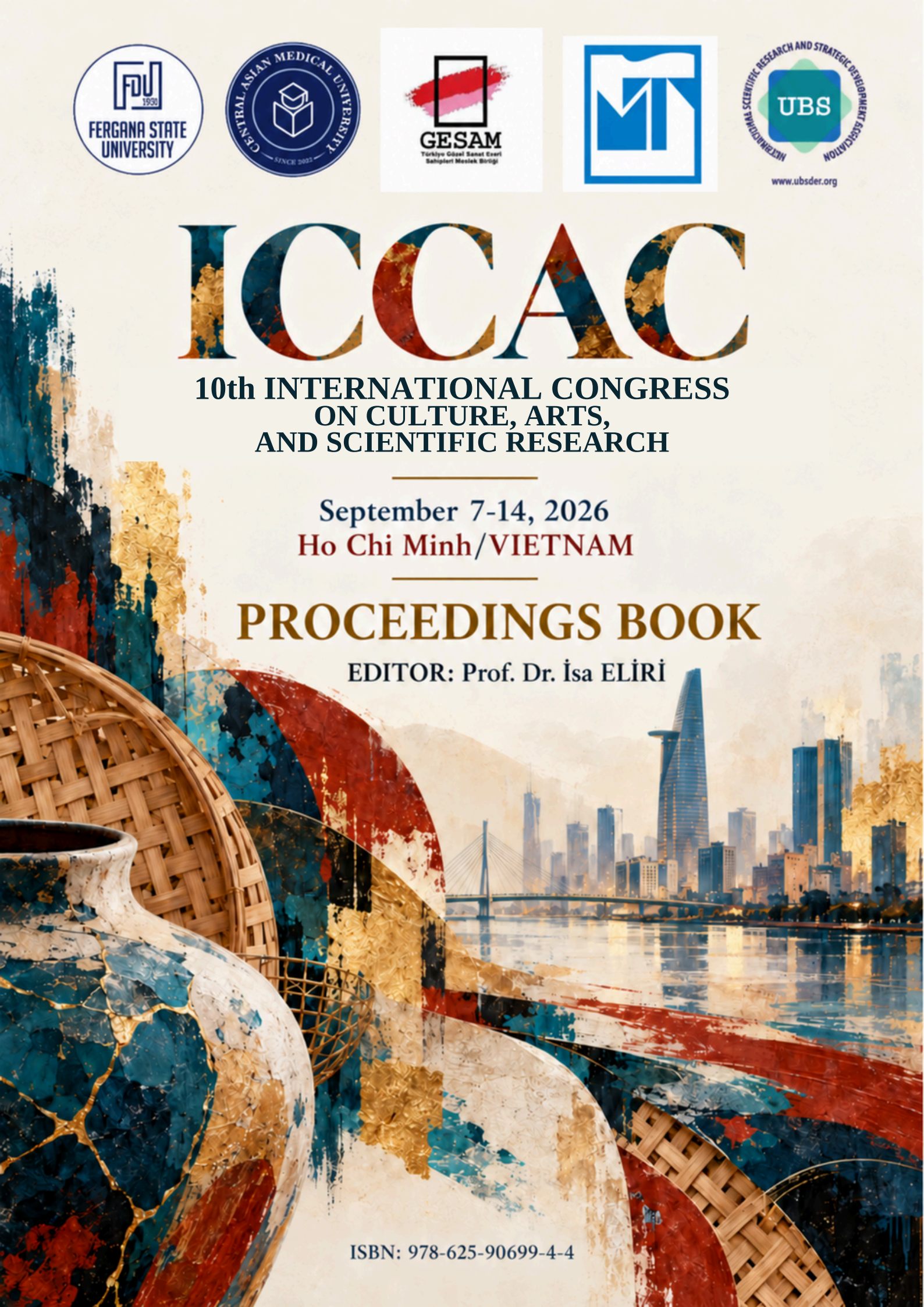


ICCAC

10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026
Ho Chi Minh/VIETNAM

PROCEEDINGS BOOK

EDITOR: Prof. Dr. İsa ELİRİ

ISBN: 978-625-90699-4-4

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 9-25, 2026 Ho Chi Minh/VIETNAM

www.ubsder.org

PROCEEDINGS BOOK

EDITOR IN CHIEF

Prof. Dr. İsa ELİRİ

ISBN: 978-625-90699-4-4

by

ACADEMIC SHARING PLATFORM PUBLISHING HOUSE®

All Rights Reserved.
The authors are solely responsible for the ethical and legal content of their contributions.
APP Publications – 2026 ©

Publication Date: 29.10.2026

CONGRESS ID

CONGRESS TITLE

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

DATE and PLACE

September 7-14, 2026 Ho Chi Minh/VIETNAM

CONGRESS CHAIRS

Prof. Dr. İsa ELİRİ

EDITOR IN CHIEF

Prof. Dr. İsa ELİRİ

HONORARY CO-CHAIR OF THE CONGRESS

Lam Thi Phuong Thanh

HONORARY CO-CHAIR OF THE CONGRESS

Prof. Dr. Nguyen Van Minh

HONORARY CO-CHAIR OF THE CONGRESS

Prof. Dr. Bahodirjon Shermuhammadov

HONORARY CO-CHAIR OF THE CONGRESS

Prof. Dr. Mamasadikov Nurillo Shukrullaevich

CONGRESS ORGANIZERS

Uluslararası Bilimsel Araştırma ve Strateji Geliştirme Derneği
Fergana State University
Central Asian Medical University
Türkiye Güzel Sanat Eseri Sahipleri Meslek Birliği (GESAM)
Ho Chi Minh City University of Fine Arts

PARTICIPANT COUNTRIES (8):

Azerbaijan, Georgia, Greece, Japan, Kyrgyzstan, Türkiye, Uzbekistan, Vietnam

NUMBER OF ACCEPTED PAPERS (99):

(Türkiye-8, Other Countries-91)

PRESENTATION

Oral presentation

EVALUATION PROCESS

All applications have undergone a double-blind peer review process

ISBN: 978-625-90699-4-4

ORGANIZING COMMITTEE

Prof. Dr. Ayşe Derya KAHRAMAN – Istanbul University-Cerrahpaşa, Türkiye
Prof. Dr. Serkan İLDEN – Kastamonu University, Türkiye
Prof. Dr. Rühi KONAK – Ankara Music and Fine Arts University, Türkiye
Prof. Dr. Mustafa GENÇ – Süleyman Demirel University, Türkiye
Prof. Dr. Serap BUYURGAN – Başkent University, Türkiye
Prof. Dr. Abbas KETİZMEN – Gazi University, Türkiye
Prof. Dr. Öner DEMİREL – Kırıkkale University, Türkiye
Prof. Dr. Mustafa BULAT – Atatürk University, Türkiye
Prof. Dr. Gökhan CEYLAN – Sinop University, Türkiye
Prof. Dr. Serdar TUNA – Mehmet Akif Ersoy University, Türkiye
Prof. Dr. Erol Murat YILDIZ – Giresun University, Türkiye
Prof. Dr. Emine KÜÇÜKTEKER – Harran University, Türkiye
Prof. Dr. Oğuz DİLMAÇ – İzmir Kâtip Çelebi University, Türkiye
Prof. Dr. Bülent SALDERAY – Ankara Hacı Bayram Veli University, Türkiye
Prof. Dr. Meltem KATRANCI – Ankara Hacı Bayram Veli University, Türkiye
Prof. Dr. Ahmet DALKIRAN – Selçuk University, Türkiye
Prof. Dr. Mahmut Sami ÖZTÜRK – Necmettin Erbakan University, Türkiye
Prof. Dr. Serap BUYURGAN – Başkent University, Türkiye
Prof. Dr. Çağrı GÖRÜCÜ – KTO Karatay University, Türkiye
Prof. Dr. Orhan CEBRAİLOĞLU – Selçuk University, Türkiye
Prof. Dr. İlhan ENVEROĞLU – Selçuk University, Türkiye
Prof. Dr. Hacı Halil USLUCAN – University of Duisburg-Essen, Germany
Prof. Dr. Hakan AYDOĞAN – Samarkand State University, Uzbekistan
Prof. Dr. Surena ZANJANI – Samarkand State University, Uzbekistan
Prof. Dr. Gülzar İBRAHİMOVA – Baku Eurasian University, Azerbaijan
Assoc. Prof. Dr. Abdülkerim TÜRKÇAYA – Ankara Music and Fine Arts University, Türkiye
Assoc. Prof. Dr. Mehmet SAĞ – Akdeniz University, Türkiye
Assoc. Prof. Dr. Ali Ertuğrul KÜPELİ – Gazi University, Türkiye
Assoc. Prof. Dr. Hatice CEYLAN – Sinop University, Türkiye
Assoc. Prof. Dr. Leyla KODAMAN – Süleyman Demirel University, Türkiye
Assoc. Prof. Dr. O. Tayfur ÖZTÜRK – Necmettin Erbakan University, Türkiye
Assoc. Prof. Dr. Günel HUMMETOVA – Azerbaijan State Pedagogical University, Azerbaijan
Assoc. Prof. Dr. Sahila IBRAHIMOVA – Azerbaijan State Pedagogical University, Azerbaijan
Assoc. Prof. Dr. Madrakhimova Zukhra Mamasodikovna – Central Asian Medical University, Uzbekistan
Assoc. Prof. Dr. Nurlan BAIGABYLOV – L. N. Gumilyov Eurasian National University, Kazakhstan
Assoc. Prof. Dr. Muhammad Zia-ur-Rehman – National Defence University, Pakistan
Asst. Prof. Dr. Martyna KAWIŃSKA – Cardinal Stefan Wyszyński University, Poland
Asst. Prof. Dr. Orhan DOĞRU – Ankara Hacı Bayram Veli University, Türkiye
Asst. Prof. Dr. Mevlüt ÖZEMİR – Kırıkkale University, Türkiye
Asst. Prof. Dr. Mehmet SUSUZ – Necmettin Erbakan University, Türkiye
Dr. Esma ÇEVİK – Ministry of Culture and Tourism / GESAM, Türkiye
Akdoğan TOPAÇLIOĞLU – Artist, Member of GESAM's High Council / GESAM, Türkiye
Nazlı DEMİRTEPE – Artist, Member of GESAM's High Council / GESAM, Türkiye
B. Veysel BİNYILDIZ – Artist, Member of GESAM's High Council / GESAM, Türkiye

SCIENTIFIC BOARD MEMBERS

Prof. Dr. Ayşe Derya KAHRAMAN – Istanbul University-Cerrahpaşa, Türkiye
Prof. Dr. Serkan İLDEN – Kastamonu University, Türkiye
Prof. Dr. Rühi KONAK – Ankara Music and Fine Arts University, Türkiye
Prof. Dr. Mustafa GENÇ – Süleyman Demirel University, Türkiye
Prof. Dr. Gökhan CEYLAN – Sinop University, Türkiye
Prof. Dr. Serdar TUNA – Mehmet Akif Ersoy University, Türkiye
Prof. Dr. Erol Murat YILDIZ – Giresun University, Türkiye
Prof. Dr. Emine KÜÇÜKTEKER – Harran University, Türkiye
Prof. Dr. Oğuz DİLMAÇ – İzmir Kâtip Çelebi University, Türkiye
Prof. Dr. Bülent SALDERAY – Ankara Hacı Bayram Veli University, Türkiye
Prof. Dr. Habib ÇİFTCİ – Çukurova University, Türkiye
Prof. Dr. Mehmet ILKIM – İnönü University, Türkiye
Prof. Dr. Mehmet Zeki DUMAN – Van Yüzüncü Yıl University, Türkiye
Prof. Dr. Sibel AKOVA – Yalova University, Türkiye
Prof. Dr. Meltem KATRANCI – Ankara Hacı Bayram Veli University, Türkiye
Prof. Dr. Ahmet DALKIRAN – Selçuk University, Türkiye
Prof. Dr. Mahmut Sami ÖZTÜRK – Necmettin Erbakan University, Türkiye
Prof. Dr. Serap BUYURGAN – Başkent University, Türkiye
Prof. Dr. Çağrı GÖRÜCÜ – KTO Karatay University, Türkiye
Prof. Dr. Orhan CEBRAİLOĞLU – Selçuk University, Türkiye
Prof. Dr. İlhan ENVEROĞLU – Selçuk University, Türkiye
Prof. Dr. Hacı Halil USLUCAN – University of Duisburg-Essen, Germany
Prof. Dr. Hakan AYDOĞAN – Samarkand State University, Uzbekistan
Prof. Dr. Surena ZANJANI – Samarkand State University, Uzbekistan
Prof. Dr. Gülzar İBRAHİMOVA – Baku Eurasian University, Azerbaijan
Assoc. Prof. Dr. Mehmet SAĞ – Akdeniz University, Türkiye
Assoc. Prof. Dr. Melda Medine SUNAY – Bursa Technical University, Türkiye
Assoc. Prof. Dr. Ali Ertuğrul KÜPELİ – Gazi University, Türkiye
Assoc. Prof. Dr. Hatice CEYLAN – Sinop University, Türkiye
Assoc. Prof. Dr. Leyla KODAMAN – Süleyman Demirel University, Türkiye
Assoc. Prof. Dr. O. Tayfur ÖZTÜRK – Necmettin Erbakan University, Türkiye
Assoc. Prof. Dr. Günel HUMMETOVA – Azerbaijan State Pedagogical University, Azerbaijan
Assoc. Prof. Dr. Sahila İBRAHİMOVA – Azerbaijan State Pedagogical University, Azerbaijan
Assoc. Prof. Dr. Madrakhimova Zukhra Mamasodikovna – Central Asian Medical University, Uzbekistan
Assoc. Prof. Dr. Nurlan BAIGABYLOV – L. N. Gumilyov Eurasian National University, Kazakhstan
Assoc. Prof. Dr. Muhammad Zia-ur-Rehman – National Defence University, Pakistan
Asst. Prof. Dr. Canan TERCAN – Istanbul Aydın University, Türkiye
Asst. Prof. Dr. Aslı KAYA – Istanbul Gelişim University, Türkiye
Asst. Prof. Dr. Faruk EKEN – Kastamonu University, Türkiye
Asst. Prof. Dr. Ananda MAJUMDAR – USA
Dr. Keshab Chandra MANDAL – India
Dr. Subhashish DEY – India

UBSDER

Çankaya - Ankara

06-139-180

Konu: Kongre Düzenleme Kurulu 25.07.2026

Sayı:2026/250

İLGİLİ KURUMA

İçişleri Bakanlığı tarafından tahsis edilen 06-139-180 tescil kodu ile Tüzel kişiliğe sahip olan Uluslararası Bilimsel Araştırma ve Strateji Geliştirme Derneği, 5253 sayılı kanuna uygun olarak "Bilimsel Araştırmalar ve Akademik Çalışmalar" alanında ulusal ve uluslararası düzeyde faaliyetlerini yürütmektedir.

Kurumumuzun Yönetim Kurulu tarafından, 25.07.2026 tarihinde saat 14:00'da "Bilimsel Çalışmalarda Strateji Geliştirme" görüşmeleri ile "Bilimsel Kongreler Düzenlenmesi" gündemleri ile toplanmış ve alınan 9 nolu karara istinaden aşağıda detayları yazılı olan bilimsel etkinliğin düzenlenmesine ve etkinliğe ilişkin akademisyenlerin resmi olarak görevlendirilmesine oy birliği ile karar verilmiştir.

Bilgi ve gereğini arz ederim.

Dr. Nadire KANTARCIOĞLU

UBSDER Başkanı

Etkinlik Adı : **ICCAC 10. Uluslararası Kültür, Sanat ve Bilimsel Araştırmalar Kongresi**

Etkinlik Tarihi: **7-14 Eylül 2026, Ho Chi Minh/Vietnam**

www.ubsder.org

KONGRE BAŞKANI

Prof. Dr. İsa ELİRİ - President of GESAM, Kırıkkale University, Türkiye

Düzenleme Kurulu Üyeleri

Prof. Dr. Ayşe Derya KAHRAMAN – Istanbul University-Cerrahpaşa, Türkiye

Prof. Dr. Serkan İLDEN – Kastamonu University, Türkiye

Prof. Dr. Rühi KONAK – Ankara Music and Fine Arts University, Türkiye

Prof. Dr. Mustafa GENÇ – Süleyman Demirel University, Türkiye

Prof. Dr. Serap BUYURGAN – Başkent University, Türkiye

Prof. Dr. Abbas KETİZMEN – Gazi University, Türkiye

Prof. Dr. Öner DEMİREL – Kırıkkale University, Türkiye

Prof. Dr. Mustafa BULAT – Atatürk University, Türkiye

Prof. Dr. Gökhan CEYLAN – Sinop University, Türkiye

Prof. Dr. Serdar TUNA – Mehmet Akif Ersoy University, Türkiye

Prof. Dr. Erol Murat YILDIZ – Giresun University, Türkiye

Prof. Dr. Emine KÜÇÜKTEKER – Harran University, Türkiye

Prof. Dr. Oğuz DİLMAÇ – İzmir Kâtip Çelebi University, Türkiye

Prof. Dr. Bülent SALDERAY – Ankara Hacı Bayram Veli University, Türkiye

Prof. Dr. Meltem KATRANCI – Ankara Hacı Bayram Veli University, Türkiye

Prof. Dr. Ahmet DALKIRAN – Selçuk University, Türkiye

Prof. Dr. Mahmut Sami ÖZTÜRK – Necmettin Erbakan University, Türkiye

Prof. Dr. Serap BUYURGAN – Başkent University, Türkiye

Prof. Dr. Çağrı GÖRÜCÜ – KTO Karatay University, Türkiye

Prof. Dr. Orhan CEBRAİLOĞLU – Selçuk University, Türkiye

Prof. Dr. İlhan ENVEROĞLU – Selçuk University, Türkiye

Prof. Dr. Hacı Halil USLUCAN – University of Duisburg-Essen, Germany

Prof. Dr. Hakan AYDOĞAN – Samarkand State University, Uzbekistan

Prof. Dr. Surena ZANJANI – Samarkand State University, Uzbekistan

Prof. Dr. Gülzar İBRAHİMOVA – Baku Eurasian University, Azerbaijan

Assoc. Prof. Dr. Abdülkerim TÜRKÇAYA – Ankara Music and Fine Arts University, Türkiye

Assoc. Prof. Dr. Mehmet SAĞ – Akdeniz University, Türkiye

Assoc. Prof. Dr. Ali Ertuğrul KÜPELİ – Gazi University, Türkiye

Assoc. Prof. Dr. Hatice CEYLAN – Sinop University, Türkiye

Assoc. Prof. Dr. Leyla KODAMAN – Süleyman Demirel University, Türkiye

INTERNATIONAL SCIENTIFIC RESEARCH AND STRATEGY DEVELOPMENT ASSOCIATION
www.ubsdcr.org

Assoc. Prof. Dr. O. Tayfur ÖZTÜRK – Necmettin Erbakan University, Türkiye

Assoc. Prof. Dr. Günel HUMMETOVA – Azerbaijan State Pedagogical University, Azerbaijan

Assoc. Prof. Dr. Sahila IBRAHIMOVA – Azerbaijan State Pedagogical University, Azerbaijan

Assoc. Prof. Dr. Madrakhimova Zukhra Mamasodikovna – Central Asian Medical University, Uzbekistan

Assoc. Prof. Dr. Nurlan BAIGABYLOV – L. N. Gumilyov Eurasian National University, Kazakhstan

Assoc. Prof. Dr. Muhammad Zia-ur-Rehman – National Defence University, Pakistan

Asst. Prof. Dr. Martyna KAWIŃSKA – Cardinal Stefan Wyszyński University, Poland

Asst. Prof. Dr. Orhan DOĞRU – Ankara Hacı Bayram Veli University, Türkiye

Asst. Prof. Dr. Mevlüt ÖZEMİR – Kırıkkale University, Türkiye

Asst. Prof. Dr. Mehmet SUSUZ – Necmettin Erbakan University, Türkiye

Dr. Esma ÇEVİK – Ministry of Culture and Tourism / GESAM, Türkiye

Akdoğan TOPAÇLIOĞLU – Artist, Member of GESAM's High Council / GESAM, Türkiye

Nazlı DEMİRTEPE – Artist, Member of GESAM's High Council / GESAM, Türkiye

B. Veysel BİNYILDIZ – Artist, Member of GESAM's High Council / GESAM, Türkiye

INTERNATIONAL BUSINESS RESEARCH AND STRATEGY DEVELOPMENT ASSOCIATION

UBS

www.ubsder.org

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026 Ho Chi Minh/VIETNAM

Sayı:2026/270

İlgili Makama:

Uluslararası Bilimsel Araştırma ve Strateji Geliştirme Derneği (UBSDER) tarafından organize edilen "**ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH**" Eylül 7-14, 2026 tarihinde 8 farklı ülkeden (Türkiye'den 8, yurt dışından 91 bildiri sunuldu) olmak üzere toplam 99 adet sunum yapılarak, çevrimiçi olarak düzenlenmiştir.

Kongremiz, 16 Ocak 2020'de Akademik Teşvik Ödeneği Yönetmeliğine getirilen "Tebliğlerin sunulduğu yurt içinde veya yurt dışındaki etkinliğin uluslararası olarak nitelendirilebilmesi için Türkiye dışından en az beş farklı ülkeden sözlü tebliğ sunan konuşmacının katılım sağlaması ve tebliğlerin yarıdan fazlasının Türkiye dışından katılımcılar tarafından sunulması esastır." Değişikliğine uygun olarak düzenlenmiştir.

Bilgilerinize Arz Ederim.

26.10.2026

Dr. Nadire KANTARCIOĞLU

UBSDER Başkanı

Kongremize katılan ülkeler:

Azerbaijan, Georgia, Greece, Japan, Kyrgyzstan, Türkiye, Uzbekistan, Vietnam

INSTITUTE CONTACT INFORMATION:
TURGUT ÖZAL MAH. AKKENT 6 TWINS TRADE CENTER ANKARA
TEL: 0 312 566 00 20 FAKS: 0 312 566 0021
Web : www.ubsder.org ubsder@ubsder.org

ICCAC 10th

INTERNATIONAL CONGRESS ON CULTURE, ART AND SCIENTIFIC RESEARCH

&

LOTUS VISIONS

INTERNATIONAL EXHIBITION

INTERCULTURAL REFLECTIONS AND TRACES OF ART

THURSDAY, SEPTEMBER 10, 2026

GARDEN PLAZA HOTEL • HO CHI MINH CITY, VIETNAM





CONGRESS PRESIDENT

Prof. Dr. İsa Eliri

EXHIBITION CURATOR

Prof. Dr. Ruhi Konak

VIETNAM LOCAL TIME

09:00–11:00

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026 Ho Chi Minh/VIETNAM

CONGRESS PROGRAM

PARTICIPANT COUNTRIES (8)

Azerbaijan, Georgia, Greece, Japan, Kyrgyzstan, Türkiye, Uzbekistan, Vietnam

EXHIBITION CATALOGUE INTERNATIONAL LONDON MIXED EXHIBITION

EXHIBITION CURATOR
Prof. Dr. Ruhi KONAK

Venue:
Garden Plaza hotel
309B–311 Nguyen Van Troi Street, Tan Son Hoa Ward, Ho Chi Minh City, Vietnam

☎ +84 28 3842 1111

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
FACE TO FACE

10.09.2026	
VIETNAM	**VIETNAM LOCAL TIME: 09:00-11:00**

HEAD OF SESSION: Prof. Dr. İsa ELİRİ

Author(s)	Affiliation	Title
Prof. Dr. İsa ELİRİ	Kırıkkale University, Faculty of Fine Arts, Department of Painting, Kırıkkale, Türkiye	**THE SEARCH FOR TRADITION AND IDENTITY IN TURKISH PAINTING FROM THE 19TH CENTURY TO THE PRESENT**
Mustafa ÇOLAK	Ankara Şair Nedim Primary School, Ankara, Türkiye	**THE VISUAL MEMORY OF THE STEPPE: GEOGRAPHY AND CULTURAL IDENTITY IN TURKISH PAINTING**
Veysel PEKDOĞAN	Tınaz Primary School, Kırıkkale, Türkiye	**FROM TRADITION TO ALGORITHM: THE RECODING OF TURKISH VISUAL CULTURE IN THE DIGITAL AGE**
Asst. Prof. Dr. Mevlüt ÖZEMİR	Kırıkkale University, Faculty of Fine Arts, Department of Painting, Kırıkkale, Turkey	**ARCHIVAL TRANSFORMATION IN CONTEMPORARY ART IN THE CONTEXT OF MEMORY, FICTION, AND ALTERNATIVE HISTORIOGRAPHY**
Sumbula Maxmudova Shuxrat Tursunov	Fergana State University, Senior Research Fellow at the "Victims of Repression" Museum, Doctor of Philosophy (PhD) in Pedagogical Sciences, Associate Professor, Fergana, Uzbekistan Fergana State University, Independent Researcher, Fergana, Uzbekistan	**CONTENT AND TECHNOLOGY OF DEVELOPING THE PERFORMANCE COMPETENCE OF FUTURE MUSIC TEACHERS**
Dilorom Namozova, PhD, Associate Professor Jo'raboyeva Dilobarxon Sherali qizi	Fergana State University, Fergana, Uzbekistan Fergana State University, Doctoral Researcher, Fergana, Uzbekistan	**ANALYSIS OF NATIONAL AND INTERNATIONAL EXPERIENCE IN DEVELOPING THE PROFESSIONAL COMPETENCE OF FUTURE MUSIC TEACHERS**
Laylo Tursunova	Senior Lecturer, Fergana State University, Doctor of Philosophy (PhD) in Philosophy	**THE SPIRITUAL AND CULTURAL VALUES OF ART IN TILAB MAHMUDOV'S PHILOSOPHY: A CONTEMPORARY INTERPRETATION OF AESTHETIC THOUGHT**
Mavluda Najmetdinova	Associate Professor, Doctor of Philosophy (PhD) in Philological Sciences, Department of Music Education and Culture, Fergana State University	**THE PRIORITY OF INTERCULTURAL COOPERATION IN THE EMPIRE OF AMIR TEMUR**
Prof. Dr. Abdumutal Ahadjonovich QAMBAROV	Department of Philosophy, Fergana State University, Fergana, Uzbekistan	**TANOVAR IS A GENUINE PHILOSOPHICAL WORK**

Opening Ceremony

Online

Date: September 12, 2026
Time: 16:30

Meeting Link:
https://us06web.zoom.us/j/4603636838?pwd=Gx9rIRf5cUTPsZZ4pilDYkYWaaEAc6.1&omn=86420730298

Meeting ID: **460 363 6838**
Password: **121314**

Speech:

Dr. Nadire KANTARCIOĞLU
UBSDER President

ÖNEMLİ, DİKKATLE OKUYUNUZ LÜTFEN / IMPORTANT, PLEASE READ CAREFULLY

Önemli, Dikkatle Okuyunuz Lütfen

- ✓ Kongremizde Yazım Kurallarına uygun gönderilmiş ve bilim kurulundan geçen bildiriler için online (video konferans sistemi üzerinden) sunum imkanı sağlanmıştır.
- ✓ Online sunum yapabilmek için **https://zoom.us/join** sitesi üzerinden giriş yaparak "Meeting ID or Personal Link Name" yerine ID numarasını girerek oturuma katılabilirsiniz.
- ✓ Zoom uygulaması ücretsizdir ve hesap oluşturmaya gerek yoktur.
- ✓ Zoom uygulaması kaydolmadan kullanılabilir.
- ✓ Uygulama tablet, telefon ve PC'lerde çalışıyor.
- ✓ Her oturumdaki sunucular, sunum saatinden 15 dk öncesinde oturuma bağlanmış olmaları gerekmektedir.
- ✓ Tüm kongre katılımcıları canlı bağlanarak tüm oturumları dinleyebilir.
- ✓ Moderatör – oturumdaki sunum ve bilimsel tartışma (soru-cevap) kısmından sorumludur.

Dikkat Edilmesi Gerekenler- TEKNİK BİLGİLER

- ✓ Bilgisayarınızda mikrofon olduğuna ve çalıştığına emin olun.
- ✓ Zoom'da ekran paylaşma özelliğine kullanabilmelisiniz.
- ✓ Kabul edilen bildiri sahiplerinin mail adreslerine Zoom uygulamasında oluşturduğumuz oturuma ait ID numarası gönderilecektir.
- ✓ **Katılım belgeleri kongre sonunda tarafınıza pdf olarak gönderilecektir**
- ✓ Kongre programında yer ve saat değişikliği gibi talepler dikkate alınmayacaktır

IMPORTANT, PLEASE READ CAREFULLY

- ✓ To be able to attend a meeting online, login via **https://zoom.us/join** site, enter ID "Meeting ID or Personal Link Name" and solidify the session.
- ✓ The Zoom application is free and no need to create an account.
- ✓ The Zoom application can be used without registration.
- ✓ The application works on tablets, phones and PCs.
- ✓ The participant must be connected to the session 15 minutes before the presentation time.
- ✓ All congress participants can connect live and listen to all sessions.
- ✓ Moderator is responsible for the presentation and scientific discussion (question-answer) section of the session.

Points to Take into Consideration - TECHNICAL INFORMATION

- ✓ Make sure your computer has a microphone and is working.
- ✓ You should be able to use screen sharing feature in Zoom.
- ✓ **Attendance certificates will be sent to you as pdf at the end of the congress.**
- ✓ Requests such as change of place and time will not be taken into consideration in the congress program.

Before you login to Zoom please indicate your name_surname and HALL number,

exp. Hall-1, Hakan ÖZTÜRK



Meeting ID: 880 0871 3068
Passcode: 010101

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-1
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Lecturer Dr. Gökhan BİLİCİ

Author(s)	Affiliation	Title
Associate Professor Ulduz Fərhad QƏHRƏMANOVA	Azerbaijan State Pedagogical University, Department of Literature, Azerbaijan	**NIZAMI GANJAVI'S POEM "TREASURE OF SECRETS": VIII ARTICLE – "THE BEAUTY OF CREATION AND THE POWER OF PERFECTION"**
Associate Professor Ulduz Fərhad QƏHRƏMANOVA	Azerbaijan State Pedagogical University, Department of Literature, Azerbaijan	**ARTICLE XII IN NIZAMI GANJAVI'S POEM "THE TREASURY OF SECRETS": SAYING GOODBYE TO THE WORLD**
Lecturer Dr. Gökhan BİLİCİ	Selcuk University, Akören Ali Rıza Ercan Vocational School	**DISASTER GOVERNANCE IN TÜRKİYE: STRUCTURAL PROBLEMS, LOCAL GOVERNMENT-CIVIL SOCIETY COOPERATION, AND POLICY RECOMMENDATIONS**
Lecturer Dr. Gökhan BİLİCİ	Selcuk University, Akören Ali Rıza Ercan Vocational School	**INSTITUTIONAL LIMITS OF PARTICIPATORY BUDGETING AND CITIZEN'S BUDGET PRACTICES IN TÜRKİYE**
Mehmet Salih AKIN Prof. Dr. Hamdiye ARDA SÜRÜCÜ	Dicle University, Atatürk Faculty of Health Sciences Dicle University, Atatürk Faculty of Health Sciences	**DIABETES TECHNOLOGIES AND THEIR PSYCHOLOGICAL EFFECTS IN PATIENTS WITH TYPE 1 DIABETES**
Kübra BULUT Prof. Dr. Hamdiye ARDA	Dicle University, Institute of Health Sciences Dicle University, Ataturk Faculty of Health Sciences	**CLIMATE CHANGE AND DIABETES MANAGEMENT**

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-2
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Emil Raul oğlu Ağayev

Author(s)	Affiliation	Title
Mansirova Shahana Zulfugar	Teacher at the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University, Baku, Azerbaijan	**WINGS OF THE SOUL: SYMBOLISM AND INNER FREEDOM IN C. YAHYA'S "WISH BUTTERFLY"**
Mansirova Shahana Zulfugar	Teacher at the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University, Baku, Azerbaijan	**THE SYMBOLIC SEMANTICS OF JUSTICE: THE UNITY OF PHILOSOPHICAL IMAGES IN FINE ART**
Mansirova Shahana Zulfugar	Teacher at the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University, Baku, Azerbaijan	**THE UNITY OF MYTHOLOGICAL AND NATIONAL SYMBOLS IN ARTISTIC COMPOSITION: AN ANALYSIS OF J. YAHYA'S WORK "AYDAN YERI"**
Sevil Bayram qızı Əliyeva	ADPU-nun nəzdində Azərbaycan Dövlət Pedaqoji Kollecinin müəllimi	**DAHİ RƏSSAM MİKAYIL ABDULLAYEV**
Sevil Bayram qızı Əliyeva	ADPU-nun nəzdində Azərbaycan Dövlət Pedaqoji Kollecinin müəllimi	**TOĞRUL NƏRİMANBƏYOV**
Sevil Bayram qızı Əliyeva	ADPU-nun nəzdində Azərbaycan Dövlət Pedaqoji Kollecinin müəllimi	**THE LIFE AND CREATIVITY OF PEOPLE'S ARTIST AZIM AZIMZADE**
Emil Raul oğlu Ağayev	Teacher of the subject combination commission "Art and physical education" of the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University	**DISCUSSION STRATEGIES IN TEACHING FINE ARTS IN SECONDARY SCHOOLS**
Emil Raul oğlu Ağayev	Teacher of the subject combination commission "Art and physical education" of the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University	**THE ROLE OF GAME-BASED LEARNING IN THE METHODOLOGY OF TEACHING FINE ARTS**

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-3
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Assistant Kamila Ye. Djurayeva

Author(s)	Affiliation	Title
Ph.D., Assoc. Prof. Rasuljon M. Shermatov Assistant Shaxlo R. Sodikova S.Sh. Gayratova	Fergana Medical Institute of Public Health, Faculty of Pediatrics, Department of Pediatrics, Fergana, Uzbekistan Central Asian Medical University, Faculty of Medicine, Department of Pediatrics, Fergana, Uzbekistan Fergana Medical Institute of Public Health, Faculty of Pediatrics, Fergana, Uzbekistan	**CLINICAL AND IMMUNOLOGICAL PREDICTORS OF RESPIRATORY DISEASES IN CHILDREN WITH ACQUIRED IMMUNODEFICIENCY: A COMPARATIVE STUDY**
Assistant Kamila Ye. Djurayeva	Fergana Medical Institute of Public Health, Faculty of Pediatrics, Department of Pediatrics, Fergana, Uzbekistan	**DIAGNOSTIC PERFORMANCE OF NEONATAL SCREENING AND LABORATORY METHODS FOR EARLY DETECTION OF CYSTIC FIBROSIS: A COMPARATIVE ANALYSIS**
Senior Lecturer Temur Alisher o'g'li Olimjonov	Department of Maxillofacial Surgery, Tashkent State Medical University, Tashkent, Uzbekistan	**EFFICACY OF TITANIUM IMPLANTS AND ENDOPROSTHETIC MESH IN SURGICAL RECONSTRUCTION OF ZYGOMATICO-ORBITAL COMPLEX FRACTURES**
Nuritdinova Dilnoza Yusupovna Assoc. Prof. Dr. Aminjon Sabdarovich Nematov	International University Central Asian Medical University, Department of Modeling Hygienic and Medical Processes, Fergana, Uzbekistan Center for the Development of Professional Qualification of Medical Workers of the Republic of Uzbekistan, Department of Epidemiology, Fergana, Uzbekistan	**MONITORING OF COVID-19 PCR TESTING IN UZBEKISTAN 2020–2024 YEARS**
Abdusalom Rakhimovich Soliyev	Lecturer at the Department of Music Education and Culture, Faculty of Pedagogy, Psychology and Art Studies, Fergana State University	**THE ROLE OF INTERNATIONAL MUSIC FESTIVALS IN THE DEVELOPMENT OF UZBEK MUSICAL CULTURE**

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-4
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Ulugbek Karimovich Rakhmonov

Author(s)	Affiliation	Title
Ulugbek Karimovich Rakhmonov	Associate Professor, Doctor of Philosophy (PhD) in Pedagogical Sciences, Department of Music Education and Culture, Faculty of Pedagogy, Psychology and Art Studies, Fergana State University	**THE ROLE OF NATIONAL MUSICAL ART IN SOCIAL LIFE IN THE DEVELOPMENT OF UZBEK MUSICAL CULTURE**
Nuritdinova Shahzoda Kenjayev Olimjon Obidjonovich, PhD	Central Asian Medical University International Medical University, Head of the Department of Internal Diseases in Family Medicine, Fergana City, Uzbekistan Central Asian Medical University, Head of the Department of Internal Diseases in Family Medicine, Fergana City, Uzbekistan	**IMPACT OF COMORBID CARDIOVASCULAR DISEASES ON THE CLINICAL COURSE, DEVELOPMENT OF COMPLICATIONS, AND TREATMENT EFFECTIVENESS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE**
Kamronbek Sharofiddinov	Honored Art Worker of the Republic of Uzbekistan, Academician of the Academy of Arts of Uzbekistan, recipient of the “El-yurt hurmati” Order and the “Shuhrat” Medal, and grandson-disciple of the renowned master potter Sharofiddin Yusupov	**FAMILY VALUES AND BECOMING A SUCCESSOR OF THE RISHTON TRADITIONAL POTTERY SCHOOL – MY LIFE PATH**

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-5
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Ph.D. Madamin Aminov

Author(s)	Affiliation	Title
Ph.D. Madamin Aminov Ph.D. Bakhtiyor K. Urinboev Clinical Resident Farzona K. Sobirova	Department of Urology and Clinical Pharmacology, Central Asian Medical University, Fergana, Uzbekistan Fergana Branch of the Republican Scientific Center for Emergency Medical Care, Fergana, Uzbekistan Clinical Resident in Neurosurgery, Central Asian Medical University, Fergana, Uzbekistan	**MODERN CLINICAL APPROACHES TO CHRONIC SUBDURAL HEMATOMA**
I. Yuldashev	Senior Lecturer, Department of Fine Arts, Fer.GU.	**FACTORS DEMONSTRATING THE CONNECTION BETWEEN ANCIENT IMAGES IN THE TERRITORY OF UZBEKISTAN AND THE ART OF MINIATURE PAINTING**
Tokhirjon Shokirov Nurmamatovich	Fergana State University, Head of the Department of Music Education and Culture, Associate Professor	**FOLK MUSIC IS AN INTEGRAL PART OF YOUTH EDUCATION**
Djalalova Nigora Khusanovna	Fergana State University, Department of Music Education and Culture, Fergana, Uzbekistan	**THE NECESSITY AND CONDITIONS FOR IMPROVING SOCIO-CULTURAL TECHNOLOGIES IN ENHANCING YOUTH THINKING**
Bakhtiyor Mirzarakhimov	Associate Professor, Department of Philosophy (PhD), Fergana State University, Fergana, Uzbekistan	**PHILOSOPHY OF TOURISM AND CULTURE: AXIOLOGICAL AND AESTHETIC FOUNDATIONS OF INTERCULTURAL DIALOGUE IN THE ERA OF GLOBAL MOBILITY**

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-6
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Prof. Dr. Nazar Khakimovich KHAKIMOV

Author(s)	Affiliation	Title
Prof. Dr. Abdumutal Ahadjonovich QAMBAROV Assoc. Prof. Dr. Bakhtiyor MIRZARAKHIMOV	Fergana State University, Department of Philosophy, Fergana, Uzbekistan Fergana State University, Department of Philosophy, Fergana, Uzbekistan	**UZBEK ASKIYA ART: PROBLEMS AND SOLUTIONS**
Gulsevar MIRZAYEVA	2nd-Year Student, Music Education, Faculty of Pedagogy, Psychology and Arts, Fergana State University, Fergana, Uzbekistan	**PRESERVATION OF INTANGIBLE CULTURAL HERITAGE: SYSTEMATIC ANALYSIS OF FERGANA VALLEY MUSICAL FOLKLORE AND AMATEUR ENSEMBLES**
Prof. Dr. Nazar Khakimovich KHAKIMOV	Tashkent University of Applied Sciences, Tashkent, Uzbekistan	**DEVELOPMENT OF NON-STATE HIGHER EDUCATION IN THE CONTEXT OF THE NEW UZBEKISTAN STRATEGY**
Senior Lecturer Muyassarxon Adiljonovna ACHILDIYEVA	Department of Music Education and Culture, Faculty of Pedagogy, Psychology and Arts, Fergana State University, Fergana, Uzbekistan	**EVOLUTIONARY NATURE OF SMALL-SCALE MODES IN UZBEK MUSICAL FOLKLORE WITHIN THE CONTEXT OF EASTERN MUSICAL THEORY**

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-7
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Assoc. Prof. Dr. Mukaddas Otajonovna KARIMOVA

Author(s)	Affiliation	Title
Assoc. Prof. Dr. Mukaddas Otajonovna KARIMOVA Lecturer Maxpuzaxon Kaxarovna AKHMEDBEKOVA	Fergana State University, Fergana, Uzbekistan Department of Fine Arts, Fergana State University, Fergana, Uzbekistan	**THE MECHANISM FOR DEVELOPING THE ARTISTIC-PEDAGOGICAL COMPETENCE OF FUTURE FINE ARTS TEACHERS BASED ON VISUAL CULTURE**
Maxpuzaxon Kaxarovna AXMEDBEKOVA Madinabonu Yoqubbek qizi DADADJANOVA	Lecturer, Department of Fine Arts, Fergana State University, Fergana, Uzbekistan Lecturer, Department of Fine Arts, Fergana State University, Fergana, Uzbekistan	**PEDAGOGICAL CONDITIONS FOR DEVELOPING ARTISTIC-PEDAGOGICAL COMPETENCE IN FUTURE FINE ARTS TEACHERS BASED ON VISUAL CULTURE**
Ismailov Akhroridin Zakhridinovich	Central Asian Medical University	**EVALUATION OF CHANGES IN SYNOVIAL FLUID IN PATIENTS DEPENDING ON THE STAGE OF DEVELOPMENT OF OSTEOARTHRITIS OF THE KNEE JOINT**
MD, DSc, Associate Professor J.T. MAMASAIDOV Nigora Ravshanbek qizi MADRAKHIMOVA	CAMU, Department of Morphology, Fergana, Uzbekistan Fergana Medical Institute of Public Health, Department of Morphology, Fergana, Uzbekistan	**TIME-DEPENDENT DYNAMICS OF MORPHOLOGICAL CHANGES IN THE LIVER AND BILE DUCTS IN EXPERIMENTAL CHOLESTEROL LITHOGENESIS**
Ubaydullayeva Salomat Rakhmidinovna	Central Asian Medical University, Assistant of the Department of Internal Medicine in Family Medicine, Fergana, Uzbekistan	**CLINICAL FEATURES OF ARTERIAL HYPERTENSION AND OBESITY IN YOUNG PATIENTS**
Ubaydullayeva Salomat Rakhmidinovna	Central Asian Medical University, Assistant of the Department of Internal Medicine in Family Medicine, Fergana, Uzbekistan	**PHYSIOLOGICAL MECHANISMS OF CARDIOVASCULAR SYSTEM ADAPTATION TO EXTREME FACTORS**

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-8
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Dilbar KABILOVA

Author(s)	Affiliation	Title
Yusupova Mamlakat MUTALIBOVNA Ubaydullayeva Salomat RAKHMIDINOVNA	Central Asian Medical University, Department of Propaedeutics of Internal Diseases and Pediatric Surgery, Fergana, Uzbekistan Central Asian Medical University, Department of Internal Medicine in Family Medicine, Fergana, Uzbekistan	**EARLY DETECTION OF LATENT IRON DEFICIENCY IN WOMEN OF REPRODUCTIVE AGE**
Dilbar KABILOVA Javlon MAMANAZIROV Soibjon HAKIMOV	Central Asian Medical University, Ferghana, Uzbekistan Central Asian Medical University, Ferghana, Uzbekistan Central Asian Medical University, Ferghana, Uzbekistan	**CLINICAL FEATURES AND RESPONSE TO IMMUNOSUPPRESSIVE AND BIOLOGIC THERAPY IN CHILDREN WITH JUVENILE DERMATOMYOSITIS**
Tursunaliyev ZILOLIDDIN	Assistant, Central Asian Medical University, Ferghana, Uzbekistan	**THE SIGNIFICANCE OF ANTHROPOMETRIC FACIAL PARAMETERS IN DIAGNOSING AESTHETIC DEFECTS IN PATIENTS WITH DENTITION DEFECTS**
Khabibjonova Yoqutkxon Khamidullo qizi	Fergana City Central Asian Medical University	**DEVELOPMENT AND EVALUATION OF THE EFFECTIVENESS OF INDIVIDUAL ORAL HYGIENE MEASURES IN PATIENTS UNDERGOING ORTHODONTIC TREATMENT**
Kazimova Sevara Baxtiyorovna	Assistant, Department of Infectious Diseases and Dermatovenereology	**THE INFLUENCE OF MUSIC ON HEART RATE, BLOOD PRESSURE, AND THE PSYCHO-EMOTIONAL STATE OF PATIENTS**
Kurbonova GULNORA Berdiyeva Xilola UMARJONOVNA, PhD	Assistant, Department of Pediatrics, Central Asian Medical University, Ferghana, Uzbekistan Fergana Medical Institute of Public Health, Ferghana, Uzbekistan	**THE ROLE OF NUTRIENT DEFICIENCY IN DELAYED SPEECH DEVELOPMENT IN CHILDREN**
Kurbonova GULNORA Berdiyeva Xilola UMARJONOVNA, PhD	Assistant, Department of Pediatrics, Central Asian Medical University, Ferghana, Uzbekistan Fergana Medical Institute of Public Health, Ferghana, Uzbekistan	**WAYS TO SUPPORT SPEECH DEVELOPMENT IN PRESCHOOL CHILDREN THROUGH PROPER NUTRITION**

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-8
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Sharofiddin XOLMATOV

Author(s)	Affiliation	Title
Sharofiddin XOLMATOV Orifjon ARIPOV Muzaffar XABIBULLOYEVICH	Central Asian Medical UniversityCenter for Professional Development of Medical WorkersFergana Branch of the Republican Scientific Center for Emergency Medical Care	MONITORING TESTOSTERONE LEVELS IN MEN USING IMMUNOCOMPLEX METHODS
A'zamjonov A'ZAMJONOVICH	Fergana State University, Faculty of Pedagogy, Psychology and Art History	THEORETICAL AND PRACTICAL BASES OF USING ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN PAINTINGS LESSONS
Aliyev ZOKHIDJON ZOKIRJON UGLI	Central Asian Medical University, International Medical University, Assistant at the Department of Medical Chemistry and Biological Sciences	METHODOLOGY FOR ALIGNING THE CONTENT OF INTEGRATIVE MEDICAL BIOLOGY TEACHING WITH PROFESSIONAL COMPETENCIES
Babayev ANVAR AXMEDOVICH	Central Asian Medical University	THE IMPORTANCE OF PHYSICAL EXERCISES AND SPORTS GAMES THAT DEVELOP PROFESSIONAL PRACTICAL SKILLS IN MAINTAINING HEALTH
G'aniyev KOMOLIDIN XALILOVICH	Central Asian Medical University, Candidate of Biological Sciences, Associate Professor, Fergana, Uzbekistan	PEDAGOGICAL BARRIERS TO FUTURE PHYSICIANS' APPLICATION OF ECOLOGICAL AND BIOLOGICAL KNOWLEDGE IN CLINICAL SITUATIONS
Kamalova DILFUZA ADILOVNA	Central Asian Medical University, Senior Lecturer, Fergana, Uzbekistan	PSYCHODIDACTIC AND COGNITIVE STRATEGIES FOR THE FORMATION OF CLINICAL THINKING OF STUDENTS IN HIGHER EDUCATIONAL INSTITUTIONS IN THE DIRECTION OF MEDICINE
Abdullayev UMIDJON RAHMONALIYEVICH	Central Asian Medical University, Assistant	EFFECTIVE USE OF THERAPEUTIC PHYSICAL EDUCATION IN RESTORING HEALTH
Eryigitova LOBARKHON ABDUKADIROVNA	CAMU International Medical University, Department of Social Sciences and Physical Culture, Associate Professor, PhD in Social Sciences	MAHALLA AS AN INSTITUTION FOR PREVENTING LONELINESS IN OLD AGE: A SOCIOGERONTOLOGICAL ANALYSIS OF THE UZBEK MODEL OF SOCIAL SUPPORT

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-9
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Sh. M. Sadikova

Author(s)	Affiliation	Title
Assoc. Prof. Dr. Alisher Madrahimov Mahammadibrohimovich	Central Asian Medical University, Fergana, Uzbekistan	MEDICINE IN THE DEVELOPMENT OF ARTIFICIAL INTELLIGENCE AND DIGITAL TECHNOLOGIES
Assoc. Prof. Dr. Rayimov Abdulxamid Abdulxakimovich	Central Asian Medical University, Fergana, Uzbekistan	OPPORTUNITIES FOR MONITORING A HEALTHY LIFESTYLE THROUGH MOBILE APPLICATIONS
Assistant Lecturer Allaberganov Muzaffar Yuldashbayevich Senior Lecturer Karimova Dilbar Sharipovna Assistant Raximov Umidbek Rashid o'gli Assistant Sultanova Munira Kamilovna Assistant Raximov Asror Sanat o'gli	Urgench State Medical Institute, Department of Pharmacology and Clinical Pharmacology, Urgench, Uzbekistan	BENZKETOZONE: EFFECTS ON THE HISTOMORPHOLOGY OF EXPERIMENTALLY INDUCED GASTRIC ULCERS
Ruzmatova Hiloloy Kabilovna	Central Asian Medical University	NUTRITION HYGIENE OF THE GERIATRIC POPULATION IN THE CONDITIONS OF DEMOGRAPHIC AGING AND ITS IMPACT ON THE QUALITY OF LIFE
Azizova Noilakhon Saidolimkhon KIZI Assoc. Prof. Dr. Mavlonjon Ziyomiddinovich NASIRDINOV	1st-Year PhD Student in Preventive Medicine, Central Asian Medical University Scientific Supervisor, Central Asian Medical University	MODERN APPROACHES TO THE EARLY DETECTION AND PREVENTION OF OBESITY AND CARDIOVASCULAR DISEASES IN YOUNG PEOPLE
Sh. M. Sadikova	Professor of the International Islamic Academy, Doctor of Social Sciences.	SOCIOGERONTOLOGICAL ASPECTS OF LONELINESS IN THE ELDERLY IN THE SOCIAL MANAGEMENT SYSTEM
Nilufar Mukhammedova	Central Asian Medical University, Assistant, Department of Anatomy and Microanatomy	MORPHOFUNCTIONAL CHANGES IN HEPATIC SINUSOIDAL CAPILLARIES AND HEPATOCYTES IN NON-ALCOHOLIC FATTY LIVER DISEASE UNDER CONDITIONS OF HYPODYNAMIA
DSc. Raiymov G.N. Joraboev O.U.	Department of Surgery and Clinical Disciplines, Central Asian Medical University, Fergana, Uzbekistan	ENHANCING CLINICAL EFFICACY OF LOCAL MINIMALLY INVASIVE APPROACHES IN TREATMENT OF PERIPANCREATIC ABSCESS FOLLOWING ACUTE PANCREATITIS
Marasulova Feruza Yusubovna	Central Asian Medical University, Fergana Uzbekistan	THE SOCIAL SIGNIFICANCE OF THE APPLICATION OF MANAGEMENT ACTIVITIES IN THE MEDICAL FIELD

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-10
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: Mamajonov Ma'rufjon Muxtorovich

Author(s)	Affiliation	Title
Sodiqjon Toirovich Musoyev Gulmira Kakhkharovna Mirzaeva Dilnurabegim Bagirovna Yashinova	Assistant, Department of Surgical Diseases, Faculty of Pediatrics, Samarkand State Medical University, Samarkand, Uzbekistan Obstetrician-gynecologist, Samarkand Regional Multidisciplinary Medical Center, Samarkand, Uzbekistan 4th-year student, Faculty of General Medicine Zarmed University, Samarkand, Uzbekistan	SHORT-TERM OUTCOMES OF LAPAROSCOPIC VERSUS OPEN SURGERY FOR COMMON ABDOMINAL DISEASES: A SINGLE-CENTER COHORT STUDY
Mamajonov Ma'rufjon Muxtorovich	Associate Professor, Department of Biophysics and Information Technologies, Central Asian Medical University (CAMU)	ENHANCING OSSEOINTEGRATION OF PEEK-BASED ORTHOPEDIC IMPLANTS THROUGH THE INTEGRATION OF SURFACE PROPERTIES, BIOMECHANICAL STABILITY, AND BIOLOGICAL RESPONSE
Komilova Dildora Alisherovna	Central Asian Medical University	IMPROVING THE SYSTEM OF EARLY PREVENTION OF PSYCHOSOMATIC HEALTH DISORDERS IN CHILDREN WITH DOWN SYNDROME
Kuramatova Shakhlo Azizjon kizi	Central Asian Medical University	INTEGRATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES INTO BIOPHYSICS EDUCATION IN MEDICAL UNIVERSITIES: METHODOLOGICAL APPROACHES, DIGITAL MODELING, AND DEVELOPMENT OF CLINICAL-ANALYTICAL COMPETENCIES
Senior Lecturer Teshaboyev Umidjon Abdukarimovich	Central Asian Medical University, Fergana, Uzbekistan	RISK FACTORS FOR SEVERE COVID-19 AND ANALYSIS OF CLINICAL AND LABORATORY PARAMETERS IN PATIENTS WITH DIABETES MELLITUS
M.S. Tokhtasinov	Central Asian Medical University, Fergana, Republic of Uzbekistan	SPECIFIC MORPHOLOGICAL FEATURES OF PNEUMONIA IN CHILDREN WITH CEREBRAL PALSY

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-11
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: PhD, Docent M.S. ISROILOV

Author(s)	Affiliation	Title
Daripov Shahobiddin Isroiljonovich	Central Asian Medical University, Senior Lecturer, Fergana, Uzbekistan	ISSUES OF PRODUCTION AND ITS ECONOMIC EFFICIENCY IN UZBEKISTAN'S RAILWAY SYSTEM (A Case Study of 1991–2001)
PhD, Docent M.S. ISROILOV Assistant J.X. AXMEDOV	International Central Asian Medical University, Fergana, Uzbekistan	MORPHOFUNCTIONAL CHANGES OF THE SIGMOID COLON IN DOLICHOSIGMOID DISEASE IN NEWBORNS AND INFANTS
Mahmudova Diyora Radik qizi	First-Year Student, Music Education Program Faculty of Pedagogy and Psychology, and Art Studies Fergana State University, Uzbekistan	THE INTERRELATION BETWEEN CULTURE AND AESTHETIC THINKING
Mamurov Abdusalom Anvarovich	Fergana State University, teacher Fergana, Uzbekistan	METHODOLOGY FOR FORMING STUDENTS' AESTHETIC TASTE IN PAINTINGS
Yunusaliev Mukhamadkadir Tojimadovich	Uzbekistan. Fergana State University, Senior Lecturer,	THE IMPORTANCE OF THE COLOR SQUARE IN A LIMITED PALETTE
Basic Doctoral Student (PhD Candidate) Boqijonov Farrux Azizjon o'g'li Assoc. Prof. Dr. Axmadaliyeva Nigora Odilovna	Fergana Medical Institute of Public Health, Fergana, Uzbekistan Tashkent State Medical University, Tashkent, Uzbekistan	COMPREHENSIVE ANALYSIS OF SANITARY AND HYGIENIC MONITORING INDICATORS IN RAILWAY TRANSPORT ENTERPRISES
Boqijonova Nargizakhon Foziljon qizi	Central Asian Medical University Assistant of the Department of Anatomy and Microanatomy Fergana, Uzbekistan	ENHANCING SECONDARY PREVENTION FOLLOWING CORONARY STENTING IN PATIENTS WITH ISCHEMIC HEART DISEASE: EVALUATION OF MEDICATION ADHERENCE AND CARDIOVASCULAR RISK FACTORS

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-12
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: PhD, Matxoshimov N.S.

Author(s)	Affiliation	Title
PhD, Matxoshimov N.S. Makhmudova M.A.	Fergana Medical Institute of Public Health, Fergana, Republic of Uzbekistan	MEDICAL AND SOCIAL FACTORS AND IMPROVEMENT OF THE LABORATORY DIAGNOSTIC SYSTEM IN DIABETES MELLITUS
Salohiddinov N.A. DSc. Raiymov G.N.	*Central Asian Medical University, Fergana Branch of the Republican Scientific Center for Emergency Medical Care, Fergana, Uzbekistan*	OPTIMIZATION OF DIAGNOSTIC STRATEGY IN PATIENTS WITH MULTIPLE ABDOMINAL TRAUMA: MINIMALLY INVASIVE APPROACH TO REDUCE UNNECESSARY LAPAROTOMY
Dekhkonov Sh.Sh. DSc. Raiymov G.N.	[1]Central Asian Medical University, Fergana Branch of the Republican Scientific Center for Emergency Medical Care, Fergana, Uzbekistan	OPTIMIZATION OF DIAGNOSTIC AND THERAPEUTIC MANAGEMENT IN PATIENTS WITH POST-CHOLECYSTECTOMY SYNDROME: ENDOSCOPIC APPROACH TO AMPULLARY AND CHOLEDOCHAL OBSTRUCTION
Shomurodov Q.E., Sobirov H.G'.	Tashkent state medical university, Tashkent, Republic of Uzbekistan	RECONSTRUCTION OF CONGENITAL AURICULAR DEFORMITIES USING AUTOLOGOUS COSTAL CARTILAGE AND 3D FRAMEWORK MODELING
Shomurodov Q.E., Sobirov H.G'.	Tashkent state medical university, Tashkent, Republic of Uzbekistan	RECONSTRUCTION OF CONGENITAL AURICULAR DEFECTS USING COSTAL CARTILAGE-BASED 3D FRAMEWORK AND CARVING TECHNIQUE
Odilova Mushtariybonu Bahodirjon qizi	FarDU master's student	THE IMPORTANCE OF MUSIC THEORETICAL KNOWLEDGE IN TRAINING FUTURE MUSIC TEACHERS

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH
September 5-13, 2026 Ho Chi Minh/VIETNAM
ONLINE

12.09.2026	SESSION-1 / HALL-13
VIETNAM	TÜRKİYE LOCAL TIME: 17:00-19:00

HEAD OF SESSION: PhD, Matxoshimov N.S.

Author(s)	Affiliation	Title
Umida AKBAROVA	Fergana State University, Faculty of Pedagogy, Psychology and Art Studies, Music Education Program, Uzbekistan	RESEARCHING THE AESTHETIC CONTENT OF NATIONAL CULTURE THROUGH MUSIC AND ART
Karimova NAVROʻZA **Mavluda NAJMETDINOVA, PhD (Scientific Supervisor)**	Fergana State University, Faculty of Pedagogy, Psychology and Art Studies, Music Education and Art Program University information is not specified in the acceptance letter	THE ROLE AND DEVELOPMENT TRENDS OF COMPOSITIONAL CREATIVITY IN THE DEVELOPMENT OF CULTURE AND ART IN THE CONTEXT OF NEW UZBEKISTAN
Abduvoxid Nurmatov	Fergana State University, Music Education and Art Program	THE SOCIO-CULTURAL FACTORS OF THE FORMATION AND CREATIVE DEVELOPMENT OF POP ART IN THE FERGANA VALLEY
Ruhshona Aktiyorova	Fergana State University, Faculty of Pedagogy, Psychology and Art Studies, Music and Art Program, Uzbekistan	NATIONAL AESTHETIC THOUGHT AND ARTISTIC REPRESENTATION OF THE MAIN CHARACTERS IN SULAYMON YUDAKOV'S OPERA "MAYSARA'S WORK"
Kakhramon Tillaboyev	Fergana State University, Faculty of Pedagogy, Psychology and Art Studies, Music Education and Art Program, Uzbekistan	PHILOSOPHICAL FOUNDATIONS OF MUSIC CLUBS IN SHAPING STUDENTS' AESTHETIC CULTURE
DSc Ahmedova MATLUBA MUHAMMADJONOVNA **Assistant Xadjaev TOXIR AVAZXONOVICH**	Central Asian Medical University, Department of Pediatrics Central Asian Medical University, Department of Pediatrics	CLINICAL AND FUNCTIONAL DIAGNOSTICS AND SPECIFIC THERAPY IN CHILDREN WITH BRONCHIAL ASTHMA
Kosimov Sh.Kh.	Fergana Medical Institute of Public Health, Fergana, Uzbekistan	MORPHOLOGICAL REMODELING OF VENOUS VALVES AND THE MUSCULOVENOUS PUMP IN CHRONIC VARICOSE DISEASE OF THE LOWER LIMBS
Axrorov A.H.	Central Asian Medical University, Fergana, Uzbekistan	OPTIMIZATION OF MINIMALLY INVASIVE SURGICAL TREATMENT IN ACUTE CHOLECYSTITIS
Matkarimova Shahnoza Maxamadjonovna	Lecturer at Korea International University in Fergana Fergana, Uzbekistan	A MODEL FOR DEVELOPING THE COMMUNICATIVE COMPETENCE OF FUTURE PRIMARY SCHOOL TEACHERS
Abdurahimova Zukhra Khan	First-Year Student, Music Education Program Faculty of Pedagogy, Psychology and Art Studies Fergana State University	THE MANIFESTATION OF AESTHETIC VALUES IN MUSICAL ART AND THE FORMATION OF AESTHETIC CULTURE

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026 Ho Chi Minh/VIETNAM

CONTENT

CONFERENCE ID	I
ORGANIZING COMMITTEE	II
SCIENTIFIC BOARD MEMBERS	III
PROGRAM	V
CONTENT	VI

AUTHORS	TITLE	PAGE
Ulduz Fərhad Qəhrəmanova	NIZAMI GANJAVI'S POEM "TREASURE OF SECRETS" VIII ARTICLE: "THE BEAUTY OF CREATION AND THE POWER OF PERFECTION"	1-2
Ulduz Fərhad Qəhrəmanova	ARTICLE XII IN NIZAMI GANJAVI'S POEM "THE TREASURY OF SECRETS": SAYING GOODBYE TO THE WORLD	3-5
Gökhan BİLİCİ	DISASTER GOVERNANCE IN TÜRKIYE: STRUCTURAL PROBLEMS, LOCAL GOVERNMENT-CIVIL SOCIETY COOPERATION, AND POLICY RECOMMENDATIONS	6-15
Gökhan BİLİCİ	INSTITUTIONAL LIMITS OF PARTICIPATORY BUDGETING AND CITIZEN'S BUDGET PRACTICES IN TÜRKIYE	16-23
Mehmet Salih AKIN Hamdiye ARDA SÜRÜCÜ	DIABETES TECHNOLOGIES AND PSYCHOLOGICAL EFFECTS IN PATIENTS WITH TYPE 1 DIABETES	24-40
Kübra BULUT Hamdiye ARDA SÜRÜCÜ	CLIMATE CHANGE AND DIABETES MANAGEMENT	41-51
Mansirova Shahana Zulfugar	WINGS OF THE SOUL: SYMBOLISM AND INNER FREEDOM IN C. YAHYA'S "WISH BUTTERFLY"	52-55
Mansirova Shahana Zulfugar	THE SYMBOLIC SEMANTICS OF JUSTICE: THE UNITY OF PHILOSOPHICAL IMAGES IN FINE ART	56-62
Mansirova Shahana Zulfugar	THE UNITY OF MYTHOLOGICAL AND NATIONAL SYMBOLS IN ARTISTIC COMPOSITION: AN ANALYSIS OF J. YAHYA'S WORK "AYDAN YERI"	63-70
Sevil Bayram qızı Əliyeva	GENIUS ARTIST MIKAYIL ABDULLAYEV	71-75
Sevil Bayram qızı Əliyeva	TOGRUL NARIMANBEYOV	76-79
Sevil Bayram qızı Əliyeva	THE LIFE AND CREATIVITY OF PEOPLE'S ARTIST AZIM AZIMZADE	80-86
Emil Raul oğlu Ağayev	DISCUSSION STRATEGIES IN TEACHING FINE ARTS IN SECONDARY SCHOOLS	87-88

ISBN: 978-625-90699-4-4

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026 Ho Chi Minh/VIETNAM

AUTHORS	TITLE	PAGE
Emil Raul oğlu Ağayev	THE ROLE OF GAME-BASED LEARNING IN THE METHODOLOGY OF TEACHING FINE ARTS	89-90
Rasuljon M. Shermatov Shaxlo R. Sodikova S.Sh.Gayratova	CLINICAL AND IMMUNOLOGICAL PREDICTORS OF RESPIRATORY DISEASES IN CHILDREN WITH ACQUIRED IMMUNODEFICIENCY: A COMPARATIVE STUDY	91-92
Kamila Ye. Djurayeva	DIAGNOSTIC PERFORMANCE OF NEONATAL SCREENING AND LABORATORY METHODS FOR EARLY DETECTION OF CYSTIC FIBROSIS: A COMPARATIVE ANALYSIS	93
Temur Alisher o'g'li Olimjonov	EFFICACY OF TITANIUM IMPLANTS AND ENDOPROSTHETIC MESH IN SURGICAL RECONSTRUCTION OF ZYGOMATICO-ORBITAL COMPLEX FRACTURES	94-95
Nuritdinova Dilnoza Yusupovna Aminjon Sabdarovich Nematov	MONITORING OF COVID-19 PCR TESTING IN UZBEKISTAN 2020–2024 YEARS.	96-98
Abdusalom Rakhimovich Soliyev	THE ROLE OF INTERNATIONAL MUSIC FESTIVALS IN THE DEVELOPMENT OF UZBEK MUSICAL CULTURE	99-101
Ulugbek Karimovich Rakhmonov	THE ROLE OF NATIONAL MUSICAL ART IN SOCIAL LIFE IN THE DEVELOPMENT OF UZBEK MUSICAL CULTURE	102-105
Nuritdinova Shahzoda Kenjayev Olimjon Obidjonovich	IMPACT OF COMORBID CARDIOVASCULAR DISEASES ON THE CLINICAL COURSE, DEVELOPMENT OF COMPLICATIONS, AND TREATMENT EFFECTIVENESS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE	106-108
Kamronbek Sharofiddinov	“FAMILY VALUES AND BECOMING A SUCCESSOR OF THE RISHTON TRADITIONAL POTTERY SCHOOL – MY LIFE PATH”	109-111
Madamin Aminov Bakhtiyor K. Urinboev Farzona K. Sobirova	MODERN CLINICAL APPROACHES TO CHRONIC SUBDURAL HEMATOMA	112-114
I.Yuldashev	FACTORS DEMONSTRATING THE CONNECTION BETWEEN ANCIENT IMAGES IN THE TERRITORY OF UZBEKISTAN AND THE ART OF MINIATURE PAINTING	115-122
Tokhirjon Shokirov Nurmamatovich	FOLK MUSIC IS AN INTEGRAL PART OF YOUTH EDUCATION	123-125
Djalalova Nigora Khusanovna	THE NECESSITY AND CONDITIONS FOR IMPROVING SOCIO-CULTURAL TECHNOLOGIES IN ENHANCING YOUTH THINKING	126-130
Bakhtiyor Mirzarakhimov	PHILOSOPHY OF TOURISM AND CULTURE: AXIOLOGICAL AND AESTHETIC FOUNDATIONS OF INTERCULTURAL DIALOGUE IN THE ERA OF GLOBAL MOBILITY	131-136

ISBN: 978-625-90699-4-4

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026 Ho Chi Minh/VIETNAM

AUTHORS	TITLE	PAGE
Qambarov Abdumutal Ahadjonovich Bakhtiyor Mirzarakhimov	UZBEK ASKIYA ART: PROBLEMS AND SOLUTIONS	137-142
Mirzayeva Gulsevar	PRESERVATION OF INTANGIBLE CULTURAL HERITAGE: SYSTEMATIC ANALYSIS OF FERGANA VALLEY MUSICAL FOLKLORE AND AMATEUR ENSEMBLES	143-149
Khakimov Nazar Khakimovich	DEVELOPMENT OF NON-STATE HIGHER EDUCATION IN THE CONTEXT OF THE NEW UZBEKISTAN STRATEGY	150-156
Achildiyeva Muyassarxon Adiljonovna	EVOLUTIONARY NATURE OF SMALL-SCALE MODES IN UZBEK MUSICAL FOLKLORE WITHIN THE CONTEXT OF EASTERN MUSICAL THEORY	157-163
Karimova Mukaddas Otajonovna Akhmedbekova Maxpuzaxon Kaxarovna	THE MECHANISM FOR DEVELOPING THE ARTISTIC-PEDAGOGICAL COMPETENCE OF FUTURE FINE ARTS TEACHERS BASED ON VISUAL CULTURE	164-167
Axmedbekova Maxpuzaxon Kaxarovna Dadadjanova Madinabonu Yoqubbek qizi	PEDAGOGICAL CONDITIONS FOR DEVELOPING ARTISTIC-PEDAGOGICAL COMPETENCE IN FUTURE FINE ARTS TEACHERS BASED ON VISUAL CULTURE	168-170
Ismailov Akhroridin Zakhridinovich	EVALUATION OF CHANGES IN SYNOVIAL FLUID IN PATIENTS DEPENDING ON THE STAGE OF DEVELOPMENT OF OSTEOARTHRITIS OF THE KNEE JOINT	171-175
J.T. MAMASAIDOV Nigora Ravshanbek qizi MADRAKHIMOVA	TIME-DEPENDENT DYNAMICS OF MORPHOLOGICAL CHANGES IN THE LIVER AND BILE DUCTS IN EXPERIMENTAL CHOLESTEROL LITHOGENESIS	177
Ubaydullayeva Salomat Rakhmidinovna	CLINICAL FEATURES OF ARTERIAL HYPERTENSION AND OBESITY IN YOUNG PATIENTS	178-184
Ubaydullayeva Salomat Rakhmidinovna	PHYSIOLOGICAL MECHANISMS OF CARDIOVASCULAR SYSTEM ADAPTATION TO EXTREME FACTORS	185-188
Yusupova Mamlakat Mutalibovna Ubaydullayeva Salomat Rakhmidinovna	EARLY DETECTION OF LATENT IRON DEFICIENCY IN WOMEN OF REPRODUCTIVE AGE	189-190
Dilbar Kabilova Javlon Mamanazirov Soibjon Hakimov	CLINICAL FEATURES AND RESPONSE TO IMMUNOSUPPRESSIVE AND BIOLOGIC THERAPY IN CHILDREN WITH JUVENILE DERMATOMYOSITIS	191-192
Tursunaliyev Ziloliddin	THE SIGNIFICANCE OF ANTHROPOMETRIC FACIAL PARAMETERS IN DIAGNOSING AESTHETIC DEFECTS IN PATIENTS WITH DENTITION DEFECTS	193-194

ISBN: 978-625-90699-4-4

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026 Ho Chi Minh/VIETNAM

AUTHORS	TITLE	PAGE
Khabibjonova Yoqutkxon Khamidullo qizi	DEVELOPMENT AND EVALUATION OF THE EFFECTIVENESS OF INDIVIDUAL ORAL HYGIENE MEASURES IN PATIENTS UNDERGOING ORTHODONTIC TREATMENT	195-196
Kazimova Sevara Baxtiyorovna	THE INFLUENCE OF MUSIC ON HEART RATE, BLOOD PRESSURE, AND THE PSYCHO-EMOTIONAL STATE OF PATIENTS	197-202
Kurbonova Gulnora Berdiyeva Xilola Umarjonovna	THE ROLE OF NUTRIENT DEFICIENCY IN DELAYED SPEECH DEVELOPMENT IN CHILDREN	203-205
Kurbonova Gulnora Berdiyeva Xilola Umarjonovna	WAYS TO SUPPORT SPEECH DEVELOPMENT IN PRESCHOOL CHILDREN THROUGH PROPER NUTRITION	206-207
Sharofiddin Xolmatov Orifjon Aripov Muzaffar Xabibulloyevich	MONITORING TESTOSTERONE LEVELS IN MEN USING IMMUNOCOMPLEX METHODS	208-212
A'zamjonov Axadjon A'zamjonovich	THEORETICAL AND PRACTICAL BASES OF USING ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN PAINTINGS LESSONS	213-218
ALIYEV ZOKHIDJON ZOKIRJON UGLI	METHODOLOGY FOR ALIGNING THE CONTENT OF INTEGRATIVE MEDICAL BIOLOGY TEACHING WITH PROFESSIONAL COMPETENCIES	219-231
Babayev Anvar Axmedovich	THE IMPORTANCE OF PHYSICAL EXERCISES AND SPORTS GAMES THAT DEVELOP PROFESSIONAL PRACTICAL SKILLS IN MAINTAINING HEALTH	232-234
G'ANIYEV KOMOLIDIN XALILOVICH	PEDAGOGICAL BARRIERS TO FUTURE PHYSICIANS' APPLICATION OF ECOLOGICAL AND BIOLOGICAL KNOWLEDGE IN CLINICAL SITUATIONS	235-245
Kamalova Dilfuza Adilovna	PSYCHODIDACTIC AND COGNITIVE STRATEGIES FOR THE FORMATION OF CLINICAL THINKING OF STUDENTS IN HIGHER EDUCATIONAL INSTITUTIONS IN THE DIRECTION OF MEDICINE	246-249
Abdullayev Umidjon Rahmonaliyevich	EFFECTIVE USE OF THERAPEUTIC PHYSICAL EDUCATION IN RESTORING HEALTH.	250-253
Lobarkhon Abdukadirovna Eryigitova	MAHALLA AS AN INSTITUTION FOR PREVENTING LONELINESS IN OLD AGE: A SOCIOGERONTOLOGICAL ANALYSIS OF THE UZBEK MODEL OF SOCIAL SUPPORT	254-261
Alisher Madrahimov Mahammadibrohimovich	MEDICINE IN THE DEVELOPMENT OF ARTIFICIAL INTELLIGENCE AND DIGITAL TECHNOLOGIES	262-265
Rayimov Abdulxamid Abdulxakimovich	OPPORTUNITIES FOR MONITORING A HEALTHY LIFESTYLE THROUGH MOBILE APPLICATIONS	266-269

ISBN: 978-625-90699-4-4

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026 Ho Chi Minh/VIETNAM

AUTHORS	TITLE	PAGE
Allaberganov Muzaffar Yuldashbayevich Karimova Dilbar Sharipovna Raximov Umidbek Rashid o'gli Sultanova Munira Kamilovna Raximov Asror Sanat o'gli	BENZKETOZONE: EFFECTS ON THE HISTOMORPHOLOGY OF EXPERIMENTALLY INDUCED GASTRIC ULCERS	270-274
Ruzmatova Hiloloy Kabilovna	NUTRITION HYGIENE OF THE GERIATRIC POPULATION IN THE CONDITIONS OF DEMOGRAPHIC AGING AND ITS IMPACT ON THE QUALITY OF LIFE	275-276
Azizova Noilakhon Saidolimkhon kizi Mavlonjon Ziyomiddinovich Nasirdinov	MODERN APPROACHES TO THE EARLY DETECTION AND PREVENTION OF OBESITY AND CARDIOVASCULAR DISEASES IN YOUNG PEOPLE	277-283
Sh. M. Sadikova	SOCIOGERONTOLOGICAL ASPECTS OF LONELINESS IN THE ELDERLY IN THE SOCIAL MANAGEMENT SYSTEM	284-293
Nilufar Mukhammedova	MORPHOFUNCTIONAL CHANGES IN HEPATIC SINUSOIDAL CAPILLARIES AND HEPATOCYTES IN NON-ALCOHOLIC FATTY LIVER DISEASE UNDER CONDITIONS OF HYPODYNAMIA	294-298
Raiymov G.N. Joraboev O.U.	ENHANCING CLINICAL EFFICACY OF LOCAL MINIMALLY INVASIVE APPROACHES IN TREATMENT OF PERIPANCREATIC ABSCESS FOLLOWING ACUTE PANCREATITIS	299-300
Marasulova Feruza Yusubovna	THE SOCIAL SIGNIFICANCE OF THE APPLICATION OF MANAGEMENT ACTIVITIES IN THE MEDICAL FIELD	301-302
Sodiqjon Toirovich Musoyev Gulmira Kakhkharovna Mirzaeva Dilnurabegim Bagirovna Yashinova	SHORT-TERM OUTCOMES OF LAPAROSCOPIC VERSUS OPEN SURGERY FOR COMMON ABDOMINAL DISEASES: A SINGLE-CENTER COHORT STUDY	303-309
Mamajonov Ma'rufjon Muxtorovich	ENHANCING OSSEOINTEGRATION OF PEEK-BASED ORTHOPEDIC IMPLANTS THROUGH THE INTEGRATION OF SURFACE PROPERTIES, BIOMECHANICAL STABILITY, AND BIOLOGICAL RESPONSE	310-315
Komilova Dildora Alisherovna	IMPROVING THE SYSTEM OF EARLY PREVENTION OF PSYCHOSOMATIC HEALTH DISORDERS IN CHILDREN WITH DOWN SYNDROME	316-321
Kuramatova Shakhlo Azizjon kizi	INTEGRATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES INTO BIOPHYSICS EDUCATION IN MEDICAL UNIVERSITIES: METHODOLOGICAL APPROACHES, DIGITAL MODELING, AND DEVELOPMENT OF CLINICAL-ANALYTICAL COMPETENCIES	322-326

ISBN: 978-625-90699-4-4

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026 Ho Chi Minh/VIETNAM

AUTHORS	TITLE	PAGE
Teshaboyev Umidjon Abdukarimovich	RISK FACTORS FOR SEVERE COVID-19 AND ANALYSIS OF CLINICAL AND LABORATORY PARAMETERS IN PATIENTS WITH DIABETES MELLITUS	327-328
M.S. Tokhtasinov	SPECIFIC MORPHOLOGICAL FEATURES OF PNEUMONIA IN CHILDREN WITH CEREBRAL PALSY	329-330
Daripov Shahobiddin Isroiljonovich	ISSUES OF PRODUCTION AND ITS ECONOMIC EFFICIENCY IN UZBEKISTAN'S RAILWAY SYSTEM (A Case Study of 1991–2001)	331-335
M.S. Isroilov J.X. Axmedov	MORPHOFUNCTIONAL CHANGES OF THE SIGMOID COLON IN DOLICHOSIGMOID DISEASE IN NEWBORNS AND INFANTS	336
Mahmudova Diyora Radik qizi	THE INTERRELATION BETWEEN CULTURE AND AESTHETIC THINKING	337-341
Mamurov Abdusalom Anvarovich	METHODOLOGY FOR FORMING STUDENTS' AESTHETIC TASTE IN PAINTINGS	342-344
Yunusaliev Mukhamadkadir Tojimadovich	THE IMPORTANCE OF THE COLOR SQUARE IN A LIMITED PALETTE	345-351
Boqijonov Farrux Azizjon o‘g‘li Axmadaliyeva Nigora Odilovna	COMPREHENSIVE ANALYSIS OF SANITARY AND HYGIENIC MONITORING INDICATORS IN RAILWAY TRANSPORT ENTERPRISES	352-357
Boqijonova Nargizakhon Foziljon qizi	ENHANCING SECONDARY PREVENTION FOLLOWING CORONARY STENTING IN PATIENTS WITH ISCHEMIC HEART DISEASE: EVALUATION OF MEDICATION ADHERENCE AND CARDIOVASCULAR RISK FACTORS	358-364
Matxoshimov N.S. Makhmudova M.A.	MEDICAL AND SOCIAL FACTORS AND IMPROVEMENT OF THE LABORATORY DIAGNOSTIC SYSTEM IN DIABETES MELLITUS	365-369
Salohiddinov N.A. Raiymov G.N.	OPTIMIZATION OF DIAGNOSTIC STRATEGY IN PATIENTS WITH MULTIPLE ABDOMINAL TRAUMA: MINIMALLY INVASIVE APPROACH TO REDUCE UNNECESSARY LAPAROTOMY	370-377
Dekhkonov Sh.Sh. Raiymov G.N.	OPTIMIZATION OF DIAGNOSTIC AND THERAPEUTIC MANAGEMENT IN PATIENTS WITH POST-CHOLECYSTECTOMY SYNDROME: ENDOSCOPIC APPROACH TO AMPULLARY AND CHOLEDOCHAL OBSTRUCTION	378-384
Shomurodov Q.E. Sobirov H.G’.	RECONSTRUCTION OF CONGENITAL AURICULAR DEFORMITIES USING AUTOLOGOUS COSTAL CARTILAGE AND 3D FRAMEWORK MODELING	385-391

ISBN: 978-625-90699-4-4

ICCAC 10th INTERNATIONAL CONGRESS ON CULTURE, ARTS, AND SCIENTIFIC RESEARCH

September 7-14, 2026 Ho Chi Minh/VIETNAM

AUTHORS	TITLE	PAGE
Shomurodov Q.E. Sobirov H.G'.	RECONSTRUCTION OF CONGENITAL AURICULAR DEFECTS USING COSTAL CARTILAGE-BASED 3D FRAMEWORK AND CARVING TECHNIQUE	392-393
Odilova Mushtariybonu Bahodirjon qizi	THE IMPORTANCE OF MUSIC THEORETICAL KNOWLEDGE IN TRAINING FUTURE MUSIC TEACHERS	394-395
Umida Akbarova	RESEARCHING THE AESTHETIC CONTENT OF NATIONAL CULTURE THROUGH MUSIC AND ART	396-400
Karimova Navro'za Mavluda Najmetdinova	THE ROLE AND DEVELOPMENT TRENDS OF COMPOSITIONAL CREATIVITY IN THE DEVELOPMENT OF CULTURE AND ART IN THE CONTEXT OF NEW UZBEKISTAN	401-405
Abduvoxid Nurmatov	THE SOCIO-CULTURAL FACTORS OF THE FORMATION AND CREATIVE DEVELOPMENT OF POP ART IN THE FERGANA VALLEY	406-409
Ruhshona Aktiyorova	NATIONAL AESTHETIC THOUGHT AND ARTISTIC REPRESENTATION OF THE MAIN CHARACTERS IN SULAYMON YUDAKOV'S OPERA "MAYSARA'S WORK"	410-413
Kakhramon Tillaboyev	PHILOSOPHICAL FOUNDATIONS OF MUSIC CLUBS IN SHAPING STUDENTS' AESTHETIC CULTURE	414-416
Akhmedova Matluba Mukhammadjonovna Khadjaev Tokhir Avazkhonovich	CLINICAL AND FUNCTIONAL DIAGNOSTICS AND SPECIFIC THERAPY IN CHILDREN WITH BRONCHIAL ASTHMA	417-423
Kosimov Sh.Kh.	MORPHOLOGICAL REMODELING OF VENOUS VALVES AND THE MUSCULOVENOUS PUMP IN CHRONIC VARICOSE DISEASE OF THE LOWER LIMBS	424-425
Axrorov A.H.	OPTIMIZATION OF MINIMALLY INVASIVE SURGICAL TREATMENT IN ACUTE CHOLECYSTITIS	426-427
İsa ELİRİ	THE SEARCH FOR TRADITION AND IDENTITY IN TURKISH PAINTING FROM THE 19TH CENTURY TO THE PRESENT	428
Mustafa ÇOLAK	THE VISUAL MEMORY OF THE STEPPE: GEOGRAPHY AND CULTURAL IDENTITY IN TURKISH PAINTING	429-430
Veysel PEKDOĞAN	FROM TRADITION TO ALGORITHM: THE RECODING OF TURKISH VISUAL CULTURE IN THE DIGITAL AGE	431-432
Mevlüt ÖZEMİR	ARCHIVAL TRANSFORMATION IN CONTEMPORARY ART IN THE CONTEXT OF MEMORY, FICTION, AND ALTERNATIVE HISTORIOGRAPHY	433-447

ISBN: 978-625-90699-4-4

AUTHORS	TITLE	PAGE
Sumbula Maxmudova Shuxrat Tursunov	CONTENT AND TECHNOLOGY OF DEVELOPING THE PERFORMANCE COMPETENCE OF FUTURE MUSIC TEACHERS	448-452
Namozova Dilorom Tursunovna Jo‘raboyeva Dilobarxon Sherali qizi	ANALYSIS OF NATIONAL AND INTERNATIONAL EXPERIENCE IN DEVELOPING THE PROFESSIONAL COMPETENCE OF FUTURE MUSIC TEACHERS	453-458
Laylo Tursunova	THE SPIRITUAL AND CULTURAL VALUES OF ART IN TILAB MAHMUDOV'S PHILOSOPHY: A CONTEMPORARY INTERPRETATION OF AESTHETIC THOUGHT	459-460
Mavluda Najmetdinova	THE PRIORITY OF INTERCULTURAL COOPERATION IN THE EMPIRE OF AMIR TEMUR	461-464
Qambarov Abdumutal Ahadjonovich	TANOVAR IS A GENUINE PHILOSOPHICAL WORK	465-469
Matkarimova Shahnoza Maxamadjonovna	A MODEL FOR DEVELOPING THE COMMUNICATIVE COMPETENCE OF FUTURE PRIMARY SCHOOL TEACHERS	470-472
Abdurahimova Zukhra Khan	THE MANIFESTATION OF AESTHETIC VALUES IN MUSICAL ART AND THE FORMATION OF AESTHETIC CULTURE	473-476

ISBN: 978-625-90699-4-4

NIZAMI GƏNCƏVININ "SIRLƏR XƏZINƏSI" POEMASI VIII MƏQALƏT:"XILQƏTIN GÖZƏLLIYI VƏ KAMALIN QÜDRƏTI"

NIZAMI GANJAVI'S POEM "TREASURE OF SECRETS" VIII ARTICLE: "THE BEAUTY OF CREATION AND THE POWER OF PERFECTION"

Ulduz Fərhad Qəhrəmanova
Doctor of Philosophy in Philology, Azerbaijan State Pedagogical University, Associate Professor at the Department of "Literature"
Orcid ID: 0009-0003-4418-9319

Abstrakt:

Nizami Gəncəvinin "Sirlər xəzinəsi" poemasının VIII məqaləti belə adlanır :"Xilqətin gözəlliyi və kamalın qüdrəti". Poemada şair Nizami göstərirdi ki, bəşər və təbiət yaranmamışdan əvvəl varlıq çox kasıb və boş idi. Bu dünyanın əlində sərvət də, var-dövlət də yox idi. Bu dünyanın yolunda toz da, qubar da yox idi. Möcüzələr yaradan varlıq İnsanoğlunu da yaratdı. Nə qədər İnsanoğlu yox idi, Cövza sənə soyuq verib sonra da səndən sağaltmaq üçün qan aldırmırdı.

Fələk çoxdandır sənin əmrinin quludur. Bütün varlıq köləndir, hər cür fərman sənindir. Nəşələrə dalmaq səfa demək deyil. İnsanın özbaşınalığı onun cəfasıdır. Belin büküləndə gündə yanıb qovrularsan. Cəhənnəmin odunda əlif kimi yanarsan. Sonra şair insanoğluna müraciət edərək deyir ki, İnsanoğlu, bu dünya gəldi-gedərdi. İnsan az yeyib çox dincəlməlidir. Çox yemək insana narahatlılıq, əziyyət verir. Ağıl tamaha aldanmamalıdır. İnsan zirəkli insanları aldadan dələduzdan uzaq olmalıdır. Bəşəriyyətin amalı öz nəfsini öldürmək olmalıdır. İnsanoğlu hərisliyə uymamalıdır.

Açar sözlər: İnsanoğlu, fələk, bəşər, xeyir və şər

Abstract:

The VIII article of Nizami Ganjavi's poem "Treasure of Secrets" is called: "The Beauty of Creation and the Power of Perfection". In the poem, the poet Nizami showed that before the creation of man and nature, existence was very poor and empty. This world had no wealth or possessions. There was no dust or dust on the path of this world. The being who creates miracles also created the Son of Man. As long as there was no Son of Man, Jovza would not give you a cold and then take blood from you to cure you.

The universe has long been a slave to your command. All beings are slaves, all orders are yours. Indulging in pleasures does not mean bliss. Man's arbitrariness is his torment. When your back is bent, you burn and roast in the sun. You burn like an alif in the fire of hell. Then the poet addresses the human being and says, "Son of Man, this world would come and go. Man should eat little and rest a lot. Eating a lot gives a person anxiety and suffering. The mind should not be deceived by greed. Man should be far from the deceiver who deceives intelligent people. The action of humanity should be to kill his own soul. Man should not follow greed.

Keywords: Man, universe, human, good and evil

Nizami Gəncəvinin "Sirlər xəzinəsi" poemasının VIII məqaləti belə adlanır :"Xilqətin gözəlliyi və kamalın qüdrəti". Poemada şair Nizami göstərirdi ki, bəşər və təbiət yaranmamışdan əvvəl varlıq çox kasıb və boş idi. Bu dünyanın əlində sərvət də, var-dövlət də yox idi. Bu dünyanın yolunda toz da, qubar da yox idi. Möcüzələr yaradan varlıq İnsanoğlunu da yaratdı. Nə qədər İnsanoğlu yox idi, Cövza sənə soyuq verib sonra da səndən sağaltmaq üçün qan aldırmırdı.

Yerdə, göydə insan izinin olmayan vaxtı xilqətin intizarı dünyanı dərdə salmışdı. Hökmranlıq fərmanı gələn gündən Aydan və Gündən ibarət göylər sənə tac düzəltdirdilər. Ulduzların gözü də baxışından qamaşıb. Ulduzlar cəlalına heyrandır.

Fələk çoxdandır sənin əmrinin quludur. Bütün varlıq köləndir, hər cür fərman sənindir. Nəşələrə dalmaq səfa demək deyil. İnsanın özbaşınalığı onun cəfasıdır. Belin büküləndə gündə yanıb qovrularsan. Cəhənnəmin odunda əlif kimi yanarsan.

Sonra şair insanoğluna müraciət edərək deyir ki, İnsanoğlu, bu dünya gəldi-gedərdi. İnsan az yeyib çox dincəlməlidir. Çox yemək insana narahatlılıq, əziyyət verir. Ağıl tamaha aldanmamalıdır. İnsan zirəkli insanları aldadan dələduzdan uzaq olmalıdır. Bəşəriyyətin amalı öz nəfsini öldürmək olmalıdır. İnsanoğlu hərisliyə uymamalıdır. Əzəldən hər bəşəriyyəti şər izləyir. Əzəldən xeyir xeyri, şər də şəri tapar:

“Xeyirlə şər izləyir hər bəşəri əzəldən,
Xeyir xeyri tapandır, şər də şəri əzəldən” (5, s. 89)

Hətta şair bu məqalətə uyğun “Oğru və tülkü” adlı hekayətində də insanoğluna nəsihət edərək bildirir ki, qəflət yolunda xoş yuxuya dalan insanın başı əldən gedəcəkdir, papağı boş qalacaqdır:

“Kim ki qəflət yolunda xoş yuxuya dalandır,
Başı əldən gedəndir, papağı boş qalandır” (5, s. 89)
“Ayıl uyma qəflətdə yatmağa sən, Nizami!
Çalış qəflət daşını atmağa sən, Nizami”. (5, s. 89)

Göründüyü kimi, məqalətə aid olan hekayətin sonunda belə Nizami özü-özünə xitab edərək qəflətə uymamağı, qəflət daşını atmağı nəsihət verir.

Ədəbiyyat:

1. Azərbaycan ədəbiyyatı tarixi. 1 c. Bakı, Elm, 1960.
2. Azərbaycan ədəbiyyatı tarixi. VI cilddə, 2 c., Bakı, Elm, 2007
3. Ə.Səfərli, X.Yusifov. Qədim və orta əsrlər Azərbaycan ədəbiyyatı. Bakı, Maarif, 1982, 1998
4. Əlibəyzadə E. Azərbaycan ədəbiyyatı tarixi. Ən qədim dövrlər. Bakı, Qarabağ, 2009
5. Nizami Gəncəvi, “Sirlər xəzinəsi”, Çaşıoğlu, 2004, 167 s.

ISBN: 978-625-90699-4-4

NİZAMİ GƏNCƏVİNİN "SİRLƏR XƏZİNƏSİ" POEMASINDA XII MƏQALƏT: DÜNYA İLƏ VİDALAŞMAQ

ARTICLE XII IN NIZAMI GANJAVI'S POEM "THE TREASURY OF SECRETS": SAYING GOODBYE TO THE WORLD

Ulduz Fərhad Qəhrəmanova
Doctor of Philosophy in Philology, Azerbaijan State Pedagogical University, Associate Professor at the Department of "Literature"
Orcid ID: 0009-0003-4418-9319

Abstrakt:

Nizami Gəncəvinin "Sirlər xəzinəsi" poemasının XII məqalətində "Dünya ilə vidalaşmaq" adlı başlıqda şair İnsanoğluna bildirir ki, ayağa qalxıb cahanla vidalaşıb köçmək vaxtıdır. Sən yurdundan daha gözəl yurda (maddi dünyadan haqq dünyasına) köç etməlisən. Hücrəni (kiçik otağını) at, özünə bir qapı aç. Bu yeni açılan qapıda qəlbin ahla, gözlərin yaşla dolar. Bu yolda könül ahın, göz yaşın sənə sirdaş olar. Şair deyir ki, Allahtaaladan nəyi diləsən sənə onu bəxş edər, çünki o comərddir (mərddir, əliaçıqdır, səvaxətlidir). Burada şair Allahı könül şahı deyə təqdim etmişdir. Şair düşünür ki, bu fani dünyada kimsə zərrə qədər də olsa, niyə sənin halına yanmaz deyə öz-özünə sorğu-sual edir. Bu fani dünyada canı yanan hər kəs haqq dünyasında ülviyyətə, mənəvi təmizliyə qovuşar. Arif insanların hər biri haçandır fani dünyadan köçübdür, yalqız qalmaqdan ülviyyət haçandır səni səsləyir. Xislətinlə sən həyatda çox zəifsən, bu həyatda təksən, qəribsən. Qəlbini qara torpaqda şəffaf suya döndər. Qəlbini ülvi qayəyə, saf arzuya bağla. Ağır yükünü atıb son mənzilə çatmalısan.

Açar sözlər: Dünya, Allah, arif insan, haqq dünyası

Abstract:

In the article XII of Nizami Ganjavi's poem "The Treasury of Secrets" under the title "Saying goodbye to the world", the poet tells Mankind that it is time to get up, say goodbye to the world and move on. You must move from your homeland to a more beautiful homeland (from the material world to the world of truth). Throw away your cell (small room), open a door for yourself. In this newly opened door, your heart will be filled with sighs and your eyes with tears. On this path, your heart's sighs and tears will become your confidants. The poet says that whatever you ask of Allah, He will grant you, because He is generous (brave, open-handed, generous). Here, the poet has presented Allah as the king of hearts. The poet thinks that in this mortal world, he asks himself why no one, even a little bit, feels sorry for you. Everyone who feels sorry for himself in this mortal world attains sublimity and spiritual purity in the world of truth. Each of the wise people has long since passed away from the mortal world, and sublimity has long since called you from being alone. By your nature, you are very weak in life, you are alone, a stranger in this life. Turn your heart into clear water in the black soil. Attach your heart to the sublime goal, to pure desire. You must throw off your heavy burden and reach the final destination.

Keywords: World, Allah, wise person, world of truth

Nizami Gəncəvinin "Sirlər xəzinəsi" poemasının XII məqalətində "Dünya ilə vidalaşmaq" adlı başlıqda şair İnsanoğluna bildirir ki, ayağa qalxıb cahanla vidalaşıb köçmək vaxtıdır. Sən yurdundan daha gözəl yurda (maddi dünyadan haqq dünyasına) köç etməlisən. Hücrəni (kiçik otağını) at, özünə bir qapı aç. Bu yeni açılan qapıda qəlbin ahla, gözlərin yaşla dolar. Bu yolda könül ahın, göz yaşın sənə sirdaş olar.

Şair deyir ki, Allahtaaladan nəyi diləsən sənə onu bəxş edər, çünki o comərddir (mərddir, əliaçıqdır, səvaxətlidir). Burada şair Allahı könül şahı deyə təqdim etmişdir:

"Gözlərinin yaşını bu torpağa çiləsən,
Könül şahı comərddir, verər nəyi diləsən". (5, s.100)

Şair düşünür ki, bu fani dünyada kimsə zərrə qədər də olsa, niyə sənin halına yanmaz deyə öz-özünə sorğu-sual edir. Bu fani dünyada canı yanan hər kəs haqq dünyasında ülviyyətə, mənəvi təmizliyə qovuşar:

"Zərrə qədər halına hanı yanan dünyada?
Ülviyyətə qovuşar canı yanan dünyada" (5, s.100)

Arif insanların hər biri haçandır fani dünyadan köçübdür, yalqız qalmaqdan ülviyyət haçandır səni səsləyir. Xislətinlə sən həyatda çox zəifsən, bu həyatda təksən, qəribsən. Qəlbini qara torpaqda şəffaf suya döndər. Qəlbini ülvi qayəyə, saf arzuya bağla. Ağır yükünü atıb son mənzilə çatmalısan. Şair deyir:

"Dünya evi hədərdir, könül də bir məskənin,
Ucal uca göylərə, könüldədir məskənin.
Yuva sanma özünə can sıxan dar qəfəsi,
Ülvi eşqin yolunda parçala, yar qəfəsi" (5, s.100)

Şair İnsanoğluna bildirmək istəyir ki, dünya evi hədərdir, göylərə ucalmaq lazımdır. İnsanoğlunun məskəni könüldür. Can sıxan dar qəfəsi özünə yuva (ev) hesab etmək olmaz. Ülvi eşqin yolunda dar qəfəsi yarmağa, parçalamağa dəyər. İnsanoğlu özünü fələyin köləsi, qulu saymalıdır. Gündüz ilə gecənin gərdişindən (hərəkətindən, gəzintisindən-U.Q.) uzaqlaş. Öz əzəlki köləlik vəziyyətindən uzaqlaşmalısan. Hara qədəm atırsan at, amma ehtiyatlı olmağı unutma. Gözün görə-görə özünə xətər vermə. Özünü yolunda qəfil çıxan quyudan gözlə:

"Atma xətər qoynuna görən gözlə özünü,
Yolundakı quyudan gözlə, gözlə özünü" . (5, s. 100)

Seldə qalan qəsri (qalanı) çalış yarmağı bacar, fəlakətin əlindən canını qurtarmağı bacar. Sən əzəldən keyfə, şadlığa uyubsan. Bununla qəflətdəsən, çünki varlığını unutmusan:

"Uydun keyfə, şadlığa qəflətdə sən əzəldən,
Varlığını unutdun, qəflətdəsən əzəldən". (5, s.101)

Əzəl günün hökmü belədir ki, bu darısqal fani dünyada candan bezib gedənə "qal dünyada" deməz:

"Əzəl günün hökmüdür bu darısqal dünyada
Candan bezib gedənə deməz ki: " Qal dünyada" . (5, s.101)

Yaradanın hökmünə bir gün sən də hamı kimi boynunu əyməlisən. Bu yolu da qəlb gözü ilə seçməlisən:

"Yaradanın hökmünə əyməsən də boynunu,
Əyməlisən hamı tək bir gün sən də boynunu
Yalnız qəlbin gözüylə seçməlisən bu yolu,
İki dünya yoludur, keçməlisən bu yolu ". (5, s.101)

İnsanoğlu bu yolda, seçdiyi yolda cürətli olmalıdır, dönüb arxasına baxmamalıdır, məslək eşqi ilə ülvi aləmdə yaşamalıdır. Məslək eşqi İnsanoğluna bir sovqatdır. Var gücünlə düşmənin qolunu burmalısan, kürəyini tez yerə vurmalısan. Bu fələk səndən qolu güclünün yenilməzidir. Şair fələyin gücünü maraqlı tərzdə belə təqdim etmişdir ki, fələyin hünəri, fəndi, qılıncı, qalxanı qorxuludur. Fələk ilan deyil, ancaq fələyin kəndiri ilantək qıvrılandır. Fələyin kəndiri ancaq ülvi eşqin gücüylə qırıla bilər:

"İlan deyil, ilantək qıvrılandır kəndiri,
Ülvi eşqin gücüylə qırılandır kəndiri". (5, s.101)

Yəni fələyin qalxanı-günəş, fələyin qılıncı-günəşin şüalarıdır. Fələyin qıvrılan ilana bənzəməsinə baxma, o sənin uca mənəviyyat aləmin olan eşqinin cazibəsi önündə heç bir şeydir.

ISBN: 978-625-90699-4-4

Comərd insan canında zər odunu söndürər, şirin dillə düşmənin hər odunu söndürür. Sən ancaq qazandığın bilik çeşməsi ilə öyünə bilərsən. Düşmənini də günəş kimi nurunla, gülünlə öldürə bilərsən. Yəni ağlın, biliyinlə, savadınla düşmənini məhv edə bilərsən:

“Öyün bilik çeşməsi nur saçan könüllə sən,
Günəş kimi, düşməni öldür nurla, güllə sən” . (5, s.101)

Hətta Şair on ikinci məqalətə aid “İki rəqib alimin hekayəti” adlı hissəsində də şair Nizami İnsanoğluna nəsihət edərək deyir ki, comərd insan məsləkinə (peşəsinə) xəyanət etməz, satmaz, ona hörmətlə yanaşmalıdır:

“Heç bir hünər sahibi,-comərd insan dünyada
Məsləkini dünyaya satmaz, inan, dünyada
...Məsləkinlə qolunda qüvvət duysan əgər sən,
Ədalət mizanını sanma tükcə əyərsən”. (5, s.105)

Şairə görə, seçdiyin məsləklə hər hansı güc sahibi olsan, sanma ki, sən gücünlə ədalət mizanını tük qədər əyə biləsən. Şair deyir:

“Halallıqla yaşayıb ucal gözdə dağ kimi,
Son mənzildə tərəzi çəkər səni yağ kimi” (5, s.105)

Şairə görə, İnsanoğlu dağ kimi ucalmaq istəyirsə, halal yaşamağı bacarmalıdır ki, son mənzildə tərəzi səni yağ kimi çəkməsin.

Ədəbiyyat:

1. Azərbaycan ədəbiyyatı tarixi. 1 c. Bakı, Elm, 1960.
2. Azərbaycan ədəbiyyatı tarixi. VI cilddə, 2 c., Bakı, Elm, 2007
3. Ə.Səfərli, X.Yusifov. Qədim və orta əsrlər Azərbaycan ədəbiyyatı. Bakı, Maarif, 1982, 1998
4. Əlibəyzadə E. Azərbaycan ədəbiyyatı tarixi. Ən qədim dövrlər. Bakı, Qarabağ, 2009
5. Nizami Gəncəvi, “Sirlər xəzinəsi”, Çaşıoğlu, 2004, 167 s.

ISBN: 978-625-90699-4-4

TÜRKİYE'DE AFET YÖNETİŞİMİ: YAPISAL SORUNLAR, YEREL YÖNETİM-SİVİL TOPLUM İŞBİRLİĞİ VE POLİTİKA ÖNERİLERİ

DISASTER GOVERNANCE IN TÜRKİYE: STRUCTURAL PROBLEMS, LOCAL GOVERNMENT-CIVIL SOCIETY COOPERATION, AND POLICY RECOMMENDATIONS

Lecturer Dr. Gökhan BİLİCİ
Selçuk University, Akören Ali Rıza Ercan Vocational School
ORCID ID: https://orcid.org/0000-0001-8446-1928

Özet

Bu bildiri, Türkiye'de afet yönetimi disiplininin devlet odaklı kriz yönetimi anlayışından toplum odaklı afet yönetişimine evrilme sürecini kavramsal, teknik ve idari açılardan analiz etmeyi amaçlamaktadır. Çalışmanın önemi, 6 Şubat 2023 Kahramanmaraş depremlerinin ortaya koyduğu ölçekteki can ve mal kayıplarının, mevcut merkeziyetçi ve tepkisel yönetim modelinin sürdürülebilir olmadığını açıkça göstermesinden kaynaklanmaktadır. Betimsel bir literatür derlemesi yöntemiyle yürütülen çalışmada, öncelikle afet, tehlike, risk, kriz ve yönetişim gibi temel kavramlar ulusal ve uluslararası literatürdeki farklı tanımlar üzerinden ele alınmakta; modern afet yönetimi anlayışının müdahale odaklı kriz yönetiminden hazırlık odaklı adaptif risk yönetimine doğru yaşadığı dönüşüm, kırılganlığın sosyal ve siyasal süreçlerce üretildiği vurgusuyla birlikte ortaya konmaktadır. Ardından Türkiye'deki afet yönetişiminin karşılaştığı beş temel yapısal sorun -aşırı merkeziyetçilik ve katılım eksikliği, afet yasalarının araçsallaştırılması, bilgi siyaseti ve cehalet üretimi, tepkisel yönetim anlayışı ve kırılgan gruplara yönelik kapsayıcılık sorunu- literatür eşliğinde ele alınmakta; bu sorunlar Balıkesir ve Sakarya örnekleri ile 2023 Kahramanmaraş depremi deneyimi üzerinden somutlaştırılarak tartışılmaktadır. Çalışmada ayrıca, 1999 Marmara depremi sonrası ivme kazanan sivil toplum kuruluşlarının arama-kurtarma, barınma ve psikososyal destek alanlarındaki operasyonel kapasitesi ile yerel yönetimlerin zarar azaltma ve hazırlık aşamalarındaki kurumsal sorumlulukları incelenmektedir. Bulgular, Türkiye'de afet yönetişimi pratiğinin katılımcılık, şeffaflık ve hesap verebilirlik gibi iyi yönetişim ilkeleriyle önemli ölçüde çeliştiğini; sivil toplum kuruluşlarının çoğunlukla karar alma süreçlerinin dışında tutularak yalnızca bir "iş gücü" olarak konumlandırıldığını ve yerel yönetim kapasitesinin ancak STK'larla kurumsallaşmış bir işbirliği modeliyle anlam kazandığını göstermektedir. Bu bulgulardan hareketle çalışma; yerel afet yönetişim konseylerinin kurulması, kurumlar arası veri paylaşım protokolleri, kentsel dönüşümde bağımsız denetim mekanizmaları, hazırlık ve müdahale kalemleri arasında dengeli afet bütçelemesi, kırılgan gruplara özgü politika modülleri ve yerel yönetim-STK ortak eğitim programları olmak üzere altı somut politika önerisi sunmaktadır. Sonuç olarak çalışma, Türkiye'deki afet yönetişiminin sürdürülebilirliği için AFAD öncülüğündeki merkezi otoritenin yerel yönetimleri ve sivil toplum kuruluşlarını stratejik ortaklar olarak kabul ettiği; çok aktörlü, şeffaf, katılımcı ve adaptif bir yönetişim modelinin tüm aşamalara entegre edilmesi gerektiğini savunmaktadır.

Anahtar Kelimeler: Afet Yönetişimi, Adaptif Yönetişim, Yerel Yönetimler, Sivil Toplum Kuruluşları, Risk Yönetimi.

Abstract

This paper aims to analyse, from conceptual, technical, and administrative perspectives, the transformation of disaster management in Türkiye from a state-centred crisis management approach toward society-centred disaster governance. The significance of the study stems from the scale of loss caused by the 6 February 2023 Kahramanmaraş earthquakes, which made clear that the prevailing centralised and reactive management model is unsustainable. Employing a

descriptive literature review method, the study first defines the core concepts of disaster, hazard, risk, crisis, and governance through different definitions found in the national and international literature, and outlines the shift of modern disaster management from response-oriented crisis management toward preparedness-oriented adaptive risk management, emphasising that vulnerability is itself produced through social and political processes. It then discusses five structural problems that Türkiye's disaster governance faces -excessive centralisation and lack of participation, the instrumentalisation of disaster legislation, deficiencies in information politics and the production of ignorance, reactive management, and inclusiveness gaps affecting vulnerable groups- grounding each in the literature through the cases of Balıkesir and Sakarya and the experience of the 2023 Kahramanmaraş earthquakes. The study further examines the operational capacity of civil society organisations in search-and-rescue, temporary shelter, and psychosocial support -a capacity that gained momentum after the 1999 Marmara earthquake- alongside the institutional responsibilities of local governments in the mitigation and preparedness phases. The findings indicate that disaster governance practice in Türkiye conflicts substantially with good-governance principles such as participation, transparency, and accountability; that civil society organisations are largely excluded from decision-making and positioned merely as "labour force"; and that local government capacity only becomes meaningful when embedded in an institutionalised cooperation model with civil society. Building on these findings, the study puts forward six concrete policy recommendations: establishing local disaster governance councils, inter-agency data-sharing protocols, independent oversight mechanisms in urban renewal, balanced budgeting between preparedness and response, policy modules tailored to vulnerable groups, and joint training programmes for local government staff and civil society volunteers. The study concludes that the sustainability of disaster governance in Türkiye depends on the central authority led by AFAD recognising local governments and civil society organisations as strategic partners, and on implementing a multi-actor, transparent, participatory, and adaptive governance model across all stages of disaster management.

Keywords: Disaster Governance, Adaptive Governance, Local Governments, Civil Society Organizations, Risk Management.

1. GİRİŞ

Afetler; fiziksel, ekonomik ve sosyal kayıplar doğurarak toplumsal hayatın normal akışını sekteye uğratan ve etkilenen toplumun kendi kaynaklarıyla baş etme kapasitesini aşan olaylar zinciridir (Özmen, Gerdan ve Ergünay, 2015). Türkiye, jeolojik ve topoğrafik yapısı gereği başta deprem olmak üzere çığ, sel, fırtına ve heyelan gibi çok çeşitli afet türleriyle karşı karşıyadır. 6 Şubat 2023 tarihinde meydana gelen ve on bir ili doğrudan etkileyen Kahramanmaraş merkezli depremler, 50 binin üzerinde can kaybına yol açarak Türkiye'nin afet yönetim kapasitesini ve bu kapasitenin dayandığı yönetişim modelini yeniden sorgulanır hâle getirmiştir (Hussain, Kalaycıoğlu, Milliner ve Çakır, 2023). Bu tablo, çalışmanın konusunu güncel ve acil bir politika sorunu olarak ortaya koymaktadır.

Modern afet yönetimi anlayışı, kriz anındaki reaktif (tepkisel) müdahalelerin ötesine geçerek; zarar azaltma, hazırlık, müdahale ve yeniden inşa aşamalarını kapsayan proaktif bir döngüye

dönüşmüştür (Ergünay, 2009). Bu dönüşüm süreci, merkeziyetçi yapının yerine çok aktörlü ve katılımcı bir "yönetişim" modelinin inşasını zorunlu kılmaktadır.

Bu çalışmanın amacı, Türkiye'de afet yönetiminin devlet odaklı kriz yönetimi anlayışından toplum odaklı afet yönetişimine evrilme sürecini kavramsal düzeyde ortaya koymak; bu süreçte karşılaşılan yapısal sorunları (aşırı merkeziyetçilik, yasaların araçsallaştırılması, bilgi dışlanması, tepkisellik ve kapsayıcılık eksikliği) literatür ışığında somut örneklerle analiz etmek; sivil toplum kuruluşlarının ve yerel yönetimlerin afet yönetişimindeki fiili rolünü değerlendirmek ve bu bulgulardan hareketle uygulanabilir politika önerileri geliştirmektir. Çalışmanın önemi, Kahramanmaraş depremlerinin gösterdiği gibi, merkeziyetçi ve tepkisel bir modelin artan afet sıklığı ve şiddeti karşısında yetersiz kalmasından; buna karşın çok aktörlü, adaptif bir yönetişim modelinin henüz Türkiye'de kurumsal karşılığını tam olarak bulamamış olmasından kaynaklanmaktadır.

1.1. Kuramsal Çerçeve

Bu bölümde çalışmanın dayandığı temel kavramlar -afet, tehlike, risk, kriz ve yönetişim- literatürdeki farklı tanımlar üzerinden ele alınmakta ve afet yönetiminden afet yönetişimine geçişin kuramsal temelleri ortaya konmaktadır.

Literatürde ortak bir afet tanımı bulunmamakla birlikte; Dünya Sağlık Örgütü afeti sağlık kaynaklarının yetersiz kalması olarak tanımlarken, Kızılhaç temel insani ihtiyaçların karşılanamaması durumu olarak değerlendirmektedir. Afetin, toplumun mevcut kaynaklarıyla baş edemediği bir tehlike-kırılganlık etkileşimi olduğu ve kırılganlığın sosyal, ekonomik ve politik süreçlerce üretildiği vurgulanmaktadır (Blaikie, Cannon, Davis ve Wisner, 2004). Tehlike ise, can ve mal kayıplarına yol açma potansiyeli taşıyan doğa, teknoloji veya insan odaklı fiziksel bir olaydır (AFAD, 2021).

Risk, tehlikenin oluşma ihtimali ile maruz kalınan etkinin şiddetini içeren bir fonksiyondur (Kadıoğlu ve Özdamar, 2005). Birleşmiş Milletler Afet Riskini Azaltma Ofisi de risk kavramını, tehlike, maruziyet ve kırılganlık bileşenlerinin etkileşimiyle ortaya çıkan potansiyel kayıplar olarak tanımlamakta ve afet riskinin azaltılmasını yönetişim kapasitesiyle doğrudan ilişkilendirmektedir (UNDRR, 2016). Kriz ise, kurumsal yapıların dengesini bozan ve kriz yönetimi müdahaleleriyle zararları asgariye indirmeyi hedefleyen dinamik bir süreçtir (Demirtaş, 2000).

Yönetişim, devlet odaklı hiyerarşik bir modelden toplum odaklı, çoğulcu ve katılımcı bir modele geçişi ifade etmektedir. Afet yönetişimi, bu çerçevede yalnızca teknik bir kapasite

ISBN: 978-625-90699-4-4

meselesi değil; sosyal, siyasal ve ekonomik boyutları iç içe geçmiş bir olgu olarak ele alınmalıdır (Tierney, 2012). Adaptif yönetişim, bu yaklaşımın bir alt dalı olarak sorunların çoklu aktör platformları ve ağlar aracılığıyla, öğrenme ve yenilikçilik temelinde çözülmesini esas almaktadır (Chaffin, Gosnell ve Cosens, 2014; Djalante, 2012). Kötü yönetişim, afet risklerinin altında yatan ana faktörlerden biri olarak kabul edilmektedir; merkezi yapıların yerel yönetimlere yeterli yetki devri yapmadığı durumlarda afet risklerinin azaltılması sürecinin etkinliği düşmektedir (Grady, Gersonius ve Makarigakis, 2016). Karşılaştırmalı bir bakış açısıyla, ulusal düzeyde koordine edilen ancak yerel uygulayıcı kapasiteye dayanan afet ve kriz yönetişimi modellerinin, aşırı merkeziyetçi yapılara kıyasla daha esnek bir müdahale kapasitesi sunduğu belirtilmektedir (Kapucu ve Özgür, 2013).

2. YÖNTEM

Bu çalışma, birincil veri toplamaya dayanmayan, betimsel nitelikte bir literatür derlemesidir (narrative/descriptive review). Veri kaynağını, afet yönetişimi, adaptif yönetişim, yerel yönetimler ve sivil toplum kuruluşlarının afet yönetimindeki rolü konularında ulusal ve uluslararası hakemli dergilerde yayımlanmış makaleler, kitap bölümleri, tezler ve resmî kurum raporları (AFAD, Sakarya Büyükşehir Belediyesi vb.) oluşturmaktadır. Kaynaklar; "afet yönetişimi", "disaster governance", "yerel yönetim afet" ve "sivil toplum afet yönetimi" anahtar terimleriyle taranmış; içerik olarak çalışmanın kavramsal çerçevesiyle (yönetişim, merkeziyetçilik, katılım, kapsayıcılık) doğrudan ilişkili olanlar seçilmiştir. Elde edilen bulgular, tematik olarak önce "yapısal sorunlar", ardından "aktör rolleri" başlıkları altında sentezlenmiştir. Çalışmanın temel sınırlılığı, sistematik bir derleme protokolü (PRISMA vb.) izlenmemiş olması ve saha araştırması içermemesidir; bulgular ikincil kaynaklara dayalı olarak yorumlanmıştır.

3. BULGULAR

Bu bölümde çalışmanın iki temel bulgu grubu sunulmaktadır: ilk olarak Türkiye'deki afet yönetişimi pratiğinin karşılaştığı beş yapısal sorun -aşırı merkeziyetçilik, yasaların araçsallaştırılması, bilgi siyaseti, tepkisel yönetim ve kapsayıcılık eksikliği- literatürdeki somut örneklerle ele alınmakta; ardından bu sorunların çözümünde kilit rol oynayan sivil toplum kuruluşlarının ve yerel yönetimlerin fiili kapasitesi tartışılmaktadır.

ISBN: 978-625-90699-4-4

3.1. Türkiye'de Afet Yönetişiminde Karşılaşılan Yapısal Sorunlar

Aşağıda ele alınan beş sorun alanı, Türkiye'deki afet yönetişimi pratiğini iyi yönetişim ilkelerinden (katılımcılık, şeffaflık, hesap verebilirlik ve kapsayıcılık) uzaklaştıran temel dinamikleri oluşturmaktadır.

Aşırı Merkeziyetçilik ve Katılım Eksikliği:

Türkiye'de afet yönetimi ağırlıklı olarak hiyerarşik bir düzende yürütülmektedir. Balıkesir özelinde yapılan saha çalışmaları, kamu kurumlarının sivil toplum kuruluşlarını karar alma süreçlerine dahil etmediğini, onları yalnızca "iş gücü" olarak gördüğünü ortaya koymaktadır; araştırmaya katılan STK temsilcileri, afet öncesi planlama ve kaynak dağıtım kararlarına erişimlerinin olmadığını, sürece yalnızca saha uygulama aşamasında ve genellikle son anda dahil edildiklerini belirtmiştir (Özkan ve Uzun, 2024). Bu durum, iyi yönetişimin temel bileşenlerinden biri olan katılımcılığın, Türkiye'deki afet yönetimi pratiğinde sınırlı kaldığını göstermektedir.

Merkeziyetçiliğin operasyonel sonuçları, 2023 Kahramanmaraş depremlerinde de somut biçimde gözlemlenmiştir. Deprem koordinasyon merkezlerinde görev yapan uzmanlarla yürütülen nitel bir araştırmaya göre, çok aktörlü ve çok sektörlü müdahale yapılarının devreye girmesine rağmen, karar yetkisinin büyük ölçüde merkezde toplanması ekipler arası koordinasyonu zayıflatan yedi temel soruna yol açmıştır; araştırmacılar, merkeziyetçiliğin azaltılması, yerel aktörlerin yetkilendirilmesi ve katılımcı yönetişim modellerine geçişin koordinasyon etkinliğini artıracağını vurgulamaktadır (Çamurcu, Oral ve Cengiz, 2025, s. 30-44). Benzer şekilde, Türkiye'deki afet müdahale süreçlerine yönelik nitel bir koordinasyon analizi de, kurumlar arası bilgi akışının merkezi kademelerde tıkandığını ve bunun saha düzeyinde kaynak dağıtım gecikmelerine yol açtığını ortaya koymuştur (Sarı ve Özer, 2024, s. 1-12). Bu bulgular, merkeziyetçilik sorununun yalnızca kavramsal düzeyde değil, saha düzeyinde de afet müdahalesinin etkinliğini doğrudan sınırlandırdığını göstermektedir.

Afet Yasalarının Araçsallaştırılması:

6306 sayılı Kentsel Dönüşüm Yasası örneğinde görüldüğü üzere risk azaltma yasaları, zamanla sermaye birikimi ve siyasi hedefler için araçsallaştırılmaktadır (Civelek, 2025).

ISBN: 978-625-90699-4-4

Bilgi Siyaseti ve Cehalet Üretimi:

Bilişim teknolojileri ve coğrafi bilgi sistemleri (CBS) kapasitesinin kullanımı hayati önem taşırken, uzman görüşlerinin sistematik olarak dışlanması "cehalet üretimi"ne yol açarak karar alma süreçlerini işlevsiz kılmaktadır (Yetişkin, 2025; Macit, 2018).

Tepkisel (Reaktif) Yönetim:

Doğal afetlere karşı en etkili önlem afet eğitimiyken, kamu kaynaklarının ağırlıklı olarak afet sonrası akut müdahaleye ayrılması hazırlık süreçlerini zayıflatmaktadır. Nitekim afet ve kriz yönetimi üzerine Konya ilinde yürütülen nitel bir araştırma da, kurumsal kriz yönetim planlarının çoğunlukla afet sonrası müdahale senaryolarına odaklandığını, önleme ve hazırlık boyutunun kurumsal pratikte ikincil kaldığını ortaya koymuştur (Bilici, 2021).

Kapsayıcılık Sorunu:

Merkezi sistemin hızlı iyileştirme politikaları, kırılgan gruplar üzerinde adaletsiz sonuçlar doğurmaktadır. Kahramanmaraş depremlerinin ardından bölgede ikamet eden yaklaşık 1,7 milyon Suriyeli sığınmacı, hem afetin doğrudan etkilerine hem de barınma, belgesizlik ve geri gönderilme kaygısı gibi afete özgü ikincil risklere maruz kalmıştır (Akar, 2024). Türkiye'nin merkeziyetçi ve reaktif afet sonrası konut politikalarının, sığınmacıları güvencesiz barınma koşullarına ve ikincil yerinden edilmeye sürüklediği; buna karşın daha ademi merkeziyetçi ve önleyici modellerin barınma güvencesini daha iyi koruduğu karşılaştırmalı bir çalışmada ortaya konmuştur (Nahavandi, 2026). Kırılganlık yalnızca mülteci statüsüyle sınırlı değildir: yaşlılar, engelliler ve kadınlar da afet sonrası süreçte barınma, ulaşım ve bilgiye erişim bakımından orantısız risklerle karşılaşmakta; sosyo-kültürel, ekonomik, sağlık ve mekânsal boyutları kesişen çok katmanlı bir kırılganlık örüntüsü oluşmaktadır (Ozcurumez, Yalın Erokay ve Sönmez Gioftsios, 2026). Bu bulgular, kapsayıcı bir afet yönetişimi tasarımının yalnızca mülteciler değil, tüm kırılgan grupları gözeten çok boyutlu bir politika çerçevesi gerektirdiğini göstermektedir.

3.2. Sivil Toplum Kuruluşlarının ve Yerel Yönetimlerin Afet Yönetişimindeki Rolü

Yukarıda sıralanan yapısal sorunların aşılmasında, sivil toplum kuruluşlarının sahadaki operasyonel kapasitesi ile yerel yönetimlerin kurumsal sorumlulukları belirleyici bir rol oynamaktadır. Bu alt bölümde her iki aktörün katkısı ve sınırlılıkları ele alınmaktadır.

Türkiye'de afet yönetimindeki kurumsal dağınıklığı önlemek amacıyla, 2009 yılında 5902 sayılı kanunla AFAD kurularak yetki tek bir çatı altında toplanmıştır (TÜBİTAK Bilim

ISBN: 978-625-90699-4-4

Ansiklopedisi, t.y.). Bu doğrultuda proaktif yönetime geçişte yerel dinamiklerin rolü belirleyici hale gelmiştir.

STK'ların Etki Alanı:

1999 Marmara Depremi, STK'ların rüştünü ispat ettiği bir milat olarak kabul edilmektedir (Toksoy, 2000). AKUT'un arama-kurtarma çalışmaları, Türk Kızılayı'nın geçici barınma ve gıda yardımları, diğer sivil yapıların ise travma sonrası psikososyal destek hizmetleri sivil mobilizasyonun kriz yönetimindeki operasyonel gücünü kanıtlamıştır (Aker, 2006; Durmaz, 2008). Bu operasyonel kapasite, 2023 Kahramanmaraş depremlerinde de görülmüştür: meslek temelli sivil toplum kuruluşlarının afet sahasındaki rolü üzerine yapılan bir inceleme, Türk Tabipleri Birliği örneğinde olduğu gibi mesleki STK'ların sahada tıbbi triyaj, saha hastanesi kurulumu ve koordinasyon desteği gibi kamu kurumlarının kapasitesini tamamlayıcı işlevler üstlendiğini; ancak bu katkının çoğunlukla resmî koordinasyon yapılarına gecikmeli ve sınırlı biçimde entegre edildiğini göstermektedir (Ökten, 2023). Bu bulgu, STK kapasitesinin sahada var olduğunu, ancak yönetişim mimarisine yapısal olarak eklemlenmediğini ortaya koyması bakımından önemlidir.

Yerel Yönetimlerin Sorumlulukları:

Yerel yönetimler; zarar azaltma evresinde yapı denetimi ve imar mevzuatının uygulanmasından, hazırlık aşamasında erken uyarı sistemleri ve acil eylem planlarının oluşturulmasına kadar kritik görevler üstlenmektedir (Özdemir, 2023). Sakarya Büyükşehir Belediyesi deneyimi bu açıdan açıklayıcıdır: belediye bünyesinde kurulan Afet Koordinasyon Merkezi (AKOM), 1999 Marmara depreminin doğrudan etkilediği bir ilde, yapı stoğu denetimi, tatbikat organizasyonu ve acil durum iletişim ağlarının kurulması gibi işlevleri üstlenerek, merkezi AFAD yapısının il düzeyindeki operasyonel karşılığını oluşturmaktadır (Özdemir, 2023). Bununla birlikte literatür, belediyelerin bu görevleri yerine getirebilmesi için yalnızca yasal yetkiye değil, merkezi yapılarla çok düzeyli işbirliği ve koordinasyona da ihtiyaç duyduğuna işaret etmektedir. Balıkesir örneğinde ise tablo daha sorunludur: kamu kurumları STK'ları planlama ve karar süreçlerine dahil etmemekte, onları yalnızca saha uygulamasında "iş gücü" olarak konumlandırmaktadır (Özkan ve Uzun, 2024). Sakarya ve Balıkesir örnekleri birlikte değerlendirildiğinde, yerel yönetim kapasitesinin varlığının tek başına yeterli olmadığı; bu kapasitenin STK'larla kurumsallaşmış, karar alma yetkisi içeren bir işbirliği modeliyle desteklenmesi gerektiği görülmektedir.

ISBN: 978-625-90699-4-4

4. SONUÇ, TARTIŞMA VE ÖNERİLER

Türkiye'de afet yönetişimi pratiği; merkeziyetçilik, bilgi dışlama, yasaların araçsallaşması ve kapsayıcılık sorunlarıyla maluldür. Balıkesir örneği katılım eksikliğini, Sakarya örneği yerel kapasitenin varlığına rağmen koordinasyon bağımlılığını, Kahramanmaraş depremleri ise her iki sorunun kriz anında yol açtığı somut maliyeti göstermektedir. Bu yapısal bariyerlerin aşılması ve afetlere dirençli kentlerin inşa edilmesi; AFAD öncülüğündeki merkezi otoritenin, yerel yönetimleri ve sivil toplum kuruluşlarını yalnızca uygulayıcı olarak değil, karar alma ve planlama süreçlerinin stratejik ortakları olarak kabul etmesine bağlıdır.

Bu çerçevede aşağıdaki politika önerileri geliştirilmiştir:

1. İl düzeyinde, kararları bağlayıcı nitelikte olan ve STK temsilcilerinin daimî üye olarak yer aldığı Yerel Afet Yönetişim Konseylerinin kurulması; böylece STK'ların yalnızca uygulama değil planlama aşamasına da dahil edilmesi.
2. AFAD, yerel yönetimler ve STK'lar arasında CBS tabanlı, karşılıklı veri paylaşımını zorunlu kılan yasal protokollerin oluşturularak "bilgi siyaseti" sorununun kurumsal düzeyde giderilmesi.
3. Kentsel dönüşüm mevzuatının uygulanmasında, risk azaltma amacından sapmayı önleyecek bağımsız teknik denetim ve kamuoyu şeffaflığı mekanizmalarının güçlendirilmesi.
4. Kamu afet bütçelerinde hazırlık ve önleme kalemlerine ayrılan payın, akut müdahale kalemleriyle dengeli hale getirilmesi ve bu dengenin performans göstergeleriyle izlenmesi.
5. Mülteciler, yaşlılar, engelliler ve kadınlar gibi kırılgan gruplara yönelik, afet sonrası barınma ve yeniden yerleşim süreçlerine özgü ayrı politika modüllerinin afet eylem planlarına entegre edilmesi.
6. Yerel yönetim personeli ile STK gönüllülerine yönelik ortak, sürekli ve sertifikalı afet yönetişimi eğitim programlarının, sahada yaşanan koordinasyon sorunlarını azaltacak şekilde tasarlanması.

Sürdürülebilir kalkınma ve afet yönetimi, ancak şeffaf, hesap verebilir, adil ve çok aktörlü bir adaptif yönetişim modelinin tüm aşamalara entegre edilmesiyle başarıya ulaşabilir.

ISBN: 978-625-90699-4-4

KAYNAKÇA

AFAD. (2021). Açıklamalı afet yönetimi terimleri sözlüğü. T.C. İçişleri Bakanlığı Afet ve Acil Durum Yönetimi Başkanlığı.

Akar, S. (2024). Natural disasters and Syrian refugees: The case of Kahramanmaraş earthquakes in Türkiye.

Aker, A. T. (2006). 1999 Marmara depremleri: Epidemiyolojik bulgular ve toplum ruh sağlığı uygulamaları üzerine bir gözden geçirme. Türk Psikiyatri Dergisi, 17(3), 204–212.

Bilici, G. (2021). Afetle mücadelede kriz yönetimi: Konya ilinde nitel bir araştırma. International Social Sciences Studies Journal, 7(82), 2125–2134.

Blaikie, P., Cannon, T., Davis, I. ve Wisner, B. (2004). At risk: Natural hazards, people's vulnerability and disasters (2. bs.). Routledge.

Chaffin, B. C., Gosnell, H. ve Cosens, B. A. (2014). A decade of adaptive governance scholarship: Synthesis and future directions. Ecology and Society, 19(3), 56.

Civelek, C. (2026). From state commodification to local reproduction of vulnerability: Ethnographic insights from a Risk Zone Urban Renewal Project in Turkey. Disasters, 50(1). https://doi.org/10.1111/disa.70024

Çamurcu, M., Oral, V. ve Cengiz, E. (2025). Afet müdahalesinde koordinasyon dinamiklerini etkileyen faktörler: 2023 Kahramanmaraş depremlerinden yönetişim çıkarımları. Türk Deprem Araştırma Dergisi, 7(Özel Sayı), 30–44. https://doi.org/10.46464/tdad.1748702

Demirtaş, H. (2000). Kriz Yönetimi. Kuram Ve Uygulamada Eğitim Yönetimi, 23(23), 353-373. https://izlik.org/JA89LC74EW

Djalante, R. (2012). Review article: Adaptive governance and resilience: The role of multi-stakeholder platforms in disaster risk reduction. Natural Hazards and Earth System Sciences, 12(9), 2923–2942.

Durmaz, A. (2008). Gölcük'te 17 Ağustos 1999 depremi sonrasında kurulan yeni yerleşim alanlarının şehrin gelişimine etkileri [Yayınlanmamış yüksek lisans tezi]. Sakarya Üniversitesi.

Ergünay, O. (2009). Afet yönetimi: Genel ilkeler, tanımlar, kavramlar. DSİ, Ankara.

Grady, A., Gersonius, B. ve Makarigakis, A. (2016). Taking stock of decentralized disaster risk reduction in Indonesia. Natural Hazards and Earth System Sciences, 16(9), 2145–2157. https://doi.org/10.5194/nhess-16-2145-2016

Hussain, E., Kalaycıoğlu, S., Milliner, C. W. ve Çakır, Z. (2023). Preconditioning the 2023 Kahramanmaraş (Türkiye) earthquake disaster. Nature Reviews Earth & Environment, 4(5), 287-289.

Kadıoğlu, M. ve Özdamar, E. (2005). Afet yönetiminin temel ilkeleri. JICA Türkiye Ofisi Yayını, Ankara.

Kapucu, N. ve Özgür, H. (2013). Afet ve kriz durumlarında yönetişim: Amerikan ulusal mücadele planları. İçinde: M. A. Çukurçayır ve H. T. Eroğlu (Ed.), Yönetişim. Çizgi Kitabevi.

ISBN: 978-625-90699-4-4

Macit, İ. (2018). Bütünleşik afet yönetimi ve bilişim teknolojileri. Yönetim Bilimleri Dergisi, 16(32), 19-38.

Nahavandi, E. (2026). Sustainable housing in climate and disaster vulnerable contexts: A comparative legal and policy analysis of Turkey and Germany's adaptation and disaster response frameworks. Migraciones. Publicación del Instituto Universitario de Estudios sobre Migraciones, 66, 1–22. https://doi.org/10.14422/mig.23414.011

Ozcurumez, S., Yalın Erokay, A. ve Sönmez Gioftsios, P. (2026). A scoping review of the vulnerabilities of Syrian refugees amid overlapping crises in Jordan, Lebanon, and Türkiye. Journal of Human Rights and Social Work. https://doi.org/10.1007/s41134-026-00451-w

Ökten, A. İ. (2023). Doğal afetlerde mesleki sivil toplum kuruluşlarının önemi: Kahramanmaraş depremi ve Türk Tabipleri Birliği örneği. Türk Nöroşirürji Dergisi, 33(2), 132-137.

Özdemir, A. (2023). Afet yönetiminde belediyelerin rolü. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi, 12(2), 828–839. https://doi.org/10.37989/gumussagbil.1275745

Özkan, O. ve Uzun, A. (2024). Sivil toplum kuruluşlarının afet yönetimindeki ikametlerini sorgulamak: Balıkesir ili örneği. Uludağ Üniversitesi Fen-Edebiyat Fakültesi Sosyal Bilimler Dergisi, 25(46), 267-312.

Özmen, B., Gerdan, S. ve Ergünay, O. (2015). Okullar için afet ve acil durum yönetimi planları. Elektronik Mesleki Gelişim ve Araştırmalar Dergisi, 3(1), 37–52.

Sarı, B. ve Özer, Y. E. (2024). Coordination analysis in disaster management: A qualitative approach in Türkiye. International Journal of Disaster Risk Reduction, 100, 104168.

Tierney, K. (2012). Disaster governance: Social, political, and economic dimensions. Annual Review of Environment and Resources, 37(1), 341-363.

Toksoy, N. (2000). 17 Ağustos 1999 Marmara depremi sonrasında sivil toplum kuruluşlarının rolü [Yüksek lisans tezi]. Mimar Sinan Güzel Sanatlar Üniversitesi.

TÜBİTAK Bilim Ansiklopedisi. (t.y.). Afet yönetimi. Erişim adresi: https://ansiklopedi.tubitak.gov.tr/ansiklopedi/afet_yonetimi

UNDRR. (2016). Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction. United Nations Office for Disaster Risk Reduction.

Yetişkin, E. (2025). Ignorance production in national disaster risk governance and emergency response-abilities of commoning collectives: The 2023 earthquakes in Turkey. International Journal of Disaster Risk Reduction, 116, 105151.

ISBN: 978-625-90699-4-4

TÜRKİYE'DE KATILIMCI BÜTÇELEME VE VATANDAŞ BÜTÇESİ UYGULAMALARININ KURUMSAL SINIRLARI

INSTITUTIONAL LIMITS OF PARTICIPATORY BUDGETING AND CITIZEN'S BUDGET PRACTICES IN TÜRKİYE

Lecturer Dr. Gökhan BİLİCİ
Selçuk University, Akören Ali Rıza Ercan Vocational School
ORCID ID: https://orcid.org/0000-0001-8446-1928

Özet

Bütçe hakkı, kamu maliyesinin ve modern demokrasilerin temel dayanaklarından biri olarak, günümüz yönetim paradigmalarındaki dönüşümle birlikte temsili sınırları aşarak doğrudan katılım mekanizmalarına doğru evrilmektedir. Bu evrilmenin yerel yönetimler düzeyindeki en somut yansıması olan katılımcı bütçeleme, yurttaşların mali kaynakların dağıtımında ve önceliklendirilmesinde doğrudan söz sahibi olmasını sağlamaktadır. Bu çalışma, yerel yönetimlerde katılımcı bütçeleme ve vatandaş bütçesi uygulamalarını kuramsal bir çerçevede ele alarak, Türkiye'deki mevcut yasal altyapının bu mekanizmaları ne ölçüde güvence altına aldığını sorgulamayı amaçlamaktadır. Nitel doküman analizi yöntemiyle yürütülen çalışmada; katılımcı bütçelemenin kavramsal temelleri, doğrudan, temsili, dijital ve hibrit modelleri, dünyadaki -özellikle Porto Alegre örneğindeki- uygulama deneyimleri ile vatandaş bütçesi kavramı karşılaştırmalı olarak incelenmiştir. Doğrudan katılım modelinde yurttaşlar önceliklerini bizzat belirlerken, temsili modelde bu süreç seçilmiş delegeler aracılığıyla yürütülmekte; dijital modeller katılımı coğrafi ve zamansal sınırların ötesine taşırken, hibrit modeller yüz yüze müzakerenin niteliğini dijital erişilebilirlikle birleştirmektedir. Vatandaş bütçesi, katılımcı bütçelemeden farklı olarak öncelikle bilgilendirme ve hesap verebilirlik işlevi gören, ancak katılımın sağlıklı işleyebilmesi için gerekli olan bütçe okuryazarlığını sağlayan tamamlayıcı bir araç olarak konumlandırılmıştır. Ardından Türkiye'de 5393 sayılı Belediye Kanunu'nun 14, 76 ve 77. maddeleri ile 5018 sayılı Kanun'un ilgili hükümleri üzerinden yasal çerçeve tartışılmıştır. Bu tartışmada, literatürde katılımcı bütçelemenin belediye mevzuatında dolaylı bir dayanağa sahip olduğunu savunan yaklaşımlar ile doğrudan bir anayasal/yasal temelinin bulunmadığını ve uygulamanın belediye başkanının siyasi iradesine bağlı kaldığını öne süren yaklaşımlar karşılaştırılmıştır. Araştırma kapsamında Antalya Muratpaşa Belediyesi'nin "Komşu Meclisi", İstanbul Büyükşehir Belediyesi'nin "Bütçem İstanbul", İzmir Büyükşehir Belediyesi ve Çanakkale Belediyesi uygulamaları ile Sakarya ili özelindeki model önerisi incelenmiş; Bütçem İstanbul özelinde bütçe takvimiyle uyumlu işleyiş gibi güçlü yönlerin yanı sıra, ayrılacak bütçe miktarının süreç başında ilan edilmemesi gibi gelişime açık noktalar da belirlenmiştir. Bulgular, Türkiye'deki uygulamalarda genellikle sembolik bütçelerin ayrıldığını ve bu durumun yasal, kurumsal ve siyasi olmak üzere üç boyutta açıklanabilecek bir güvence eksikliğinden kaynaklandığını göstermektedir. Çalışma, katılımcı bütçelemenin Türkiye'de yaygınlaştırılabilmesi ve daha işlevsel kılınabilmesi için, ayrılacak bütçe oranının asgari bir eşikle güvence altına alındığı ve vatandaş bütçesini de kapsayan bütüncül bir yasal düzenleme yapılması gerektiği sonucuyla tamamlanmaktadır.

Anahtar Kelimeler: Katılımcı bütçeleme, Vatandaş bütçesi, Bütçe hakkı, Yerel yönetimler, Yasal çerçeve

Abstract

As a fundamental pillar of public finance and modern democracies, the right to budget is evolving towards direct participation mechanisms, transcending representative boundaries, in line with the transformation of contemporary governance paradigms. Participatory budgeting, the most concrete manifestation of this evolution at the local government level, enables citizens to have a direct say in the distribution and prioritization of financial resources. This study aims to examine participatory budgeting and citizen's budget practices in local governments within a theoretical framework, and to question the extent to which Türkiye's existing legal infrastructure secures these mechanisms. Employing qualitative document analysis, the study comparatively examines the conceptual foundations of participatory budgeting, its direct, representative, digital and hybrid models, international implementation experiences -particularly the Porto Alegre case- and the concept of the citizen's budget. In the direct participation model citizens determine their own priorities, in the representative model this process is carried out through elected delegates, digital models extend participation beyond geographic and temporal limits, and hybrid models combine the quality of face-to-face deliberation with digital accessibility. The citizen's budget is positioned as a complementary tool that, unlike participatory budgeting, primarily serves an informational and accountability function while supplying the budget literacy that participation needs to function properly. The study then discusses the legal framework in Türkiye through Articles 14, 76 and 77 of Municipality Law No. 5393 and related provisions of Law No. 5018. In this discussion, approaches in the literature arguing that participatory budgeting has an indirect legal basis in municipal legislation are contrasted with approaches asserting that it lacks a direct constitutional/legal foundation and remains dependent on mayoral political will. The research examines the "Neighborhood Council" project of Antalya Muratpaşa Municipality, the "Bütçem İstanbul" project of Istanbul Metropolitan Municipality, and the practices of İzmir Metropolitan Municipality and Çanakkale Municipality, as well as a model proposal specific to Sakarya province; in the case of Bütçem İstanbul, strengths such as alignment with the budget calendar are identified alongside areas for improvement such as the failure to announce the allocated budget amount at the outset of the process. The findings indicate that symbolic budgets are generally allocated in practices across Türkiye, and that this stems from a lack of guarantees explainable across three dimensions: legal, institutional and political. The study concludes that a comprehensive legal regulation -securing a minimum threshold for the allocated budget share and integrating the citizen's budget with participatory budgeting- is needed to make these mechanisms more widespread and functional in Türkiye.

Keywords: Participatory budgeting, Citizen's budget, Right to budget, Local governments, Legal framework

GİRİŞ

Bütçe, devletin ya da yerel idarelerin muayyen bir zaman dilimine ait gelir ve gider öngörülerini ihtiva eden hukuki nitelikli bir metindir. Kamu maliyesi perspektifinden bakıldığında bütçe, basit bir muhasebe çizelgesinin ötesinde; ekonomik, mali ve toplumsal politikaların yürütülmesinde işlevsel kılınan en temel mekanizmalardan biri olarak kabul edilmektedir (Altıngöz Zarplı 2017). Bütçe hakkı ise kamu kaynaklarının elde edilmesi ve kullanılması aşamalarında yurttaşların karar mekanizmalarına dahil olmasını öngören asli bir demokratik prensibi temsil etmektedir (Dikici 2015). Tarihsel kökeni "temsilsiz vergi olmaz" düsturuna

dayanan bu hak (Çocuk 2017), vergi yükümlülüğünü yerine getiren bireylerin, sağladıkları kaynakların kullanım şekli üzerinde belirleyici olma gerekliliğini vurgular.

Dünyada ilk kez 1989 yılında Brezilya'nın Porto Alegre kentinde somut bir yönetim pratiğine dönüşen katılımcı bütçeleme (Demirkılıç ve Topal 2024), kamu kaynaklarının tahsisinde sosyal adaleti ve şeffaflığı sağlama noktasında küresel bir referans çizgisi oluşturmuştur. Zaman içerisinde doğrudan katılım yöntemlerinin yanına temsili kurullar, dijital (e-katılımcı) bütçeleme yöntemleri ve her iki kulvarın güçlü yönlerini birleştiren hibrit modeller eklenmiştir. Aynı literatürde, katılımcı bütçelemeyle yakından ilişkili fakat ondan ayrışan bir başka araç olarak vatandaş bütçesi (citizen's budget) kavramı da öne çıkmaktadır; bu araç, kamu bütçesinin sade ve anlaşılır bir dille yurttaşlara sunulmasını, dolayısıyla katılımın bir ön koşulu olan bütçe okuryazarlığını hedeflemektedir (Alkan ve Yıldız 2017).

Türkiye'de katılımcı bütçeleme girişimleri, küresel örneklere kıyasla daha dar bir çerçevede seyretmektedir. Antalya Muratpaşa Belediyesi'nin "Komşu Meclisi", İstanbul Büyükşehir Belediyesi'nin "Bütçem İstanbul" projesi ile İzmir ve Çanakkale belediyelerinin yürüttüğü süreçler yerel düzeyde yeni bir katılım alanı açma çabasının somut örnekleridir. Ne var ki bu uygulamaların ortak paydası, literatürde sıklıkla vurgulanan bir sorunda toplanmaktadır: ayrılan bütçelerin genellikle sembolik düzeyde kalması. Bu çalışmanın temel iddiası, söz konusu sembolikliğin tesadüfi olmadığı, büyük ölçüde katılımcı bütçelemenin Türk mevzuatındaki belirsiz ve dolaylı konumundan kaynaklandığıdır.

Bu doğrultuda çalışma, katılımcı bütçeleme olgusunu kuramsal boyutlarıyla ele almayı, vatandaş bütçesi kavramıyla ilişkisini netleştirmeyi ve Türkiye'deki yasal çerçeveyi - literatürdeki çelişkili okumaları karşılaştırarak- eleştirel bir bakışla incelemeyi amaçlamaktadır. Çalışma kapsamında, katılımcı bütçelemenin kavramsal altyapısı ve modelleri incelendikten sonra, vatandaş bütçesi ayrı bir başlık altında ele alınacak; ardından 5393 sayılı Belediye Kanunu ile 5018 sayılı Kanun'un ilgili hükümleri üzerinden yasal çerçeve tartışılacak ve Muratpaşa, İstanbul, İzmir, Çanakkale belediyeleri ile Sakarya ili için geliştirilen model önerisi bu çerçevede değerlendirilecektir.

MATERYAL VE METOD

Çalışma, nitel araştırma desenlerinden doküman analizi yöntemiyle yürütülmüştür. Veri seti üç katmandan oluşmaktadır: (i) katılımcı bütçeleme, vatandaş bütçesi ve bütçe hakkına ilişkin ulusal ve uluslararası akademik literatür (hakemli dergi makaleleri, tezler, kitap bölümleri); (ii) 5393 sayılı Belediye Kanunu, 5216 sayılı Büyükşehir Belediyesi Kanunu ve 5018 sayılı Kamu Mali Yönetimi ve Kontrol Kanunu'nun ilgili maddeleri; (iii) incelenen belediyelerin resmî uygulama dokümanları ve bu uygulamaları konu alan vaka çalışmaları (Muratpaşa Komşu Meclisi, İBB Bütçem İstanbul, İzmir ve Çanakkale belediyeleri, Sakarya model önerisi).

Belediye örnekleri, Türkiye'de katılımcı bütçelemeyi sistematik ve süreklilik arz eden bir uygulama olarak yürüten belediyeler arasından, literatürde en sık atıf alan ve doküman erişilebilirliği bulunan örnekler amaçlı örnekleme yoluyla seçilmiştir. Yasal çerçeve tartışmasında, birbirine zıt iki okumayı temsil eden kaynaklar (katılımcı bütçenin 5393 sayılı Kanun'un 14. maddesinde dolaylı bir dayanağı olduğunu savunan çalışmalar ile böyle bir

dayanağın bulunmadığını, uygulamanın siyasi iradeye bağlı kaldığını öne süren çalışmalar) kasıtlı olarak yan yana konularak karşılaştırmalı bir okuma yapılmıştır.

Çalışmanın temel sınırlılığı, birincil veri (saha görüşmesi, anket) içermemesi ve değerlendirmenin ikincil kaynaklara -belediyelerin kendi yayımladığı dokümanlar ile bu dokümanları inceleyen akademik çalışmalara- dayanmasıdır. Bu nedenle bulgular, birebir saha gözlemi değil, yayımlanmış doküman ve literatürün sistematik karşılaştırması niteliğindedir. Çalışmada herhangi bir kurum veya kuruluştan destek alınmamış olup yazarın bilgisi dışında bir çıkar çatışması bulunmamaktadır.

BULGULAR VE TARTIŞMA

Kavramsal Çerçeve: Bütçe Hakkından Katılımcı Bütçelemeye

Bütçe hakkının demokratik bir sistemin temel yapı taşlarından birini teşkil ettiği hususunda literatürde geniş bir mutabakat mevcuttur (Özen ve Yontar 2009). Bu hakkın tarihsel kökleri 13. yüzyıl İngiltere'sinde Magna Carta Libertatum'a, kurumsallaşması ise 1689 Haklar Beyannamesi'ne dayanmaktadır (Dikici 2015); Türkiye'de ise 1876 tarihli Kanun-i Esasi ile anayasal bir statü kazanmış, Cumhuriyet dönemi anayasalarıyla kapsamı genişletilmiştir (Çocuk 2017).

Katılımcı bütçeleme, bireylerin kamu bütçesinin oluşturulması, yürütülmesi ve denetlenmesi aşamalarına doğrudan ya da dolaylı kanallarla dahil oldukları bir mekanizma olarak tanımlanmaktadır (Ergen 2012). Demirkılıç ve Topal (2024), kavramı 1989'da Porto Alegre'de hayata geçirilen ve yurttaşların kamu kaynaklarının kullanımına dair karar alma süreçlerine doğrudan katılımını mümkün kılan bir yöntem olarak tanımlar. Modelin dayandığı temel ilkeler; şeffaflık, hesap verebilirlik, kapsayıcılık, demokratik katılım ve toplumsal adalet olarak sıralanmaktadır (Ergen 2012).

Katılımcı Bütçeleme Modelleri

Doğrudan katılım modelinde yurttaşlar, mahalle toplantıları ve konseyler aracılığıyla önceliklerini bizzat belirleyerek kaynak tahsisine doğrudan karar verir; Porto Alegre modelinde kentin belirli bölgelere ayrılması ve delegelerin şehir ölçeğindeki bütçe konseyine katılması bu yaklaşımın en tanınan örneğidir (Wampler 2007). Temsili katılım modelinde ise vatandaşlar kararları doğrudan almak yerine bu süreci yürütecek delegeleri belirler; bu yaklaşım özellikle nüfus yoğunluğu yüksek metropollerde işlevsel bir çözüm olarak tercih edilir (Çocuk 2017).

Dijital (e-katılımcı) bütçeleme, teknolojinin bütçe süreçlerine entegrasyonu yoluyla coğrafi ve zamansal engelleri aşarak daha geniş kitlelere ulaşmayı amaçlar; buna karşılık dijital uçurum -internet erişimi ve teknoloji kullanım becerisindeki eşitsizlikler- modelin en önemli kısıtı olarak öne çıkar (Demirkılıç ve Topal 2024). Hibrit modeller ise fiziksel katılım ile dijital araçları aynı süreç içinde birleştirir: hazırlık ve öneri toplama aşamaları çevrimiçi, müzakere ve önceliklendirme aşamaları ise yüz yüze yürütülür. Avrupa'daki uygulamaların karşılaştırmalı bir analizinde, Portekiz modelinin yurttaşları bütçe döngüsünün hazırlık, onay, icra ve denetim aşamalarının tamamına doğrudan oy kullanarak dahil ettiği, buna karşın Türkiye'deki uygulamaların ekseriyetle yalnızca hazırlık aşamasıyla sınırlı kaldığı vurgulanmaktadır (Allegretti ve Koçdemir 2021); bu tespit, Avrupa genelinde katılımcı bütçe modellerinin

ISBN: 978-625-90699-4-4

çeşitliliğini ve olgunluk derecesindeki farkları ortaya koyan geniş ölçekli karşılaştırmalı çalışmalarla da örtüşmektedir (Sintomer vd. 2008).

Vatandaş Bütçesi: Katılımcı Bütçelemeyi Tamamlayan Bir Araç

Vatandaş bütçesi, kamu bütçesinin teknik ve karmaşık içeriğinin sadeleştirilerek yurttaşların anlayabileceği bir dille sunulmasını ifade eden bir şeffaflık aracıdır (Alkan ve Yıldız 2017). Katılımcı bütçeleme ile vatandaş bütçesi sıklıkla aynı literatür başlığı altında ele alınsa da aralarındaki fark önemlidir: katılımcı bütçeleme yurttaşları karar alma sürecine doğrudan dahil ederken, vatandaş bütçesi öncelikle bilgilendirme ve hesap verebilirlik işlevi görür; bir bakıma vatandaş bütçesi, katılımcı bütçelemenin sağlıklı işleyebilmesi için gerekli olan bütçe okuryazarlığını sağlayan bir ön koşuldur (Alkan ve Yıldız 2017).

Türkiye'de 5018 sayılı Kamu Mali Yönetimi ve Kontrol Kanunu'nun getirdiği saydamlık ve hesap verebilirlik ilkeleri, vatandaş bütçesi uygulamalarına dolaylı bir zemin oluşturmaktadır; ancak bu araç da katılımcı bütçeleme gibi merkezi idarede ve belediyelerde yaygın, standart bir uygulama biçimine henüz kavuşmamıştır. Bu çalışmanın önerisi, iki aracın birbirini dışlayan değil tamamlayan mekanizmalar olarak ele alınması; vatandaş bütçesinin bilgilendirme işlevi ile katılımcı bütçelemenin karar alma işlevinin aynı yasal çerçeve içinde bütünleştirilmesidir.

Türkiye'de Yasal Çerçeve: Dolaylı Dayanak mı, Yasal Boşluk mu?

Türkiye'de katılımcı bütçelemenin yasal konumu literatürde iki farklı biçimde okunmaktadır. Bir grup çalışma, 5393 sayılı Belediye Kanunu'nun 14. maddesinin üçüncü ve dördüncü fıkralarını -hizmetlerin önceliklendirilmesinde belediyenin mali durumunun ve hizmetin ivediliğinin dikkate alınmasını ve hizmetlerin vatandaşa en yakın ve uygun yöntemlerle sunulmasını öngören hükümleri- katılımcı bütçe uygulamasının dolaylı yasal temeli olarak yorumlamaktadır; bu okumaya göre Kanun'un 77. maddesindeki gönüllü katılım hükmü de aynı çerçeveyi güçlendirmektedir (Alkan ve Yıldız 2017). Aynı doğrultuda, Kanun'un 76. maddesinde düzenlenen kent konseyleri de -doğrudan karar alma yetkisine sahip olmasa da- görüş ve öneri oluşturma işlevi üzerinden katılım sürecine kurumsal bir kanal sağlamaktadır (Arıkboğa 2024).

Buna karşılık başka bir okuma, katılımcı bütçe uygulamasının anayasal ya da doğrudan yasal bir tabanının bulunmadığını, uygulamanın belediye başkanının siyasi iradesine bağlı kaldığını ve yönetimin değişmesi halinde sürdürülmeme riskiyle karşı karşıya olduğunu vurgulamaktadır (Altıngöz Zarplı 2017). İstanbul Büyükşehir Belediyesi'nin "Bütçem İstanbul" uygulamasını üç bütçe dönemi boyunca inceleyen yakın tarihli bir çalışma da bu tespiti doğrulamaktadır: kent konseyinin katılımcı bütçe sürecindeki rolü resmî bir karar organı değil, meclise iletilecek görüş ve önerileri oluşturan bir mekanizma olarak tanımlanmış; ayrılacak bütçe miktarının sürecin başında ilan edilmemesi ise uygulamanın gelişime açık yönlerinden biri olarak belirlenmiştir (Arıkboğa 2024).

Bu iki okuma bir araya getirildiğinde ortaya çıkan tablo şudur: 5393 ve 5018 sayılı kanunlar katılımcı bütçelemeyi doğrudan düzenleyen değil, ona elverişli bir zemin sunan dolaylı hükümler içermektedir. Bu dolaylılık, uygulamanın hangi belediyede, hangi kapsamda ve ne kadar süreyle yürütüleceğinin idari takdire bırakılması sonucunu doğurmakta; dolayısıyla

ISBN: 978-625-90699-4-4

sembolik bütçe sorununun kaynağında teknik değil, kurumsal-hukuki bir eksiklik yer almaktadır.

Türkiye'de Uygulamalar

Antalya Muratpaşa Belediyesi'nin "Komşu Meclisi" projesi, www.komsumeclisi.com adresi üzerinden yürütülmekte; ilçe sınırlarında yaşayan ve 13 yaşını doldurmuş tüm vatandaşlar doğrudan üye kabul edilerek eşit oylama hakkına sahip kılınmaktadır (Taşkın 2024). Sistem; 55 mahalleyi kapsayan Mahalle Meclisleri, Komşu Formu, "Bir Fikrim Var" alanı ve Oylama Sayfası olmak üzere dört bileşenden oluşmakta, oylama sonuçları resmiyet kazanması için Muratpaşa Belediye Meclisi'ne "Komşu Meclisi önerisi" olarak iletilmektedir (Taşkın 2024).

İstanbul Büyükşehir Belediyesi'nin "Bütçem İstanbul" projesi, 2022 bütçe döneminden itibaren İstanbul Kent Konseyi ile Strateji Geliştirme Daire Başkanlığı iş birliğinde yürütülmektedir. Üç yıllık uygulamayı inceleyen Arıkboğa'ya (2024) göre modelin güçlü yönleri arasında tutarlı bir yapıya dayanması, bütçe takvimiyle uyumlu işlemesi, kurumun stratejik planı ve performans esaslı bütçesiyle uyumlu yürütülmesi ve İstanbul Kent Konseyi tarafından sahiplenilmesi sayılabilir; buna karşın katılımın artırılması, proje gerçekleşmelerinin daha etkin izlenmesi, düzenli geri bildirim verilmesi, maliyet tahminlerinin daha gerçekçi yapılması ve ayrılacak bütçe miktarının sürecin başında ilan edilmesi, uygulamanın gelişime açık alanları olarak belirlenmiştir (Arıkboğa 2024).

İzmir Büyükşehir Belediyesi'nde dijital tabanlı katılımcı bütçeleme mekanizmaları uygulanmakta (Demirkılıç ve Topal 2024); Çanakkale Belediyesi'nde ise harcama önceliklerinin belirlenmesinde katılımcı bütçe uygulaması, belediyenin mali durumu ve hizmet ivediliği kriterleri çerçevesinde yürütülmektedir (Gürneş 2010). Sakarya ili için geliştirilen model önerisinde, karma araştırma yöntemiyle hem yurttaşların hem de yerel bürokratların katılımcı bütçe modeline pozitif yaklaştığı; ancak modelin sürdürülebilirliği için kurumsal bir çerçeveye ihtiyaç duyulduğu tespit edilmiştir.

Sembolik Bütçe Sorunu ve Tartışma

Porto Alegre'de yerel bütçenin yaklaşık yüzde 20'lik bir kısmı katılımcı yöntemlerle yönlendirilirken (Ergen 2012), Türkiye'deki uygulamalarda ayrılan payların bundan belirgin biçimde düşük ve sembolik düzeyde kaldığı görülmektedir. Bu çalışmanın bulguları, söz konusu sembolikliğin üç boyutta açıklanabileceğini göstermektedir: (i) yasal boyut -katılımcı bütçelemenin 5393 sayılı Kanun'da doğrudan değil dolaylı biçimde düzenlenmiş olması; (ii) kurumsal boyut -ayrılacak bütçe miktarının çoğu örnekte süreç başlamadan ilan edilmemesi (Arıkboğa 2024); (iii) siyasi boyut -uygulamanın sürekliliğinin belediye başkanının kişisel iradesine bağlı kalması (Altıngöz Zarplı 2017).

Bu üç boyut birbirini beslemektedir: yasal güvence bulunmadığında bütçe miktarının önceden ilanı bir zorunluluk değil bir tercih haline gelmekte, bu da uygulamanın siyasi konjonktüre bağlı kırılganlığını artırmaktadır. Vatandaş bütçesi ile katılımcı bütçelemenin birlikte, aynı yasal çerçeve içinde ele alınması, hem bütçe okuryazarlığını hem de karar alma sürecine katılımı güvence altına alarak bu kırılganlığı azaltabilecek bir açılım olarak değerlendirilmektedir.

ISBN: 978-625-90699-4-4

SONUÇ

Bu çalışma, Türkiye'de yerel yönetimlerde katılımcı bütçeleme ve vatandaş bütçesi uygulamalarını kuramsal bir çerçevede ele alarak, sembolik bütçe sorununun temelinde teknik değil kurumsal-hukuki bir eksikliğin yattığını ortaya koymuştur. Muratpaşa, İstanbul, İzmir, Çanakkale belediyeleri ile Sakarya modeli önerisi üzerinden yürütülen inceleme, Türkiye'deki uygulamaların önemli bir kısmının hazırlık ve öneri toplama aşamalarıyla sınırlı kaldığını, buna karşılık bütçenin onay, icra ve denetim aşamalarına yurttaş katılımının sınırlı olduğunu göstermektedir.

Literatürdeki çelişkili okumaların karşılaştırılması, 5393 ve 5018 sayılı kanunların katılımcı bütçelemeye ve vatandaş bütçesine dolaylı bir zemin sunmakla birlikte, bu araçları doğrudan ve bağlayıcı biçimde düzenlemediğini ortaya koymuştur. Bu nedenle çalışma, katılımcı bütçelemenin Türkiye'de yaygınlaştırılabilmesi ve işlevsel kılınabilmesi için; ayrılacak bütçe oranının asgari bir eşikle güvence altına alındığı, vatandaş bütçesi ile katılımcı bütçelemeyi aynı çerçevede bütünleştiren, belediye başkanının siyasi iradesinden bağımsız sürekliliği sağlayan kapsamlı bir yasal düzenleme yapılması gerektiği sonucuna ulaşmaktadır. İleride yapılacak çalışmaların, bu öneriyi belediye bürokratları ve yurttaşlarla yürütülecek saha araştırmalarıyla sınaması önerilmektedir.

KAYNAKLAR

Alkan, F., & Yıldız, F. (2017). Bütçelemede yeni yaklaşımlar: Katılımcı bütçeleme ve vatandaş bütçesi. İçinde F. Yıldız & G. Tuncer (Ed.), *Güncel gelişmeler perspektifinden kamu maliyesinde seçme konular* (s. 355–373). Savaş Yayınevi.

Allegretti, G., & Koçdemir, M. (2021). Katılımcı bütçe uygulamaları: Türkiye ve Portekiz deneyimlerinin karşılaştırılması. *Sayıştay Dergisi*, 32(123), 107–139.

Altıngöz Zarplı, S. (2017). *Kamu bütçelemesinde yeni bir yaklaşım olarak katılımcı bütçeleme: Türkiye'de belediyelere yönelik bir araştırma* [Doktora tezi]. Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Enstitüsü.

Arıkboğa, Ü. (2024). Belediyelerde katılımcı bütçe: İstanbul Büyükşehir Belediyesi örneği. *Çağdaş Yerel Yönetimler*, 33(4), 1–35.

Çocuk, M. (2017). *Türkiye'de katılımcı bütçeleme ve gençlerin katılımcı bütçelemeye yönelik algı ve eğilimlerinin değerlendirilmesi: Akdeniz Üniversitesi örneği* [Yüksek lisans tezi]. Akdeniz Üniversitesi Sosyal Bilimler Enstitüsü.

Demirkılıç, Y., & Topal, M. H. (2024). Yenilikçi bir yaklaşım olarak e-katılımcı bütçeleme. *Maliye Çalışmaları Dergisi*, 72, 127–149.

Dikici, U. (2015). *Dünyada yeni bir bütçeleme anlayışı olarak katılımcı bütçeleme yaklaşımı ve Türkiye açısından değerlendirilmesi* [Yüksek lisans tezi]. Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü.

Ergen, Z. (2012). Yönetimden yönetişime: Katılımcı bütçeleme modeli. *Maliye Dergisi*, 163, 316–334.

ISBN: 978-625-90699-4-4

Gürneş, B. (2010). *Belediyelerde harcama önceliklerinin belirlenmesinde katılımcı bütçe uygulaması: Çanakkale Belediyesi örneği* [Yüksek lisans tezi]. Çanakkale Onsekiz Mart Üniversitesi Sosyal Bilimler Enstitüsü.

Özen, A., & Yontar İG. (2009). Katılımcı demokrasi anlayışında bütçeleme: Katılımcı bütçeleme. *Maliye Dergisi*, 156, 280–293.

Sintomer, Y., Herzberg, C., & Röcke, A. (2008). Participatory budgeting in Europe: Potentials and challenges. *International Journal of Urban and Regional Research*, 32(1), 164–178.

Taşkın, A. (2024). Katılımcı bütçeleme anlayışında bilgi iletişim teknolojileri kullanımı: "Komşu Meclisi" örneği. *Pamukkale Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 64, 33–59.

Wampler, B. (2007). A guide to participatory budgeting. İçinde A. Shah (Ed.), *Participatory budgeting* (s. 21–54). The World Bank.

5018 sayılı Kamu Mali Yönetimi ve Kontrol Kanunu, 24.12.2003, Sayı: 25326.

5393 sayılı Belediye Kanunu, 13.07.2005, Sayı: 25874.

ISBN: 978-625-90699-4-4

TİP 1 DİYABETLİ HASTALARDA DİYABET TEKNOLOJİLERİ VE PSİKOLOJİK ETKİLERİ

DIABETES TECHNOLOGIES AND PSYCHOLOGICAL EFFECTS IN PATIENTS WITH TYPE 1 DIABETES

Mehmet Salih AKIN[1]
Dicle University, Institute of Health Sciences
ORCID ID: https://orcid.org/0009-0002-8907-7700

Danışman: Prof. Dr. Hamdiye ARDA SÜRÜCÜ[2]
Dicle University, Atatürk Faculty of Health Sciences
ORCID ID: https://orcid.org/0000-0001-7052-1002

ÖZET

Tip 1 diyabet (T1D), mutlak insülin bağımlılığı ve sürekli kan şekeri takibi gerektiren kronik bir hastalık olup bireyi gün içinde yüzlerce tedavi kararıyla karşı karşıya bırakmaktadır. Sürekli glukoz monitörizasyonu (CGM), insülin pompaları (CSII) ve kapalı döngü sistemleri gibi diyabet teknolojileri metabolik kontrolü belirgin biçimde iyileştirme potansiyeli taşımakla birlikte bağımlılık, damgalanma ve anksiyete gibi yeni psikolojik yükler de doğurabilmektedir. Bu derleme, T1D'li bireylerde diyabet teknolojilerinin kullanımı ile psikolojik etkiler arasındaki ilişkiyi hemşirelik perspektifinden ele almayı amaçlamaktadır. Çalışmada tip 1 diyabetin tanımı, epidemiyolojisi ile hastalarda görülen metabolik ve psikososyal sorunlar özetlenmiş; ardından CGM, insülin pompaları, kapalı döngü sistemleri ve dijital sağlık uygulamaları ilgili klinik kanıtlarla birlikte incelenmiştir. Bu teknolojilerin yol açabileceği bağımlılık, damgalanma ve anksiyete gibi psikolojik etkiler tartışılmış; hemşirenin bu etkileri erken fark etmede ve hastanın teknolojiye ilişkin gerçekçi beklentiler geliştirmesine destek olmada üstlendiği rol vurgulanmıştır. Bulgular, teknoloji temelli diyabet bakımının yalnızca cihaz yönetimiyle sınırlı kalmaması, bireyselleştirilmiş psikososyal destekle birlikte sürdürülmesi gerektiğini ve Türkiye'de bu alana ilişkin ulusal verilere duyulan ihtiyacı ortaya koymaktadır.
Anahtar Kelimeler: Tip 1 diyabet, Diyabet teknolojileri, Psikolojik etkiler, Diyabet hemşireliği, Sürekli glukoz monitörizasyonu.

ABSTRACT

Type 1 diabetes (T1D) is a chronic disease that requires absolute insulin dependence and continuous blood glucose monitoring, confronting individuals with hundreds of treatment-related decisions every day. Diabetes technologies such as continuous glucose monitoring (CGM), insulin pumps (CSII), and closed-loop systems can markedly improve metabolic control, yet they may also generate new psychological burdens such as dependency, stigma, and anxiety. This review aims to examine the relationship between the use of diabetes technologies and psychological effects in individuals with T1D from a nursing perspective. The definition and epidemiology of type 1 diabetes, together with the metabolic and psychosocial problems experienced by patients, are summarized, followed by an examination of CGM,

insulin pumps, closed-loop systems, and digital health applications along with the relevant clinical evidence. The psychological effects that these technologies may provoke, namely dependency, stigma, and anxiety, are discussed, together with the nurse's role in the early recognition of these effects and in supporting patients to develop realistic expectations toward technology. The findings indicate that technology-based diabetes care should not be limited to device management alone but should be sustained together with individualized psychosocial support, and that national data on this subject remain needed in Turkey.
Keywords: Type 1 diabetes, Diabetes technologies, Psychological effects, Diabetes nursing, Continuous glucose monitoring.

GİRİŞ

Diyabet mellitus, insülin salgılanmasındaki yetersizlik, insülin etkisindeki bozukluk veya her ikisinin birlikteliğinden kaynaklanan ve kronik, metabolik bir hastalıktır (ADA, 2024). Hastalık günümüzde yalnızca bireyin biyokimyasal dengesini değil, günlük yaşamının tamamını etkileyen küresel bir halk sağlığı sorunu olarak öne çıkmaktadır. Uluslararası Diyabet Federasyonu'nun (IDF) Diyabet Atlası'nın 11. baskısına göre dünyada yaklaşık 589 milyon yetişkin diyabetle yaşamakta; bu sayının 2050 yılına kadar 853 milyona ulaşması beklenmektedir (IDF, 2025). Türkiye bu tablonun dışında değildir; genel diyabet prevalansının %13,7 olduğu bildirilmekte ve ülkemiz bu oranla Avrupa'nın en yüksek diyabet görülme sıklığına sahip ülkeleri arasında yer almaktadır (Türk Diyabet Cemiyeti, 2023).

Tip 1 diyabet (T1D), bu tablonun görece küçük bir dilimini oluştursa da klinik ağırlık açısından farklı bir yerde durmaktadır. Mutlak insülin bağımlılığı, düzenli kan şekeri takibi gerekliliği ve uzun vadeli komplikasyon riski; T1D'li bir bireyi yalnızca hastalık yönetimiyle değil, gün içinde yüzlerce kararla yüzleştiği bir tablo yaratmaktadır. Son yıllarda bu tabloya bir de teknoloji katmanı eklenmiştir. Sürekli glukoz monitörizasyonu, insülin pompaları ve kapalı döngü sistemleri metabolik kontrolü anlamlı biçimde iyileştirme kapasitesi taşımaktadır; ancak aynı teknolojiler bağımlılık, damgalanma ve anksiyete gibi yeni psikolojik yükler de üretebilmektedir (Tanenbaum & Commissariat, 2023).

Hastayı düzenli izleyen, psikolojik güçlükleri ilk fark eden ve bakım koordinasyonunu yürüten profesyonel olarak hemşire, diyabet teknolojisinin yalnızca nasıl kullanıldığını değil bireyi nasıl etkilediğini de değerlendirmek durumundadır. Bu bağlamda hemşireler bu etkileşimin tam ortasında durmaktadır. Bu çalışmanın amacı; T1D'li hastalarda diyabet teknolojilerinin kullanımı ile psikolojik etkiler arasındaki ilişkiyi hemşirelik perspektifinden incelemek ve klinik uygulamaya yönelik çıkarımlar sunmaktır.

TİP 1 DİYABET

Tanım ve Patogenez

Tip 1 diyabet, pankreas beta hücrelerinin nedeni henüz tam olarak açıklanamamış otoimmün yıkımı sonucunda gelişen ve mutlak insülin eksikliğiyle seyreden kronik metabolik bir

hastalıktır. Tüm diyabet vakalarının yaklaşık %5--10'unu oluşturmakla birlikte çocukluk ve ergenlik döneminin en sık görülen kronik hastalıklarından biri olması nedeniyle klinik önemi büyüktür (ADA, 2024). Hastalık sürecini başlattığı belirlenen nedenler arasında genetik yatkınlık, çevresel tetikleyiciler, viral enfeksiyonlar yer almaktadır; HLA sınıf II genleri bu süreçteki en güçlü genetik risk etkeni olarak tanımlanmaktadır (Atkinson & Mirmira, 2023). Bu çok bileşenli patofizyolojik yapı, sağlık profesyonellerinin yalnızca akut dönem yönetimiyle sınırlı kalmayıp hastanın genetik yükü, aile öyküsü ve çevresel risk faktörlerine duyarlı bütüncül bir değerlendirme yapmasını zorunlu kılmaktadır.

Patogenezin merkezinde otoimmün beta hücre yıkımı yer almaktadır. T lenfositler pankreas adacık antijenlerini yabancı olarak tanıyarak beta hücrelerine yönelik otoimmün bir saldırı başlatmaktadır (Atkinson & Mirmira, 2023).

Klinik başlangıç çoğunlukla akuttur; poliüri, polidipsi, polifaji ve kilo kaybı klasik tanı bulgularını oluşturmaktadır. Tanının gecikmesi diyabetik ketoasidoz (DKA) ile başvuru sıklığını artırmakta ve ciddi bir akut komplikasyon riskine zemin hazırlamaktadır.

Beta hücre rezervinin büyük bölümünün yitirilmesiyle birlikte yaşam boyu eksojen insülin tedavisi zorunlu hale gelmektedir. Dışarıdan uygulanan insülinin pankreasın fizyolojik bazal-bolus salgı düzenini tam olarak taklit edememesi, T1D yönetimini süregelen ve karmaşık bir klinik problem olarak ön planda tutmaktadır.

ADA kılavuzlarına göre diyabet tanısı; açlık plazma glukozu ≥126 mg/dL, 75 g oral glukoz tolerans testinde (OGTT) 2. saat plazma glukozu ≥200 mg/dL, HbA1c ≥%6,5 ya da hiperglisemi semptomları eşliğinde rastgele plazma glukozu ≥200 mg/dL kriterlerinden birinin saptanmasıyla konulmakta; asemptomatik bireylerde iki ayrı ölçümün birbirini doğrulaması gerekmektedir (ADA, 2024). T1D ile T2D arasındaki ayırıcı tanıda otoantikor pozitifliği ve düşük C-peptid düzeyi belirleyici bulgular arasında yer almakta; bu ayrımın doğru yapılması tedavi yaklaşımının ve uzun vadeli bakım planının şekillenmesi açısından kritik önem taşımaktadır (ADA, 2024).

Epidemiyoloji: Dünya ve Türkiye

IDF Diyabet Atlası'nın 11. baskısına göre 20 yaş altı nüfus arasında yaklaşık 1,8 milyon kişi T1D tanısıyla yaşamaktadır; bu rakamın özellikle düşük gelirli bölgelerdeki yetersiz tanı kapasitesi nedeniyle gerçek yükü yansıtmayabileceği değerlendirilmektedir (IDF, 2025). Gregory ve arkadaşlarının (2022) modelleme çalışması, 2021 yılında tüm yaş gruplarını kapsayan küresel T1D prevalansının 8,4 milyonu aştığını ve 2040 yılına kadar 13,5--17,4 milyon aralığına ulaşacağını öngörmektedir.

Coğrafi dağılım belirgin farklılıklar sergilemektedir. En yüksek insidans İskandinav ülkelerinde gözlemlenmekte olup Finlandiya 15 yaş altı çocuklarda 100.000'de yaklaşık 52,2 yıllık yeni vaka ile dünya genelinde en yüksek insidansa sahip ülke konumundadır (Parviainen et al., 2020). Buna karşın Çin ve Japonya gibi Asya ülkelerinde bu oran 100.000'de 1--2'nin altında kalmaktadır (Gregory ve ark., 2022). Son otuz yılda pek çok bölgede T1D insidansının yılda %2--3 oranında arttığı bildirilmektedir (Abela & Fava, 2021).

ISBN: 978-625-90699-4-4

Tablo 1. Seçilmiş Ülkelerde Tip 1 Diyabet İnsidansı (0--14 Yaş, 100.000'de Yıllık Yeni Vaka)

Ülke	İnsidans (100.000'de)	Kaynak
Finlandiya	~52,2	IDF, 2025
İsveç	43,2	IDF, 2025
Norveç	32,8	IDF, 2025
Amerika Birleşik Devletleri	24,5	IDF, 2025
Türkiye (bölgesel)	8,0-9,7	Özalkak ve ark., 2022
Japonya	2,4	Gregory ve ark., 2022
Çin	0,6	Gregory ve ark., 2022

Türkiye'de T1D'ye özgü güvenilir ulusal veriler hâlâ sınırlıdır; mevcut çalışmalar büyük ölçüde tek merkezli ya da bölgesel niteliktedir. Kandemir ve arkadaşları (2024), Hacettepe Üniversitesi'nde yürütülen 50 yıllık tek merkez çalışmasında tanı konulma yaşının son 50 yılda ortalama 9,5'ten 7,1 yıla gerilediğini ve 6 yaş altındaki vakaların giderek arttığını saptamıştır. Bölgeler arasındaki farklılıklar da dikkat çekicidir; Güneydoğu Anadolu'da yürütülen çalışmada vakaların %64,9'unun DKA ile başvurduğu bildirilmiş olup bu oran özellikle tanı gecikmesinin yaygın olduğu bölgelerdeki ciddi altyapı eksikliklerine işaret etmektedir (Özalkak ve ark., 2022). Bu bölgesel verilerin Türkiye genelini temsil etmediği göz önünde bulundurulduğunda, söz konusu bulgular ulusal bir tablo olarak değil ülke içi eşitsizliklerin bir yansıması olarak değerlendirilmelidir.

TİP 1 DİYABETLİ HASTALARDA YAŞANAN SORUNLAR

Metabolik Sorunlar

T1D'nin yönetimi, fizyolojik açıdan son derece hassas bir dengeyi sürdürmeyi gerektirmektedir. Pankreasın fizyolojik insülin salgı ritmine yaklaşmak; günün her saatinde --- yemek, egzersiz, stres, hastalık ve uyku --- insülin dozunun yeniden hesaplanmasını zorunlu kılmaktadır (ADA, 2024). Bu hesaplamanın hata payı oldukça dardır: yetersiz insülin hiperglisemiye, fazla insülin ise hipoglisemiye yol açabilmekte; her iki durum da kısa ve uzun vadede ciddi klinik tablolar doğurabilmektedir. Akut komplikasyonlar arasında DKA ve şiddetli hipoglisemi öne çıkarken, uzun vadeli mikro ve makrovasküler komplikasyonlar --- retinopati, nefropati, nöropati ve kardiyovasküler hastalık --- yetersiz glisemik kontrolün kaçınılmaz sonuçları arasında yer almaktadır (ADA, 2024).

Hipoglisemi, T1D yönetiminin en acil tehlikesidir. Hafif hipoglisemi titreme, terleme ve konsantrasyon güçlüğüyle kendini gösterirken, ciddi hipoglisemi bilinç kaybına ve hayatı tehdit eden nörolojik hasara yol açabilmektedir (ADA, 2024). Uyku sırasında meydana gelen nokturnal (gececil) hipoglisemiler, semptomların fark edilememesi nedeniyle ayrı bir klinik risk oluşturmakta ve CGM teknolojisinin bu alanda sağladığı erken uyarı kapasitesi özellikle önem taşımaktadır (Beck ve ark., 2017). Uzun süreli hiperglisemi ise yıllar içinde mikro ve makrovasküler komplikasyonların zeminini hazırlamaktadır. Bu komplikasyonların gelişimi büyük ölçüde glisemik kontrol ile bağlantılıdır; bu nedenle HbA1c izlemi ve hedef glukoz

ISBN: 978-625-90699-4-4

aralığında geçirilen süre (TIR: Time in Range) temel klinik çıktılar olarak kabul görmektedir (ADA, 2024).

T1D'nin yönetim yükü salt fizyolojik değildir; davranışsal boyutu da son derece önemlidir. T1D'li bireyler karbonhidrat sayımı, insülin dozu hesaplama, egzersiz öncesi-sonrası düzeltmeler ve olası hipoglisemiye hazırlık gibi günlük yaşamın her alanına yayılan çok sayıda diyabetle ilişkili kararı kesintisiz olarak vermek durumundadır (Tanenbaum & Commissariat, 2023). Bu yoğunluğun zamanla diyabet tükenmişliğine, tedavi uyumsuzluğuna ve psikolojik distrese zemin hazırladığı bildirilmektedir (Farooqi ve ark., 2022).

Psikososyal Sorunlar

T1D'li bireyler yalnızca bir hastalığı yönetmemektedir; kronik bir belirsizlikle ve süregelen bir kaygıyla yaşamayı öğrenmektedir. Bu durum psikolojik eş tanı prevalansını anlamlı biçimde artırmaktadır. T1D'li bireylerde depresyon prevalansı genel nüfusun yaklaşık iki katıdır; anksiyete bozuklukları da benzer bir tabloya işaret etmektedir (Farooqi ve ark., 2022). Ancak bu rakamların arkasında yalnızca klinik tanılar değil, hastalığın her gün yeniden yaşanan kendine özgü bir yükü --- diyabet distresi, hipoglisemi korkusu ve diyabet tükenmişliği--- de bulunmaktadır (Hendrieckx ve ark., 2020).

Diyabetle ilişkili sıkıntı (diabetes distress), bu yükün en kapsamlı tanımıdır. Hipoglisemi korkusu, komplikasyon endişesi, tedavinin gerektirdiği süregelen dikkat ve sosyal ortamlarda diyabeti yönetmenin yarattığı baskı; bunların tümü diyabetle ilişkili sıkıntının bileşenlerini oluşturmaktadır (Hendrieckx ve ark., 2020). Bu sıkıntı hem tedavi uyumunu olumsuz etkilemekte hem de yaşam kalitesini düşürmektedir. Damgalanma ise ayrı bir yük kaynağı olarak öne çıkmaktadır. Eitel ve arkadaşlarının (2023) 1608 kişilik SEARCH kohort çalışması, diyabet stigmasının yüksek HbA1c ve akut ile kronik komplikasyonlarla doğrudan ilişkili olduğunu ve kadınlarda daha yaygın seyrettiğini ortaya koymuştur. T1D'li bireylerin kendi hastalıklarının yaşam tarzıyla ilişkili olmadığını sosyal ortamlarda açıklamak zorunda hissetmeleri, bu stigmanın en tanıdık yansımasıdır (Eitel ve ark., 2023).

Beden imajı da, özellikle diyabet teknolojilerinin yaygınlaşmasıyla birlikte, giderek daha fazla dikkat çeken psikososyal bir boyut haline gelmiştir. Sensörün kolda ya da karnında görünür biçimde taşınması ve pompa infüzyon setinin sosyal ortamlarda fark edilmesi; özellikle gençlerde akran baskısına ve sosyal ortamlardan çekilme eğilimine neden olabilmektedir (Messer et al., 2018). Cihazı bedeninin doğal bir uzantısı olarak benimseyen bireyler ile onu dışsal bir yük olarak deneyimleyenler arasındaki bu ayrışma, teknoloji uyumunu belirleyen kritik bir psikososyal değişkendir (Tanenbaum & Commissariat, 2023).

DİYABET TEKNOLOJİLERİ

Sürekli Glukoz Monitörizasyonu (CGM)

Sürekli glukoz monitörizasyonu (CGM), deri altına yerleştirilen bir sensör aracılığıyla interstisyel sıvıdaki glukoz konsantrasyonunu gerçek zamanlı olarak ölçen ve veriyi kablosuz bağlantıyla kullanıcıya ileten bir teknolojidir (ADA, 2024). Geleneksel parmak ucu

ISBN: 978-625-90699-4-4

ölçümünden temel farkı, yalnızca anlık bir değer sunmak yerine glukozun mevcut düzeyini, değişim hızını ve yönelimini --- yani trendi --- görünür kılmasıdır. Bu özellik T1D yönetiminde öngörülü karar almanın zeminini oluşturmakta ve hemşirelik eğitiminde CGM verisinin doğru yorumlanmasını önemli bir beceri haline getirmektedir.

CGM cihazları glukoz oksidaz enzimatik reaksiyonuna dayanmakta; modern sistemler 7--15 günlük sensör ömrü ve fabrika kalibrasyonu sunmaktadır (ADA, 2024). Mevcut platformlar sensör ömrü, alarm özelleştirme kapasitesi, uzaktan veri paylaşım olanakları ve entegrasyon özellikleri bakımından birbirinden farklılaşmaktadır (Wilmot, 2024).

Klinik kanıtlar CGM'nin etkinliğini güçlü biçimde desteklemektedir. DIAMOND randomize klinik çalışması, CGM kullanımının HbA1c düzeyini kontrol grubuna kıyasla ortalama 0,6 puan daha fazla düşürdüğünü ve hedef glukoz aralığında geçirilen süreyi günlük yaklaşık 77 dakika artırdığını ortaya koymuştur (Beck ve ark., 2017). CGM veri paylaşımı kullanan T1D'li yetişkinlerin %89,4'ü hipoglisemi güveninin arttığını bildirirken (Polonsky & Fortmann, 2021), retrospektif CGM verilerini düzenli olarak inceleyen hastaların %75,9'u öz yönetim davranışlarında anlamlı iyileşme tanımlamıştır (Polonsky ve ark., 2022).

CGM'nin hemşirelik pratiğindeki yansımaları birkaç boyutta kendini göstermektedir. Teknik boyutta; sensörün doğru bölgeye yerleştirilmesi, kalibrasyon gerektiren sistemlerde ölçüm zamanlaması ve sensör aktivasyon sürecinin yönetimi eğitim kapsamına alınmalıdır (ADA, 2024). Veri yorumlama boyutunda; TIR, hipoglisemi yüzdesi ve glukoz değişkenliği gibi verileri okumanın hastalara öğretilmesi, bu verilerin sadece anlamsız rakamlar olarak görülmesini değil günlük yaşam değerleri ile ilişkilendirilmesini saplamaktadır ve öz yönetim kapasitesini doğrudan güçlendirmektedir (Beck ve ark., 2017). Psikolojik boyutta ise alarm yorgunluğu, cihaza güven sorunu ve beden imajına ilişkin kaygılar CGM başlangıcından itibaren sistematik değerlendirme gündemine alınmalıdır (Frei ve ark., 2025; Tanenbaum & Commissariat, 2023).

İnsülin Pompaları (CSII)

Sürekli subkutanöz insülin infüzyonu (CSII), yani insülin pompası; programlanabilir bazal dozlar ve hasta tarafından tetiklenen bolus dozları aracılığıyla pankreasın fizyolojik insülin salgı ritmine yaklaşmayı hedefleyen bir sistemdir (Dovc & Battelino, 2020). Çoklu günlük enjeksiyon (MDI) tedavisinden temel farkı; insülin iletiminin kesintisiz ve kişiselleştirilebilir olmasıdır. Günlük aktivite düzeyine, öğün içeriğine ya da akut hastalık gibi durumlara göre bazal hız anlık olarak ayarlanabilmekte; bu esneklik MDI ile sağlanamamaktadır. CSII kullanımının MDI'ya kıyasla daha düşük HbA1c düzeyleri, azalmış ciddi hipoglisemi sıklığı ve artmış yaşam kalitesiyle ilişkili olduğu çok sayıda çalışmayla desteklenmektedir (Jendle ve ark., 2023).

Çocukluk ve ergenlik döneminde pompa kullanımının HbA1c üzerindeki etkisi özellikle belirginleşmekte; sabah hiperglisemisi (şafak fenomeni) gibi MDI ile yönetilmesi güç durumların pompada programlanabilir bazal oranlarla daha etkin biçimde kontrol edilebildiği bildirilmektedir (Dovc & Battelino, 2020). Bu klinik avantajların yanı sıra pompanın günlük

ISBN: 978-625-90699-4-4

yaşama entegrasyonu --- spor, seyahat ve hastalık gibi değişken koşullarda esneklik sağlaması --- tedavi uyumunu ve yaşam kalitesini destekleyen önemli bir etken olarak öne çıkmaktadır.
Pompa teknolojisinin etkin kullanımı pratik boyutların dikkatli yönetimini gerektirmektedir. İnfüzyon seti 2--3 günde bir değiştirilmeli; her değişimde bölge rotasyonu uygulanmalı ve lipohipertrofi ile lokal cilt reaksiyonları sistematik biçimde izlenmelidir (ADA, 2024). Kateter tıkanıklığı gibi mekanik sorunlar hipergliseminin sık görülen ancak gözden kaçabilen bir nedenidir. Egzersiz, yüzme ve seyahat gibi özel durumlar için bireyselleştirilmiş protokollerin bakım planına entegre edilmesi, teknoloji uyumunu ve hasta güvenliğini doğrudan etkileyen hemşirelik sorumluluklarından birini oluşturmaktadır (Tanenbaum & Commissariat, 2023).
Pompanın CGM ile entegrasyonu sensör destekli pompa sistemlerini (SAP) oluşturmaktadır. Bu sistemlerde pompa CGM verisini okuyarak düşük glukoz eşiğinde insülin iletimini otomatik olarak askıya almakta; bu özellik düşük glukoz askıya alma [Low Glucose Suspend (LGS)] işlevi olarak tanımlanmaktadır (Dovc & Battelino, 2020). SAP sistemleri kapalı döngü teknolojisine geçişin ilk ve en temel basamağını temsil etmekte; glukoz izlemi ile insülin iletimini bütünleşik bir yapıya taşıyarak tam otomasyona zemin hazırlamaktadır (Templer, 2022).

Kapalı Döngü Sistemleri

Kapalı döngü sistemleri (CLS), CGM'den gelen anlık glukoz verilerini bir kontrol algoritması aracılığıyla birleştirerek insülin pompasına otomatik doz komutları gönderen birleşik sistemlerdir (Templer, 2022). Yapay pankreas olarak da adlandırılan bu teknolojinin gelişimini üç evreye ayırabiliriz. Birinci nesil sistemler yalnızca hipoglisemide insülin iletimini askıya almaktadır. İkinci nesil hibrit kapalı döngü sistemleri, günümüzde klinik uygulamada yaygın olarak kullanılan sistemlerdir. Bu sistemler, glukoz düzeyine göre insülin iletimini otomatik olarak artırıp azaltabilse de öğünlerden önce kullanıcının sisteme müdahale etmesini gerektirir. Üçüncü nesil tam kapalı döngü sistemleri ise kullanıcı müdahalesini mümkün olduğunca azaltmayı ve insülin iletimini tamamen otomatik hale getirmeyi amaçlamaktadır. Bu sistemler halen klinik araştırma aşamasında değerlendirilmektedir (Jendle ve ark., 2023). Hibrit kapalı döngü sistemlerinin TIR'ı anlamlı biçimde artırdığı, nokturnal hipoglisemi riskini azalttığı ve yaşam kalitesini iyileştirdiği çok sayıda çalışmayla desteklenmektedir (Jendle ve ark., 2023).
Rankin ve arkadaşlarının (2022) çalışması, hibrit kapalı döngü kullanan hasta ve ebeveynlerin sistemin gece boyunca otomatik çalışması sayesinde uyku kalitelerinin belirgin biçimde iyileştiğini söylediğini aktarmaktadır. Kronik uyku bozukluğunun diyabet distresi ve gündüz işlevselliği üzerindeki olumsuz etkileri göz önünde bulundurulduğunda, bu kazanımın yalnızca konfor değil klinik anlam da taşıdığı görülmektedir (Frei ve ark., 2025).
Kapalı döngü sistemleri kullanıcının aktif katılımını halen gerektirmektedir. Öğün öncesi bolus yönetimi, sensör bakımı ve infüzyon seti değişimi gibi sorumluluklarda birey belirleyici bir rol üstlenmeye devam etmektedir (Templer, 2022). Hastanın kontrol ihtiyacı ve teknolojiye güven düzeyi başlangıçtan önce değerlendirilmeli; yüksek kontrol ihtiyacı olan bireylerde önce sadece gece modunun etkinleştirilmesi ve tam kapalı döngüye kademeli geçişin sağlanması, psikolojik uyumu kolaylaştıran bir yaklaşım olarak değerlendirilebilir (Rankin ve ark., 2022).

ISBN: 978-625-90699-4-4

Dijital Uygulamalar

Akıllı insülin kalemleri ve dijital sağlık uygulamaları, T1D yönetiminde giderek daha fazla kullanılan araçlar haline gelmiştir. Bu kalemler, yapılan her enjeksiyonun zamanını ve dozunu otomatik olarak kaydederek verileri akıllı telefon uygulamalarına aktarmaktadır. Böylece doz atlama ya da zamanlama hataları daha kolay fark edilebilmekte, aynı zamanda klinik değerlendirme için daha somut veri elde edilmektedir (Kompala & Neinstein, 2022). MDI tedavisini sürdüren bireylerde bu teknoloji, insülin pompası kullanılmaksızın veri odaklı karar alma süreçlerini desteklemekte; hemşirenin takip görüşmelerinde daha nesnel geri bildirim sunabilmesine katkı sağlamaktadır.

Dijital sağlık uygulamaları; glukoz günlüğü tutma, karbonhidrat sayımı, egzersiz takibi ve ilaç hatırlatıcısı gibi temel işlevlerin yanında, bazı platformlarda makine öğrenmesine dayalı kişiselleştirilmiş glukoz trend tahminleri de sunmaktadır (Klonoff ve ark., 2023). Bu araçlar, hemşirelik pratiğinde hastaların öz yönetim davranışlarının gerçek zamanlı izlenebilmesine ve daha bireyselleştirilmiş geri bildirim sağlanmasına katkı sunmaktadır. Bununla birlikte, klinik olarak yeterince doğrulanmamış uygulamaların yaygın biçimde kullanılması, hemşirenin dijital sağlık okuryazarlığı konusunda rehberlik rolünü daha görünür hale getirmektedir (Kompala & Neinstein, 2022).

Dijital uygulama ekosistemi, hızlı büyüyen ve yeterince denetlenmeyen bir alan olarak dikkat çekmektedir. Klinik doğrulaması yapılmamış ya da yanlış yönlendirici öneriler içeren uygulamaların yaygın kullanımı, hasta güvenliği açısından önemli riskler oluşturabilmektedir (Klonoff ve ark., 2023). Bu noktada hemşirenin rolü yalnızca uygulama önermekle sınırlı değildir; hastanın teknoloji okuryazarlığı ve dijital kullanım alışkanlıkları değerlendirilerek uygun platformun birlikte belirlenmesi gerekmektedir (Kompala & Neinstein, 2022).

Özellikle ileri yaşlı bireylerde ve dijital deneyimi sınırlı hastalarda yüz yüze yürütülen aşamalı oryantasyon programlarının teknolojiye uyumu desteklediği bildirilmektedir. Ayrıca veri miktarındaki artışın her zaman daha iyi karar vermeyi sağlamadığı göz önünde bulundurulduğunda, hemşirenin hasta ile birlikte öncelikli izlem ölçütlerini belirlemesi ve dijital takip yoğunluğunu bireysel kapasiteye göre düzenlemesi, veri yorgunluğunu önlemede önemli bir hemşirelik müdahalesi olarak öne çıkmaktadır (Tanenbaum & Commissariat, 2023).

DİYABET TEKNOLOJİLERİNİN PSİKOLOJİK ETKİLERİ

Bağımlılık

Diyabet teknolojilerine aşırı bağımlılık, bireyin cihaz desteği olmadan kan şekeri yönetimini sürdürebileceğine dair güvenini giderek kaybetmesi ve teknolojiyi vazgeçilmez bir güvence olarak görmesiyle ortaya çıkmaktadır. Başlangıçta işlevsel ve destekleyici bir güven ilişkisi gibi değerlendirilebilen bu durum, zaman içinde bireyin öz yönetim becerilerini zayıflatabilmekte ve teknolojiye erişimin kesintiye uğraması halinde belirgin bir kaygı kaynağına dönüşebilmektedir (Tanenbaum & Commissariat, 2023).

CGM bağımlılığı, diyabet teknolojilerine bağlılığın en sık bildirilen biçimlerinden biridir. Sürekli glukoz verisine erişim sağlayan bireyler, zaman içinde parmak ucu ölçümüne dayalı

ISBN: 978-625-90699-4-4

karar vermekte zorlandıklarını ve sensörün geçici olarak devre dışı kaldığı durumlarda yoğun kaygı yaşadıklarını ifade etmektedir (Tanenbaum & Commissariat, 2023). Bu durum; beslenme kararlarının, fiziksel aktivitenin ve hatta uyku düzeninin CGM verisine büyük ölçüde bağımlı hale gelmesiyle kendini gösterebilmekte, bireyin bağımsız öz yönetim kapasitesini zamanla zayıflatabilmektedir. Kapalı döngü sistemlerinde ise bağımlılık farklı bir boyut kazanmaktadır. Sistemin tüm kararları otomatik olarak yöneteceğine ilişkin beklenti, bazı hastalarda öz yönetim sorumluluğunun geri planda kalmasına ve aktif müdahale gerektiren durumlarda hazırlıksız kalınmasına yol açabilmektedir (Rankin ve ark., 2022).

Teknoloji bağımlılığının klinik önemi yalnızca psikolojik etkilerle sınırlı değildir; cihaz arızası, sensör kaybı ya da teknik sorunlar gibi kaçınılmaz durumlarda hastanın nasıl tepki vereceğini de doğrudan etkilemektedir (Tanenbaum & Commissariat, 2023). Bu nedenle hemşirenin, sürecin başlangıcından itibaren bu riski değerlendirmesi ve hastayı teknolojiden bağımsız öz yönetim becerileri açısından desteklemesi bakım planının önemli bir parçasını oluşturmaktadır. Bu kapsamda önerilen yaklaşımlar arasında düzenli manuel glukoz ölçümü pratiğinin sürdürülmesi, MDI ile baş etme becerilerinin belirli aralıklarla pekiştirilmesi ve cihaz arızalarına yönelik önceden yapılandırılmış acil durum planlarının hazırlanması yer almaktadır (ADA, 2024). Bu müdahaleler, bireyin teknolojiye erişimin kesintiye uğradığı durumlarda da güvenli ve daha özerk bir öz yönetim sürdürebilmesine katkı sağlamaktadır.

Damgalanma

Diyabet teknolojileri, hastalıkla ilişkili damgalanmayı hem azaltabilen hem de bazı durumlarda daha görünür hale getirebilen araçlar olarak değerlendirilmektedir. Bir yandan glisemik kontrolün iyileşmesi ve komplikasyon riskinin azalmasıyla birlikte bireyin özgüveni artabilmekte, bu durum hastalığını gizleme eğiliminin azalmasına katkı sağlayabilmektedir (Eitel ve ark., 2023). Diğer yandan ise vücutta görünür şekilde taşınan cihazlar, bireyin farklılığının sosyal ortamlarda daha belirgin hale gelmesine neden olabilmekte ve damgalanma kaygısını farklı bir düzleme taşıyabilmektedir (Messer et al., 2018).

Eitel ve arkadaşlarının (2023) yürüttüğü SEARCH kohort çalışması, diyabet stigmasının yüksek HbA1c düzeyleri ve akut komplikasyonlarla doğrudan ilişkili olduğunu, bu ilişkinin ise kadınlarda daha belirgin seyrettiğini göstermiştir. T1D'ye özgü dikkat çekici bir paradoks da bulunmaktadır. Hastalık yaşam tarzı seçimleriyle doğrudan ilişkili olmamasına rağmen, bireyler sosyal ortamlarda sıklıkla T2D ile benzer damgalanma dinamiklerine maruz kalmaktadır. Bu durum, insülin uygulaması ya da CGM kullanımı gibi zorunlu öz yönetim davranışlarının toplum içinde gizlenmesine yol açabilmektedir (Eitel ve ark., 2023). CGM sensörlerinin ve insülin pompalarının görünür olması ise bu süreci daha karmaşık hale getirebilmektedir (Messer et al., 2018). Özellikle adölesan bireylerde akran baskısına bağlı cihaz reddi ve sosyal ortamlarda insülin uygulamasını gizleme davranışı klinik açıdan önemli bir sorun alanı oluşturmaktadır. Bu nedenle hemşirenin, teknoloji kullanımına ilişkin sosyal deneyimleri ve damgalanma algısını rutin değerlendirme sürecine dahil etmesi gerekmektedir (Tanenbaum & Commissariat, 2023).

ISBN: 978-625-90699-4-4

Damgalanma deneyiminin değerlendirilmesi, diyabet teknolojilerinin psikososyal etkilerini anlamada önemli bir yer tutmaktadır. Sosyal ortamlarda insülin uygulaması ya da cihaz kullanımına ilişkin deneyimlerin doğrudan ve yargılayıcı olmayan bir yaklaşımla ele alınması, bireylerin yaşadığı damgalanma algısının daha görünür hale gelmesini sağlamaktadır (Eitel ve ark., 2023). Bunun yanında, bireyin cihazı bedeninin doğal bir parçası olarak benimseme sürecinin desteklenmesi de önem taşımaktadır. Giyim tercihleri, cihazın yerleştirileceği bölgenin seçimi ve sosyal ortamlarda kullanılabilecek baş etme stratejileri bu sürecin önemli bileşenleri arasında yer almaktadır (Messer et al., 2018; Tanenbaum & Commissariat, 2023). Ayrıca damgalanmanın yalnızca bireysel değil, aynı zamanda toplumsal bir sorun olduğu göz önünde bulundurulduğunda; okul, işyeri ve sosyal çevre gibi alanlarda farkındalığı artırmaya yönelik eğitim ve bilgilendirme çalışmalarının önemli olduğu vurgulanmaktadır. Bu yaklaşım, bilgi eksikliği ve yanlış inanışlarla beslenen damgalanma döngüsünü daha yapısal düzeyde azaltmayı amaçlamaktadır.

Anksiyete

Anksiyete, T1D'li bireylerde en sık görülen psikolojik eş tanılardan biri olarak kabul edilmekte; diyabet teknolojileri ise bu süreci hem olumlu hem de olumsuz yönde etkileyebilmektedir (Farooqi ve ark., 2022). Özellikle hipoglisemi korkusu, T1D'ye özgü en yaygın anksiyete biçimlerinden biri olarak öne çıkmaktadır. Gece boyunca fark edilmeyen glukoz düşüşleri ya da egzersiz sırasında gelişen ani hipoglisemi deneyimleri, zaman içinde birikimli bir korku yanıtının oluşmasına neden olabilmektedir (Hendrieckx ve ark., 2020). CGM sistemleri bu korku döngüsünü azaltma potansiyeline sahiptir. Hipoglisemi sıklığını azaltmaları ve erken uyarı mekanizmaları sayesinde bireyde güvenlik hissini desteklemeleri, bu teknolojilerin önemli avantajları arasında gösterilmektedir. Bununla birlikte, alarm eşiklerinin uygun biçimde yapılandırılmaması ya da sık uyarı veren sistemlerin kullanılması, kaygının sürekli aktif kalmasına yol açabilmekte; bazı bireylerde hipoglisemi korkusunun azalması yerine daha da belirgin hale gelmesine neden olabilmektedir (Frei ve ark., 2025; Tanenbaum & Commissariat, 2023).

Alarm yorgunluğu, CGM teknolojisinin sık bildirilen psikolojik etkilerinden biri olarak dikkat çekmektedir. Gün içerisinde çok sayıda alarm ile karşılaşan bireyler ve özellikle çocuklarının glukoz verilerini uzaktan takip eden ebeveynler; uyku bozukluğu, sürekli yorgunluk ve artmış anksiyete düzeyleri yaşayabilmektedir (Frei ve ark., 2025). Hastayı korumayı amaçlayan bu teknoloji, alarm eşiklerinin uygun biçimde ayarlanmaması durumunda kaygıyı azaltmak yerine sürekli canlı tutabilmekte ve zamanla alarm susturma davranışına yol açabilmektedir. Alarm bildirimlerinin görmezden gelinmesi ya da tamamen kapatılması ise kritik glukoz değişimlerinin fark edilmemesine neden olarak hasta güvenliği açısından ciddi riskler oluşturabilmektedir (Tanenbaum & Commissariat, 2023). Bu nedenle CGM kullanımında alarm ayarlarının bireyin günlük yaşam düzeni, uyku alışkanlıkları ve kaygı düzeyi dikkate alınarak kişiselleştirilmesi önemli görülmektedir (Hendrieckx ve ark., 2020).

Commissariat ve arkadaşlarının (2020) çalışması, adölesanların ebeveynlerin CGM verilerini uzaktan izlemesini bazı durumlarda yararlı bulduklarını; ancak aynı zamanda kendilerini

ISBN: 978-625-90699-4-4

sürekli gözetim altında hissettiklerini bildirdiklerini göstermektedir. Gözetim ile özerklik arasındaki bu gerilim uygun biçimde yönetilmediğinde, cihaz kullanımından kaçınma davranışına dönüşebilmektedir. Bu durum, anksiyetenin teknolojiye uyumu nasıl olumsuz etkileyebildiğine ilişkin dikkat çekici bir örnek oluşturmaktadır. Özellikle ebeveyn ve adölesan arasındaki veri paylaşım sınırlarının belirsiz olması, çatışma ve kontrol algısını artırabilmektedir. Bu nedenle veri paylaşımının kapsamı, koşulları ve bireysel sınırlar konusunda açık iletişim kurulmasının, teknolojiye uyumu destekleyen önemli yaklaşımlardan biri olduğu vurgulanmaktadır (Rankin ve ark., 2022).

Psikolojik ölçüm araçları, diyabet teknolojilerinin birey üzerindeki duygusal etkilerinin daha sistematik biçimde değerlendirilmesine olanak sağlamaktadır. Diyabete Özgü Sorun Alanları Ölçeği (PAID), Diyabet Distres Ölçeği (DDS) ve Hipoglisemi Korku Ölçeği-II (HFS-II), bu amaçla yaygın olarak kullanılan ve geçerliliği gösterilmiş araçlar arasında yer almaktadır. Amerikan Diyabet Derneği (ADA), bu ölçeklerin rutin klinik değerlendirme sürecine entegre edilmesini önermektedir (ADA, 2024). Özellikle yeni bir teknoloji kullanımına başlanmadan önce ve kullanım sürecinin erken dönemlerinde yapılan psikolojik taramalar, olası sorunların erken fark edilmesi açısından önemli bir değerlendirme alanı oluşturmaktadır. DDS skorunun belirlenen eşik değerlerin üzerine çıkması ya da HFS-II'de yüksek kaçınma puanlarının saptanması durumunda ise psikolojik destek ve klinik psikolog değerlendirmesi önerilmektedir (ADA, 2024).

DİYABET HEMŞİRELİĞİ VE DİYABET TEKNOLOJİLERİNDEKİ ROLÜ

Teknolojinin Olumsuz Etkilerinde Hemşirenin Rolü

Diyabet teknolojilerinin bağımlılık, damgalanma ve anksiyete gibi olumsuz psikolojik etkilerinin yönetimi, klinik bakımın önemli ancak çoğu zaman yeterince görünür olmayan boyutlarından birini oluşturmaktadır (Tanenbaum & Commissariat, 2023). Bu sorunların büyük kısmı rutin kontroller sırasında kendiliğinden ifade edilmemekte; bireyler çoğu zaman yaşadıkları psikolojik güçlükleri doğrudan paylaşmamaktadır (Hendrieckx ve ark., 2020). Bu nedenle psikososyal etkilerin sistematik biçimde değerlendirilmesi, teknoloji temelli bakım süreçlerinin önemli bir parçası olarak görülmektedir. Teknik izlemin yanında bireyin teknolojiyle kurduğu duygusal ilişkinin, kaygı düzeyinin ve sosyal deneyimlerinin de değerlendirilmesi, olası sorunların erken fark edilmesine katkı sağlamaktadır.

Bağımlılık açısından teknoloji kullanımının değerlendirilmesi, bireyin cihazla kurduğu ilişkinin yalnızca teknik değil psikolojik boyutunun da izlenmesini gerektirmektedir. Özellikle sensörün geçici olarak devre dışı kaldığı ya da cihaz arızasının yaşandığı durumlarda bireyin verdiği duygusal ve davranışsal tepkiler, teknolojiye aşırı bağımlılık gelişip gelişmediğine ilişkin önemli ipuçları sunabilmektedir (Tanenbaum & Commissariat, 2023). Bu nedenle bireyin teknolojisiz durumda kendini ne ölçüde güvende hissettiğinin ve manuel yönetim becerilerine olan güveninin değerlendirilmesi önem taşımaktadır.

Bu süreçte manuel glukoz ölçümü pratiğinin sürdürülmesi, çoklu doz insülin (MDI) uygulamalarına ilişkin temel becerilerin belirli aralıklarla yeniden gözden geçirilmesi ve olası

cihaz arızalarına yönelik önceden planlanmış yedek yönetim senaryolarının oluşturulması önerilmektedir. Amerikan Diyabet Derneği'nin 2024 kılavuzunda da teknoloji kullanımında olası cihaz başarısızlıklarına karşı "backup plan" oluşturulmasının gerekli olduğu vurgulanmaktadır. Amaç teknolojiyi dışlamak değil; bireyin teknolojiyi destekleyici bir araç olarak kullanırken aynı zamanda bağımsız öz yönetim kapasitesini sürdürebilmesini sağlamaktır (Tanenbaum & Commissariat, 2023).

Damgalanma deneyiminin değerlendirilmesi, diyabet teknolojilerinin birey üzerindeki psikososyal etkilerini anlamada önemli bir yer tutmaktadır. Özellikle insülin uygulaması ya da cihaz kullanımının sosyal ortamlarda yarattığı güçlüklerin doğrudan, açık ve yargılayıcı olmayan bir yaklaşımla ele alınması; bireyin yaşadığı damgalanma algısının görünür hale gelmesine katkı sağlamaktadır (Eitel ve ark., 2023). Sosyal ortamlarda cihazı gizleme eğilimi, insülin uygulamasını erteleme ya da teknoloji kullanımından kaçınma gibi davranışlar, bu sürecin dikkat çeken yansımaları arasında yer almaktadır.

Damgalanma deneyimi belirgin olduğunda; giyim tercihleri, sensör veya pompa yerleşim bölgesinin bireyin konforuna göre planlanması ve sosyal durumlarda kullanılabilecek baş etme stratejilerinin değerlendirilmesi yararlı olabilmektedir (Messer et al., 2018). Bunun yanında okul, işyeri ya da yakın sosyal çevre gibi alanlarda farkındalığı artırmaya yönelik destekleyici iletişim süreçlerinin önemli olduğu belirtilmektedir. Çünkü diyabetle ilişkili damgalanma çoğu zaman yalnızca bireysel deneyimlerden değil, toplumdaki bilgi eksikliği ve yanlış inanışlardan da beslenmektedir (Eitel ve ark., 2023).

Anksiyete açısından değerlendirme ve müdahale süreçleri, diyabet teknolojilerinin psikolojik etkilerini yönetmede önemli bir yer tutmaktadır. Diyabete Özgü Sorun Alanları Ölçeği (PAID), Diyabet Distres Ölçeği (DDS) ve Hipoglisemi Korku Ölçeği-II (HFS-II), anksiyetenin ve diyabete bağlı psikolojik yükün sistematik biçimde izlenmesinde kullanılabilen doğrulanmış araçlar arasında yer almaktadır (ADA, 2024). Özellikle alarm yorgunluğu gelişen bireylerde alarm eşiklerinin kişinin günlük yaşam düzeni, uyku alışkanlıkları ve klinik hedefleri doğrultusunda bireyselleştirilmesi önerilmektedir. Bu yaklaşımın, alarm--anksiyete--alarm susturma döngüsünü azaltmada etkili olduğu belirtilmektedir (Frei ve ark., 2025). Bunun yanında DDS ya da HFS-II skorlarının klinik eşik değerlerin üzerine çıkması durumunda psikolojik destek gereksiniminin değerlendirilmesi ve gerekli durumlarda klinik psikolog yönlendirmesinin geciktirilmeden yapılması önerilmektedir (ADA, 2024).

Teknolojinin Olumlu Etkilerinde Hasta Farkındalığını Artırma

Diyabet teknolojilerinden beklenen yararın sağlanabilmesi, bireyin bu sistemleri bilinçli, güvenli ve gerçekçi beklentilerle kullanabilmesine bağlıdır (Tanenbaum & Commissariat, 2023). Teknolojinin çalışma mantığını yeterince anlamayan bireyler, beklenmedik glukoz dalgalanmaları ya da sistem hatalarıyla karşılaştıklarında hayal kırıklığı yaşayabilmekte ve cihaza duydukları güveni hızla kaybedebilmektedir. Bu durum, teknoloji kullanımının bırakılması ya da düzensiz hale gelmesiyle sonuçlanabilmektedir. Bu nedenle teknolojinin yalnızca avantajlarının değil, sınırlılıklarının ve hata paylarının da açık biçimde anlaşılması

ISBN: 978-625-90699-4-4

önem taşımaktadır. Gerçekçi teknoloji beklentilerinin geliştirilmesi, bireyin teknolojiyle daha sürdürülebilir ve dengeli bir ilişki kurmasına katkı sağlamaktadır.

CGM'nin sağladığı gerçek zamanlı glukoz verisi, bireyin kendi fizyolojik yanıtlarını daha yakından izlemesine ve glukoz değişimlerini daha erken fark etmesine olanak tanımaktadır. Ancak bu teknolojinin sunduğu potansiyelin etkili biçimde kullanılabilmesi için yalnızca glukoz değerlerinin görülmesi yeterli değildir; trend yönünün, değişim hızının ve öğün, egzersiz ya da stres gibi bağlamsal etkenlerin birlikte yorumlanabilmesi gerekmektedir. Bu nedenle glukoz verisini okumak ile klinik bağlam içinde anlamlandırmak arasındaki farkın anlaşılması önem taşımaktadır. Gerçek zamanlı veri paylaşımı kullanan T1D'li yetişkinlerin %89,4'ünün hipoglisemi açısından kendilerini daha güvende hissettiklerini bildirmesi, uygun eğitim ve doğru kullanım ile CGM teknolojisinin güçlü bir öz yönetim aracına dönüşebildiğini göstermektedir (Polonsky & Fortmann, 2021).

Kapalı döngü sistemlerinde farkındalık ve beklenti yönetimi daha da önemli hale gelmektedir. Sistemin gece boyunca otomatik çalışabilmesi, hem T1D'li bireylerde hem de özellikle ebeveynlerde uyku kalitesinin belirgin biçimde iyileşmesine katkı sağlayabilmektedir (Rankin ve ark., 2022). Bununla birlikte, bu olumlu deneyimin sürdürülebilmesi için bireyin sistemin yalnızca ne yaptığını değil, hangi sınırlılıklara sahip olduğunu da anlaması gerekmektedir. Kapalı döngü sistemlerinin hastalığı ortadan kaldırmadığı, yalnızca diyabet yönetimini desteklediği ve kullanıcının aktif katılımının hâlâ belirleyici olduğu gerçeğinin teknoloji kullanımının başlangıcında açık biçimde anlaşılması önem taşımaktadır (Tanenbaum & Commissariat, 2023). Gerçekçi beklentilerin oluşturulması, teknolojiye yönelik güvenin korunmasına ve uzun dönem kullanım uyumunun desteklenmesine katkı sağlamaktadır. Bu nedenle teknolojiye ilişkin bilgilendirmenin yalnızca başlangıç eğitimiyle sınırlı kalmaması, izlem sürecinde düzenli olarak yeniden ele alınması önerilmektedir (Templer, 2022).

Dijital uygulamalar söz konusu olduğunda farkındalık eğitiminin odağı daha çok veri yönetimi ve yorumlama becerileri üzerine yoğunlaşmaktadır. Bu süreçte önemli olan yalnızca hangi uygulamanın kullanıldığı değil, hangi verinin gerçekten anlamlı ve öncelikli olduğunun anlaşılabilmesidir. Çünkü veri miktarındaki artış her zaman daha doğru karar verme ile sonuçlanmamakta; aksine bazı bireylerde bilgi yükü ve veri yorgunluğu gelişmesine neden olabilmektedir (Tanenbaum & Commissariat, 2023). Bu nedenle dijital sağlık verilerinin seçici ve amaç odaklı biçimde izlenmesi önem taşımaktadır. Teknoloji kullanımına ilişkin rehberliğin planlanmasında bireyin teknoloji okuryazarlığı, dijital alışkanlıkları ve günlük yaşam düzeninin dikkate alınması, daha sürdürülebilir ve işlevsel bir kullanım deneyimini desteklemektedir (Kompala & Neinstein, 2022).

SONUÇ VE ÖNERİLER

Bu çalışma dört temel önerme üzerine yapılandırılmıştır.

Birinci önerme, diyabet teknolojilerinin metabolik kontrolü iyileştirme potansiyeline sahip olmasına rağmen psikolojik sonuçlarının her zaman öngörülebilir olmadığıdır. Aynı CGM sistemi bir bireyde hipoglisemiye ilişkin güven duygusunu artırabilirken, başka bir bireyde

alarm yorgunluğu, sürekli kaygı ya da teknoloji bağımlılığına yol açabilmektedir (Tanenbaum & Commissariat, 2023). Bu nedenle teknoloji kullanımının psikolojik iyilik hâlini otomatik olarak desteklediği varsayımı her durumda geçerli değildir. Teknolojinin olumlu psikolojik etkiler oluşturabilmesi, bireyin ihtiyaçlarını ve kırılganlıklarını dikkate alan bireyselleştirilmiş psikososyal değerlendirme ve destek süreçleriyle birlikte ele alındığında klinik anlam kazanmaktadır (Frei ve ark., 2025).

İkinci önerme, bağımlılık, damgalanma ve anksiyetenin diyabet teknolojilerinin klinik kullanımında en sık gözden kaçan psikolojik boyutlar arasında yer aldığıdır. Bu etkiler çoğu zaman teknik başarı göstergelerinin gölgesinde kalmakta; glisemik kontrol iyileşse bile bireyin teknolojiyle kurduğu psikolojik ilişki yeterince değerlendirilememektedir. Oysa bağımlılık gelişimi, damgalanma deneyimi ve teknolojiye bağlı kaygı düzeyinin rutin değerlendirme sürecine dahil edilmesi, diyabet bakımının yalnızca teknik izlemlerden ibaret kalmamasını sağlamaktadır. Bu yaklaşım, bakım sürecini bireyin psikososyal deneyimini de kapsayan daha bütüncül bir yapıya dönüştürmektedir (Tanenbaum & Commissariat, 2023; Eitel ve ark., 2023).

Üçüncü önerme, Türkiye'de diyabet teknolojilerinin psikolojik etkilerine ilişkin güçlü ulusal verilerin hâlen sınırlı olmasıdır. Aralık 2024 itibarıyla SGK'nın 18 yaş altı T1D'li bireylerde CGM sensörlerini kısmi geri ödeme kapsamına alması, bu teknolojiyle ilk kez karşılaşan hasta ve aile sayısında önemli bir artışa neden olmaktadır (SGK, 2024). Bu geçiş süreci, alarm yorgunluğu, teknoloji bağımlılığı ve beden imajı kaygısı gibi psikolojik etkilerin daha geniş bir popülasyonda daha görünür hale gelmesine zemin hazırlamaktadır. Ancak bu dönüşümün psikolojik boyutlarını sistematik biçimde inceleyen ulusal araştırmaların sınırlı olması, klinik uygulamaların çoğu zaman yeterli kanıt temeline dayanmadan yürütülmesine neden olmaktadır. Bu nedenle Türkiye'de diyabet teknolojilerinin psikososyal etkilerini değerlendiren ve bakım süreçlerine rehberlik edebilecek yerel verilere dayalı çalışmalara ihtiyaç duyulmaktadır (Türk Diyabet Cemiyeti, 2023).

Dördüncü önerme, diyabet bakımında kaliteyi belirleyen temel unsurun yalnızca teknolojiye erişim olmadığı; bu teknolojinin bireyselleştirilmiş psikososyal destekle birlikte sürdürülebilmesi olduğudur. İleri düzey bir kapalı döngü sistemine erişimi bulunan bir birey, beraberinde gelişen bağımlılık riski, damgalanma kaygısı ya da anksiyete döngüsüyle yeterli destek olmadan baş etmeye çalışıyorsa, metabolik göstergelerde iyileşme sağlansa bile bütüncül iyilik hâline tam anlamıyla ulaşamayabilmektedir (Tanenbaum & Commissariat, 2023). Bu nedenle teknoloji temelli diyabet bakımının yalnızca cihaz yönetimiyle sınırlı kalmaması; bireyin psikolojik uyumu, günlük yaşam deneyimi ve öz yönetim kapasitesiyle birlikte ele alınması gerekmektedir. Bu sürecin sürekliliğini sağlamak ve ortaya çıkan psikososyal güçlükleri erken dönemde fark edebilmek, diyabet izlemini yürüten sağlık profesyonelleri açısından önemli bir sorumluluk alanı oluşturmaktadır (ADA, 2024).

Bu bulgular doğrultusunda birkaç temel araştırma önceliği öne çıkmaktadır. Öncelikle, SGK'nın CGM geri ödemesini kapsama almasından sonra teknolojiye ilk kez erişen bireylerde bağımlılık, damgalanma ve anksiyete gibi psikolojik boyutları inceleyen ulusal ölçekli prospektif kohort çalışmalarına ihtiyaç bulunmaktadır. Bu tür araştırmaların, hem klinik

ISBN: 978-625-90699-4-4

uygulamaların şekillendirilmesine hem de sağlık politikalarının geliştirilmesine doğrudan katkı sağlayabileceği düşünülmektedir (SGK, 2024; Türk Diyabet Cemiyeti, 2023). Bunun yanında, Türk kültürel bağlamında diyabetle ilişkili damgalanma dinamiklerini inceleyen niteliksel çalışmalar da önem taşımaktadır. Mevcut literatürün büyük ölçüde Batı toplumlarına dayalı olması, elde edilen bulguların yerel sosyal ve kültürel koşullara uyarlanmasını güçleştirebilmektedir (Eitel ve ark., 2023). Ayrıca teknoloji kullanımına uyumu desteklemeye yönelik hemşire liderliğindeki programların psikolojik sonuçlar üzerindeki etkisini değerlendiren müdahale çalışmalarının artırılması gerektiği düşünülmektedir. Bu çalışmalar, hemşirelik uygulamalarının teknoloji temelli diyabet bakımındaki özgün katkısını daha görünür hale getirebilir (Tanenbaum & Commissariat, 2023).

KAYNAKÇA

(Türk Diyabet Cemiyeti, 2023). *Türkiye diyabet raporu 2023*. https://www.turkdiabetes.org

Abela, A. G., & Fava, S. (2021). Why is the incidence of type 1 diabetes increasing? *Current Diabetes Reviews, 17*(8), e030521193110. https://doi.org/10.2174/1573399817666210503133747

American Diabetes Association. (2024). Standards of care in diabetes---2024. *Diabetes Care, 47*(Suppl. 1), S1--S321. https://doi.org/10.2337/dc24-SINT

Atkinson, M. A., & Mirmira, R. G. (2023). The pathogenic "symphony" in type 1 diabetes: A disorder of the immune system, β cells, and exocrine pancreas. *Cell Metabolism, 35*(9), 1500--1518. https://doi.org/10.1016/j.cmet.2023.06.018

Beck, R. W., Riddlesworth, T., Ruedy, K., Ahmann, A., Bergenstal, R., Haller, S., Kollman, C., Kruger, D., McGill, J. B., Polonsky, W., Toschi, E., Wolpert, H., & Price, D.; DIAMOND Study Group. (2017). Effect of continuous glucose monitoring on glycemic control in adults with type 1 diabetes using insulin injections: The DIAMOND randomized clinical trial. *JAMA, 317*(4), 371-378. https://doi.org/10.1001/jama.2016.19975

Commissariat, P. V., Harrington, K. R., Whitehouse, A. L., St. Pierre, D., Leis, A., Boyle, C. T., Ly, T. T., Beck, R. W., Ruedy, K. J., & Laffel, L. M. (2020). "I'm supposed to be in control": Adolescents' perceptions of sharing continuous glucose monitoring data with parents. *Diabetes Technology & Therapeutics, 22*(3), 198--205. https://doi.org/10.1089/dia.2019.0265

Dovc, K., & Battelino, T. (2021). Evolution of diabetes technology. *Endocrinology and Metabolism Clinics of North America, 49*(1), 1--18. https://doi.org/10.1016/j.ecl.2020.11.001

Eitel, K. B., Roberts, A. J., D'Agostino, R., Dabelea, D., Lawrence, J. M., Mayer-Davis, E. J., & Pihoker, C. (2023). Diabetes stigma and clinical outcomes in adolescents and young adults: The SEARCH for Diabetes in Youth Study. *Diabetes Care, 46*(4), 811--818. https://doi.org/10.2337/dc22-1749

Farooqi, A., Gillies, C., Sathanapally, H., Abner, S., Seidu, S., Davies, M. J., Polonsky, W. H., & Khunti, K. (2022). A systematic review and meta-analysis to compare the prevalence

of depression between people with and without Type 1 and Type 2 diabetes. *Primary Care Diabetes, 16*(1), 1-10. https://doi.org/10.1016/j.pcd.2021.11.001

Gregory, G. A., Robinson, T. I. G., Linklater, S. E., Wang, F., Colagiuri, S., & the IDF Diabetes Atlas Type 1 Diabetes in Adults Special Interest Group. (2022). Global incidence, prevalence, and mortality of type 1 diabetes in 2021 with projection to 2040: A modelling study. *The Lancet Diabetes & Endocrinology, 10*(10), 741--760. https://doi.org/10.1016/S2213-8587(22)00218-2

Hagger, V., Hendrieckx, C., Sturt, J., Skinner, T. C., & Speight, J. (2016). Diabetes distress among adolescents with type 1 diabetes: A systematic review. *Current Diabetes Reports, 16*(1), 9. https://doi.org/10.1007/s11892-015-0694-2

Hendrieckx, C., Halliday, J. A., Beeney, L. J., & Speight, J. (2020). *Diabetes and emotional health: A practical guide for healthcare professionals supporting adults with type 1 or type 2 diabetes* (2nd ed.). Diabetes UK / ACBRD. https://acbrd.org.au

International Diabetes Federation. (2025). *IDF Diabetes Atlas (11th ed.)*. https://diabetesatlas.org

Jendle, J., Reznik, Y., et al. (2023). Use of insulin pumps and closed-loop systems among people living with diabetes: A narrative review of clinical and cost-effectiveness to enable access to technology and meet the needs of payers. *Diabetes, Obesity and Metabolism, 25*(Suppl. 2), 21-32. https://doi.org/10.1111/dom.15087

Kandemir, N., Vuralli, D., Ozon, A., Gonc, N., Ardicli, D., Jalilova, L., Gulcek, O. N., & Alikasifoglu, A. (2024). Epidemiology of type 1 diabetes mellitus in children and adolescents: A 50-year, single-center experience. *Pediatric Diabetes, 25*(1), e13562. https://doi.org/10.1111/1753-0407.13562

Klonoff, A. N., Lee, W.-A., Xu, N. Y., Nguyen, K. T., DuBord, A., & Kerr, D. (2023). Six digital health technologies that will transform diabetes. *Journal of Diabetes Science and Technology, 17*(2), 239-249. https://doi.org/10.1177/19322968211043498

Kompala, T., & Neinstein, A. B. (2022). Smart insulin pens: Advancing digital transformation and a connected diabetes care ecosystem. *Journal of Diabetes Science and Technology, 16*(3), 596--604. https://doi.org/10.1177/1932296820984490

Messer, L. H., Johnson, R., Driscoll, K. A., & Jones, J. (2018). Best friend or spy: A qualitative meta-synthesis on the impact of continuous glucose monitoring on life with type 1 diabetes. *Diabetic Medicine, 35*(4), 409--418. https://doi.org/10.1111/dme.13568

NANDA International. (2021). *NANDA-I hemşirelik tanıları: Tanımlar ve sınıflama 2021--2023* (12. baskı). Özyurt Yayıncılık.

Parviainen, A., But, A., Siljander, H., Knip, M., & Finnish Pediatric Diabetes Register. (2020). Decreased incidence of type 1 diabetes in young Finnish children. *Diabetes Care, 43*(12), 2953--2958. https://doi.org/10.2337/dc20-0604

Polonsky, W. H., & Fortmann, A. L. (2021). Impact of real-time continuous glucose monitoring data sharing on quality of life and health outcomes in adults with type 1 diabetes. *Diabetes Technology & Therapeutics, 23*(3), 195--202. https://doi.org/10.1089/dia.2020.0466

Polonsky, W. H., Soriano, E. C., & Fortmann, A. L. (2022). The role of retrospective data review in the personal use of real-time continuous glucose monitoring: Perceived impact on quality of life and health outcomes. *Diabetes Technology & Therapeutics, 24*(7), 492-501. https://doi.org/10.1089/dia.2021.0526

ISBN: 978-625-90699-4-4

Rankin, D., Kimbell, B., Hovorka, R., & Lawton, J. (2022). Adolescents' and their parents' experiences of using a closed-loop system to manage type 1 diabetes in everyday life: Qualitative study. *Chronic Illness, 18*(4), 742--756. https://doi.org/10.1177/1742395320985924

Schmitt, A., Kulzer, B., Ehrmann, D., Haak, T., & Hermanns, N. (2022). A self-report measure of diabetes self-management for type 1 and type 2 diabetes: The Diabetes Self-Management Questionnaire-Revised (DSMQ-R). *Frontiers in Clinical Diabetes and Healthcare, 2*, 823046. https://doi.org/10.3389/fcdhc.2021.823046

Sosyal Güvenlik Kurumu. (2024). *Sağlık Uygulama Tebliği (SUT).* https://www.sgk.gov.tr/

Tanenbaum, M. L., & Commissariat, P. V. (2023). Experience with burdens of diabetes device use that affect uptake and optimal use in people with type 1 diabetes. *Endocrine Connections, 12*(10), e230193. https://doi.org/10.1530/EC-23-0193

Templer, S. (2022). Closed-loop insulin delivery systems: Past, present, and future directions. *Frontiers in Endocrinology, 13*, 919942. https://doi.org/10.3389/fendo.2022.919942

Özalkak, Ş., Demirbilek, H., Özbek, M. N., Baran, R. T., & Özen, S. (2022). Revisiting the annual incidence of type 1 diabetes mellitus in children from the Southeastern Anatolian region of Turkey: A regional report. *Journal of Clinical Research in Pediatric Endocrinology, 14*(2), 172--178. https://doi.org/10.4274/jcrpe.galenos.2021.2021-10-7

Özen, S., Darcan, Ş., Büyükinan, M., Güran, T., Demir, K., Akın, L., Kara, C., Çetinkaya, S., Akıncı, A., Orbak, Z., Dilek, E., & Dilek, M. (2020). Türkiye'de tip 1 diyabetli çocuk ve adolesanlarda demografik ve klinik özellikler. *Türk Pediatri Arşivi, 55*(2), 153--161. https://doi.org/10.14744/TurkPediatriArs.2020.32468

ISBN: 978-625-90699-4-4

CLIMATE CHANGE AND DIABETES MANAGEMENT

Kübra BULUT[1]
[1]Dicle University, Institute of Health Sciences, Department of Internal Medicine Nursing, Master's Program with Thesis, Diyarbakır, Turkey
[1]ORCID ID: https://orcid.org/0009-0001-9432-7543

Prof. Dr. Hamdiye ARDA SÜRÜCÜ[2] **(Advisor)**
[2]Dicle University, Faculty of Health Sciences, Department of Internal Medicine Nursing, Diyarbakır, Turkey
[2]ORCID ID: https://orcid.org/0000-0001-7052-1002

ABSTRACT

Climate change is widely recognised as the greatest global public health threat of the twenty-first century and has a profound influence on the development and management of chronic diseases, particularly diabetes mellitus. This review aims to analyse, in the light of current scientific evidence, the multidimensional effects of climate change on diabetes prevalence, metabolic processes, the thermal stability of insulin, and the health of high-risk groups. Rising ambient temperatures and heat waves disrupt glycaemic control, increase the risk of hypoglycaemia and hyperglycaemia, trigger dehydration-related metabolic crises, and threaten the biological efficacy of insulin. Extreme weather events and disasters interrupt access to treatment, disrupt medication supply chains, and break the insulin cold chain, thereby elevating the risk of complications among people with diabetes. Older adults, pregnant women, individuals of low socioeconomic status, and patients with chronic complications constitute the risk groups disproportionately affected by this process. Building on this evidence, the study introduces a six-step climate-resilient diabetes nursing care model and evaluates the central role of nursing interventions — education and counselling, clinical monitoring and care, insulin-storage education, and nutrition and exercise counselling — at the intersection of the climate crisis and the diabetes pandemic. In conclusion, developing climate-resilient diabetes management strategies and strengthening nursing practice in line with this new environmental reality are of critical importance for the sustainability of health systems.

Keywords: Climate Change, Diabetes, Insulin Management, Nursing, Self-Management.

INTRODUCTION

This review aims to analyse the multidimensional effects of climate change on diabetes prevalence, metabolic processes, the thermal stability of insulin, and the health of high-risk groups in the light of current scientific evidence, and to present a comprehensive framework for climate-resilient diabetes management strategies and effective nursing interventions at the intersection of these two global crises.

Climate change is a systemic crisis arising from the accumulation of anthropogenic greenhouse-gas emissions in the atmosphere and is regarded as the greatest global public health threat of the twenty-first century (Intergovernmental Panel on Climate Change, 2021). This crisis directly threatens the most basic social and environmental determinants of health, including clean air, safe drinking water, adequate food, and safe shelter (World Health Organization, 2023a). Climate change is therefore not merely an environmental issue; it is a profound health crisis that undermines the general well-being of societies and their access to health services, and it poses a global test of resilience (Haines & Ebi, 2020).

The primary manifestation of climate change is the continuous rise in global average temperatures and the extreme weather events that accompany it (Watts et al., 2021). These physical changes are characterised by an observed increase in the frequency and severity of intense storms, sudden flash floods, and devastating droughts (Intergovernmental Panel on Climate Change, 2021). The lengthening duration and intensifying severity of heat waves place excessive thermal stress on biological systems, straining the body's capacity for adaptation (Haines & Ebi, 2020). The indirect effects of this crisis emerge through the degradation of ecosystems and pressure on social systems. Rising temperatures and shifting precipitation patterns reduce agricultural productivity, jeopardising food security and access to healthy nutrition (Akyüz, 2019). At the same time, the depletion of clean water resources and sanitation problems create conditions favourable to the spread of water-borne diseases, while deteriorating air quality turns environmental exposure into a chronic burden (World Health Organization, 2023a; McMichael, 2013).

Climate change acts as a catalyst that worsens both the risk of developing non-communicable diseases and the clinical management of those already present (World Health Organization, 2023b). Heat waves and increasing air pollution generate acute and chronic physiological stress on the cardiovascular system, the respiratory tract, and the endocrine system (Romanello et al., 2022). In particular, exposure to air pollution (particulate matter, etc.) has been found to be directly associated with insulin resistance and has become an important factor increasing the risk of developing metabolic diseases such as type 2 diabetes (Yıldırım et al., 2023; Liu et al., 2021). Environmental stressors disrupt the body's physiological homeostasis, straining the thermoregulatory capacity of individuals with chronic disease (Kenny et al., 2016). Within the endocrine system specifically, excessive heat exposure modulates acute glucose metabolism, making it harder to achieve glycaemic control and contributing to higher morbidity and mortality among people with diabetes (Sanchez Perez et al., 2025; Ratter-Rieck et al., 2023). This demonstrates that climate change is making the management of chronic diseases such as diabetes considerably more complex and is increasing the burden placed on health systems (BMC Medicine Editorial, 2023).

CONCEPTUAL FRAMEWORK

Diabetes and General Characteristics

Diabetes is a chronic metabolic disease characterised by elevated blood glucose (hyperglycaemia), occurring when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces (World Health Organization, 2022). Over time, uncontrolled high blood glucose causes serious damage to the heart, blood vessels, eyes, kidneys, and nerves, and is a leading cause of life-threatening complications such as blindness, kidney failure, heart attack, stroke, and lower-limb amputation (World Health Organization, 2022). Diabetes is therefore not only an individual health problem but also a global health crisis that strains the social and economic structures of societies (Sanchez Perez et al., 2025).

Diabetes Prevalence

According to the most recent edition of the International Diabetes Federation's IDF Diabetes Atlas (11th edition, 2025), the world is experiencing a diabetes pandemic, with case numbers continuing to rise dramatically, an increase reported to be occurring faster in low- and middle-income countries in particular (International Diabetes Federation, 2025). This growing burden now affects a substantial share of the global adult population (International Diabetes Federation, 2025).

ISBN: 978-625-90699-4-4

In addition, a linear relationship has been reported between climate change and diabetes prevalence, with projections suggesting that every 1°C increase in outdoor temperature may raise diabetes incidence and prevalence at a global scale (Blauw et al., 2017). This rise in prevalence is therefore not limited to genetic and lifestyle factors alone; environmental factors are increasingly recognised as playing a critical role in the process (Blauw et al., 2017). Research shows that increases in outdoor temperature are associated with higher diabetes incidence and a greater prevalence of glucose intolerance, with new cases rising as temperatures climb (Blauw et al., 2017; Lang et al., 2025). This confirms that climate change is an important external factor fuelling the diabetes pandemic (Meo & Meo, 2024; BMC Medicine Editorial, 2023).

Core Components of Diabetes Management

Effective diabetes management requires a multifaceted, multidisciplinary approach in which the patient actively participates throughout what is a lifelong process (American Diabetes Association, 2025). According to current standards of care, the primary goal of diabetes management is not only to achieve glycaemic control but also to optimise blood pressure and lipid levels in order to minimise the risk of complications (American Diabetes Association, 2025). The core components of diabetes management include the following:

Diabetes Self-Management Education and Support (DSMES): Patients being informed about their condition, able to make their own decisions, and equipped with day-to-day management skills lies at the centre of the process (Powers et al., 2020). Self-care activities include blood glucose monitoring, healthy nutrition, regular physical activity, and adherence to medication (Shrivastava et al., 2013).

Medical Nutrition Therapy and Physical Activity: Large clinical trials have shown that lifestyle interventions are among the most effective tools both for preventing diabetes and for its long-term management (Tuomilehto et al., 2001; Knowler et al., 2002). Regular physical activity increases insulin sensitivity, while balanced nutrition prevents glycaemic fluctuations (Shrivastava et al., 2013).

Pharmacological Treatment: Insulin therapy is vital for people with type 1 diabetes and for patients with advanced type 2 diabetes (Richter et al., 2023). The success of treatment is directly linked to the correct storage and administration of medications, particularly insulin, which is highly heat-sensitive (Richter et al., 2023; Kaufmann et al., 2021).

Continuous Monitoring and Technological Support: Blood glucose meters and mobile health applications are modern tools that help patients track their glycaemic data and adjust their management strategies in times of crisis (Bonoto et al., 2017).

Diabetes management is thus a process that must be dynamically adapted to a person's environmental conditions — including extreme heat and disaster situations — since environmental stressors can directly affect each of these components (Ospelt et al., 2023; Ratter-Rieck et al., 2023).

The Relationship Between Climate Change and Diabetes

Climate change and diabetes are two major global public health problems that reinforce one another, described in the literature as “colliding crises” (Sanchez Perez et al., 2025). The environmental changes driven by the climate crisis deepen the existing diabetes pandemic both by increasing new cases of the disease and by complicating the clinical management of existing patients, thereby creating a vicious cycle (BMC Medicine Editorial, 2023). The interaction

ISBN: 978-625-90699-4-4

between these two crises unfolds on a complex terrain where biological susceptibility, environmental exposure, and socio-economic vulnerability intersect (Ratter-Rieck et al., 2023).

Heat Stress and Glycaemic Control

High ambient temperatures are a key stressor that makes it difficult for people with diabetes to maintain glycaemic balance (Sanchez Perez et al., 2025). Clinical data show that, particularly among older insulin users, high temperatures significantly increase the risk of hypoglycaemia and are associated with a rise in hospital admissions (Setoguchi et al., 2024). Heat exposure modulates acute glucose metabolism by altering insulin absorption rates and tissue insulin sensitivity, leading to unpredictable glycaemic fluctuations (Kimball et al., 2018). Although some evidence suggests that controlled, passive heat exposure may produce temporary improvements in glucose metabolism, the uncontrolled environmental heat waves brought by climate change typically trigger metabolic crises that are far more difficult to manage (Maley et al., 2019; Pallubinsky et al., 2020).

Dehydration, Complications and Metabolic Effects

People with diabetes are physiologically more vulnerable to heat, particularly because of autonomic neuropathy and impaired sweating responses, which limit their thermoregulatory capacity (Kenny et al., 2016). Heat stress triggers oxidative stress in the body, causing cellular damage and worsening both the microvascular (kidney, eye damage) and macrovascular (cardiovascular disease) complications of diabetes (Ceriello et al., 2020). Epidemiological studies show that increases in outdoor temperature run parallel to diabetes incidence and the prevalence of glucose intolerance, with new cases rising as temperatures climb (Blauw et al., 2017). Fluid loss (dehydration) occurring in extreme heat concentrates blood glucose and raises the risk of hyperglycaemic crises; heat is now considered an important prognostic factor in both the development and progression of diabetes (Lang et al., 2025; Ratter-Rieck et al., 2023).

Lifestyle Changes: Nutrition and Physical Activity

Climate change environmentally constrains the two pillars of diabetes management that matter most: healthy nutrition and physical activity (Ospelt et al., 2023). Severe heat waves and the air pollution that accompanies them discourage patients from exercising outdoors, pushing them toward a sedentary lifestyle and thereby reinforcing insulin resistance (Sanchez Perez et al., 2025). From a food-security perspective, the adverse impact of the climate crisis on agricultural productivity makes it harder to access fresh fruit and vegetables, foods of critical importance for people with diabetes (Akyüz, 2019). As one response to this challenge, pseudo-cereals such as quinoa, buckwheat, and amaranth — valued for their climate resilience as well as their low glycaemic index and high fibre content — have been proposed as functional and therapeutic dietary alternatives in diabetes management (Çelik et al., 2025). In addition, exposure to air pollution (particulate matter, etc.) has been shown to disrupt the endocrine system directly, raising the risk of type 2 diabetes (Liu et al., 2021; Yıldırım et al., 2023).

Effects of Climate Change on Diabetes Management

Climate change directly and indirectly disrupts the complex management processes that people with diabetes must sustain in their daily lives. Extreme weather events, rising temperatures, and environmental instability generate adverse effects across a broad range of domains — from medication supply to biological stability, from access to hospital care to individual self-management capacity (Sanchez Perez et al., 2025; Ospelt et al., 2023).

ISBN: 978-625-90699-4-4

Access to Treatment and Medication Use

Extreme weather events (storms, floods, droughts) can physically damage health infrastructure and paralyse transport networks, preventing patients from attending routine check-ups or obtaining medication from pharmacies (Ospelt et al., 2023). Long-term climate crises such as severe drought, in particular, restrict access to clean water, increasing the risk of infection among people with diabetes and disrupting metabolic balance, which in turn raises hospitalisation rates (Mani et al., 2024). These interruptions in access to treatment undermine continuity of chronic-disease management and increase the risk of acute complications (World Health Organization, 2023b).

Insulin Use and Storage Conditions

Insulin, which plays a vital role in diabetes management, is extremely sensitive to environmental conditions because of its protein structure. Rising ambient temperatures brought by climate change pose a serious obstacle to the safe storage and transport of insulin (Richter et al., 2023).

Effect of High Temperature on Insulin Efficacy: The biological potency of insulin degrades rapidly once its thermal-stability limits are exceeded (Richter et al., 2023). Insulin molecules exposed to high temperatures can undergo structural changes that reduce their glucose-lowering capacity, making it harder for patients to adjust dosing and increasing the risk of uncontrolled hyperglycaemia (Kaufmann et al., 2021; Richter et al., 2023).

Cold-Chain Requirements and Risk of Degradation: Unopened insulin vials should ideally be stored between 2–8°C (around 4°C) (Richter et al., 2023). Stability studies indicate that insulin can retain its biological activity for roughly 28 days at temperatures up to 25°C, but that degradation accelerates once this threshold is exceeded (Richter et al., 2023; Kaufmann et al., 2021). In tropical regions or during severe heat waves, ambient temperatures rising above 30°C pose a serious threat to insulin stability (Pendsey et al., 2023).

Insulin Access During Disasters and Supply Disruptions: When refrigeration becomes impossible during natural disasters or power outages, preserving insulin becomes difficult. In such crisis situations, or while travelling, the primary solution for isolating insulin from ambient heat is the use of ice packs (cold packs) and insulated cooling bags (Taerahkun & Sriphrapradang, 2022). These alternative devices and methods help keep insulin within the safe temperature range of 4–24°C, supporting the preservation of the medication's biological effectiveness (Taerahkun & Sriphrapradang, 2022; Richter et al., 2023). Evaporative cooling systems that require no electricity, such as traditional clay pots, have also proven effective in maintaining insulin stability (Taerahkun & Sriphrapradang, 2022).

Self-Management (Glucose Monitoring, Diet, Exercise)

Self-management — the process by which people with diabetes make their own care decisions — becomes considerably more difficult under climate stress (Powers et al., 2020). Extreme heat and air pollution reduce patients' motivation and ability to exercise safely outdoors, pushing them toward a sedentary lifestyle (Sanchez Perez et al., 2025). In addition, blood glucose meters and test strips can be affected by extreme heat under environmental stress, producing inaccurate readings that may lead to incorrect treatment decisions (Ospelt et al., 2023). Mobile health applications are an important tool that can offset these challenges by helping patients track glycaemic data and obtain remote support during crises (Bonoto et al., 2017).

ISBN: 978-625-90699-4-4

High-Risk Groups

The burden the climate crisis places on people with diabetes is not evenly distributed; age, physiological status, and socio-economic circumstances all shape the extent of this risk (Sanchez Perez et al., 2025).

Older Adults: With ageing, the body's capacity for thermoregulation and its sweating response naturally decline (Kenny et al., 2016). A weakened sense of thirst among older adults is another biological factor that heightens dehydration risk in hot weather (Kenny et al., 2016). Among older insulin users, high ambient temperatures have been found to significantly increase hypoglycaemic events and related emergency-department visits (Setoguchi et al., 2024).

Pregnant Women and Maternal-Fetal Health: Pregnancy is a period of heightened sensitivity to metabolic and physiological stressors, marked by rapid hormonal change (Kılıç & Yılmaz, 2025). Exposure to extreme heat and air pollution adversely affects maternal health, triggering gestational-diabetes risk and worsening complications of existing diabetes (Kılıç & Yılmaz, 2025). This, in turn, suppresses fetal development, leading to adverse outcomes such as preterm birth and low birth weight (Akgün & Güray, 2024; Kılıç & Yılmaz, 2025).

Individuals of Low Socioeconomic Status: These individuals face financial barriers to accessing the technological resources needed to protect against the effects of climate change, such as air conditioning, refrigeration, and uninterrupted electricity (Ospelt et al., 2023). The lack of cooling facilities, particularly in hot regions, disrupts the insulin cold chain and causes the medication to lose its biological efficacy, resulting in inadequate treatment (Sanchez Perez et al., 2025; Ospelt et al., 2023). Rising food prices linked to the climate crisis further restrict access to healthy nutrition, impairing glycaemic control (Akyüz, 2019).

Individuals with Autonomic Neuropathy and Chronic Complications: Autonomic neuropathy, a long-term consequence of diabetes, impairs the body's ability to sense heat and cool itself through sweating (Kenny et al., 2016). In individuals whose heat-dissipation mechanisms are compromised, the risk of hyperthermia increases, and heat stress triggers oxidative stress in the body that accelerates the progression of existing kidney (nephropathy) and cardiac damage (Ceriello et al., 2020; Ratter-Rieck et al., 2023).

Populations in Disaster-Affected and Extreme-Condition Areas: Events such as floods, droughts, and severe storms can destroy health facilities, cutting off medication supply chains and access to medical care altogether (Mani et al., 2024; Ospelt et al., 2023). Reduced access to clean water increases infection risk, while the loss of access to insulin and blood-glucose monitoring devices can trigger life-threatening metabolic crises such as diabetic ketoacidosis (Ospelt et al., 2023).

The Role of Nursing in Climate-Resilient Diabetes Care

Nurses occupy a central position in the effort to counter the adverse health effects of climate change and to help people with diabetes adapt to this new environmental reality (International Council of Nurses, 2021). As the largest professional group within the health system, nurses lead the way in clinical care and in community-level advocacy, driving the development of climate-resilient care models (International Council of Nurses, 2021; Döner et al., n.d.). Reducing the risks faced by people with diabetes during climate-related events requires that nursing interventions be planned across several interconnected domains — patient education and counselling, insulin-storage guidance, clinical monitoring and care, and nutrition and exercise counselling — the structured model for which is presented in the Methodology section below (Ospelt et al., 2023; Ratter-Rieck et al., 2023; Powers et al., 2020).

ISBN: 978-625-90699-4-4

METHODOLOGY

Review Approach and Data Sources

This study was conducted as a narrative literature review. Sources related to the relationship between climate change and diabetes management were identified by searching PubMed, Scopus, Web of Science, and Google Scholar, using keyword combinations such as “climate change and diabetes”, “heat stress and glycaemic control”, “insulin storage and temperature”, and “nursing and climate change”. The review prioritised recent peer-reviewed articles, systematic reviews, and meta-analyses, and was further supported by the current guidance and standards published by authoritative bodies, including the International Diabetes Federation, the American Diabetes Association, the World Health Organization, the International Council of Nurses, and the Cochrane Library. These sources were synthesised to examine the theories, evidence, and practical tools relevant to climate-resilient diabetes care, following an approach consistent with that used in other conceptual reviews in the health-sciences literature.

Development of the Climate-Resilient Diabetes Nursing Care Model

In order to translate the evidence reviewed above into practice, this study proposes a six-step nursing care model addressing the risks that climate change poses to people with diabetes. The purpose of designing this model is to identify the climate-related risks encountered in diabetes care and to determine the steps necessary to reduce them. The model is built on four guiding principles: patient safety, continuity of care, environmental adaptability, and patient empowerment. Patient safety requires that the harm potentially caused by heat stress, dehydration, or insulin degradation be clearly identified and prevented. Continuity of care requires that treatment, monitoring, and medication supply remain uninterrupted even during extreme weather events or disasters. Environmental adaptability requires that care plans be flexible enough to respond to seasonal and regional climate risks. Patient empowerment requires that individuals and their families be equipped with the knowledge and tools needed to manage their own risk. Each of these principles is embedded within the six steps of the model, which are summarised below and illustrated in Figure 1.

The first step involves determining the patient's profile and the scope of their environmental exposure. The second step identifies climate-related threats and diabetes-specific vulnerabilities, such as insulin-storage risk and limited access to care. The third step analyses risk probabilities, reviews current and planned controls, and identifies priority patients requiring closer attention. The fourth step translates this analysis into an individualised, climate-resilient care plan and evaluates its potential impact. The fifth step concerns the implementation of the plan alongside continuous testing and risk monitoring. The sixth and final step involves evaluating outcomes, reporting results, and updating the protocol for future use.

ISBN: 978-625-90699-4-4

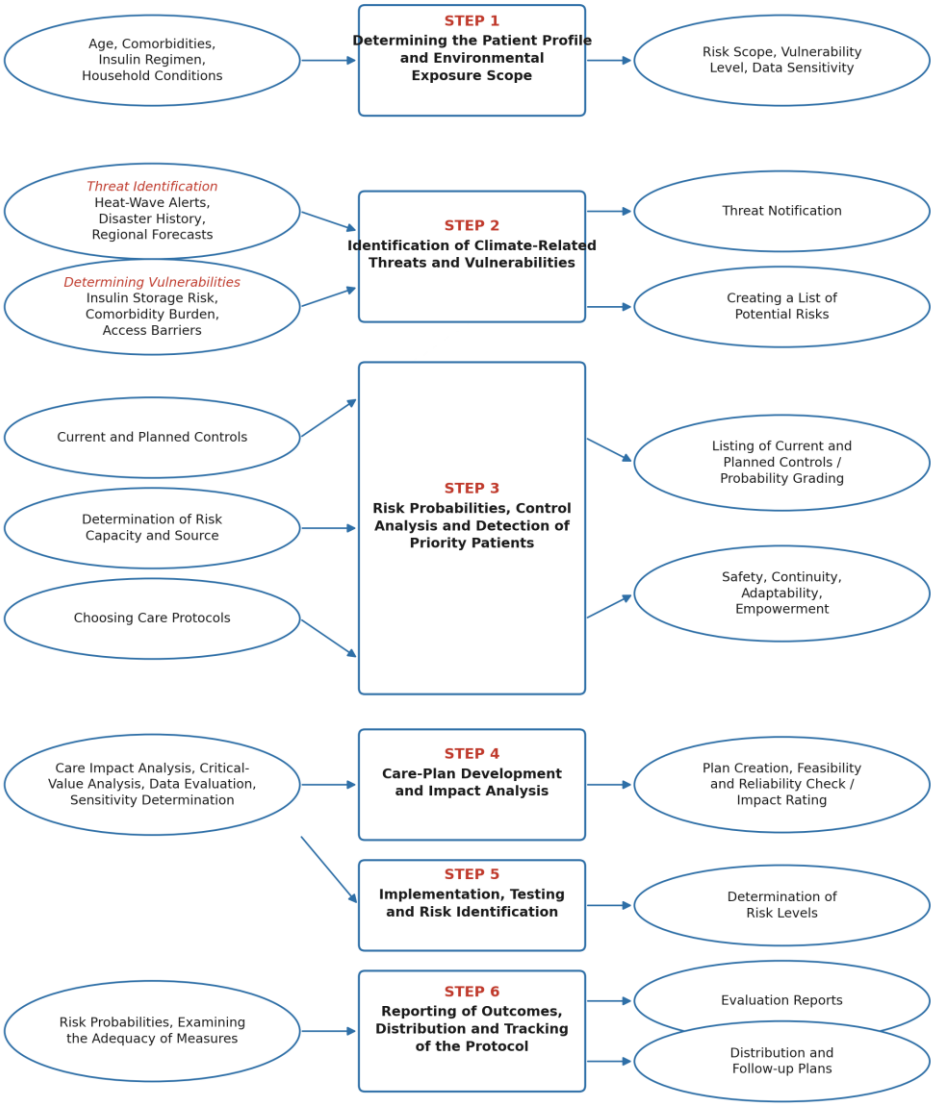


Figure 1. The Six-Step Climate-Resilient Diabetes Nursing Care Model (adapted for climate change and diabetes management).

Model of the Research

In developing the six-step model presented above, the WHO framework on climate change and health, the IDF Diabetes Atlas (11th edition), the American Diabetes Association's Standards of Care in Diabetes, the International Council of Nurses' guidance on nurses and climate change, and the Cochrane review on the thermal stability and storage of human insulin were used as the principal reference sources (World Health Organization, 2023a; International Diabetes Federation, 2025; American Diabetes Association, 2025; International Council of Nurses, 2021; Richter et al., 2023).

CONCLUSION AND DISCUSSION

Climate change and the diabetes pandemic together constitute a strategic threat that is profoundly shaking modern health systems, described in the literature as “colliding crises” (Sanchez Perez et al., 2025; BMC Medicine Editorial, 2023). This interaction transforms

ISBN: 978-625-90699-4-4

diabetes from being merely a lifestyle-related condition into a biological risk domain in which environmental factors directly threaten metabolic balance, medication safety, and quality of life (Sanchez Perez et al., 2025; Ospelt et al., 2023). Within this context, nurses emerge as key advocates and strategic leaders in helping people with diabetes adapt to the climate crisis (International Council of Nurses, 2021).

The nursing profession sits at the centre of this response through its core educator role, strengthening patients' self-management capacity in the face of environmental stressors such as extreme weather and heat waves (International Council of Nurses, 2021; Döner et al., n.d.). Future nursing interventions in diabetes management should concentrate on the following critical areas:

Climate-Sensitive Education: Nurses should teach patients practical solutions for preserving insulin's thermal stability, such as the use of ice packs or evaporative cooling systems (e.g., clay pots) (Taerahkun & Sriphrapradang, 2022; Richter et al., 2023).

Nutrition and Adaptation Counselling: Against climate-related food insecurity, the integration of climate-resilient and therapeutically valuable foods such as quinoa and buckwheat into patients' diets should be encouraged (Akyüz, 2019; Çelik et al., 2025).

Proactive Monitoring and Advocacy: Proactive blood-glucose monitoring should be supported in response to the hypoglycaemia risk triggered by rising ambient temperatures, and nurses should advocate for health policies that are made resilient to the climate crisis (Setoguchi et al., 2024; International Council of Nurses, 2021).

In conclusion, easing the metabolic burden of the climate crisis will only be possible if the educator, clinical-monitoring, and advocacy roles of the nursing profession are strengthened in line with this new environmental reality (International Council of Nurses, 2021; Sanchez Perez et al., 2025).

REFERENCES

Akgün, Ö., & Güray, S. (2024). *The effects of climate change on women's health.* Anatolian Journal of Health Research, 5(2), 194–198. https://doi.org/10.61534/anatoljhr.1431073

Akyüz, A. A. (2019). *Vital uncertainty: The climate crisis and food.* Toplum ve Hekim, 34(5), 348–355.

American Diabetes Association. (2025). *Standards of care in diabetes—2025.* https://diabetesjournals.org/care/issue

Blauw, L. L., et al. (2017). *Diabetes incidence and glucose intolerance prevalence increase with higher outdoor temperature.* BMJ Open Diabetes Research & Care, 5(1), e000317.

BMC Medicine Editorial. (2023). *Diabetes and climate change: Breaking the vicious cycle.* BMC Medicine, 21, 281.

Bonoto, B. C., et al. (2017). *Mobile apps and glycemic control in diabetes.* JMIR mHealth and uHealth, 5(3), e4.

Ceriello, A., et al. (2020). *Heat stress and oxidative stress in diabetes.* Free Radical Biology and Medicine, 152, 252–259.

Costello, A., et al. (2009). *Managing the health effects of climate change.* The Lancet, 373(9676), 1693–1733.

ISBN: 978-625-90699-4-4

Çelik, S. A., Çelik, Y., & Bilmez, S. (2025). *The functional and therapeutic potential of pseudo-cereals: The example of quinoa, buckwheat and amaranth.* Türk Bilimsel Derlemeler Dergisi, 18(2), 41–53.

Döner, N. H., Özdemir, S. T., & Usta Yeşilbalkan, Ö. (n.d.). *Examination of publications on climate change and diabetes using bibliometric analysis method.* Türk Diyabet Hemşireliği Dergisi, 4(2), 32–38.

Haines, A., & Ebi, K. (2020). *The imperative for climate action to protect health.* New England Journal of Medicine, 380, 263–273.

Hajat, S., et al. (2010). *Health effects of hot weather.* Epidemiologic Reviews, 32, 24–44.

Intergovernmental Panel on Climate Change. (2021). *Climate change 2021: The physical science basis.* https://www.ipcc.ch/report/ar6/wg1/

International Council of Nurses. (2021). *Nurses, climate change and health.* https://www.icn.ch

International Diabetes Federation. (2025). *IDF Diabetes Atlas* (11th ed.). https://diabetesatlas.org

Kaufmann, B., et al. (2021). *Heat-stability study of various insulin types in tropical temperature conditions: New insights towards improving diabetes care.* PLOS ONE, 16(2), e0245372.

Kenny, G. P., et al. (2016). *Heat stress in chronic disease.* CMAJ, 188(2), E45–E53.

Kılıç, S., & Yılmaz, S. (2025). *Evaluation of the effects of climate change on maternal-fetal health.* Selçuk Sağlık Dergisi, 6(2), 300–319.

Kimball, A. L., et al. (2018). *Whole body heat exposure modulates acute glucose metabolism.* International Journal of Hyperthermia, 35(1), 644–651.

Knowler, W. C., et al. (2002). *Diabetes prevention program.* New England Journal of Medicine, 346, 393–403.

Lang, A., et al. (2025). *Heat as a prognostic factor for the development and progression of diabetes: A systematic review and meta-analysis (Protocol).* Cochrane Database of Systematic Reviews.

Liu, C., et al. (2021). *Air pollution and diabetes risk.* Environment International, 147, 106336.

Maley, M. J., et al. (2019). *Passive heating and glycaemic control in non-diabetic and diabetic individuals: A systematic review and meta-analysis.* PLOS ONE, 14(3), e0214223.

Mani, Z. A., Khorram-Manesh, A., & Goniewicz, K. (2024). *Global health emergencies of extreme drought events: Historical impacts and future preparedness.* Atmosphere, 15(9), 1137.

McMichael, A. J. (2013). *Globalization, climate change, and human health.* New England Journal of Medicine, 368, 1335–1343.

Meo, S. A., & Meo, A. S. (2024). *Climate change and diabetes mellitus—Emerging global public health crisis: Observational analysis.* Pakistan Journal of Medical Sciences, 40(4), 559–562.

Ospelt, E., Hardison, H., Mungmode, A., Noor, N., Bankole, K., Anikpezie, N., Chima, C., Singh, A. K., Wright, T., Elisha, V., Shah, V. N., & Ebekozien, O. (2023). *The impact of climate change on people living with diabetes: A scoping review.* Clinical Diabetology, 12(3), 186–200.

ISBN: 978-625-90699-4-4

Pallubinsky, H., et al. (2020). *Passive exposure to heat improves glucose metabolism in overweight humans.* Acta Physiologica, 229(4), e13488.

Pendsey, S., et al. (2023). *Insulin thermostability in a real-world setting.* The Lancet Diabetes & Endocrinology, 11(5), 310–312.

Powers, M. A., et al. (2020). *Diabetes self-management education.* Diabetes Care, 43(7), 1636–1649.

Ratter-Rieck, J. M., et al. (2023). *Diabetes and climate change: Current evidence and implications for people with diabetes, clinicians and policy stakeholders.* Diabetologia, 66(6), 1003–1015.

Richter, B., Bongaerts, B., & Metzendorf, M-I. (2023). *Thermal stability and storage of human insulin.* Cochrane Database of Systematic Reviews, 2023(11).

Romanello, M., et al. (2022). *The 2022 report of the Lancet Countdown on health and climate change.* The Lancet, 400, 1619–1654.

Sanchez Perez, J., et al. (2025). *Colliding crises: The global diabetes pandemic meets climate change—A scoping review.* The Journal of Climate Change and Health, 22, 100433.

Satman, I., et al. (2013). *TURDEP-II study.* European Journal of Epidemiology, 28, 169–180.

Setoguchi, S., et al. (2024). *Higher ambient temperature associated with increased hypoglycemia events in national samples of U.S. and Taiwan older adults using insulin.* Diabetes Care.

Shrivastava, S. R., et al. (2013). *Self-care in diabetes.* Journal of Diabetes & Metabolic Disorders, 12, 14.

Taerahkun, S., & Sriphrapradang, C. (2022). *Efficacy of alternative cooling devices used for insulin storage without refrigeration under hot-humid environment.* Annals of Medicine, 54(1), 1118–1125.

Tuomilehto, J., et al. (2001). *Diabetes prevention study.* New England Journal of Medicine, 344, 1343–1350.

Watts, N., et al. (2021). *The 2021 report of the Lancet Countdown on health and climate change.* The Lancet, 398, 1619–1662.

World Health Organization. (2022). *Diabetes fact sheet.* https://www.who.int/news-room/fact-sheets/detail/diabetes

World Health Organization. (2023a). *Climate change and health.* https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

World Health Organization. (2023b). *Climate change and noncommunicable diseases: Connections.* https://www.who.int/news/item/02-11-2023-climate-change-and-noncommunicable-diseases-connections

Yıldırım, M., et al. (2023). *Air pollution and endocrine diseases.* Turkiye Klinikleri Journal of Health Sciences, 8(2), 334–342.

ISBN: 978-625-90699-4-4

WINGS OF THE SOUL: SYMBOLISM AND INNER FREEDOM IN C. YAHYA'S "WISH BUTTERFLY"

Mansirova Shahana Zulfugar
Teacher at the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University, Baku, Azerbaijan

Abstract

The article presents a deep semantic, compositional, and psycho-philosophical analysis of the artwork titled “Wish Butterfly” (*Arzu kəpənək*). In the work, feelings of the inner world, love, imagination, and freedom are expressed not directly, but through symbolic images, lines, and colors. Occupying a central place in the vertical composition, the figures of a woman (inner silence, dream) and a man (elevation, hope) complement the human spiritual state. The butterfly image embodies the free yet fragile nature of desire, while spiral and circular shapes reflect the endless movement of time, and the musical instrument element represents the voice of the human soul. The plastic language of the work, with its fluid lines and warm color palette based on earth tones, harmonizes with Eastern decorative thought and Art Nouveau aesthetics, bringing universal spiritual values to the forefront.

Keywords: Wish Butterfly, symbolism in fine arts, artistic composition, spiritual freedom, plastic language, visual rhythm, psychological analysis, Eastern decorative art

İntroduction

In the fine arts, symbolic imagery is widely used to express the human inner world, emotions, desires, and thoughts. Rather than directly depicting an idea, the artist often communicates with the viewer through various forms and imagery. In this process, every detail portrayed in the artwork carries a specific meaning and serves to shape the overall concept. From this perspective, the artwork titled "Wish Butterfly" stands out as a compelling artistic example expressing human hopes, dreams, love, spiritual connection, and the longing for freedom.

At first glance, the artwork draws attention with its human figures, butterfly-like forms, spiral and wavy lines, and elements resembling musical instruments. However, none of these images are placed randomly within the composition; they interact harmoniously to complement the core idea of the work. The title itself holds particular significance in this context. The phrase "Wish Butterfly" suggests that human desire—much like a butterfly—is free, lightweight, and in constant motion. Here, the butterfly figure is presented not merely as a beautiful natural element, but as a symbol of the hopes and dreams living within the human soul.

In my opinion, the main feature of this work is that the artist combines real-life observations with imagination and symbolism, striving to evoke a specific feeling in the viewer rather than merely portraying an ordinary event. The artwork instills a sense of tranquility, contemplation, and a longing for freedom.

The composition of "Wish Butterfly" is built along a vertical axis, creating an impression of elevation and motion. The large, circular, and spiral forms situated at the bottom draw the viewer's focus first, after which the gaze moves upward toward the human figures.

The female and male figures at the center form the core of the composition. The closed eyes of the female figure indicate that she is attuned to her inner world rather than the reality around her, remaining alone with her thoughts and dreams. Conversely, the upward tilt of the

ISBN: 978-625-90699-4-4

male figure's head gives the composition a dynamic direction, conveying a striving to rise, look into the distance, and pursue a greater purpose.

The close positioning of the two figures is equally intentional. Their proximity reinforces the themes of love and spiritual connection, presenting love not merely as a bond between two individuals, but as an elevating force that grants inner strength.

Curved and wavy lines prevent the composition from appearing static, evoking the movement of wind, music, or water. The fluid rendering of the hair and garments further imparts motion, establishing a rhythmic coherence across the entire artwork.

As suggested by the title, the butterfly serves as a central symbol associated with freedom, beauty, and transformation. Its lifecycle—metamorphosing from caterpillar to chrysalis and finally to a winged butterfly—signifies change and renewal.

In this piece, the butterfly can be paralleled with human desire, which originates within and transports the individual beyond reality's constraints. Thus, the concepts of "wish" and "butterfly" in the title complement one another seamlessly.

Another key attribute of the butterfly is its fragility. Human desires are similarly delicate, easily wounded or lost; yet, humanity continues to dream and look toward the future with hope. Consequently, the butterfly symbolizes both freedom and the inherent fragility of human aspiration.

The central female figure carries a profound emotional resonance. Her closed eyes direct attention inward, suggesting a focus on inner feelings rather than external sight. She can be understood as an embodiment of dreams, intuition, love, and inner silence.

Her flowing, wavy hair aligns with the composition's overall rhythm, appearing to move with the wind and merging the figure with surrounding forms, thereby deepening her connection to nature and the dreamlike atmosphere.

Meanwhile, the male figure conveys elevation and hope. His upward gaze implies a movement toward an unseen horizon, the future, or aspiring ideals. If the female figure represents the inner realm, the male figure directs the eye outward, toward action and upward motion.

In my view, presenting these two figures together is one of the strongest aspects of the work. Here, the man and the woman do not merely depict two individuals, but also represent two distinct spiritual states of humanity. One contemplates and feels, while the other ascends and searches. The core force uniting them is love and desire.

The color scheme of the artwork is generally built on calm and warm tones. The predominance of brown, beige, gray, and earth colors gives the composition a distinct sense of tranquility and depth. These hues simultaneously bring the human figures to the forefront.

Brown is primarily associated with the concepts of earth and nature. In this context, I believe it expresses humanity’s connection to reality. No matter how much a person dreams and aspires, they remain, in a sense, part of real life. Therefore, the earth tones in the lower section of the composition signify human ties to the material world.

Light beige and cream tones bring softness and light to the piece. These colors are particularly felt around the human figures, creating an atmosphere of hope and stillness.

Meanwhile, the warm red and orange accents visible in certain parts enhance the emotional impact of the composition. These colors can be linked to love, vital energy, and inner feelings. Thus, color serves not only a decorative purpose, but actively helps unfold the emotional content of the work.

Spiral and circular forms attract attention in the lower section and various areas of the artwork. The spiral is an ancient symbol expressing the ever-changing, dynamic nature of human and natural life.

ISBN: 978-625-90699-4-4

To me, these forms evoke the infinite progression of time and the cyclical nature of existence. Human life, much like a circle, passes through specific stages. One dreams, aspires, sometimes reaches those dreams, and then pursues new ones.

A contrast can be drawn between the heavy spiral shapes located at the bottom and the human figures depicted above. The dense circular forms at the base represent the material world, whereas the upward development of the composition signifies spiritual elevation. In this respect, a connection is established between earth and sky, reality and dream, materiality and spirituality.

The placement of a form resembling a musical instrument beneath the human figures is also noteworthy, lending an additional poetic layer to the composition.

Music is an art form capable of expressing human emotions without words. Thus, the musical instrument in the work can be perceived as the voice of the human soul, where music becomes an expression of love, desire, and inner feelings.

Furthermore, a parallel can be drawn between the symbols of music and the butterfly. Just as music elevates the human spirit, desire removes an individual from the constraints of daily life. In this sense, both concepts are intimately linked to spiritual freedom.

Line serves as a key expressive tool in the artwork. Wavy, curved, and spiral lines generate the overall rhythm of the piece, guiding the viewer's gaze from one form to another and uniting all parts of the composition.

The flowing hair of the female figure and the fluid shapes around her impart a strong sense of movement. It is as if an unseen wind blows through the piece, animating all the figures in its wake.

This movement reflects the very nature of human desire, which is never static. As one pursues one dream, another begins to form. Hence, the undulating lines express the continuous movement of desire and life itself.

The chiaroscuro relationships are built on soft transitions. The absence of sharp light-and-shadow contrasts gives the artwork a serene, dreamlike atmosphere.

The light falling upon the human figures turns them into the main focal point of the composition, while the surrounding dark tones allow them to stand out with greater clarity.

From a symbolic perspective, light can be associated with human hope and aspiration. The interaction between the dark and light areas of the artwork evokes the interplay between the hardships and hope present in human life.

The psychological impact of "Wish Butterfly" stems from its focus on the inner state of the individual rather than depicting a concrete real-life event. The artwork lacks a specific time and space setting, enabling viewers to interpret the piece through the lens of their own thoughts and experiences.

The woman's closed eyes, the man's upward tilt of the head, the butterfly-like forms, and the spiral lines together construct a dreamscape. The viewer steps away from objective reality and enters the realm of the human soul.

From a philosophical standpoint, the artwork prompts reflection on the relationship between human desire and reality. Though an individual may encounter various limitations in life, their thoughts and dreams possess the capacity to transcend those boundaries. Thus, desire stands as one of humanity's greatest spiritual strengths.

In the piece, the flight of the butterfly symbolizes this spiritual freedom. Much like a butterfly spreading its wings, a person can unfold their inner "wings" to rise above the constraints of reality. Here, flight is understood not as physical movement, but as a spiritual and psychological elevation.

The artistic language of the work reveals a strong affinity with the traditions of Symbolism and decorative arts. Artists belonging to the Symbolist movement prioritized the

ISBN: 978-625-90699-4-4

representation of the inner world, dreams, and spiritual sensations over visible reality. Similarly, the primary goal of "Wish Butterfly" is not to illustrate a specific event, but to evoke a particular emotional and psychological state.

The fluid lines, decorative forms, and female figure also recall the aesthetic of Art Nouveau. However, the color palette and ornamental qualities simultaneously align the piece with Azerbaijani and Eastern decorative traditions.

In particular, the spiral and circular forms resonate with Eastern artistic concepts of infinity and rhythm, while the warm earth tones impart a distinct national and organic character to the work.

At the same time, the core symbols—humanity, love, desire, the butterfly, and freedom—remain universal. Consequently, the central concept of the artwork resonates beyond a single cultural context, appealing to a broader human perspective.

"Wish Butterfly" is a multilayered composition that conveys the human inner world, feelings of love and desire, and the quest for spiritual elevation through symbolic and poetic imagery. Every element contributes to the unified narrative: the human figures embody love and spiritual connection, the butterfly symbolizes desire and freedom, the spiral forms reflect the cyclical progression of life and time, and the element resembling a musical instrument expresses the voice of the human soul.

The warm and serene tones used in the artwork's color scheme lend a romantic and contemplative atmosphere to the composition. Meanwhile, the wavy and spiral lines provide the internal movement of the piece. All these elements together depict the spiritual state a person experiences between the real world and the realm of dreams.

In my view, the central idea of the work is that humanity cannot exist without dreams. No matter how many hardships one encounters in life, a desire, a hope, and a dream always live within. This desire is sometimes very fragile, and at other times immensely powerful. That is precisely why the title "Wish Butterfly" encapsulates the essence of the entire composition. Like a butterfly, a dream gives wings to the human soul, freeing it from the weight of daily life and guiding it toward a brighter future.

"Wish Butterfly" stands out as a compelling artistic work not only aesthetically, but also psychologically and philosophically. Its primary semantic line is built upon the concepts of "wish, love, dream, and freedom." By expressing these ideas through symbols and imagery rather than direct depiction, the artist invites viewers to create their own personal interpretations. Therein lies the true strength of the piece: every viewer can see their own wish, their own dream, and their own "butterfly" within this composition.

References

1. 100 великих художников Самин Д.К. 2004
2. Анализ красоты. У.Хогарт 1987
3. Введение в искусствознание (учебное пособие) Ильина Т.В. 2003
4. Великие художники. Р. Камминг 2008
5. Великие полотна. Ветрова Г. 2003
6. Возвраждение. XV век: Кватроченто. Дзуффи С 2008

ISBN: 978-625-90699-4-4

THE SYMBOLIC SEMANTICS OF JUSTICE: THE UNITY OF PHILOSOPHICAL IMAGES IN FINE ART

Mansirova Shahana Zulfugar
Teacher at the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University, Baku, Azerbaijan

Abstract

The article analyzes the role of symbolic images in fine arts as a means of expressing human social, moral, and philosophical thoughts, using a composition centered on the core idea of "Rays of Justice" as an example. The semantic meanings of symbols such as the sword (acting as the central axis), open book, scales, eye, sun, red flower, and human profiles, along with their interrelations within a unified philosophical-artistic system, are explored.

The study demonstrates that justice is presented not merely as a strict legal mechanism, but as a moral and ethical responsibility arising from the unity of knowledge, truth, conscience, objectivity, and mercy. It is substantiated how the vertical compositional structure, symmetrical balance, and color scheme formally complement the conceptual content of the work. Overall, the piece is interpreted as a visual moral model evaluating human and societal relationships on a philosophical plane.

KEYWORDS: fine art, symbolism, concept of justice, semantic analysis, philosophical-artistic text, compositional structure, moral balance, visual metaphor.

İntroduction

In fine art, symbolic images serve as one of the key means of expressing human social, moral, and philosophical thoughts. Throughout the centuries, artists have not merely depicted visible reality; by endowing various objects and figures with additional meaning, they have expressed universal concepts such as justice, truth, freedom, love, struggle, life, and death. In this context, the presented artwork attracts attention as a composition that combines numerous symbolic images and explores human and societal relationships on a philosophical plane.

The main conceptual line of the work consists of the notion of justice, the preservation of truth, moral balance, and the inner world of the human being. Various symbols—such as a book, a sword, scales, an eye, human profiles, the sun, and a flower—are presented interconnectedly within the composition. Although each of these elements carries an individual semantic meaning, their combination within a unified composition further reinforces the central idea of the work. Every symbol depicted here, though appearing as an independent image at first glance, is actually an integral part of the overall conceptual system. In this regard, the artwork can be evaluated not merely as a depiction of individual objects, but as a unified philosophical-artistic text constructed through symbolic signs. Based on the general structure of the work, it can be said that justice is presented here not only as a legal and social concept, but also as a universal principle formed within the human moral world. The images of the "sword," "scales," and "book" placed at the center of the composition create the main ideological axis of the work. These three key elements symbolize the unity of the concepts of "truth," "law," and "justice." The book serves as a symbol of knowledge and truth, the sword of law and power, and the scales of objectivity and balance. The interaction of these elements within a single composition demonstrates that justice is tied not only to the law, but also to knowledge, thought, and moral responsibility.

The image of the book holds special significance in the semantic structure of the work. Depicted in an open state, the book primarily represents the concepts of knowledge, science, enlightenment, and truth. The open position of the book demonstrates that it is presented not as a secret or enclosed source of knowledge, but as an accessible source of truth and moral

ISBN: 978-625-90699-4-4

value for humanity. For justice to be established properly, it is essential for a person to comprehend events, understand cause and effect, and possess the ability to discern truth from falsehood. From this perspective, the book image constitutes the intellectual and moral foundation of justice within the composition. In other words, in the semantic system of the artwork, the starting point of justice is knowledge and truth. It is also no coincidence that the book enters into a visual relationship with the sword along the central axis. In a sense, a relationship of mutual complementarity emerges between these two symbols. The book expresses knowledge and truth, while the sword expresses the defense of this truth and the law. Here, it is possible to interpret the sword not merely as a weapon, but as the protective force of law and justice. If the sword is accepted as a symbol of physical force, the book positioned beside it indicates the direction in which this force should be utilized. Thus, the work is concerned not with force itself, but with the purpose that force serves. When law and force stray from knowledge and truth, the concept of justice risks losing its essence. Therefore, the combined depiction of the book and the sword expresses the interplay between knowledge and force, and between truth and law.

This evokes Mammed Said Ordubadi's historical novel *"The Sword and the Pen"* (*"Qılınc və qələm"*).

The sword placed at the center of the composition is one of the key elements of the artwork from both a formal and semantic perspective. Its vertical orientation creates a unified axis that connects all parts of the composition. The visual connection of the sword with the book at the top, the sun in the center, and the human profiles at the bottom links the various semantic layers of the work together. Thus, the sword functions not only as the central element of the composition, but also as a symbolic bridge connecting knowledge, truth, law, and humanity.

Another important feature of the sword motif is its association with the human hand. The human hand here symbolizes willpower, action, responsibility, and the capacity for decision-making. This detail further deepens the philosophical content of the work. For although law and justice exist as abstract concepts, their implementation depends on human will. In this sense, the artwork poses a fundamental question to the viewer: Who executes justice, and who is responsible for its preservation? According to the semantic structure of the composition, the answer lies within the human being itself. Consequently, humanity is presented in the work as both the subject of justice and the entity holding responsibility before it.

The motif of the scales in the artwork serves as one of the oldest and most universal symbols of the concept of justice. The primary function of scales is to weigh, compare, and establish balance. Therefore, their placement in the composition demonstrates that justice relies on the principles of objectivity and equality. The scales imply the evaluation of both sides without granting unjustified preference to either. In this regard, the scales in the work express not only legal justice, but also the principle of moral balance in human life.

The positioning of the scale pans on either side of the composition also reinforces the overall symmetrical structure of the work. Thus, a mutual harmony between form and content is established here. The visual balance inherent in the composition itself formally confirms the central idea of the work—the concept of justice and equality. In other words, the idea of justice is expressed not only through the depicted symbols, but also through the compositional structure itself.

The eye motif placed on one of the scale pans brings an additional philosophical nuance to the semantic content of the artwork. The eye is traditionally associated with perception, observation, consciousness, knowledge, and truth. For justice to be carried out, one must first see and comprehend the truth. From this perspective, the eye image can express the idea of bearing witness to the truth, seeing what is concealed, and penetrating the essence

ISBN: 978-625-90699-4-4

of events. At the same time, the eye can be interpreted as a gaze directed toward the inner moral world of the human being. In this case, the eye transforms from an organ merely observing the external world into a symbol of an inward gaze turned toward one's own conscience and moral responsibility.

The red flower placed on the other scale pan creates an interesting semantic contrast with the eye motif. While the eye is mostly associated with observation, reason, and truth, the flower expresses the concepts of life, love, beauty, emotion, and mercy. The placement of these two images on opposite scale pans raises the problem of balance between reason and emotion, objectivity and mercy, and law and humanity within the artwork. Here, justice is presented not merely as a rigid and cold legal mechanism, but as a humanistic principle that accounts for the human element.

In this regard, one of the vital philosophical messages of the work can be formulated as follows: "True justice requires the involvement of both the mind and the human heart." A decision based solely on emotions may lose its objectivity, whereas an approach based strictly on cold law may weaken its humanistic essence. The mutual relationship between the eye and flower motifs in the work precisely emphasizes the necessity of harmony between these two principles.

The sun motif, which occupies a prominent place in the composition, further expands the conceptual and thematic weight of the artwork. Across various cultures, the sun has been accepted as a symbol of life, light, truth, energy, and spiritual awakening. In the presented work, the placement of the sun in a golden-yellow hue at the central section turns it into one of the main emotional centers of the composition. The rays radiating from the sun seem to illuminate the entire composition, presenting the concept of justice as a transition from darkness to light.

From this perspective, the sun motif can symbolize the unveiling of truth and the establishment of justice. The confrontation between darkness and light here carries a metaphorical nature: darkness signifies ignorance, injustice, and moral blindness, while light expresses knowledge, truth, and justice. The placement of the sun behind the sword also creates an intriguing semantic connection. This suggests the idea that the power underlying law and justice must be guided by truth and spiritual light.

The two human profiles located at the bottom of the artwork connect the philosophical content of the composition with the human element. These profiles are positioned face to face with the central sword placed between them. The mutual positioning of the human profiles can be interpreted as a dialogue, a confrontation, or an encounter between two different worldviews. Simultaneously, they can symbolize two distinct facets of the human inner world—reason and emotion, good and evil, as well as individual and social principles.

The sword situated between the human profiles acts as both a boundary and a balancing element between these two sides. In this sense, the position of the sword demonstrates that law and justice serve as essential regulatory forces for resolving contradictions arising within human relations and society. However, the depiction of the sword alongside the book, scales, and sun indicates that this regulation must rely not solely on physical force, but on knowledge, objectivity, and moral responsibility.

Thus, the human profiles in the work function not merely as portrait elements, but as a generalized image of humanity. Rather than representing individual personalities, they act as symbolic figures depicting the various facets of society. From this standpoint, the main idea of the work addresses human and societal relationships. Justice in society becomes possible not merely through the existence of laws, but when individuals embrace the principle of justice within their own behavior and thinking.

The interaction of all these symbols forms a unified semantic system of the work. The book represents knowledge and truth, the eye represents seeing and perceiving the truth, the

ISBN: 978-625-90699-4-4

sun spiritual light and hope, the sword law and responsibility, the scales justice and balance, and the flower humanity, compassion, and life. None of these symbols should be considered in isolation from the others; their primary meaning emerges precisely from their interaction within the composition.

From this perspective, the semantic structure of the work can be conditionally expressed as: "Knowledge leads to truth, truth to law, law to justice, and justice to spiritual balance." However, man stands at the center of this process. Man is a being who seeks truth, creates law, executes justice, and experiences its consequences.

The core philosophical idea of the presented work is that justice is not merely a legal norm, but a moral and ethical responsibility of man. For justice to exist, law must be accompanied by knowledge, truth, conscience, objectivity, and compassion. The symbolic language of the work prompts the viewer to establish connections among these concepts and to reflect upon the essence of justice.

In this regard, the composition can be evaluated not only as an artistic work depicting justice, but also as a visual text of a philosophical nature presenting a moral model of a just society. The integrity of the symbols in the work demonstrates that justice requires balance like a scale, knowledge like a book, responsibility like a sword, seeing the truth like an eye, and spiritual light like a sun. Through the harmony of these elements, the central idea of the work emerges: the concept of justice rooted in truth and protected by humanity and moral values.

The composition of the work is structured vertically. This allows the viewer's gaze to move from bottom to top and top to bottom, sequentially absorbing the various symbolic layers of the work. The long, sharp sword positioned at the center of the composition serves as the main axis unifying all visual elements.

The placement of the sword in the center of the composition is not accidental. In the visual structure of the work, it forms both the foundation of symmetry and the ideological core. The open book above the sword, the sun-like form resting upon it, and the human profiles divided between the scales below organize the semantic structure of the work in a stepped, layered manner.

An open book is depicted in the upper section of the composition. A decorative, ornamented form extending downward from the center of the book visually connects with the hilt of the sword. Thus, a spiritual connection is established between the book and the sword. Here, the book can express knowledge and truth, while the sword represents the power of law and justice.

The image of the golden sun located in the center of the composition is one of the brightest visual focal points of the work. The rays emanating from the sun impart dynamism to the composition and visually emphasize the central idea. The sun here can be interpreted as a symbol of light, truth, rightfulness, and spiritual awakening.

In the lower section of the work, the placement of two human profiles facing each other commands attention. Rendering the human faces in two distinct colors and textures can signify not only their physical difference, but also their contrasting worldviews and life stances. The sword positioned between these two profiles illustrates the boundary between them, as well as the principle that justice must be applied equally to both sides.

From this perspective, the overall structure of the composition shapes the following idea: people may be different, but everyone is equal before justice.

One of the most essential symbols of the work is the sword. The sword is a universal symbol in visual arts, carrying various meanings. On one hand, it can symbolize power, struggle, and defense; on the other, the enforcement of law and justice.

ISBN: 978-625-90699-4-4

In this work, the shape and placement of the sword demonstrate that it carries a broader meaning than a mere weapon image. Positioned in the exact center of the composition, the sword unifies all elements of the work. Its tip points downward. This orientation highlights the legislative and regulatory function of the sword rather than a destructive one.

Particularly noteworthy is the depiction of the sword's hilt in the form of a human hand. Here, the human hand symbolizes willpower, responsibility, and the capacity for decision-making. The mere existence of law is insufficient for the execution of justice; the human will that protects and applies it is equally crucial.

In this regard, the integration of the sword with the human hand can be interpreted as follows: the fate of justice depends on human conscience, will, and responsibility.

One of the clearest and most universal symbols of the work is the scale. Historically, the scale has been considered one of the primary symbols of justice. Its core function is to measure, compare, and establish balance.

In the presented work, the scales are positioned on both sides of the composition. This placement reinforces the symmetrical structure of the artwork. However, the various imagery placed upon the scales adds further semantic depth to the piece.

The placement of the eye image on the left scale expresses the idea of observation, oversight, and witnessing the truth. Here, the eye is not merely an organ of physical vision, but also a symbol of moral and philosophical perception. For justice, it is essential to see the truth, to comprehend the essence of events, and to uncover that which is hidden.

On the scale positioned on the right side, a red flower commands attention. The flower is traditionally a symbol of life, love, beauty, and hope. The color red, meanwhile, is associated with passion, vital energy, and at times, the concept of sacrifice. Thus, an intriguing semantic juxtaposition emerges between one scale bearing an eye and the other bearing a flower.

Together, these two symbols can represent the balance between truth and humanity, law and mercy, objectivity and emotion. Justice must be complemented not only by strict law, but also by human moral values. In this sense, the artwork presents the concept of justice not solely within a legal framework, but also from an ethical and humanistic perspective.

The eye imagery in the work is one of the ancient and universal symbols. Across various cultures, the eye has been associated with divine oversight, wisdom, truth, consciousness, and spiritual awakening.

Positioning the eye on one pan of the scale in the composition enhances its specific semantic significance. Here, the eye can express the idea that justice sees all. Through this symbol, the thought is conveyed that no event, no injustice, and no truth remains hidden.

The eye can also symbolize a person's inner vision. In this case, the artwork invites the viewer to look not only at the external world, but also into their own inner realm. When reflecting upon justice, a person must first be just within themselves.

The open book placed in the upper section of the composition is one of the key symbolic elements of the work. Throughout history, the book has been regarded as a bearer of knowledge, science, memory, history, and truth.

The open state of the book in the work is particularly significant. Unlike a closed book, an open book symbolizes openness to knowledge, as well as the pursuit and acquisition of truth.

The depiction of the golden sun located in the central part of the work is one of the strongest elements of the composition in terms of emotion and color.

As one of the most ancient symbols, the sun is associated with life, light, energy, and truth. Just as light makes the truth visible in the face of darkness, justice reveals the hidden inequities within society. The placement of the sun behind the sword creates a particularly

ISBN: 978-625-90699-4-4

interesting compositional solution. In this arrangement, the sword is associated not merely with rigidity and force, but also with light—that is, with truth. The radiating of golden rays in various directions can symbolize the dissemination of justice and truth throughout all spheres of society.

The color scheme of the work plays a vital role in shaping its symbolic content. The composition utilizes white, golden-yellow, green, blue, red, and brown tones.

White mainly dominates the book and certain parts of the background. The color white expresses purity, cleanliness, truth, and spiritual clarity. Rendering the open book with white surfaces reinforces its perception as a source of truth and knowledge.

The "gold and yellow" colors manifest themselves in the depiction of the sun. These colors are associated with light, energy, intellect, spiritual elevation, and hope. The golden tones of the sun visually emphasize the central idea of the composition.

The color "green" is utilized in the human profile on the right side and in the plant-like decorative element. Green is a symbol of nature, life, renewal, and development. This color adds a humanistic and life-affirming nuance to the rigorous legal and philosophical theme of the artwork.

The color "blue" creates a sense of tranquility, contemplation, stability, and spiritual depth. The blue tones in the lower section of the work soften the emotional tension of the composition and impart a calm, reflective atmosphere to it.

The color "red" is primarily used in the image of the flower. Although it covers a small area within the composition, it possesses strong emotional impact. The red flower acts as a symbol of life, love, and human emotions. Within the coloristic structure of the work, golden light, white truth, green life, blue contemplation, and red emotion interact with one another to form a unified semantic system. The two human profiles placed facing each other in the lower section of the work constitute one of the most intriguing semantic elements of the composition. One of the human faces is rendered in warmer tones, while the other is depicted in cooler colors. Juxtaposing these two profiles can express the dual nature of humanity—its rational and emotional, individual and social, material and spiritual dimensions.

The sword positioned between the human profiles serves as both a boundary and a balancing element between these two worlds. Thus, the central position of the sword demonstrates that justice is the primary regulatory force in human relations.

Here, the placement of two people facing each other also creates the idea of dialogue. Justice is not merely delivering a judgment, but also the ability to listen to the opposing side, to understand, and to arrive at an objective decision.

Analyzing all the symbols of the work together reveals a unified semantic system. The book expresses knowledge and truth, the sword law and power, the scale justice and balance, the eye the observation of truth, the sun light and spiritual clarity, and the flower humanity and compassion. The interaction of these symbols shapes the core philosophical idea of the work: Justice must be built upon truth and knowledge, while force and law must be balanced with humanity and compassion. In the work, justice is not presented as the dominance of one side over another. On the contrary, the concept of balance is brought to the fore through the symbol of the scale. This balance must be established between individual and society, law and mercy, reason and emotion, power and responsibility.

The presented work is an example of a multi-layered composition that commands attention through its symbolic and philosophical content. Although the central idea of the work takes shape around the concept of justice, this concept acquires a broader meaning through diverse symbols such as the book, sword, scale, eye, sun, human, and flower. Located at the center of the composition, the sword forms the main ideological axis of the work and interconnects the other symbols. The unity of the book and the sword becomes a symbol of

ISBN: 978-625-90699-4-4

knowledge and power, while the scales symbolize justice and balance. The eye represents seeing the truth, the sun spiritual light, and the flower humanity and mercy. The most vital feature of the work is that justice is presented here not merely as a legal category, but as a moral and philosophical responsibility of man. The symbolic use of colors, vertical composition, construction of the central axis, and integration of various symbols around a unified idea reinforce the artistic expressiveness of the work.

The work does not merely ask the viewer, "What is justice?", but also poses a deeper question: "What values must a person possess within themselves to preserve justice?" In this regard, the piece presents the unity of truth, knowledge, responsibility, conscience, and compassion as the essential prerequisite for a just society.

The potential title of the work—"Rays of Justice" (or "Dawn of Justice")—further complements this idea. Here, "ray/dawn" symbolizes the transition from darkness to light, as well as the birth of truth and justice. Thus, the work as a whole poetically and symbolically expresses the idea of justice breaking through the darkness to generate a new spiritual light for humanity and society.

References

1. Ninni bebeğim , ninni. Ninni Şiirleri Antolojisi. Tertibçi Mustafa Ruhi Şirin. – Ankara, Aile Araştırma Kurumu Başkanlığı Yayınları
2. Boratav P.N. Halk hikayeleri ve halk hikayeçiliyi. - Ankara, Milli Egitim Basımevi
3. Onay Ahmet Talat. Eski Türk Edebiyyatında mazmunlar ve izahı. Hazırlayan doç. Dr. Semal Kurnaz. – Ankara, Türkiye Diyanet Vakfi Yayın Maivaasilik ve Ticaret İşletmesi
4. Əfəndiyev.R., Kərimov.K., Rzayev.N., Həbibov.N. Azərbaycan incəsənəti : Monoqrafiya. Bakı: İşıq, 1992
5. R.Əfəndi. Azərbaycan incəsənəti. Bakı, 2001.
6. Бодрийяр Ж. Символический обмен и смерть / Зенкин С. Н. (пер.с франц. и вступ.ст.) – М., 2000

ISBN: 978-625-90699-4-4

THE UNITY OF MYTHOLOGICAL AND NATIONAL SYMBOLS IN ARTISTIC COMPOSITION: AN ANALYSIS OF J. YAHYA'S WORK "AYDAN YERI"

Mansirova Shahana Zulfugar
Teacher at the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University, Baku, Azerbaijan

Abstract

The presented artwork is analyzed from the perspective of the use of symbolic motifs in contemporary visual art. The composition is centered around a stylized number “4”, which symbolizes wholeness, balance, harmony, and cosmic order. The four female figures in the artwork embody the four primordial elements: earth, water, air, and fire. The female figures represent different manifestations of life, nature, creativity, inner strength, and spiritual energy.

The pomegranate, as an important symbol of Azerbaijani national culture, reflects abundance, prosperity, unity, life, and continuity of generations. The ornaments evoke the traditions of Azerbaijani carpet weaving, wood carving, and miniature art, establishing a connection between national cultural memory and contemporary art. The colors, flowing lines, and dynamic structure of the composition enhance the symbolic and philosophical content of the artwork. As a result, the artwork is presented as a multilayered artistic work expressing the unity between human beings, nature, and the universe, as well as the eternal cycle of life and the harmony of the world.

Keywords: Symbolism, contemporary visual art, the number “4”, four elements, female figure, pomegranate symbolism, ornament, Azerbaijani art, national culture, nature, harmony, wholeness, cosmic order, cycle of life, philosophical meaning.

Introduction

The use of symbols in contemporary visual art is one of the main ways through which artists express their ideas and philosophical thoughts. An artist does not depict every image and form presented in an artwork merely to create beauty. The colors, figures, elements of nature, and other details may each carry a particular meaning and their own symbolic significance. In such artworks, the primary aim is not simply to portray the surrounding world as it is, but rather to convey the artist’s perspective on the world and their reflections about it to the viewer.

The presented artwork is also characterized by an interesting and multifaceted composition in this regard. Decorative forms, female figures, nature motifs, and numerical symbolism are presented in an interconnected manner. Although these elements convey different meanings individually, together they complement the overall idea of the artwork and create a unified artistic vision. At first glance, the decorative and aesthetic appearance of the artwork attracts attention; however, a closer examination reveals deeper philosophical meanings embedded within the composition.

The prominent role of female figures in the artwork does not appear to be coincidental. In art, the female figure is often associated with the beginning of life, Mother Nature, creativity, beauty, and life-giving power. In this artwork, the female figures can likewise be interpreted as symbols expressing the continuity of life and nature. Their depiction together with nature motifs further strengthens the connection between humans and nature. From this

ISBN: 978-625-90699-4-4

perspective, the idea that humans are not separate from nature but rather an integral part of it comes to the forefront.

One of the most striking features of the artwork is its numerical symbolism. Numbers have carried special meanings in various cultures and works of art since ancient times. In the presented composition, the use of numbers is not merely formal but conveys a particular philosophical and symbolic meaning. In particular, the number four is associated with the concepts of wholeness, balance, and stability in various cultures. In this context, the symbolic representation of the four basic elements—earth, water, air, and fire—demonstrates the unity of the natural forces that form the foundation of life and the universe.

Nature motifs are among the key elements that complement the overall idea of the artwork. Earth, water, air, and fire carry symbolic meanings in the artwork as fundamental elements that play an important role in human life and the existence of nature. The presentation of these elements together expresses the balance and harmony existing in the universe. Although each element has its own characteristics, their unity ensures the wholeness of life. In this sense, the artwork emphasizes the close relationship between humans, nature, and the universe.

At first glance, the artwork appears to be a decorative composition built around a stylized number “4”. However, upon closer examination, it becomes clear that it contains a deeper philosophical meaning. By combining four female figures, the pomegranate, plant ornaments, and a complex system of lines within a single composition, the artist creates a multifaceted and holistic image of the universe. Each element in the artwork is presented not separately, but in interaction with the other symbols. The way these elements complement one another more clearly expresses the idea of the unity of humans, nature, and the spiritual world.

The artwork primarily evokes a mythological worldview based on the interaction of the four primordial elements. According to the perceptions of ancient peoples, the world and the universe were formed through the unity and interaction of certain fundamental elements. From this perspective, the number “4” in the artwork can be regarded not merely as a form determining the structure of the composition, but also as an important symbol expressing the concepts of wholeness, balance, and harmony.

At the same time, the artwork is closely connected with Azerbaijani artistic traditions. In Azerbaijani visual and decorative arts, particular importance is attached to decorative qualities, ornamentation, and the use of symbolic imagery. In particular, the pomegranate is considered one of the important symbols in Azerbaijani culture and art. The pomegranate is associated with abundance, prosperity, life, fertility, and unity. Its depiction together with the female figures and plant ornaments in the artwork further reinforces this symbolic meaning.

In the composition of the artwork, the number "4", female figures, pomegranates, and plant ornaments interactively form a unified artistic system. The interplay of these symbols allows for a deeper understanding of the work's main idea, bringing the inseparable connection between humanity, nature, and the spiritual realm to the fore. By combining traces of ancient mythological worldviews with the characteristics of Azerbaijan's national art traditions, the artwork creates an original, multi-layered artistic meaning.

The core of the composition is formed by a stylized number "4". In this work, this number serves not merely as a graphic symbol, but as an artistic structure that shapes the entire composition and determines its design. An entire artistic world composed of various symbolic imagery is created within the number. Thus, the number "4" becomes the central element that brings together both the exterior appearance and the internal semantic system of the artwork.

One of the interesting aspects is that the number fulfills several different functions within the artwork. On one hand, it organizes the space of the composition, uniting all the

ISBN: 978-625-90699-4-4

figures and elements placed within it into a single system. On the other hand, it acts as one of the main philosophical symbols of the work. The soft and fluid curves of the number allow it to be perceived not merely as a conventional mathematical sign, but rather as a living, dynamic form. It is as if within this form, life is born, evolves, and continuously moves forward. In this regard, the number "4" creates the impression of a symbolic image expressing the wholeness of life and the universe.

All elements of the composition are primarily arranged in a circular and fluid motion. The movement of the women's hair, the soft curves of the ornaments, and the lines of the pomegranate depictions and floral motifs complement one another, creating a sense of uninterrupted movement. The rhythm created by these lines guides the viewer's gaze continuously across different parts of the artwork. Consequently, the viewer does not focus for long on just a single figure or detail; instead, they perceive the entire composition as a unified whole. Such a compositional structure produces an effect that expresses the continuity, cyclical nature, and endless motion of life.

Another notable feature of the artwork is the absence of strict, complete symmetry. Although the composition appears balanced and harmonious as a whole, each figure and detail possesses its own distinct form and expression. The differing plastic structure of the female figures and the emotional resonance they evoke imbue the work with a distinct vitality and dynamism. Consequently, the composition does not feel static or fixed. On the contrary, the movement of shapes, the fluidity of lines, and the diversity of the figures reinforce its lively and dynamic character.

In the compositional structure of the artwork, the number "4" functions not only as the primary visual form, but also as a crucial symbol that unites all artistic elements and completes the philosophical content of the piece. The circular motion, fluid lines, ornaments, and female figures together express the infinite cycle of life and the continuous movement inherent in nature. Meanwhile, the breakdown of symmetry grants the work a more organic and natural character, heightening its emotional impact. Across most ancient cultures, the number four has been regarded as a symbol expressing the wholeness and completeness of the world. It also holds a special place in the spatial and temporal structure of the universe—manifested in the four cardinal directions, four seasons, four main divisions of the day, and four fundamental elements of nature. In this light, the number four can be considered a universal symbol representing the order, balance, and wholeness existing within the universe.

In ancient philosophy, ideas regarding the four fundamental elements also hold an important place. The ancient Greek philosopher Empedocles viewed earth, water, air, and fire as the primary elements forming the basis of all existence. According to him, each of these elements possesses its own distinct characteristics and energy. However, the creation of life and existence becomes possible only through their interaction and unity. In this respect, although the individual elements differ from one another, their synthesis forms the foundation of harmony and life in the universe.

In the presented artwork, the artist draws directly from this idea, transforming the number "4" into a symbol of cosmic balance and wholeness. Here, the number is not merely a numerical indicator, but carries a philosophical meaning that brings together the diverse forces of nature and the spiritual world of humanity. Much like the interaction of the four elements, the various figures and symbols in the artwork complement each other to create a single artistic whole.

In this sense, the number "4" in the artwork can be evaluated as a unique axis of the universe. It plays the role of a primary symbolic center that connects the various states of nature with the human inner world and spiritual realm. Thus, through the number four, the work expresses the existing connection and harmony between humanity, nature, and the cosmos. The fact that this number forms the foundation of the composition further reinforces

ISBN: 978-625-90699-4-4

the artwork's overall philosophical idea, demonstrating that the diverse elements of the world constitute a unified and balanced system.

The four female figures hold a special place in the composition. These faces are not portraits depicting concrete people or real individuals; rather, they are presented as figures bearing a certain symbolic and allegorical meaning. Each of them can be perceived as an artistic symbol expressing a specific principle or element of nature. The facial expressions, emotional states, and direction of gaze of the female figures differ from one another. This contrast infuses the artwork with variety and vitality. Yet despite these differences, each figure remains an integral part of the unified composition and stays aligned with the overarching idea. They complement one another, preserving the integrity and harmony of the work.

It is as though the artist attempts to manifest the distinct expressions of a single, universal female energy through these diverse female figures. Here, the female figure is not confined merely to concepts of beauty and grace; it acts simultaneously as a symbolic representation of the creation of life, the fertility of nature, inner strength, and spiritual energy. Uniting the four female faces within a single composition illustrates that these various forms of energy constitute a unified whole. In this regard, the female figures play a crucial role in unlocking the core philosophical idea of the piece. Although each creates a distinct character and emotional resonance, together they express the inseparable unity of humanity and nature, the varied manifestations of life, and the multifaceted character of the universal feminine principle.

The female figure with long green hair located at the top of the artwork is one of the composition's most expressive and striking images. Her flowing hair primarily evokes air currents, the movement of the wind, and the fluid form of clouds. As the hair cascades beyond the boundaries of the composition, it seems to disrupt the spatial statics and infuse the artwork with a sense of motion. This feature further accentuates the figure's connection to the element of air.

In many philosophical and mythological worldviews, air is regarded as a symbol of freedom, inspiration, thought, intellect, and the spiritual origin. In this light, the forward direction of the woman's gaze appears far from accidental. It is as though she is in constant pursuit of new knowledge, journeying toward unknown paths and striving for fresh perspectives. A sense of curiosity and quest directed toward the future is clearly observable in her eyes.

The greenish hues used in her hair reinforce her deep connection to nature. The color green is traditionally associated with renewal, nature, growth, and vitality. Consequently, alongside the element of air, this figure embodies the ideas of nature's regeneration and the continuity of life. Thus, the upper female figure completes the artwork's overall philosophical narrative as a symbol expressing freedom, intellect, inspiration, and renewal.

In contrast, the second female figure situated on the right side of the composition is depicted with her eyes closed. Her facial expression conveys tranquility and an inward-looking state of contemplation. While the first female figure looks outward toward the external world and the future, this image leaves an impression of being turned inward, deeply focused on her emotions and inner realm.

The soft, fluid forms of the woman's hair recall the movement and serene flow of water. The smooth, refined structure of these lines amplifies the feeling of calm and peace within the composition. For this reason, linking this figure to the element of water appears entirely natural and logical.

Water traditionally symbolizes the human emotional realm, feelings, intuition, and memory. Simultaneously, it is connected to concepts of purification, renewal, and transformation. In this context, the woman's closed eyes signify that she is attuned to her inner

ISBN: 978-625-90699-4-4

world rather than external realities. It is as if she has stepped back from surrounding events to listen to her own feelings and inner thoughts.

Closed eyes can also signify inner contemplation, reflection, and a spiritual search. Through this image, the artist conveys the idea of an individual turning inward, understanding their emotions, and seeking spiritual tranquility. Thus, representing the element of water, this female figure symbolizes emotional depth, intuition, and a journey into the inner world.

The third female figure, located in the lower-left section of the composition, produces a more stable and restrained impression compared to the previous images. Her face is directed downward, and her gaze is presented in a serious and thoughtful manner. A sense of inner strength, composure, and self-confidence is felt in the figure's overall appearance.

Earth is traditionally accepted as the foundation of stability, fertility, reliability, and the bedrock of life. In this respect, placing the third female figure specifically in the lower part of the composition is not accidental. It is as if this figure supports the entire composition from below, forming its solid foundation.

As in nature, earth plays the role of the primary base and support for the existence of all living beings in the artwork's symbolic system. The lives of all creatures, including humans, are tied to the earth in a certain sense. Therefore, this image can be understood as a symbol expressing the foundation of life, stability, and steadfastness. Her serious and calm expression further reinforces this meaning. This female figure stands as the core force maintaining stability against the movement and dynamism present in the composition's other elements.

One of the most enigmatic and striking figures in the artwork is the central image placed within the number "4". Partially hidden among decorative elements, this image appears to emerge directly from the composition's structure itself. The fact that it is not fully visible heightens its mystical and intriguing effect.

Since ancient times, fire has been considered one of the primary symbols of life force, energy, creativity, and transformation. It is perceived as a force that both consumes and regenerates. Just as the warmth of fire sustains life, its energy can be linked to human inner strength and creative potential.

The artist's choice to position this figure specifically inside the number "4" carries special symbolic resonance. One can suggest that a person's core energy and creative power lie hidden within their inner world. The partial concealment of the figure amid decorative elements may express that this inner energy is not always openly visible, yet remains continuously present within the human spirit.

Thus, alongside symbolizing the element of fire, the central image encapsulates human inner strength, creative energy, and the capacity for transformation. Together with the other three female figures, this image completes the quartet of elements. The stability of earth, the emotional depth of water, the freedom of air, and the energy of fire converge to construct a complete model of life and the cosmos within the artwork.

One of the key semantic accents of the artwork is formed by the depiction of the pomegranate. The pomegranate holds a special and prominent place among symbols in Azerbaijani culture. This fruit is traditionally associated with concepts of fertility, family well-being, unity, abundance, and prosperity. It is no coincidence that Azerbaijan is often known as the "land of pomegranates." The Pomegranate Festival held annually in Goychay serves as another clear indication of the distinct role this fruit plays in Azerbaijani culture and national identity. However, in the presented artwork, the image of the pomegranate functions not only as a national emblem, but also as an element carrying a broader philosophical meaning. The artist presents both whole pomegranates and sliced-open depictions of the fruit within the composition.

ISBN: 978-625-90699-4-4

The juxtaposition of the fruit's exterior and interior appearance evolves into one of the work's core artistic ideas. Viewed from the outside, the pomegranate conveys an impression of a intact, serene, and unified fruit. Yet hidden within it are numerous radiant seeds. These seeds can be understood as symbols of life, energy, birth, and generational continuity. Each individual pomegranate seed can be envisioned as a distinct human destiny, while the whole pomegranate symbolizes people living together, a family, a society, and even an entire nation. In this regard, the multitude of seeds inside the pomegranate brings the idea of unity to the forefront despite individual differences. Although each seed is small and independent on its own, they are closely linked within the whole fruit. This characteristic symbolizes the connection and solidarity between the individual, family, and society.

The red color of the seeds reinforces this symbolic meaning, expressing life energy, love, passion, and spiritual strength. In the artwork, the pomegranate acts both as a key symbol of Azerbaijani national culture and as a philosophical image expressing the continuity of life, unity, and wholeness. The contrast between the pomegranate's exterior and interior structures draws attention to the relationship between outer appearance and inner essence.

Another primary quality enhancing the artistic value of the piece is its rich ornamental system. The ornaments envelop nearly every section of the composition, interconnecting various images and elements. The lines used here are far from random; each line and pattern fulfills a specific role in shaping the overall composition and serves to unpack the artwork's symbolic content. The swirling and fluid forms within the ornaments recall traditional artistic motifs found in Azerbaijani carpet weaving, wood carving, and miniature painting. In this context, ornament does not merely serve a decorative purpose, but transforms into an essential artistic medium expressing a connection to national cultural heritage.

The ornament acts here as a kind of language of memory. It connects this modern work of art with the historical and cultural legacy of the nation, bringing the past and present together. Through these traditional motifs, one can see how national artistic memory is sustained within contemporary artistic thought. Furthermore, the intertwining and endlessly continuing lines symbolize the continuity of life, the succession of generations, and the perpetual movement of time. The unending rhythm of the ornament evokes the constant cycle of existence. In this sense, the ornaments create visual beauty while simultaneously serving as a philosophical bridge connecting humanity's past, present, and future.

Thus, the ornament carries aesthetic, national, and philosophical significance within the artwork. On one hand, it unites the distinct parts of the composition into a harmonious whole; on the other, it keeps the rich artistic traditions and cultural memory of the Azerbaijani people alive through modern means of artistic expression.

In the artistic impact of the work, colors play as crucial a role as the plot and composition. By intentionally limiting the color palette, the artist allows each used hue to acquire its own distinct symbolic meaning. In this regard, color in the artwork is not merely a tool for aesthetic beauty, but an essential artistic medium that completes the core idea of the composition.

The red color of the pomegranates forms the emotional center of the piece. Red is traditionally linked to concepts of love, life, blood, generation, and inner energy. The vibrant red hue of the pomegranate seeds highlights the strength and continuity of life more prominently. Simultaneously, this color creates a sharp contrast with the other calm tones of the artwork, drawing the viewer's immediate attention toward the pomegranates.

Green hues are associated with nature, spring, renewal, hope, and vital energy. Particularly in the female figure with green hair, the use of this color reinforces her connection to nature and the element of air. Green brings vitality to the overall composition, pushing the concepts of renewal and development to the fore.

ISBN: 978-625-90699-4-4

The silvery-gray color of the number "4" imbues the work with a sense of antiquity and wisdom. This tone makes the number resemble an ancient monument carved from stone or metal rather than a simple graphic sign. It is as if the number "4" exists beyond time, having become part of the eternal structure of the universe—a quality that elevates its philosophical and symbolic weight within the piece.

Dark decorative lines serve both aesthetic and constructive functions in the composition. Connecting distinct figures and elements with one another, these lines preserve the structural integrity of the artwork. Meanwhile, the light-colored background renders the space broader and almost boundless. Consequently, the main composition creates the impression of an eternal realm existing outside concrete frames of time and space.

The ultimate value of the artwork lies in its multi-layered nature and capacity for diverse interpretations. The artist avoids offering a single rigid explanation, creating instead a symbolic artistic space where everyone can draw distinct meanings based on their worldview and reflection. Through the number "4", female figures, pomegranates, and ornaments, key philosophical ideas—such as the connection between humanity and nature, and the unity of physical and spiritual principles—come forward.

The female imagery carries particular significance in this composition. Here, woman is presented not as a portrait of a specific individual, but as an archetypal image. She transforms into a symbol of life, nature, creativity, and inner power. The four female faces can simultaneously be interpreted as different states of a single human or unified entity. They express contrasting yet complementary conditions: youth and maturity, reflection and action, stillness and energy. Alternatively, the four female figures can be connected to the four seasons of the year and the four primary stages of human life—an approach that expands the artwork's philosophical scope and evokes profound reflection on time, life, and human existence.

One of the core ideas of the artwork is that global harmony emerges through the interaction of diverse and even opposing forces. Each natural element possesses its own distinct characteristics and energy. However, only their combined existence creates the complete picture and equilibrium of the universe. In this regard, earth represents stability; water, emotional depth; air, freedom and spiritual origins; and fire, vital energy and creative power. The pomegranate symbolizes the continuity of life and the bond between generations.

The ornaments create a spiritual bridge between the present and the past, preserving cultural memory and national artistic traditions. Meanwhile, the number "4" becomes the symbol of stability, balance, and cosmic order that brings all these elements together. All these features allow the piece to step beyond the boundaries of being merely a decorative work of art.

The composition transforms into a philosophical masterpiece that evokes profound reflection on humanity, time, and the eternal cycle of life. Bringing universal philosophical symbols and national artistic traditions together enriches the content and makes it multi-layered. One of the most intriguing aspects of the artwork is its ability to use traditional symbols while maintaining a distinctly modern spirit.

The viewer does not look at the artwork merely from the standpoint of decorative beauty; they also attempt to decipher the hidden meanings within and form their own interpretation. In this sense, the artwork establishes a dialogue with the viewer. Every individual can perceive the symbols in the piece differently, shaped by their own worldview and personal experience.

It is precisely these possibilities for open interpretation and rich symbolic content that lend the artwork a distinct artistic depth. As a result, the piece can be evaluated as a notable example of contemporary symbolic art. Here, the memory of national culture, the forces of

ISBN: 978-625-90699-4-4

nature, the human spiritual world, and the eternal cycle of life converge in a unified artistic composition to create a meaning that is both aesthetically and philosophically thought-provoking.

Overall, the presented artwork can be appreciated not only from decorative and aesthetic viewpoints, but also for its symbolic and philosophical content. Female figures, natural motifs, the four elements, and numerical symbolism complement one another to shape the core idea of the work.

Through these images, the artist strives to express the wholeness of life, the connection between nature and humanity, and the harmony existing within the cosmos.

What makes the artwork particularly interesting is that it does not offer the viewer a ready-made concept; instead, it provides everyone with the opportunity to understand and interpret these symbols according to their own worldview. Precisely for this reason, the piece can be recognized as a multi-layered and contemplative work of art both aesthetically and philosophically.

References

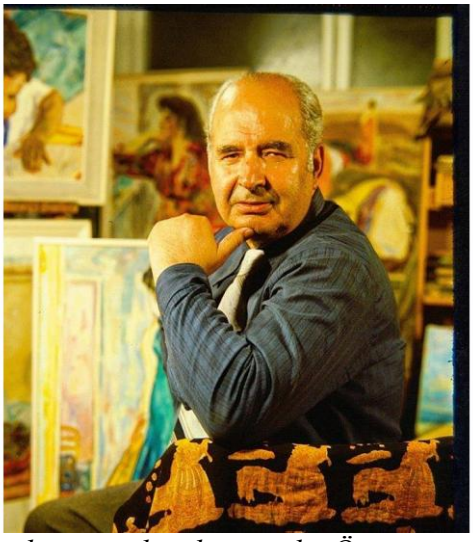
1. Abbasova F.Ə. Azərbaycanın orta əsr zoomorf əşyaları. Bakı: Elm, 2004, 208 s
2. Azərbaycan Arxeologiyası. 6 cilddə, VI cild. Bakı, "Şərq-Qərb", 2008. 632 səh
3. Azərbaycan qadın geyim bəzəkləri. Kitab-albom. Bakı: Mütərcim, 2016. 100 səh
4. Babayev İ.A., Əhmədov Q. M. Qəbələ (tarixi-arxeoloji oçerk). Bakı: Elm, 1981; Novruzlu Ə.İ. Azərbaycanın orta əsr sənətkarlığı (XIV-XVII əsrlər). Bakı: 1997;
5. Əfəndi R. Azərbaycan dekorativ-tətbiqi sənətləri (orta əsrlər). Bakı, "İşıq", 1976. 190 səh
6. Əfəndiyev.R., Kərimov.K., Rzayev.N., Həbibov.N. Azərbaycan incəsənəti : Monoqrafiya. Bakı: İşıq, 1992
7. R.Əfəndi. Azərbaycan incəsənəti. Bakı, 2001.
8. Бодрийяр Ж. Символический обмен и смерть / Зенкин С. Н. (пер.с франц. и вступ.ст.) – М., 2000.

ISBN: 978-625-90699-4-4

DAHİ RƏSSAM MİKAYIL ABDULLAYEV
GENIUS ARTIST MIKAYIL ABDULLAYEV

Sevil Bayram qızı Əliyeva
ADPU-nun nəzdində Azərbaycan Dövlət Pedaqoji Kollecinin müəllimi

Abstract. Mikayil Abdullayev is one of the outstanding painters of Azerbaijani fine art. His creativity is particularly distinguished by his works of various genres. In this article, the creativity of Mikayil Abdullayev is analyzed.
Keywords: Azerbaijan, Mikayil Abdullayev, artist, genre



Təbiətin ən böyük möcüzələrindən biri rənglər dünyasıdır.Öz sözünü düşüncələrini rənglərin dili ilə insanlara çatdırmağı bacaran rəngkarların sənət dünyası dünya mədəniyyətinin incisidir.

Özünəməxsus sənət inciləri ilə Azərbaycan təsviri incəsənətini zənginləşdirən rəssamlarımızdan biri də Akademik Mikayıl Abdullayevdir.Mikayıl Hüseyn oğlu Abdullayev 19 dekabr 1921-ci ildə Bakı şəhərində

Ziyalı bir ailədə dünyaya göz açıb. O ailənin 8-inci və sonuncu evladı olub.Atası Hüseyn Kəblə Abdulla varlı tacir idi.Onun bir neçə dükanı var idi. O İrandan müxtəlif ədviyyatlar,zinət əşyaları ,müxtəlif mallar gətirib satdırarmış.1938-ci ildə Kəblə Abdulla İranda olarkən sərhəd baglanır və O qalır Arazın o tayında.Anası Cəvahir xanım isə qızlar gimnaziyasında təhsil almış ziyalı qadınlardan idi.Azərbaycan dilinin incəliklərini çox mükəmməl bilirdi.

Mikayıl Abdullayev uşaqlıq illərində müəyyən çətinliklərlə üzləşsə də öz istedadı ilə yüksək pillələrə doğru addım atmışdır.Uşaqlıqinda keçirdiyi xoşagəlməz hadisə valideyinlərini çox narahat etmişdi. Hələ 1 yaşı olarkən təsadüf nəticəsində yanan çıragın üzərinə yıxılmış və nəticədə gözləri tutulmuşdur. 2 ilə yaxın əziyyət çəkmişdi.Və xoşbəxtlikdən müəyyən vaxtdan sonra onun bir gözü tam açılmış digər gözü isə 10 faiz görürdü.Buna görə də onun Ali məktəbə gəbul edilməmək ehtimalı var idi.Mikayıl Abdullayev 7-ci sinifi bitirdikdən sonra Rəssamlıq məktəbinə daxil olmaq üçün sənədlərini hazırlayır və qəbul olur.Rəssamlıq məktəbinə gedərkən adını əzbərlədiyi rəssam Əzim Əzimzadə olmuşdur.Onun uşaqkən çəkdiyi rəsmlər rəng baxımından çox fərqlənirdi və güclü müxtəlif fantaziyalardan ibarət idi.Həyata nikbin baxışı, dərin müşahidə qabiliyyəti,qeyri-adi rəng düyümü Allahın ona bəxş etdiyi nadir istedad idi.Mikayıl Abdullayev zidiyyətli bir şəraitdə təhsil alırdı. O, daha çox realistlərə üstünlük verirdi.Elə bu səbəbdən də O ömrünün sonuna qədər realizm və klassizm cərəyanını önəmli tuturdu.Onun ən böyük arzusu Ali rəssamlıq təhsili almaq idi. Bakıda Rəssamlıq məktəbini bitirdikdən sonra O təhsilini davam etdirməyi qərara alır. 1939-cu ildə Surikov adına Moskva

ISBN: 978-625-90699-4-4

Dövlət Rəssamlıq İnstitutunun təsviri incəsənət fakultəsinə daxil olur. Mikayıl Abdullayev Ali təhsil alarkən rəssam-professor Serqey Gerasimovun emalatxanasında rəssamlıq sənətinin incəliklərini öyrənmişdir.Vətən torpağının hər qarışında gözəllik,məhəbbət duyan rəssam bütün istəyini, düşüncələrini ağ kətana köçürürdü. Onun Vətən sevgisi rənglərdə dil açırdı,danışırdı.Bu məhəbbət solmaz rənglərin ahəngi ilə könüllərə köçürdü.1941-ci il Böyük Vətən müharibəsi başladıgında O yenidən Bakıya qayıdır və Rəssamlıq məktəbində fəaliyyət göstərir. Öyrəndiyi rəssamlıq incəliklərini gənc tələbələrə çatdırmağa çalışırdı.1945-ci ildə isə Böyük Vətən müharibəsi başa çatdıqdan sonra Mikayıl Abdullayev yenidən Moskvaya qayıdaraq təhsilini başa çatdırmağa başlayır.Rənglərin poeziyasını yaradan sənətkar bütün yaradıcılığını Azərbaycan təbiətinin,onun qəhrəman insanlarının, tarixin şanlı səhifələrinin vəsfinə həsr edib.Təsviri sənətimizin inkişafında mühüm xidmətləri olan bu böyük sənətkarın boyakarlıq və qrafika janrında yaratdığı əsərlər incəsənətimizin çox qiymətli səhifələrini təşkil edir.Müasir Azərbaycan təsviri incəsənətinin inkişafında böyük xidmətləri olmuş, xalq rəssamı Mıkayıl Abdullayev dünya şöhrətli sənətkar idi.

Moskvada və dünyanın bir sıra başqa şəhərlərində fərdi sərgiləri keçirilmiıdir.Onun əsərlərinin mövzu dairəsinə özündə sevinc notları ilə yanaşı, kədər, nisgil,əhval- ruhiyyəsi daşıyan kompozisiyalar da daxil edilib.1941-ci il Böyük Vətən müharibəsi onun işlərinin bəlkə də ana xəttidir.İstər bu dövrdə işlənmiş,istərsə də Massalı qadınlarının kənddəki ağır yaşayışı ,əzab-əziyyətini əks etdirən tablolar monumental əsərlər seriyasındadır. Onları yaradarkən daxilən həyəcanlanır,iç dünyasını ağ kətana köçürürdü. Müharibədən çox qabaq Şuşaya getmişdir.Qarabag mənzərələri, Şuşa camaatının güzəranı da uğurlu işlərindəndir.

Mikayıl Abdullayev 20 Yanvar faciəsinin qurbanlarına həsr etdiyi Nakamların dəfni əsəri rənglərin dili ilə şəhidlərimizin qəhrəmanlığını əks etdirmişdi. Rəssamın özü 20 Yanvar faciəsinin şahidi olmuşdur. O bu cinayəti 20-ci əsrin ən böyük cinayəti adlandırmışdı.

Onun əsərləri koloritin zənginliyi ilə cəlbedicidir.



«Qışda Qarabağ» tablosu da zəngin koloritli əsərlərindəndir. Bu xüsusiyyətlər onun Xaçmaz qızları,Astarada çay yığımı,Azərbaycan çöllərində,Çəltik əkən qızlar əsərlərində daha aydın görünür.İşlədiyi bir sıra tablolarda müasir qadın obrazı əks olunmuşdur. «Qarabağlı qizlar», «Abşeronlu qadın», «Ananın gəncliyi», kimi əsərləri bu qəbildəndir. Abşeron peyzajları, natürmortlar, Əfqanıstan və başqa ölkələrə həsr etdiyi əsərlər Mikayıl Abdullayev yaradıcılıq diapazonunun genişliyinə şəhadət verir. Əsərləri dünyanın bir sıra muzeylərində saxlanılır-Dehildə, Londonda, Monrealda, Moskvada və sair.

ISBN: 978-625-90699-4-4

1941-1945-ci illərdə kənd əməkçilərinin payına düşən ağır,narahat,keşməkeşli həyatını əks etdirən əsər canlı povestdir. «Çəltikçi qızlar», monumental lövhəsi 20-ci əsrin qadınının zəngin mənəvi cizgilərini parlaq boyalarla əks etdirir. Qeyd edək ki, Rəssamın «Arazın o tayında» tablosu da onun yaralı yeri idi. Mikayıl Abdullayev «Arazın o tayında» adlı publisistik ruhlu rəsm silsiləsindən sonra kitab tərtibatına maraq göstərir.S.Rəhimovun Şamo, romanına Dədə Qorqud eposuna , Nizami Xəmsəsinə, olduqca ifadəli illüstrasiya silsilələri yaradır.



Ustad sənətkarın fırçası sərhəd tanimayıb.Dünyanın bir çox ölkələrinin müzeylərində dəyərli eksponat kimi saxlanılan Mikayıl Abdullayev yaradıcılığının nümunələri milli mədəniyyətimizin təbliğatçılarıdır.O əsərlərində Azərbaycanımızın əsrarəngiz təbiətini, şanlı tarixini,milli-mənəvi dəyərlərini böyük məharətlə təsvir etmişdir.Mikayıl Abdullayev bütün yaradıcı həyatını Azərbaycan təbiətinin,onun qəhrəman insanlarının,tarixinin şanlı səhifələrinin vəsfinə həsr edib.Təsviri sənətimizin inkişafında mühüm xidmətləri olan böyük sənətkarın rəngkarlıq və qrafika janrında yaratdığı əsərlər incəsənətimizin çox qiymətli səhifələrini təşkil edir. Sənətkarın teatr rəssamlığının inkişafında da xidməti çox olmuşdur. O, «Leyli və Məcnun», «Koroğlu», operalarına Niyazinin «Çitra» baletinə bədii tərtibat vermişdir. Sənətkar 1963-cü ildə SSRİ Xalq rəssamı fəxri adına layiq görülmüşdür.1969-cu ildə beynəlxalq C.Nehru mükafatına.1974-cü ildə isə Azərbaycan SSR Dövlət Mükafatına layiq görülüb.Onun əsərləri koloritin zənginliyi ilə cəlbedicidir.

Mikayıl Abdullayevin bütün əsərlərində ifadəlilik hökm sürüb.Mikayıl Abdullayev kimi 2-ci bir fırça ustası tapılmaz ki.o öz yaradıcılığı ilə klassik və müasir Azərbaycan ədəbiyyatına möhkəm bağlı olsun.

Şifahi xalq ədəbiyyatından «Kitabi-Dədə Qorqud», «Molla Nəsrəddinin» lətifələri, yazılı ədəbiyyatımızdan «Leyli və Məcnun», «Danabaş kəndinin məktəbi», «Poçt qutusu», «Gələcək gün», «Şamo», «Şəbi-hicran» əsərlərinə çəkdiyi illüstrasiyalar Azərbaycan kitab qrafikası

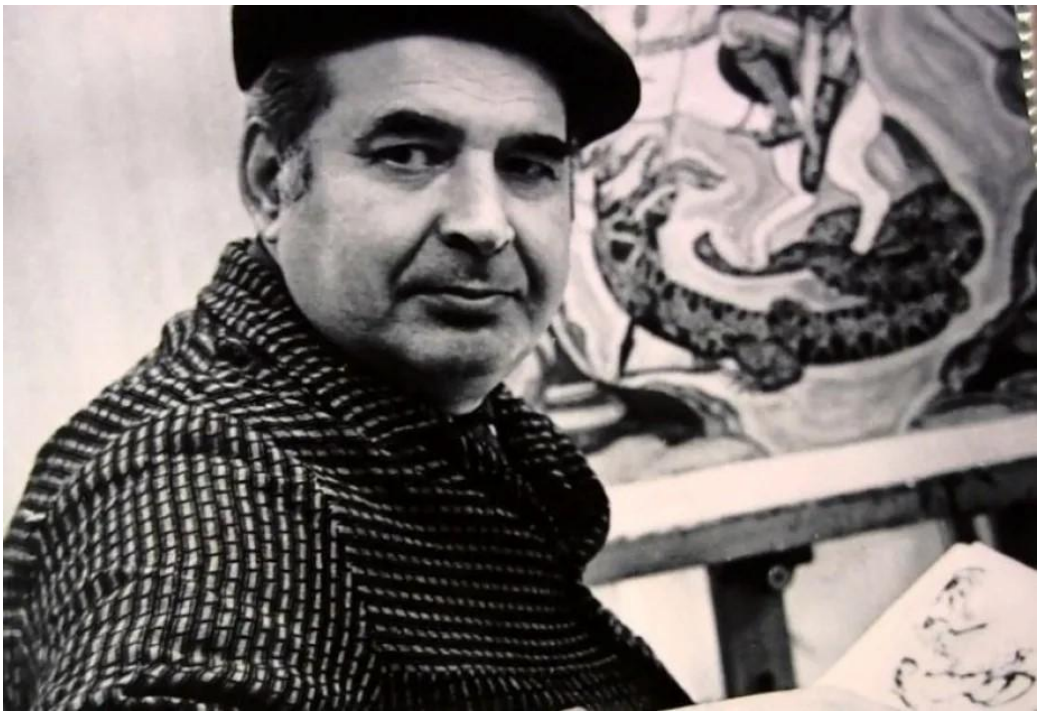
ISBN: 978-625-90699-4-4

sənətinin bitkin nümunələridir.Moskvada keçirilən ümumittifaq bədii sərgidə «Axşam» əsəri ilə iştirak etdi.Bu əsər gənc rəssama böyük uğur və tamaşaçı marağı gətirdi. Beləliklə, 26 yaşlı Mikayılın sənət qələbələri bir-birini əvəz etməyə başladı.Rəssamın şöhrətinə yeni çalarlar gətirən «Mingəçevir işıqları» əsəri həm Moskvada, həm də Budapeşt şəhərində sərgiləndi. Elə ilk fərdi sərgisi də Moskvada keşirildi.



İstedadlı rəssam 1955-ci ildə Azərbaycan SSR Əməkdar incəsənət Xadimi fəxri adına layiq görülüb.1958-ci ildə isə SSRİ Rəssamlıq Akademiyasının müxbir üzvü seçilib.Dahi sənətkar Mikayıl Abdullayev Azərbaycan incəsənətində böyük iz qoymuşdur.Dünyanın bir çox ölkələrinin muzeylərində dəyərli eksponat kimi saxlanılan Mikayıl Abdullayev yaradıcılığının nümunələri milli mədəniyyətimizin əsl təbliğatçısıdır.Bu əsərlərdə Azərbaycanın əsrarəngiz təbiəti var.Milli-mədəni dəyərləri sənətkarlıqla bu tablolarda qorunub saxlanılır.Onun yaratdığı portretlər qalereyasında məhşur sənət adamlarının çox qiymətli rəsmləri var.Fırça ustasının ,,Axşam'' tablosu özünün də etiraf etdiyi kimi ən əlamətdar və məzmunlu lövhələrdən biridir.Bu əsəri yaradarkən rəssamın cəmi 26 yaşı var idi.Burada Qarabağ milli geyimlərində təsvir edilən Azərbaycan qadınlarının surəti mənalı və gözəldir.Mikayıl Abdullayevin əsərləri dünyanın bir çox muzey,qalereya və şəxsi kolleksiyalarında saxlanılır.

ISBN: 978-625-90699-4-4



Dahi rəssam 21 avqust 2002-ci ildə 80 yaşında olarkən Bakıda vəfat etmiş və fəxri xiyabanda dəfn edilmişdir.

ƏDƏBİYYAT SİYAHISI:

1.Ziyadxan Əliyev "Səməd Vurğunun ilk portreti" 2018, 25 dekabr,Mədəniyyət qəzeti ,s 12
2.Paşa Hacıyev "Zamanın boyaları" 1979, Bakı, Gənclik
3.Mürsəl Nəcəfov "Mikayıl Abdullayev" 1983, Bakı
4.Şirin Məlikova "Mikayıl Abdullayev" 2013,Xalq Bank

ISBN: 978-625-90699-4-4

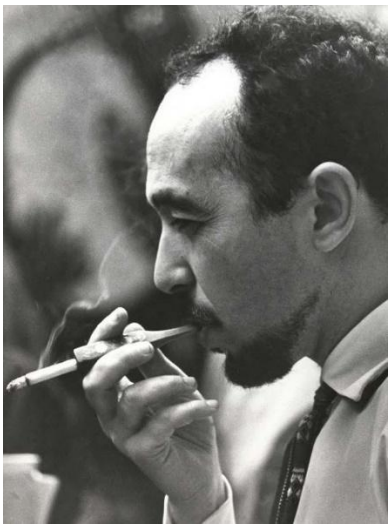
TOĞRUL NƏRİMANBƏYOV
TOGRUL NARIMANBEYOV

Sevil Bayram qızı Əliyeva
ADPU-nun nəzdində Azərbaycan Dövlət Pedaqoji kollecinin müəllimi

Abstract. Azerbaijani art has a very ancient and rich history. Many outstanding artists have grown up in Azerbaijan. One of such artists is Togrul Narimanbeyov. In this article, we are talking about the life and work of the outstanding artist Togrul Narimanbeyov. The Narimanbeyovs are a noble family from Ancient Karabakh
Keywords: Azerbaijan, Karabakh ,Shusha ,Togrul Narimanbeyov, painter

Azərbaycan incəsənəti cox qədim və zəngin bir tarixə malikdir. Azərbaycanda bir cox görkəmli rəssamlar yetişmişdir.Belə rəssamlardan biri də Toğrul Nərimanbəyovdur.Bu məqalədə biz görkəmli rəssam Toğrul Nərimanbəyovun həyat və yaradıcılığından bəhs edirik. Nərimanbəyovlar Qədim Qarabağlı zadəgan nəslidir

Toğrul Nərimanbəyovun babası Şuşalı hüquqşünas Əmirbəy Nərimanbəyov olmuşdur.Əmirbəyin oğlu,yəni Toğrulun atası Fərman da Şuşada dünyaya göz açmışdır.Daha sonra Əmirbəy Bakının qubernatoru olmuşdur.Azərbaycan xalq cümhuriyyəti zamanında 40 nəfər seçilmiş gəncdən biri Fərmanbəy idi.



Toğrulun atası Fərman bəy 1919-cu ildə Azərbaycan xalq cümhuriyyətinin göstərişi ilə Fransaya təhsil almağa gedir.Təhsil aldığı müddətdə o fransız xanımı ilə tanış olur və bu xanımla sevgi dolu xoşbəxt bir ailə qurur və təhsilini davam etdirir.Bir müddətdən sonra ailə Azərbaycana qayıtmağı qərara alır.

ISBN: 978-625-90699-4-4



1930-cu il avqust ayının 7-si Toğrul Nərimanbəyov Bakı şəhərində dünyaya göz acır.Avropada təhsil almış valideynlərinin zənğin mənəvi aləmi Toğrulun tərbiyəsinə,erkən yaşlarından mükəmməl yetişməsinə kömək edirdi.Amma tezliklə Nərimanbəyovlar ailəsinin üstünü qara buludlar alır.Atası Fərmanbəy bir cox azərbaycanlılar kimi repressiyaya məruz qalır.Onu Sibirə sürgün edirlər.



Bu da azmış kimi 1941-ci ildə anası,təmamilə günahsız Toğrulu isə həbsxanaya atırlar.Uşaqlıq illərini həbsxanada kecirən Toğrul həbsxananın divarlarına,döşəməsinə qəribə rəsmlər çəkirdi..
Toğrul və qardaşı Vidadi dayə polyak xanım Anna Andreyevnanın himayəsində qalırlar.Anna Andreyevna onlara ikinci ana olmağı bacarır.
1950-ci ildə Toğrul Nərimanbəyov Əzim Əzimzadə adına rəssamlıq məktəbini bitirir.
1955-ci ildə isə Litva incəsənət universitetinin monumental və dəzgah rəssamlığı fakültəsində təhsil alır.Eyni vaxtda musiqiyə böyük maraq göstərən Toğrul Nərimanbəyov Vilnus konservatoriyasında klassik vokalı da öyrənməyə başlayır.
Toğrul elə tələbəlik illərində ilk fürsətdə Səmərqəndə gedib anasını ziyarət edir.
Nəhayət Toğrulun müxtəlif orqanlara etdiyi müraciətlər və gərğin mübarizəsi sayəsində anasına bəraət verirlər.20 illik həsrətdən sonra 1961-ci ildə Toğrulun anası və daha sonra atası sürgündən qayıdır.

ISBN: 978-625-90699-4-4

Artıq onun həyatında uğurlu illər başlayır.1-1-nin ardınca uğurlu sərgiləri keçirilir,şöhrəti yayılırdı.30 yaşında əməkdar,33yaşında xalq rəssamı adına layiq görülmüşdür.Toğrul Nərimanbəyovun yaradıcılığında dönüş yaradan hadisə baş verir.O ərəfələrdə rəssamın Moskvada sərgisi kecirilmiıdir.Sərgiyə möhtərəm qonaq kimi,Fransanın o vaxtkı mədəniyyət naziri,yazıcı və incəsənət xadimi Andrey Maliroda dəvət olunur.Toğrul Nərimanbəyovun'' Azərbaycan musiqiçiləri''əsəri qarşısında ayaq saxlayıb müəllif haqqında maraqlanır.Təşkilatçılar ona Toğrul Nərimanbəyov haqqında geniş məlumat verib və anasının da Fransız xanımı olduğunu bildirirlər.Maliro heyrətə gəlir və təcili Bakıya yola düşür.Bu xəbər SSRİ-də böyük sevinclə qarşılanır.O vaxtkı hökumət bu mötəbər qonağın gəlişinə Toğrul bəyin emalatxanasını səliqəyə salır,mebellə,xalçalarla təmin edirlər.

Fransız nazir Toğrul bəylə görüşdükdən sonra onun yaradıcılığı haqqında ğeniiş resenziya yazır.Bundan sonra Avropanın bir cox ölkəsində Toğrul Nərimanbəyovun əsərlərindən ibarət kataloqlar cap olunmağa başlayır.

Toğrul Nərimanbəyovun yaradıcılığının səs-sədası bütün dünyaya yayılır.Onun əsərləri bütün prestijli sərğilərdə nümayiş olunur.Onu bir cox ölkələrə dəvət edirlər.

Sonrakı illər Toğrulun həyatında yeni səhifələr açdı və o daha da məhşurlaşdı.1974-cü ildə bəstəkar Fikrət Əmirovun Nəsimi haqqında poema baletinə verdiyi tərtibata görə Azərbaycan dövlət mükafatına layiq görülür.1980-ci ildə isə Fikrət Əmirovun Min bir gecə baletinə verdiyi tərtibata görə 2-ci dəfə dövlət mükafatı ilə təltif olunur.

Toğrui Nərimanbəyovun musiqi istedadı da var idi.O deyirdi; Mən muğamı sevirəm,lakin oxuya bilmərəm.Çünki mən özüm üçün oxuyanda,ya qulaq asanda ağlamağa başlayıram.

Toğrul Nərimanbəyov Azərbaycanın öndə gedən tətbiqi sənət nümayəndələrindən biridiidir.Doğma diyarımızı,milli xüsusiyyətlərimizi,etnoqrafiyamızı rənğlərlə tərənnüm edib dünyaya tanıdıb.Bənzərsiz fırça ustası bütün ömrü boyuAzərbaycan təsviri sənətinin inkiıafına və təbliğinə çalışıb.Yaratdığı bənzərsiz sənət nümunələri ilə milli sənət dünyamıza dəyərli töhfələr verib.Görkəmli rəssamın mənzərə,portret,monumental boyakarlıq,illüstrasiya və teatr rəssamlığı kimi müxtəlif sahələrdə yaratdığı parlaq əsərlər,mövzu və janr rənğarənğliyi,estetik kamilliyi və özünəməxsus üslubu ilə fərqlənir.O fitri istedadı və böyük zəhməti sayəsində Azərbaycan rəssamlıq məktəbində yeni yol açmaqla çoxlarının qibtə etdiyi səviyyəyə ucalıb.Sənət sevərlərin rəğbətini,kiçikdən böyüyədək insanların məhəbbətini qazanıb.

Rənğlərin ahənğliyini qəlbinin,ruhunun ayrılmaz hissəsinə çevirən Toğrul Nərimanbəyov yaratmaq duyğusu ilə ürəyinin dərin qatlarından ğələnləri kətana köçürüb.Dünyaya Buzovnadan,İçərişəhərdən,Abşerondan boylanıb.Göyçay narına əbədi xoşbəxtlik gətirib və harada olubsa Azərbaycanı düşünüb,tərənnüm edib və vətəni təmsil edib.Nar onun rəsmlərində Göyçaydan Bakıya,oradan da İstanbula,Nyu-Yorka,Londona,Moskvaya və neçə- neçə uzaq şəhərlərə gedib çıxıb.Rəssamın əsərləri dünyanın bir sıra incəsənət muzeylərində qorunub saxlanılır.

Amerika qalereyası Toğrulu fərdi sərği üçün Bostona dəvət edir.Buna görə də Toğrul ABŞ-a köçməli olur.Cünki əsərlərin yarıdan çoxu orada çəkilməli idi.Onu Azərbaycanı bəyənməməkdə ittiham edirdilər.

O deyirdi ''Mən doğulduğum torpağa həddindən artıq bağlı adamam.Mənim xaricə üz tutmağım nə yaxşı yaşamaqla,nə də çox pul qazanmaqla,nə də öz yerini -yurdunu bəyənməməklə bağlı deyil.''

Bu sadəcə rəssam kimi yaratdıqlarımın qiymətini bimək marağımdır.1989-cu ildə Bostonda,sonra Nyu-Yorkda sərgiləri keçirildi.1993-cü ildə isə Parisə köçür və yaradıcılığının ən məhsuldar dövrü başlayır.1998-ci ildə Azərbaycan xalq cümhuriyyətinin 80 illiyi ilə əlaqədar Parisdə Toğrul Nərimanbəyovun fərdi sərğisi keçirilir.

Toğrul Nərimanbəyovun ustad kimi yetişməsində Azərbaycan mühitinin zənğin ənənələri böyük rol oynamışdır.Onun əsərləri ğərğin Azərbaycan incəsənətinin milli ənənələrinə

söykənən işıq ritmi üzərində qurulmuş dekorativ-təmtaraqlı üslubdadır.Yaxımın fəallığı və koloritin ahənğdarlığı ilə fərqlənir.Fırça ustası milli mədəniyyətin köklərinə qayıtmağı incəsənət üçün,xüsusən rənğkarlıq üçün həmişə vacib hesab edirdi.Rəssamın yaradıcılıq yolu milli mədəniyyət tarixində istisna nümunələrindən və rəssamlıq sənəti tarixinin parlaq səhifələrindən biridir.Onun cəkdiyi əsərlər yenilik və gözlənilməzliyi,onlarda müəllifin coşğun temperamentinin aşkar duyulması ilə diqqəti cəkir.

Kicik yaşlarından gördüyü ədalətsizliklər Toğrulun əzmkarlığını artırır və onun yaradıcılıq yolunda daha da irəliləməsinə səbəb olur.Həmkarları deyirdilər ki ünlü rəssam həm özünü, həm də Azərbaycan mədəniyyətini dünyaya tanıtmaq istəyirdi.Bu məqsədlə Azərbaycandan xricə köçmüşdü.Əvvəlcə bir neçə il Amerikada yaşayıb,daha sonra anasının vətəni Fransaya köçmüşdür.Toğrul Nərimanbəyov 1-ci dəfə heykəltəraş Elmira Hüseynova ilə ailə qurur.Bu evlilikdən Əsmər xanım dünyaya gəlir.Onu da qeyd edək ki Əsmər xanım da atasının sənətini davam etdirir.

Toğrul Nərimanbəyov ürək xəstəliyindən əziyyət çəkirdi.O ölümündən 2 ay qabaq əməliyyat keçirmişdir.Dahi rəssam 2 iyun 2013-cü ildə Parisdəki Corc Pompido adlı hospitalda vəfat edir.Parisdə dəfn edilir.

ƏDƏBİYYAT SİYAHISI:

1.Ağayev E. “Toğrul Nərimanbəyovun yaradıcılığında nəğməli rəngkarlıq”//Mədəniyyət.AZ jurnalı.10(308) 2016//ISSN 2413-2365//s38-39
2.https://az.wikipedia.org/wiki/To%C4%9Frul_N%C9%99rimanb%C9%99yov

ISBN: 978-625-90699-4-4

THE LIFE AND CREATIVITY OF PEOPLE'S ARTIST AZIM AZIMZADE

Sevil Bayram qızı Əliyeva
Teacher of the subject combination commission "Art and physical education" of the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University

Abstract. Azim Azimzadeh is an Azerbaijani graphic artist, the founder of Azerbaijani caricature art. It is very interesting that this great artist did not even have an art education. Azim Azimzadeh learned this art himself. consists of clothing and decoration sketches, including political caricatures. Posters are the main part of the artist's creativity.
Caricatures have a special place in Azim Azimzade's creative heritage. The formation of this genre in Azerbaijan is related to Molla Nasreddin magazine. He was the main artist of that magazine and he very accurately and masterfully described the facial expressions and movements of the characters he chose to laugh at.
Keywords: Azim Azimzadeh, caricature, graphics, Baku, image



Həyatda elə insanlar var ki, sağlığında ölməzlik qazanır, işıqlı əməlləri ilə xalqının əzizinə çevrilirlər.

Həyat və yaradıcılığından söhbət açacağımız Xalq Rəssamı Əzim Əzimzadə də belə xoşbəxt insanlardandır. O, öz yaradıcılığı ilə Azərbaycan təsviri sənət məkanında fenomen kimi qəbul olunan, milli incəsənətimizin XX-ci əsrin birinci yarısına təsadüf edən mərhələsində çox dərin iz qoyması birmənalıdır.

Əzim Aslan oğlu Əzimzadə 1880-ci il may ayının 15-ində Bakının yaxınlığında yerləşən Novxanı kəndində kasıb bir ailədə dünyaya göz açmışdır. Ailədə 5 uşaq dünyaya gəlməsinə baxmayaraq O, ailənin həyatda qalan yeganə övladı olmuşdur. Rəssam ilk təhsilini Novxanıdakı molla məktəbində almışdır.Boyalarla ilkin tanışlığı elə həmin bu məktəbdən başlamışdır.

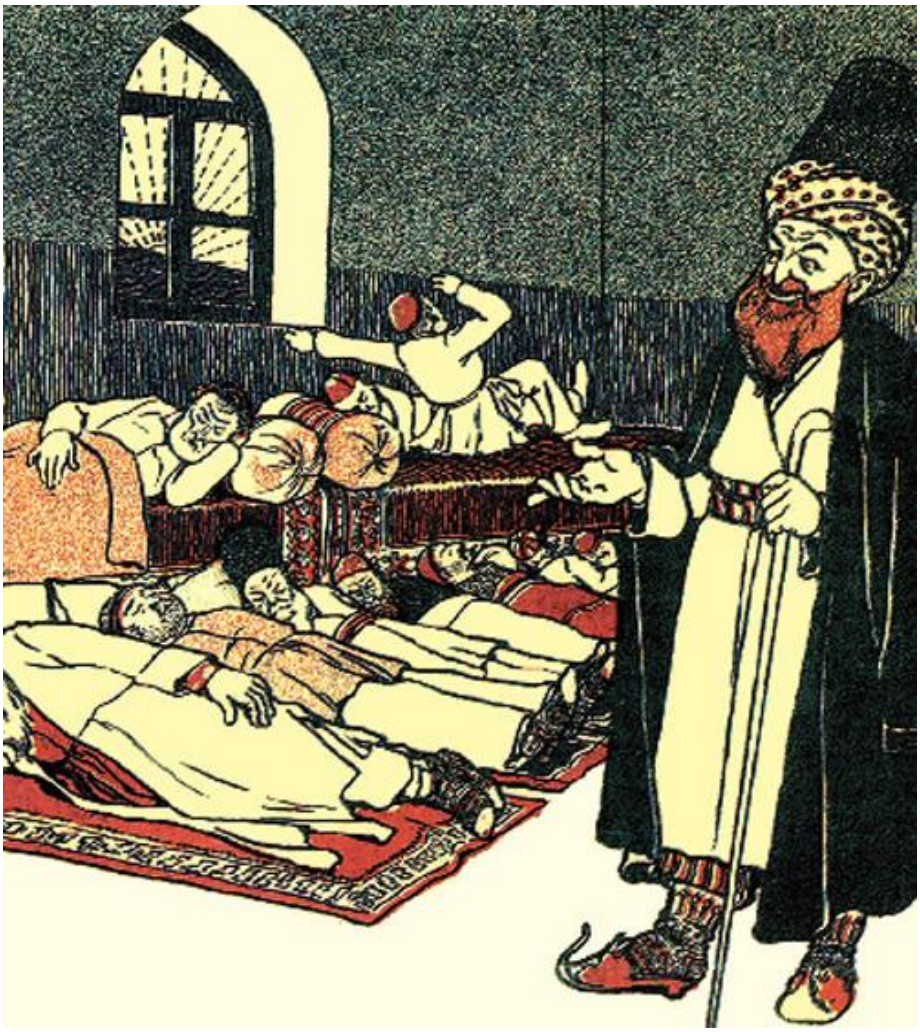
1887-ci ildə isə ailəsi Bakiya köçür. Rəssam Bakıda rus-tatar məktəbində təhsil alır və məktəbi bitirdikdən sonra O, metaltökmə zavodunda işləməyə başlasada rəssamlıq fəaliyyətindən əl çəkmir. Əzim Əzimzadə öz əsərlərini məşhur," Molla Nəsrəddin'' jurnalında dərc etdirməklə rəssamlığa doğru yeni addımlar atmışdır.

ISBN: 978-625-90699-4-4



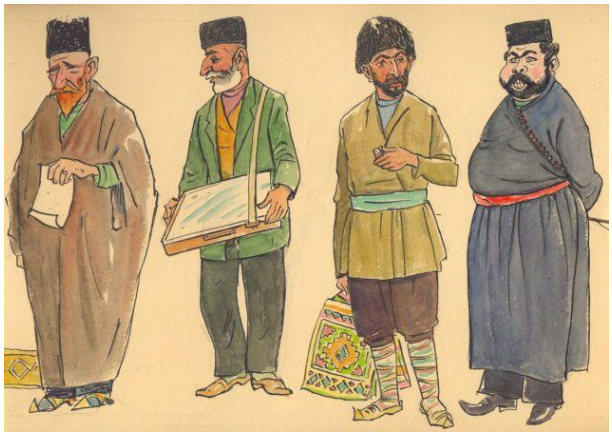
Əzim Əzimzadə hələ uşaq yaşlarından rəssamlığa həvəs göstərsədə ,onun bu həvəsinə nə ailəsində , nə əhatələndiyi mühitdə dəstək verən olmamışdır.Şəkil çəkmək böyük günah olduğunu mədrəsədə ona söyləyən mollalarin , müsəlman balasına rəssam olmağın gərəksizliyini söyləsələr də ,həm özü , həm də, Əzim Əzimzadənin istedadını görən rus rəssamı Durov onun bu sahədə uğur qazanacağına tam əmin idi . Elə bu inamı özünə etibarlı seçən Əzim Əzimzadə 1906-cı ildə əsərinin o dövrün məşhur jurnalı sayılan ,, Molla Nəsrəddin" də çap olunmasını məqsədə doğru atdığı davamlı səylərin ilk işartısı sayır və daha israrla yaradıcılıq axtarışlarını davam etdirir.

ISBN: 978-625-90699-4-4



Bundan sonra o , ,, Molla Nəsrəddin ‘’lə yanaşı ,, Zənbur’’, ,,Kəlniyyət’’, ,,Bic’’, ,, Baraban’’, “Məzəli’’ və ,, Babayi – Əmir’’ jurnallarında müxtəlif mövzularda çəkdiyi karikaturalarla daha geniş şöhrət tapır.

Əzim Əzimzadə öz əsərlərini məşhur ,, Molla Nəsrəddin’’ jurnalında dərc etdirməklə rəssamlığa doğru yeni addımlar atmışdır. Rəssam ,,Köhnə Bakı Tipləri‘’(1937-ci il) adlı məhşur silsiləsində psixoloji portretləri məharətlə təsvir etmişdir.



ISBN: 978-625-90699-4-4





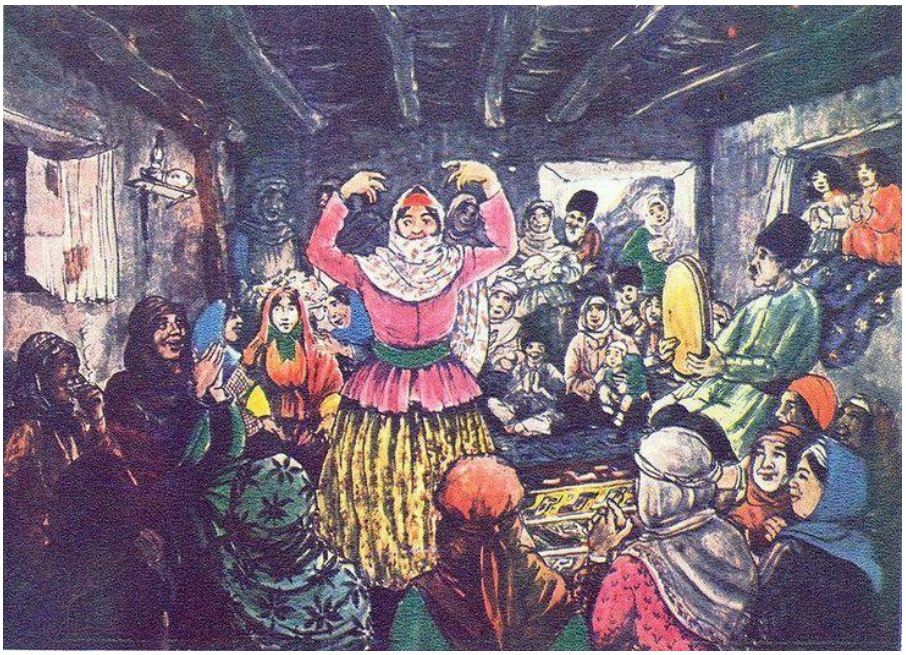
Əzim Əzimzadə azərbaycanlı rəssam - qrafik ,Azərbaycan karikatura sənətinin banisidir.Çox maraqlıdır ki ,bu böyük sənətkarın heç rəssamlıq təhsili də olmayıb.Əzim Əzimzadə bu sənəti özü öyrənib .Əzim Əzimzadənin yaradıcılıq irsi dəzgah vərəqləri ,kitab illüstrasiyaları ,satirik jurnal və qəzet rəsmləri ,geyim və dekorasiya eskizləri ,o cümlədən siyasi karikaturalardan ibarətdir.Rəssamın yaradıcılığının əsas hissəsini plakatlar təşkil edir.

Əzim Əzimzadənin yaradıcılıq irsində karikaturalar xüsusi yer tutur.Azərbaycanda bu janrın formalaşması Molla Nəsrəddin jurnalı ilə bağlıdır.O həmin jurnalın baş rəssamı idi və gülüş hədəfi seçdiyi obrazların mimikasını,hərəkətlərini çox dəqiq və ustalıqla təsvir edirdi.



ISBN: 978-625-90699-4-4

Xalq şairi M.Ə.Sabirin „ Hophopnamə'' əsərinə 56 rəngli illüstrasiyalar çəkmişdi.Rəssam C.Məmmədquluzadənin və Əbdürrəhim bəy Haqverdiyevin əsərləri ,o cümlədən xalq nağılları üçün də eyni üslubda rəsmlər silsiləsi yaratmışdır.Siyasi karikatura janrında da bir çox nümunələr yaradıb.Onun faşizmi ifşa edən „Şir və pişik balası '' "Faşizmin çöhrəsi", " Vurulmuş kartlar" və digər karikaturaları da bu qəbildəndir. Ə.Əzimzadənin məişət mövzusunda çəkilmiş „ Kos-Kosa '' , „ Tonqaldan atlanırlar'' , Mirasın bölüşdürülməsi '' , „ Kəndirbaz '', „ Varlı evində toy '' , „ Kasıb evində toy '' akvarelləri həmin dövrün adət-ənənələrini əks etdirirdi.



Rəssam çəkdiyi satirik-qrafik karikaturalarını 1906- cı ildən „ Baraban '', „Zənbur'' „Tuti '', "Kəlniyyət '', „ Molla Nəsrəddin '' və sair jurnallarda nəşr etdirməklə Azərbaycan satirik qrafikasının əsasını qoymuşdur.

Əzimzadə yaradıcılığında Təbriz Azərbaycan miniatür məktəbinin ,rus rəssamlıq məktəb ənənələrinin izlərini görmək mümkündür.

Rəssamın əsərlərinin əsas mövzusunu sosial təzadlar adətlər və xalqın məişət həyatı təşkil edirdi.Buna misal olaraq „Varlı evində toy'' , „ Kasıb evində toy ''əsərlərini misal göstərə bilərik.



Rəssamın satirik qələmi cəmiyyətin müxtəlif təbəqələrinin mənfi obrazlarını -xəsis tacirlər , fırıldaqcı din xadimləri, onun satirik qələminin hədəfində olurdular.Rəssamın sənətkarlığı orijinal və çoxcəhətlidir.Təsvir üslubunda Xalq yaradıcılığına xas olan yığcamlılıq obrazlılıq səmimilik kimi cəhətlər üstünlük təşkil edir.O, mənfi surətləri yaradarkən ya öldürücü satira

ISBN: 978-625-90699-4-4

,ya da kəsərli yumor və ya yumşaq kinayə atəşinə tuturdu.Məhşur rəssam Mirzə Ələkbər Sabirin Hop-hopnaməsinə illüstrasiyalar çəkmiş teatr tamaşalarına tərtibat və eskizlər vermişdir.Böyük Rəssam Üzeyir Hacıbəyovun ,, Leyli və Məcnun '' , ,, Əsli və Kərəm '' operasına, ,, Arşın mal alan'' , ,, O olmasın, bu olsun '' musiqili komediyasında da eskizlər və tərtibatlar vermişdir.

Əzim Əzimzadə 1920- ci illərdən başlayaraq Azərbaycan Rəssamlıq Texnikumunda müəllim,1932-1937-ci illərdə isə direktor vəzifəsində fəaliyyət göstərmişdir.Böyük Rəssam işlədiyi müddətdə bir çox tanınmış rəssamlarımızın ilhamverən , yolgöstərən müəllimi olmuşdur.Həmin məhşur rəssamlarımızdan Mikayıl Abdullayev , Səttar Bəhlulzadə Maral Rəhmanzadə Tahir Salahov Toğrul Nərimanbəyov kimi dahilərin adlarını sadalaya bilərik.Əzim Əzimzadə yaradıcılığı boyu əsrlərdən bəri formalaşan Azərbaycan miniatür və rus rəssamlıq məktəbinin ənənələrindən mümkün qədər bəhrələnib.1906-cı ildən Molla Nəsrəddin ,, Baraban '', ,, Zənbur '' , ,,Tuti '' , ,, Kəlniyyət'' və sair jurnalların səhifələrində satirik qrafik karikaturaları nəşr etdirməklə Azərbaycan Satirik qrafikasının əsasını qoyub .O, öz əsərlərində mənfi surətləri ,gah kəsərli yumor, gah yumşaq kinayə ilə kəskin satira atəşinə tuturdu.





,,Varlı evində toy '' , ,, Yoxsulların toyu '' , ,,Su üstündə dava'' , ,, Köhnə Bakılılar'' kimi əsərlərində müxtəlif sosial təbəqələrə məxsus tiplərin iç üzünü açaraq ,qadın hüqüqsuzluğuna

ISBN: 978-625-90699-4-4

ədalətsizliyə qarşı çıxış edirdi.Bu mənada o dövrdə cəmiyyətdəki sosial ədalətsizlikləri özündə daha qabarıq əks etdirən ,, Köhnə Bakı tipləri'' və ,,100 tip ''əsəri xüsusilə təqdirə layiqdir. Sual oluna bilər : Əzim Əzimzadə sənətinin gücü nədədir? Yaxud onun yaradıcılığı niyə xalq tərəfindən bu qədər sevilir ? Doğrudan da Azərbaycan təsviri sənət məkanında fenomen kimi qəbul olunan Əzim Əzimzadə xüsusi ixtisas təhsili almasa da ,yaratdıqları ilə hamını ovsunlamaq gücündə idi.Onun ən müxtəlif mövzuda və janrda çəkdiyi əsərlərdəki təbiilik və inandırıcılıq yəqin ki,Əzim Əzimzadəni başqalarından fərqləndirən başlıca bədii xüsusiyyət idi.Xalq həyatını dərindən bilən ,onun uzaq -yaxın hadisələrini göz yaddaşında qoruyub saxlamaqla qeyri - adi tutumda bədiiləşdirməyi bacaran rəssamın əsərləri həm də tarixə bələndiyindən bu gün zamansızlıqla qovuşmuş kimi qəbul olunur.Realizm ənənələrinə həm də milli kolorit qatmağı bacaran rəssam çəkdiyi düşündürücü lövhələrdə bu bədii qovşağı duyğulandırıcı qaynağa çevirməklə ,özünün bu baxımdan tayı-bərabəri olmadığını hələ zamanında sübut etmişdi.

Ə.Əzimzadə satirik şair M.Ə.Sabirin Hop-hopnamə sinə çəkdiyi geyim eskizləri və dekorasiyasıyaları Azərbaycan rəssamlığının bu sahədəki inkişafına xüsusi təkan verib.1940-cı ildə Əzim Əzimzadənin fərdi sərgisi açılmış 1200-dən artıq əsəri nümayiş etdirilmişdir.1927-ci ildə isə Azərbaycan SSR Xalq artisti və həmin ildə əmək qəhrəmanı kimi fəxri adlara layiq görülmüşdür.Əsərləri dünyanın bir sıra muzeylərində nümayiş etdirilmışdir.Mustafayev adına Azərbaycan Dövlət İncəsənət muzeyində Cəfər Cabbarlı adına Dövlət teatr muzeyində saxlanılan bir çox əsərləri vardır.2-ci dünya müharibəsi zamanı Əzim Əzimzadə cəbhəyə yollannan kiçik oğlu Lətifin qara kağızını almış və infarkt keçirmişdi.Elə onu çox sevdiyi Lətifin yoxluğu öldürdü desək yanılmarıq.

Əzim Əzimzadə iyul ayının 15-ində 1943-cü ildə vəfat etmişdir.Bakıda adına küçə ev muzeyi və Rəssamlıq Akademiyasının nəzdində olan Əzim Əzimzadə adına rəssamlıq kolleci fəaliyyət göstərir. 15 iyul Xalq Rəssamı Əzim Əzimzadənin anım günüdüdür.

ƏDƏBİYYAT SİYAHISI:

1.Nəcəfov M. "Əzim Əzimzadə". Bakı 1980. 68 s
2.Həbibova S. "Əzim Əzimzadə". Bakı 2013. 104 s

ISBN: 978-625-90699-4-4

ORTA MƏKTƏBLƏRDƏ TƏSVİRİ İNCƏSƏNƏT FƏNNİNİN TƏDRİSİNDƏ MÜZAKİRƏ STRATEGİYALARI

DISCUSSION STRATEGIES IN TEACHING FINE ARTS IN SECONDARY SCHOOLS

Emil Raul oğlu Ağayev
Teacher of the subject combination commission "Art and physical education" of the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University
ORCID: 0000-0001-9354-0839

Xülasə. Orta məktəblərdə təsviri incəsənət fənninin tədrisində müzakirə metodlarının şagirdlər arasında inkişafı vacibdir. Təsviri incəsənət müəllimi seçilmiş mövzu və ya əsər haqqında ideya və fikirlərini müzakirə edirlər. Şagirdlər əsərləri təhlil edərək, problemli hissələri ön plana çıxara, yaradıcı təfəkkürü inkişaf etdirirlər. Məlumat və ideyaları ümumiləşdirərək, əsər haqqında şifahi danışa bilirlər. Bu məqalədə təsviri incəsənət fənninin tədrisində müzakirə metodları təhlil edilmişdir.
Açar sözlər: Təsviri incəsənət, tədris, müzakirə, metod, təhsil
Abstract. The development of discussion methods among students is crucial in the teaching of visual arts in secondary schools. Fine arts teachers engage students in discussions about selected topics or artworks, encouraging them to express their ideas and opinions. Through analyzing artworks, students highlight problematic aspects and foster creative thinking. By summarizing information and ideas, they are able to verbally articulate their understanding of the artwork. This article analyzes the discussion methods used in the teaching of fine arts.
Keywords: Fine Arts, teaching, discussion, method, education

Hər bir fənnin tədrisində olduğu kimi, təsviri incəsənətdə də seçilmiş bir mövzu və ya məsələ ətrafında fikir, məlumat, təəssürat, tənqid və təkliflərin qarşılıqlı şəkildə və müəyyən struktur çərçivəsində aparıldığı fikir mübadiləsi müzakirə üsulunda aparılmalıdır. Bu metod fəal təlimdə geniş istifadə olunur və bir neçə fərqli formaya malikdir.Əvvəla, iştirakçılar qarşıya qoyulmuş problemi təhlil etməyi, onun əsas səbəblərini müəyyənləşdirməyi və mümkün həll yollarını tapmağı öyrənirlər. Bu proses eyni zamanda düzgün qərar vermək bacarığının inkişafına kömək edir.Təsviri incəsənət fənnində müzakirələr əsasən rəssamların yaradıcılığı və əsərlər haqqında ola bilər.

Müzakirə zamanı şagirdlər təsviri incəsənət fənnində konkret mövzu və ya problem ətrafında öz şəxsi fikirlərini ifadə edir, bu fikirləri əsaslandırmağa və başqalarına qəbul etdirməyə çalışırlar. Onlar irəli sürdükləri düşüncələri faktlarla təhlil edir, dəlillərlə mövqelərini gücləndirir və problemin mümkün həll yollarını təklif edirlər. Müzakirə prosesi zamanı iştirakçılar arasında mövzuya dair anlayışların və ideyaların düzgünlüyü yoxlanılır və bu ideyalar daha da dəqiqləşdirilir. Bu mərhələdə tərəflər bir-birinin fikirlərini təhlil edir, nəticədə daha dərin və aydın təsəvvür formalaşır.

Bununla yanaşı, müzakirə zamanı təsviri incəsənətdə mövzu ilə bağlı olan məlumatlar və düşüncələr sistemli şəkildə təşkil edilir, əlaqəli ideyalar bir araya gətirilir və ümumi nəticələr çıxarılır. Eyni zamanda bu proses, rəssamların yaradıcılığı və ya əsərləri haqqında oxşarlıqlar və fərqlərin müəyyənləşdirilməsinə şərait yaradır. Müzakirə iştirakçılara problemin alternativ həll yollarını araşdırmaq imkanı da verir. Əvvəla, müzakirə müxtəlif baxış bucaqlarının sərbəst şəkildə ifadə olunmasına şərait yaradır və bu da şagirdlərin fərqli fikirlərlə tanış olmasına imkan verir. Ix sinif şagirdlərinə “Sakit Məmmədov:klassik və müasir üslubun sintezi” mövzusunu keçəndən sonra müəllim rəssamların yaradıcılığını və əsərlərini müzakirəyə çıxara bilər.



İLL 1. Sakit Məmmədov "Küsmüş mələk"

Diskussiya adətən qarşılıqlı fikir mübadiləsi, müzakirə və ya mübahisə formasında həyata keçirilir və əsasən bir-birinə qarşı opponent mövqedə olan tərəflərin qarşıdurması ilə müşahidə olunur. Lakin debat bu klassik formadan müəyyən fərqlərlə seçilir. Debatda əsas hədəf qarşı tərəfi deyil, üçüncü bir tərəfi – yəni hakim və ya auditoriyanı – inandırmaqdır. Təsviri incəsənət fənninin tədrisində də debatlardan geniş istifadə etmək olar.

Şagirdlər həmçinin müzakirə xəritələrindən istifadə etməklə, mövzu haqqında mövqelərini müəyyənləşdirə, fikirlər söyləyə və ümumiləşdirmə apara bilərlər. Müəllim şagirdlərə "Alberto Cakometti:heykəlin zərif silueti" mövzusunu keçəndən sonra müzakirə xəritəsi vasitəsilə mövzu haqqında biliklərini tamamlaya bilərlər.



İLL 2. Alberto Cakometti "Cütlük"

Təsviri incəsənət fənnində müzakirə metodlu dərslərin şagirdlərlə birlikdə tədrisi onlarda özünüifadə bacarıqlarınıda inkişaf etdirir.

ƏDƏBİYYAT SİYAHISI:

1.Veysova Z. Fəal/interaktiv təlim. S 66-76.
2.Ümumtəhsil müəssisələrinin IX sinfi üçün təsviri incəsənət dərsliyi. Bakı 2020. 136 s.

ISBN: 978-625-90699-4-4

TƏSVİRİ SƏNƏT FƏNNİNİN TƏDRİSİ METODİKASINDA OYUN ƏSASLI ÖYRƏNMƏNİN ROLU

THE ROLE OF GAME-BASED LEARNING IN THE METHODOLOGY OF TEACHING FINE ARTS

Emil Raul oğlu Ağayev
Teacher of the subject combination commission "Art and physical education" of the Azerbaijan State Pedagogical College under the Azerbaijan State Pedagogical University
ORCID NO: 0000-0001-9354-0839

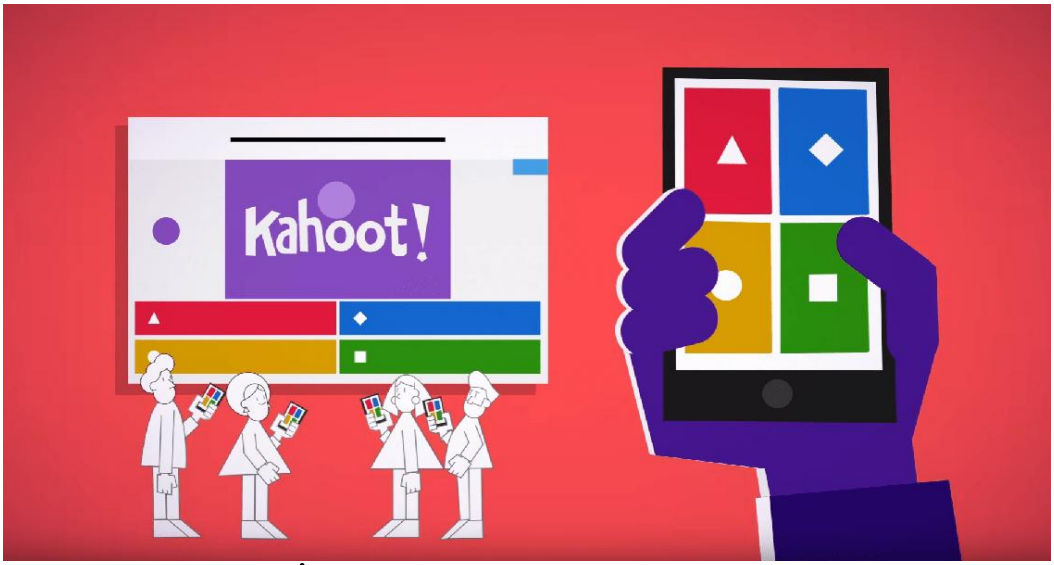
Xülasə. Hər bir fənnin tədrisi metodikasında olduğu kimi təsviri sənətdə də oyun əsaslı öyrənmənin mühüm rolu vardır. Oyunlaşdırma zamanı şagirdlər hər hansı rəssamın əsərini səhnələşdirə bilərlər. Bu zaman şagirdlər dərsin gedişində aktiv iştirak etməklə bərabər, öz yaradıcı qabiliyyətlərini də inkişaf etdirirlər. Oyun vasitəsilə şagirdlər həmçinin geyim, bəzək işlərinə də cəlb oluna bilərlər.
Açar sözlər: Təsviri sənət, oyun əsaslı təlim, təhsil, orta məktəb, incəsənət
Abstract. As in the teaching methodology of every subject, game-based learning plays an important role in fine arts. During gamification, students can stage the work of any artist. At this time, students actively participate in the lesson and develop their creative abilities. Through the game, students can also be involved in clothing and decoration.
Keywords: Fine arts, game-based learning, education, secondary school, art

Müasir təhsilin yeni və maraqlı öyrənmə üsullarından biri oyun əsaslı adlanır. Bütün bu proses təsviri sənət fənninin tədrisi metodikasına da tətbiq olunur. Bu metod şagirdləri həvəsləndirməklə bərabər, onları dərs prosesinə cəlb edir. Oyun vasitəsilə öyrənmənin iki növü var:

1.Oyunlaşdırma
2.Oyun əsaslı öyrənmə

Hər ikisinin ortaq xüsusiyyəti şagirdlərin təsviri sənət fənninin tədrisi metodikasına öyrənmə marağının artırılmasıdır. Fərqli xüsusiyyətlərini geniş şəkildə nəzərdən keçirməliyik.

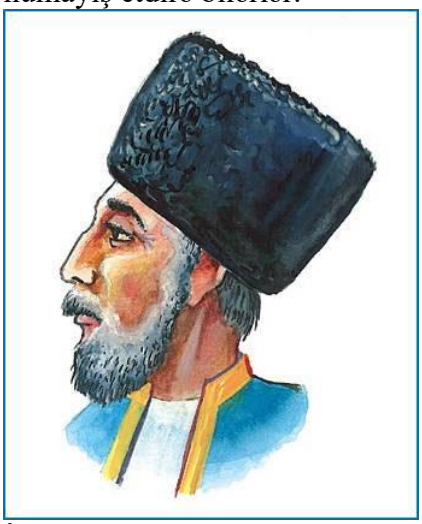
Oyunlaşdırma üsulunda oyun elementləri ilə təsviri sənət fənninin tədrisi metodikasında nəzəri və yaradıcı tapşırıqlar inteqrasiya edilir. Şagirdlər il ərzində müxtəlif təqdimatlar hazırlayırlar. Toplanan xallar əsasında şagirdləri təsviri sənət fənni üzrə müxtəlif kateqoriyalara bölərək titullar vermək olar. Həmçinin dərsdə Kahoot elektron tətbiqini istifadə edərək tədrisin üsulunu maraqlı etmək olar.



İLL 1. Kahoot elektron tətbiqi

ISBN: 978-625-90699-4-4

Oyun əsaslı öyrənməni təsviri sənət fənninin tədrisi metodikasına tətbiq etsək, bütövlükdə dərsi bu metod üzərində qurmaq nəzərdə tutulur. VII sinif təsviri incəsənət fənnində "Azərbaycan baş geyimləri" mövzusunu keçəndən sonra müəllim şagirdlərlə oyun əsaslı öyrənmə üsulunu istifadə edə bilər. Şagirdlər motal, şiş, taqqa, yappa və araqçın baş geyimlərini canlı olaraq nümayiş etdirə bilərlər.



İLL 2.Yappa papaq



İLL 3. Taqqa papaq

VIII sinif təsviri incəsənət fənnində Anri Matissin yaradıcılığını keçəndən sonra müəllim rəssamın "Rəqs" əsərini oyunlaşdırmalıdır. Fovistlərə məxsus olan kontrast rənglər, perspektiv təsvirləri də şagirdlər albom vərəqlərində də səhnələşdirə bilərlər.

Təsviri sənət fənninin tədrisi metodikasında oyun əsaslı öyrənmənin rolu üsulunun aşağıdakı üstünlükləri vardır:

-təsviri sənəti öyrənməyə maraq oyadır;
-səhnələşdirməni ön plana çıxarır;
-əməkdaşlığı və yaradıcı inkişafı artırır.

Oyun təsviri sənət fənninin tədrisində bir üsuldur. Bu üsuldan istifadə edilərkən, təlim nəticələri əsas götürülərək, fənnin tədrisində ön planda tutulmalıdır.

ƏDƏBİYYAT SİYAHISI:

1. Ümumtəhsil müəssilərinin 7-ci sinfi üçün dərslik. Bakı 2022. S 63-65.
2.Ümumtəhsil müəssilərinin 8-ci sinfi üçün dərslik. Bakı 2020. S 60-63.
3.Metodika və pedaqogika. TAİM 2024. S 96-97

ISBN: 978-625-90699-4-4

CLINICAL AND IMMUNOLOGICAL PREDICTORS OF RESPIRATORY DISEASES IN CHILDREN WITH ACQUIRED IMMUNODEFICIENCY: A COMPARATIVE STUDY

Ph.D, Assoc. Prof. Rasuljon M. Shermatov[1]
[1]Fergana Medical Institute of Public Health, Faculty of Pediatrics, Department of Pediatrics, Fergana, Uzbekistan
[1] ORCID ID: https://orcid.org/0000-0002-0606-799X

assistant Shaxlo R. Sodikova[2]
[2]Central Asian Medical University, Faculty of Medicine, Department of Pediatrics, Fergana, Uzbekistan
[2] ORCID ID: https://orcid.org/0009-0008-4009-7384

A 6th-year student S.Sh.Gayratova[3]
[3]Fergana Medical Institute of Public Health, Faculty of Pediatrics, Fergana, Uzbekistan

ABSTRACT

Respiratory diseases remain the leading cause of morbidity and hospitalization among immunocompromised children. Respiratory tract diseases remain among the most frequent causes of morbidity, hospitalization, and reduced quality of life in children with immune system dysfunction. Children with acquired or secondary immunodeficiency represent a vulnerable population due to impaired immune surveillance, altered inflammatory regulation, and decreased ability to eliminate bacterial and viral pathogens. Recent studies have demonstrated that recurrent respiratory infections (RRIs), chronic bronchopulmonary inflammation, and progressive lung injury are frequently associated with disturbances in both cellular and humoral immune responses. Modern concepts of pediatric immunology emphasize that respiratory manifestations may represent not only infectious complications but also important clinical indicators of underlying immune dysfunction. Therefore, identification of clinical and immunological predictors has become a significant direction for improving early diagnosis, risk stratification, and preventive strategies. Respiratory infections are considered one of the earliest and most common manifestations of immune impairment in childhood. According to Tangye et al. (2022), abnormalities of adaptive and innate immunity contribute to increased susceptibility to infections and determine the severity of clinical manifestations. The updated International Union of Immunological Societies (IUIS) classification emphasized the importance of evaluating T-cell, B-cell, natural killer (NK)-cell, and antibody-mediated immune defects in children with recurrent infections. Cellular immunity plays a central role in antiviral defense, regulation of inflammation, and elimination of intracellular pathogens. Decreased T-lymphocyte function has been associated with increased frequency and severity of respiratory infections. Pac et al. (2020) investigated pulmonary complications in children with immune disorders and demonstrated that abnormalities in cellular immunity were associated with increased risk of interstitial lung disease and chronic respiratory complications. The authors emphasized the necessity of early immunological assessment in children with recurrent respiratory symptoms. Studies conducted in pediatric populations with recurrent respiratory infections have demonstrated significant alterations in lymphocyte subpopulations. Moldovan et al. (2020) reported that children with recurrent respiratory infections without diagnosed primary immunodeficiency showed changes in peripheral immune cell profiles, particularly involving CD8+ T cells and B-cell populations. The authors suggested that immunophenotyping may provide additional diagnostic information and help guide therapeutic decisions. According to Moura et al. (2021), evaluation of CD3+, CD4+, CD8+, CD19+

ISBN: 978-625-90699-4-4

lymphocytes and NK-cell activity can improve identification of children at risk for recurrent infections and pulmonary complications.The clinical relevance of recurrent respiratory infections as a marker of immune dysfunction was also highlighted by Pinto-Mariz et al. (2021), who reported that repeated severe infections during childhood should be considered a warning sign requiring immunological investigation.Contemporary studies have identified abnormalities in CD4+ and CD8+ T lymphocytes, B-cell maturation, natural killer (NK) cell activity, serum immunoglobulins, and pro-inflammatory cytokines as important determinants of recurrent pulmonary infections, bronchiectasis, and progressive lung injury. Furthermore, recent predictive models emphasize that combining clinical manifestations with laboratory immune biomarkers significantly improves early identification of children at increased risk compared with clinical assessment alone. Nevertheless, validated clinical-immunological prediction models for children with acquired immunodeficiency remain limited, particularly in low- and middle-income countries, highlighting the need for comprehensive comparative investigations. To comparatively evaluate clinical characteristics and immunological biomarkers associated with respiratory diseases in children with acquired immunodeficiency and to identify independent predictors that may improve early diagnosis, individualized risk stratification, and preventive management. A comparative observational study will include children diagnosed with acquired immunodeficiency who are categorized according to the presence or absence of recurrent respiratory diseases. Clinical characteristics, anthropometric indices, infection history, complete blood count, inflammatory markers, serum immunoglobulin concentrations (IgG, IgA, IgM), lymphocyte subsets (CD3+, CD4+, CD8+, CD19+, NK cells), and selected cytokines will be analyzed. Independent predictors will be identified using multivariable logistic regression, while receiver operating characteristic (ROC) analysis will evaluate the diagnostic performance of the proposed prediction model. Correlation analyses will examine relationships between immunological parameters and disease severity. Based on current scientific evidence, children with acquired immunodeficiency who experience recurrent respiratory diseases are expected to demonstrate significantly reduced CD4+ T-cell counts, lower CD4/CD8 ratios, impaired humoral immunity, and increased concentrations of inflammatory cytokines compared with children without recurrent respiratory pathology. Integration of immunological biomarkers with clinical variables is anticipated to increase predictive accuracy, allowing earlier identification of high-risk patients and facilitating personalized preventive interventions before irreversible pulmonary complications develop. These expectations are consistent with recent studies emphasizing multidisciplinary immune assessment and biomarker-guided clinical decision-making in pediatric respiratory medicine. Comprehensive clinical and immunological evaluation represents a promising strategy for predicting respiratory diseases in children with acquired immunodeficiency. Incorporating immune biomarkers into routine pediatric assessment may improve diagnostic precision, optimize preventive interventions, reduce recurrent infections and hospitalizations, and improve long-term respiratory outcomes. Prospective multicenter studies are needed to externally validate predictive models and support their implementation in routine pediatric healthcare.

Keywords: acquired immunodeficiency; pediatric respiratory diseases; clinical predictors; immunological biomarkers; T lymphocytes; B lymphocytes; immunoglobulins; cytokines; recurrent respiratory infections; risk prediction; pediatric immunology; early prevention.

DIAGNOSTIC PERFORMANCE OF NEONATAL SCREENING AND LABORATORY METHODS FOR EARLY DETECTION OF CYSTIC FIBROSIS: A COMPARATIVE ANALYSIS

Assistant Kamila Ye. Djurayeva
Fergana Medical Institute of Public Health, Faculty of Pediatrics, Department of Pediatrics, Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0007-7979-0568

ABSTRACT

Cystic fibrosis (CF) is one of the most common life-threatening autosomal recessive genetic disorders caused by pathogenic variants in the *CFTR* gene. Early diagnosis is essential for improving survival, reducing pulmonary complications, preventing malnutrition, and enhancing the quality of life. Although neonatal screening programs have significantly increased early case detection, confirmation of the diagnosis still requires reliable laboratory investigations. Therefore, evaluating the diagnostic performance of currently available screening and laboratory methods remains an important clinical and public health priority. To comparatively evaluate the diagnostic performance of neonatal screening and laboratory diagnostic methods for the early detection of cystic fibrosis and to determine their clinical value in improving diagnostic accuracy. This study is designed as a comparative analytical investigation. Data obtained from neonatal immunoreactive trypsinogen (IRT) screening, sweat chloride testing, and *CFTR* gene mutation analysis will be comparatively assessed. The diagnostic sensitivity, specificity, positive predictive value, negative predictive value, and overall diagnostic accuracy of each method will be analyzed using appropriate statistical techniques. Concordance between screening results and confirmatory laboratory tests will also be evaluated. The study is expected to demonstrate that neonatal IRT screening provides high sensitivity for the early identification of infants at risk for CF, whereas sweat chloride testing remains the diagnostic gold standard. Molecular genetic analysis is anticipated to provide definitive confirmation of the diagnosis, identify disease-causing *CFTR* variants, and support personalized clinical management and genetic counseling. The combined diagnostic approach is expected to improve diagnostic accuracy and reduce delays in establishing the diagnosis. Integrating neonatal screening with confirmatory laboratory and molecular genetic testing represents the most effective strategy for the early diagnosis of cystic fibrosis. Optimizing diagnostic algorithms may facilitate timely therapeutic interventions, improve long-term clinical outcomes, and strengthen neonatal screening programs, particularly in healthcare systems where standardized CF diagnostic pathways are still being developed.

Keywords: cystic fibrosis; neonatal screening; immunoreactive trypsinogen; sweat chloride test; *CFTR* gene; molecular diagnostics; early diagnosis; diagnostic accuracy.

EFFICACY OF TITANIUM IMPLANTS AND ENDOPR OSTHETIC MESH IN SURGICAL RECONSTRUCTION OF ZYGOMATICO-ORBITAL COMPLEX FRACTURES

Senior Lecturer Temur Alisher o'g'li Olimjonov,
Department of Maxillofacial Surgery, Tashkent State Medical University,
Tashkent, Uzbekistan
ORCID: https://orcid.org/0009-0003-8068-0332

Background: Orbital floor reconstruction following zygomatico-orbital complex (ZOC) fractures remains one of the most technically demanding challenges in maxillofacial surgery. While titanium miniplates are the gold standard for zygomatic arch and infraorbital rim fixation, orbital floor defects require additional support to prevent enophthalmos and persistent diplopia. Titanium endoprosthetic mesh (TEM) has emerged as a versatile material offering rigidity, biocompatibility, and precise contouring. However, data on its application in a Central Asian clinical context, including long-term functional outcomes and complication profiles, remain limited.

Objective: To evaluate the clinical efficacy, functional outcomes, and complication profile of a combined titanium miniplate and endoprosthetic mesh technique for surgical reconstruction of ZOC fractures.

Materials and Methods: A prospective case series was conducted on 45 patients with ZOC fractures involving orbital floor disruption (orbital floor defect ≥1 cm²) treated at the Department of Maxillofacial Surgery, Tashkent State Medical University, between 2020 and 2023. All patients underwent open reduction and internal fixation using a standardized protocol: (1) transconjunctival approach for orbital floor exposure, (2) zygoma repositioning with titanium miniplates at two- or three-point fixation, and (3) orbital floor reconstruction with a pre-contoured titanium endoprosthetic mesh (Stryker, 0.4 mm thickness). Outcomes assessed at 1, 3, 6, and 12 months included: diplopia (Hess screen test), enophthalmos (Hertel exophthalmometry), infraorbital sensation (static esthesiometry), ocular motility (ocular motility grading), and postoperative complications.

Results: The cohort comprised 34 males (75.6%) and 11 females (24.4%), with a mean age of 32.7 ± 9.8 years. Knight–North type III fractures predominated (53.3%). The mean orbital floor defect area was 1.8 ± 0.7 cm², and the mean operative time was 87 ± 22 minutes.

Preoperatively, diplopia was present in 68.9% of patients, enophthalmos (≥2 mm) in 51.1%, infraorbital hypoesthesia in 77.8%, and ocular motility restriction in 57.8% of cases.

At 3 months, these values improved to 13.3%, 8.9%, 26.7%, and 11.1%, respectively. At 12 months, diplopia persisted in only 4.4% of patients, enophthalmos in 2.2%, infraorbital hypoesthesia in 8.9%, and ocular motility restriction in 4.4% of cases.

ISBN: 978-625-90699-4-4

Patient satisfaction scores increased from 7.8 ± 1.1 at 3 months to 8.9 ± 0.8 at 12 months.

Diplopia resolved completely in 95.5% of cases by 12 months, while enophthalmos was corrected in 97.8% of patients. Infraorbital sensation normalized in 91.1% of patients.

Complications included implant palpability without removal (4.4%), mild lower eyelid retraction that resolved spontaneously (2.2%), and wound dehiscence (2.2%). No implant removal was required.

Conclusion: The combined titanium miniplate and endoprosthetic mesh technique demonstrates high efficacy in ZOC reconstruction, achieving resolution of diplopia in 95.5% and enophthalmos in 97.8% of cases at 12 months, with a low complication profile (4.4% minor complications, 0% implant removal rate). This technique is recommended as a reliable approach for ZOC fractures with concurrent orbital floor involvement. Prospective randomized studies comparing mesh types and thicknesses are warranted.

Keywords: *zygomatico-orbital complex fracture, titanium mesh, orbital floor reconstruction, endoprosthetic mesh, enophthalmos, diplopia, maxillofacial surgery.*

References:

1. Boymuradov ShA, Olimjonov TA. Optimization of care for patients with fractures of the midface bones. Internauka. 2022;(4):51–53.
2. Boymuradov ShA, Olimjonov TA. Planning of bone fragment reposition using virtual modeling in midface fractures. Internauka. 2022;(4):54–56.
3. Bobamuratova DT, Boymuradov ShA, Rakhmonov SB, Olimjonov TA. Nutrition of patients with jaw fracture after orthognathic surgery: a literature review. J Dent Oral Disord Ther. 2018;6(2):1–7.
4. Olimjonov TA, Fattayeva DR, Umarov JA. Treatment methods for fractures of the zygomatic-orbital complex. Periodica J Mod Philos Soc Sci Humanit. 2022;13: 65–68.
5. Olimjonov TA. Application of navigation systems in the treatment of post-traumatic defects and deformities of the zygomatic-orbital complex. In: Proceedings of the VII International Congress of Dentists; 2024; Tashkent.
6. Olimjonov TA, Boymuradov ShA. Improvement of surgical treatment of patients with zygomatic-orbital complex injuries. In: Proceedings of the International Scientific Conference; 2022; Tashkent.
7. Olimjonov TA. Improvement of surgical tactics in patients with zygomatic-orbital fractures. J Mod Med. 2025;1:719–725.
8. Olimjonov TA. Minimally invasive surgical treatment of craniofacial injuries. J Mod Med. 2025;1:726–731.

MONITORING OF COVID-19 PCR TESTING IN UZBEKISTAN 2020–2024YEARS.

Nuritdinova Dilnoza Yusupovna.[1]
1Candidate of the International University Central Asian Medical University,
Department Department of modeling hygienic and medical processes, Fergana, Uzbekistan
[1]ORCID ID: https://orcid.org/0009-0008-9065-9269

Assoc. Prof. Dr. Aminjon Sabdarovich Nematov[2]
[2]Center for the Development of Professional Qualification of Medical Workers of the
Republic of Uzbekistan, Department of Epidemiology, Fergana, Uzbekistan[2]
2 ORCID ID: https://orcid.org/0009-0000-8545-4535

Abstract
The COVID-19 pandemic posed unprecedented challenges to healthcare systems worldwide, making polymerase chain reaction (PCR) testing a cornerstone of disease surveillance and control. This study examines the monitoring and development of PCR testing in Uzbekistan from 2020 to 2024. It evaluates testing capacity, laboratory expansion, regional accessibility, government interventions, and the integration of digital reporting systems. A descriptive and analytical research approach was employed using secondary data obtained from official reports, scientific publications, and international health organizations. The findings indicate that Uzbekistan significantly expanded its PCR testing infrastructure, enhanced laboratory quality control, and improved data management throughout the pandemic. Despite challenges related to logistics and resource availability during the early stages, continuous investment in healthcare infrastructure strengthened the country's preparedness for future infectious disease outbreaks.

Keywords: COVID-19, PCR testing, Uzbekistan, public health, epidemiological surveillance, laboratory diagnostics, healthcare monitoring.

Introduction

Coronavirus Disease 2019 (COVID-19), caused by the SARS-CoV-2 virus, rapidly evolved into a global pandemic after its emergence in late 2019. PCR testing became the gold standard for confirming infection due to its high sensitivity and specificity. Effective monitoring of PCR testing allows governments to detect outbreaks, allocate healthcare resources efficiently, and evaluate public health interventions.

Uzbekistan reported its first confirmed COVID-19 cases in March 2020 and immediately implemented nationwide testing, quarantine measures, and laboratory expansion programs. Between 2020 and 2024, substantial improvements were made in testing capacity, laboratory accreditation, and digital surveillance systems. This research investigates the evolution of PCR testing in Uzbekistan and evaluates its contribution to pandemic management.

Conceptual Framework

The conceptual framework of this study is based on the relationship between healthcare infrastructure, PCR testing capacity, epidemiological surveillance, and disease control outcomes.

The framework assumes that:

Expansion of PCR laboratories increases testing accessibility.
Increased testing capacity improves early detection of infected individuals.
Accurate laboratory reporting supports evidence-based public health decision-making.
Continuous monitoring strengthens national preparedness against future epidemics.

These interconnected components contribute to effective infectious disease surveillance and healthcare resilience

Methodology

This research applies a descriptive and analytical methodology.

Research Design

A retrospective observational study covering the period from 2020 to 2024.

Data Sources

Ministry of Health of the Republic of Uzbekistan reports
World Health Organization (WHO) publications
Scientific journal articles
National Statistical Committee reports
Public health databases

Methods of Analysis

Descriptive statistical analysis
Comparative trend analysis
Document analysis
Qualitative evaluation of healthcare policies

The collected data were analyzed to identify changes in PCR testing volume, laboratory infrastructure, and monitoring systems during different phases of the pandemic.

Analysis of the Research Problem

During the first months of the pandemic, Uzbekistan faced limited laboratory capacity and shortages of testing materials. However, significant governmental investment rapidly increased the number of certified PCR laboratories across the country.

Between 2020 and 2021, testing capacity expanded considerably through:

• establishment of new regional PCR laboratories;
• procurement of modern diagnostic equipment;
• training of laboratory specialists;
• implementation of standardized testing protocols.

From 2022 onward, testing demand gradually declined due to widespread vaccination and decreasing infection rates. Nevertheless, PCR laboratories remained operational for monitoring new variants, imported cases, and respiratory infections.

Digitalization also played an important role. Electronic reporting systems improved data collection, reduced reporting delays, and strengthened epidemiological surveillance.

Several challenges remained throughout the study period:

• unequal laboratory distribution in remote regions;
• occasional shortages of reagents;
• increased operational costs;
• maintaining laboratory quality assurance.

Despite these obstacles, Uzbekistan demonstrated continuous improvement in laboratory diagnostics and public health preparedness.

Model of the Research

The proposed monitoring model consists of five sequential stages:

Input

Sample collection
Patient registration
Clinical information

Laboratory Process

RNA extraction
PCR amplification
Quality control

ISBN: 978-625-90699-4-4

Data Management
Digital recording
Laboratory verification
Database integration
Public *Health Monitoring*
Daily reporting
Regional surveillance
Epidemiological analysis
Decision Making
Isolation measures
Contact tracing
Resource allocation
Policy implementation

This model emphasizes the integration of laboratory diagnostics with real-time public health decision-making.

Conclusion and Discussion

PCR testing played a crucial role in Uzbekistan's response to the COVID-19 pandemic between 2020 and 2024. Continuous investment in laboratory infrastructure, personnel training, and digital health systems significantly improved national diagnostic capacity.

Although testing demand declined after widespread vaccination, the established PCR network remains an important component of infectious disease surveillance. The experience gained during the pandemic provides valuable lessons for strengthening preparedness against future public health emergencies.

Future research should focus on integrating PCR surveillance with genomic sequencing, artificial intelligence-based disease forecasting, and regional health information systems to improve rapid outbreak detection.

References

1. World Health Organization. (2023). *COVID-19 Strategic Preparedness and Response Plan*.
2. World Health Organization. (2022). *Laboratory Testing Strategy Recommendations for COVID-19*.
3. Ministry of Health of the Republic of Uzbekistan. *COVID-19 Official Reports* (2020–2024).
4. World Bank. (2022). *Uzbekistan Health System Strengthening Report*.
5. Centers for Disease Control and Prevention (CDC). (2023). *Overview of Testing for SARS-CoV-2*.
6. Johns Hopkins University. (2023). *Coronavirus Resource Center*.
7. European Centre for Disease Prevention and Control (ECDC). (2022). *COVID-19 Surveillance Guidance*.
8. OECD. (2022). *Health at a Glance: Europe*.
9. Nature Reviews Microbiology. (2021). *Diagnostic Testing for COVID-19: Current Methods and Future Directions*.
10. The Lancet Public Health. (2022). *Lessons Learned from Global COVID-19 Testing Strategies*.

ISBN: 978-625-90699-4-4

THE ROLE OF INTERNATIONAL MUSIC FESTIVALS IN THE DEVELOPMENT OF UZBEK MUSICAL CULTURE

Abdusalom Rakhimovich Soliyev
Lecturer at the Department of Music Education and Culture, Faculty of Pedagogy, Psychology and Art Studies, Fergana State University

ABSTRACT.
This article provides a scholarly analysis of the role and significance of international music festivals in the development of Uzbekistan's musical culture. It examines the contribution of international music festivals to the preservation of the national musical heritage, its promotion at the international level, the development of intercultural dialogue, the strengthening of creative cooperation, and the support of young talents. The article also assesses the contribution of international music festivals held in Uzbekistan to the development of national musical art, the enhancement of the country's cultural image, and the strengthening of cultural diplomacy. The study employs the methods of historicism, comparative analysis, a systems approach, analysis and synthesis, content analysis, and generalisation.
Keywords: music, festivals, international, national, heritage, preservation, intercultural dialogue, development, creative cooperation.

RELEVANCE OF THE STUDY

In the present era of rapidly intensifying globalisation, preserving and enriching national musical culture and promoting it widely in the international arena are among the most urgent tasks. Uzbekistan is implementing reforms aimed at developing musical art, transmitting the national musical heritage to future generations, and integrating it into the global cultural space. Within this process, international music festivals play an important role in strengthening cultural relations, exchanging creative experience, and enhancing the international prestige of national musical art.[1]

International music festivals bring together artists, performers, and researchers from different countries on a single platform, thereby facilitating the study of contemporary trends in musical art, the comparison of national traditions, and the development of intercultural dialogue.

The relevance of the article lies in the scholarly analysis of the influence of international music festivals on the development of Uzbek musical culture and in revealing their importance in preserving the national cultural heritage, supporting young talents, developing cultural diplomacy, and enhancing the country's international cultural image. This issue is of considerable scientific and practical significance.

PURPOSE OF THE ARTICLE

The principal purpose of the article is to provide a comprehensive scholarly analysis of the role and significance of international music festivals in the development of Uzbekistan's musical culture. It also aims to reveal the contribution of such festivals to preserving and popularising the national musical heritage, harmonising it with contemporary musical art, and securing its worthy place in the global cultural space.

The article examines the role of international music festivals as a major factor influencing the development of national musical culture, their contribution to cultural diplomacy, the strengthening of cultural relations between countries, the expansion of creative cooperation, and the mutual enrichment of the musical traditions of different peoples.

It also considers the positive impact of scientific and practical conferences, master classes, creative meetings, and competitions organised within festivals on the development of musicology, music education, and performance art.[2] Another important objective of the article is to substantiate the significance of international music festivals in shaping the

country's cultural brand, developing cultural tourism, promoting the national cultural heritage internationally, and strengthening Uzbekistan's position within the global cultural community.

MATERIALS AND METHODS

The preparation of this article involved theoretical and practical materials concerning the significance of international music festivals in the development of Uzbekistan's musical culture. The sources include scholarly literature, monographs, dissertations, academic articles in the fields of musicology, cultural studies, and art history, materials from international and national scientific and practical conferences, regulatory and legal documents relating to the organisation and development of music festivals, and official information relevant to the field.

The article analyses the activities of international music festivals held in Uzbekistan, including the Sharq Taronalari International Music Festival, the International Maqom Art Festival, the International Bakhshi Art Festival, and other prestigious musical events, as well as their influence on the development of national musical culture.

The study employed such scholarly methods as historicism, a systems approach, comparative analysis, analysis and synthesis, induction and deduction, source study, content analysis, and generalisation. The historical method was used to examine the stages in the formation and development of international music festivals.[3]

The comparative method was used to compare the organisation, aims and objectives, composition of participants, and cultural influence of national and foreign festivals. On the basis of a systems approach, international music festivals were analysed in their interrelationship with national musical culture, music education, performance art, cultural diplomacy, and cultural tourism. Through content analysis, scholarly sources, mass-media materials, academic presentations, and official reports concerning festivals were examined.

RESULTS

The study demonstrates that international music festivals constitute one of the most effective cultural mechanisms for developing Uzbekistan's musical culture, preserving the national musical heritage, and promoting it globally.

The analysis established that prestigious events held in Uzbekistan, such as the Sharq Taronalari International Music Festival, the International Maqom Art Festival, and the International Bakhshi Art Festival, are of major importance for preserving national musical traditions, studying them scientifically, and introducing them widely to the international community.

The findings also indicate that international music festivals are an important means of strengthening cultural relations between countries. The participation of performers, composers, musicologists, and cultural figures from different states creates broad opportunities for exchanging creative experience, mutually enriching national musical traditions, and mastering modern methods of performance.

The study further established that festivals serve as a professional development platform for young artists.[4] The results also confirm that international music festivals have a positive influence on the development of cultural tourism within the country.

Several challenges were identified during the study. In particular, there is a need to strengthen the international promotion of certain festivals, use digital platforms more effectively, expand cooperation with foreign academic and cultural institutions, increase the number of scholarly studies conducted within festivals, and publish their results more extensively in international academic journals.

DISCUSSION OF RESULTS

The results confirm that international music festivals constitute an important institutional mechanism for the development of Uzbekistan's musical culture. The evidence indicates that such festivals contribute not only to the promotion of the national musical

ISBN: 978-625-90699-4-4

heritage, but also to its harmonisation with contemporary creative processes, the strengthening of intercultural dialogue, and the expansion of international cooperation.[5]

The discussion also highlighted the particular importance of festivals for young artists. They obtain opportunities to acquire experience of performing on international stages, engage in creative dialogue with foreign specialists, and master new performance technologies and pedagogical approaches. This has a positive influence on the development of national music education and performance schools and contributes to the training of highly qualified specialists.

CONCLUSION

On the basis of the findings, it may be concluded that international music festivals are among the effective means of developing Uzbekistan's musical culture, preserving the national musical heritage, and promoting it at the international level. Such festivals are of major significance in integrating national musical art into the global cultural space, developing intercultural dialogue, strengthening creative cooperation, and enhancing the country's cultural prestige.

The research established that international music festivals make a worthy contribution to the preservation and development of such traditional musical fields as maqom art, bakhshi performance, folk singing, and national instrumental performance.[6] At the same time, they create broad opportunities for enriching national performance schools through international experience, improving the professional mastery of young artists, and implementing new creative projects.

The analysis also demonstrated the importance of international festivals in developing cultural diplomacy. Through festivals, cultural relations between different countries are strengthened, and the place of national musical art within the world cultural heritage is further expanded.

REFERENCES

1. Law of the Republic of Uzbekistan "On Culture". Tashkent, 2021.
2. Karimov, I. History of Uzbek Music. Tashkent: O'qituvchi, 2005. 368 p.
3. Matyoqubov, O. Maqomot. Tashkent: Musiqa, 2004. 416 p.
4. Ibrohimov, O. Foundations of Maqom. Tashkent: Yangi Asr Avlodi, 2018. 240 p.
5. Abdullayev, R. History of the Musical Culture of Central Asia. Tashkent: Fan, 2019. 320 p.
6. Rajabov, I. Maqoms. Tashkent: G'afur G'ulom Publishing House of Literature and Art, 2006.

ISBN: 978-625-90699-4-4

THE ROLE OF NATIONAL MUSICAL ART IN SOCIAL LIFE IN THE DEVELOPMENT OF UZBEK MUSICAL CULTURE

Ulugbek Karimovich Rakhmonov,
Associate Professor, Doctor of Philosophy (PhD) in Pedagogical Sciences; of the Department of Music Education and Culture, Faculty of Pedagogy, Psychology and Art Studies, Fergana State University; Excellence in Secondary Specialised Vocational Education.
ORCID ID: https://orcid.ord./0009-0006-2268-10

ABSTRACT. This article provides a scientific and theoretical analysis of the role and significance of national musical art in social life during the development of Uzbek musical culture. The study elucidates the characteristics of national musical art as an important sociocultural phenomenon that reflects the spiritual heritage, national identity, history, and cultural values of the people. The article analyses the importance of oral folk art, traditional performance, the art of maqom, folklore examples, and professional musical trends in the formation and development of Uzbek national musical culture. At the same time, it emphasises the need to study the national musical heritage through modern approaches and to promote it widely within the education system and the digital information environment. The article presents conclusions and recommendations aimed at enhancing the sociocultural significance of national musical art and making effective use of its scientific, theoretical, and practical potential.
Keywords: Uzbek, music, culture, national art, maqom, traditional performance, national values, spiritual heritage, social life.

RELEVANCE OF THE STUDY

In our country, the development of national culture and art, the preservation of the rich spiritual heritage of our people, and its transmission to future generations are recognised as priority areas at the level of state policy. Within this process, Uzbek national musical art occupies a special place as an important spiritual asset embodying the national identity, spiritual values, and cultural heritage of the people. For centuries, national music has expressed the people's way of life, customs, traditions, aesthetic taste, and worldview, and has become an integral part of the spiritual life of society.

Under contemporary conditions of globalisation and information development, preserving and developing national musical culture and further strengthening its significance in social life constitute urgent scientific and practical tasks. National musical art serves as an important educational instrument for reinforcing the spiritual and moral environment of society, promoting national values, and cultivating national pride, patriotism, and awareness of national identity among the younger generation.

PURPOSE OF THE ARTICLE

The principal purpose of this article is to investigate, from scientific-theoretical and practical perspectives, the role of national musical art in social life in the development of Uzbek musical culture, its influence on the spiritual progress of society, and its significance in preserving the national cultural heritage and transmitting it to future generations. In addition, the stages of the formation and development of national musical culture, its interrelationship with social life, its importance in preserving and enriching national traditions, and its role in educating the younger generation in the spirit of national and universal values are examined on the basis of scholarly sources and existing research.[1] The article also analyses current trends in the development of national musical art, modern methods of popularising it, and the significance of cooperation with the education system, cultural institutions, and the mass media. The findings of this study will contribute to the enrichment of scholarly research

ISBN: 978-625-90699-4-4

aimed at further developing national musical culture, strengthening its social significance, and preserving the national musical heritage.

MATERIALS AND METHODS

In preparing the article, scholarly sources, monographs, academic articles, dissertations, and archival materials relating to the historical stages of the development of Uzbek national musical art, examples of traditional music, the art of maqom, folk singing, folklore heritage, professional performance schools, and contemporary musical processes were used. The principal materials selected for the article included the rich musical heritage of the Uzbek people, national melodies and songs, examples of maqom, traditions of composition and performance, as well as theoretical and practical sources illuminating the role of national musical art in the spiritual life of society. These materials made it possible to identify the social functions of national musical art and its significance in the spiritual development of the individual, the formation of national consciousness, and aesthetic thought. In particular, through the historical-comparative method, the emergence and development of Uzbek national musical art were studied in relation to sociocultural changes across different historical periods. [2] On the basis of a systems approach, national musical culture was analysed as part of the integral spiritual and cultural system of society, and its social, educational, aesthetic, and spiritual functions were revealed.

The study also employed methods of analysis and synthesis, generalisation, classification, comparative study, logical analysis, and scholarly observation. Through these methods, the role of national musical art in social life, its importance in preserving and developing national values, its potential in the education of the younger generation, and its place in contemporary cultural processes were scientifically substantiated.

The article additionally applied methods of studying empirical materials, comparatively analysing existing scholarly views, and generalising theoretical conclusions. [3] This enabled a deeper examination of the characteristics of national musical art as a sociocultural phenomenon and its inseparable relationship with social development and the spiritual life of society.

RESULTS

The results of the study demonstrate that Uzbek national musical art, embodying the centuries-old spiritual and cultural heritage of the people, has been formed and developed as an important component of the social life of society. National music manifests itself not only as an artistic and aesthetic phenomenon, but also as a sociocultural phenomenon expressing the history, worldview, national thought, and spiritual values of the people. The study established that oral folk creativity, traditional performance art, maqom traditions, epic storytelling, folklore examples, and professional music schools occupy an important place in the development of Uzbek national musical culture. The analysis further revealed that national musical art performs a number of significant functions in the social life of society. In particular, its spiritual and educational function contributes to the formation of respect for national values, patriotism, aesthetic taste, and moral qualities. [4] National musical art also serves as an effective means of educating the younger generation and developing their cultural awareness and creative thinking.

According to the findings, the social significance of national musical art is increasing under conditions of globalisation. At a time when diverse cultural influences are intensifying within the modern information environment, national music constitutes an important factor in preserving the cultural identity of the people, continuing national traditions, and ensuring spiritual stability.

The development of national musical art is inseparably connected with the education system, cultural institutions, creative communities, and scholarly research. [5] The results also demonstrate the necessity of promoting national musical art through modern technologies,

ISBN: 978-625-90699-4-4

popularising it widely through digital platforms, and actively involving it in processes of international cultural dialogue.

DISCUSSION OF RESULTS

The analysis of the results shows that Uzbek national musical art occupies an important place in the sociocultural development of society and constitutes one of the principal factors expressing the spiritual world, national thought, and historical memory of the people. The study of the development of national musical art revealed that it is not merely a product of artistic creativity, but an integral expression of specific social relations, national values, and cultural traditions. [6] The analysis of the historical development of Uzbek national musical culture demonstrated that folk music, the art of maqom, traditional performance, epic storytelling, and folklore examples have served as important means in shaping the spiritual life of society.

During the discussion of the findings, the social functions of national musical art were found to be of particular importance. National music exerts a significant influence on the spiritual and aesthetic development of the individual, the process of recognising national identity, and the formation of a spiritual environment in society. Through music, feelings of national pride, patriotism, historical memory, and respect for cultural heritage are cultivated. [6] From the perspective of contemporary sociocultural processes, national musical art is emerging as one of the effective means of preserving national identity under conditions of globalisation.

Based on the discussion, the importance of national musical art in education and upbringing should also be emphasised. The effective use of the national musical heritage within the education system creates broad opportunities for developing young people's artistic thinking, cultivating loyalty to national values, and revealing their creative abilities. The social significance of national musical art is not limited to its artistic characteristics. It serves as an important factor in meeting the spiritual needs of society, strengthening social cohesion, promoting national values, and ensuring cultural development.

CONCLUSION

On the basis of the findings, it may be emphasised that Uzbek national musical art is one of the unique forms of art that embodies the centuries-old spiritual and cultural heritage of the people and plays an important role in the social life of society and the development of national thought. National music manifests itself not only as an artistic and aesthetic value, but also as a sociocultural phenomenon expressing the history, national identity, worldview, and spiritual needs of the people. The formation and development of Uzbek national musical culture are inseparably connected with the social and historical development of the people, within which oral folk creativity, the art of maqom, traditional performance, epic storytelling, and professional music schools occupy an important place.

The findings demonstrate that the significance of national musical art in social life is not limited solely to its aesthetic function. It is an important factor in shaping the spirituality of the individual, educating the younger generation in the spirit of national and universal values, strengthening the process of recognising national identity, and ensuring spiritual stability in society. [7]

Under contemporary conditions of globalisation, the preservation and development of national musical culture have acquired particular urgency. In the present period, when diverse cultural influences are becoming increasingly powerful, national musical art is one of the principal factors in preserving the cultural identity of the people, safeguarding national traditions, and transmitting them to future generations.

The findings also demonstrate the need to develop national musical art on the basis of modern information technologies, promote it widely in the digital environment, and present it within the framework of international cultural relations. Such an approach will contribute to

ISBN: 978-625-90699-4-4

the preservation of the national musical heritage, the enhancement of its scholarly and practical significance, and its attainment of a worthy place in global cultural processes.

REFERENCES

1. Rahmonov, Ulugbek Karimovich. “The Role of National Musical Instruments in the Art of Instrumental Performance.” Oriental Art and Culture 3.2 (2022): 380–384.
2. Rahmonov, Ulugbek, et al. “The Role of the Great Scholars of the Eastern Renaissance in Shaping the Social and Spiritual Thinking of Young People through Musical Art.” Conference Archive, 2021.
3. Rahmonov, Ulugbek, and Abdusalom Soliyev. “The Role of Puppet Performance in the Life of Musical Culture.” Oriental Art and Culture 3.4 (2022): 536–541.
4. Rahmonov, Ulugbek, and Abdusalom Soliyev. “The Role of the Doira Musical Instrument in Performance.” Oriental Art and Culture 3.4 (2022): 223–227.
5. Rahmonov, U., and A. Soliyev. “The Role of Puppet Theatre in the Performing Arts.” Science and Innovation 1.C7 (2022): 76–79.
6. Rahmonov, U. “Inspirational Melodies in the Development of Uzbek Folk Musical Art in the Sixteenth–Nineteenth Centuries.” Science and Innovation 1.C7 (2022): 357–362.
7. U. K. Rakhmonov. “The Role of Music in National Education.” Modern Education and Development, International Interdisciplinary Research Journal, ISSN 3060-4567, No. 46, 16 March 2026, pp. 89–94. 28 March 2026.

ISBN: 978-625-90699-4-4

IMPACT OF COMORBID CARDIOVASCULAR DISEASES ON THE CLINICAL COURSE, DEVELOPMENT OF COMPLICATIONS, AND TREATMENT EFFECTIVENESS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Nuritdinova Shahzoda[1]
Central Asian Medical University international medical university, Head of the Department of Internal Diseases in Family Medicine,, *Fergana City, Uzbekistan*[1]
[1]ORCID ID: https://orcid.org/0009-0008-3643-6347

Kenjayev Olimjon Obidjonovich[2] *PhD,*
Central Asian Medical University, Fergana City, Uzbekistan[2]
Head of the Department of Internal diseases in Family Medicine,
[2]ORCID ID: https://orcid.org/0009-0002-9209-2282

Abstract
Background: Chronic Obstructive Pulmonary Disease (COPD) is one of the leading causes of morbidity and mortality worldwide. Cardiovascular diseases (CVDs) are the most common comorbid conditions in COPD patients and significantly influence disease progression, complication rates, and treatment outcomes.

Keywords: Chronic Obstructive Pulmonary Disease, COPD, cardiovascular diseases, comorbidity, complications, treatment effectiveness, prognosis.

Introduction
COPD is a chronic inflammatory respiratory disease characterized by persistent airflow limitation. Due to shared risk factors such as smoking, aging, and systemic inflammation, cardiovascular diseases frequently coexist with COPD. The coexistence of these conditions increases hospitalization, reduces quality of life, and elevates mortality. Understanding the impact of cardiovascular comorbidities is essential for optimizing patient management and improving long-term outcomes.

Conceptual Framework
The conceptual framework of this study is based on the relationship between COPD and cardiovascular diseases through common pathophysiological mechanisms, including systemic inflammation, oxidative stress, endothelial dysfunction, and hypoxia. These mechanisms contribute to worsening pulmonary function, increased frequency of exacerbations, and reduced response to standard COPD therapy.

Methodology
This study employs a narrative literature review and analytical approach using recent publications from international medical databases, including PubMed, Scopus, and Web of Science. Relevant studies published within the last decade were analyzed to evaluate the association between cardiovascular comorbidities and COPD outcomes.

Analysis of the Research Problem
Numerous studies demonstrate that cardiovascular diseases, including hypertension, ischemic heart disease, heart failure, and arrhythmias, are highly prevalent among COPD patients. These comorbidities increase disease severity, prolong hospital stays, and complicate pharmacological management. Additionally, cardiovascular disorders are associated with higher risks of acute exacerbations and mortality in COPD patients.

Model of the Research

ISBN: 978-625-90699-4-4

The proposed research model identifies cardiovascular comorbidities as independent predictors affecting COPD progression. The model evaluates the relationships between cardiovascular disease, frequency of exacerbations, pulmonary function decline, treatment response, hospitalization rate, and overall prognosis. Clinical and laboratory indicators are integrated to assess disease outcomes comprehensively.

Conclusion and Discussion

Cardiovascular diseases significantly influence the clinical course and prognosis of COPD. Early detection and comprehensive management of cardiovascular comorbidities improve treatment effectiveness, reduce complications, and enhance patients' quality of life. A multidisciplinary approach involving pulmonologists and cardiologists is recommended for individualized patient care. Future research should focus on integrated therapeutic strategies and personalized management protocols.

References

1. Global Initiative for Chronic Obstructive Lung Disease (GOLD). *Global Strategy for Prevention, Diagnosis and Management of COPD*. 2025.
2. Vogelmeier C.F., et al. Global Strategy for the Diagnosis, Management, and Prevention of COPD. *American Journal of Respiratory and Critical Care Medicine*.
3. Sin D.D., Man S.F.P. Why Are Patients with COPD at Increased Risk of Cardiovascular Diseases? *Circulation*.
4. Mannino D.M., Buist A.S. Global Burden of COPD: Risk Factors, Prevalence, and Future Trends. *The Lancet*.
5. Celli B.R., Wedzicha J.A. Update on Clinical Aspects of COPD. *The New England Journal of Medicine*.
6. Rabe K.F., Watz H. Chronic Obstructive Pulmonary Disease. *The Lancet*.
7. Agustí A., Hurd S. COPD and Comorbidities: A Comprehensive Review. *European Respiratory Journal*.

8. European Respiratory Society. ERS Statement on COPD and Cardiovascular Comorbidity. – Eur Respir J. – 2019. – Vol. 54. – 1900853.

9. European Society of Hypertension. Guidelines for the management of arterial hypertension // J Hypertens. – 2018. – Vol. 36. – P. 1953–2041.

10. Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global Strategy for the Diagnosis, Management, and Prevention of COPD – 2024 Report. – 2024. – 192 p.

11. Global Burden of Disease Study 2021 Collaborators. Global burden of chronic respiratory and cardiovascular diseases // Lancet. – 2022. – Vol. 400. – P. 1203–1249.

12. Rabe K.F., Hurd S., Anzueto A. et al. Global strategy for the diagnosis, management, and prevention of COPD // Am J Respir Crit Care Med. – 2007. – Vol. 176. – P. 532–555.

13. Sin D.D., Man S.F. Systemic inflammation and mortality in chronic obstructive pulmonary disease // Am J Respir Crit Care Med. – 2003. – Vol. 168. – P. 760–765.

14. United Nations Environment Programme. Air Quality and Public Health Report. – Nairobi, 2022. – 134 p.

15. O‘zbekiston Respublikasi Sog‘liqni saqlash vazirligi. Surunkali obstruktiv o‘pka kasalligini tashxislash va davolash bo‘yicha milliy klinik protokol. – Toshkent, 2022. – 64 b.

16. O‘zbekiston Respublikasi Sog‘liqni saqlash vazirligi. Yurak-qon tomir kasalliklarini profilaktika va davolash bo‘yicha klinik tavsiyalar. – Toshkent, 2021. – 72 b.

ISBN: 978-625-90699-4-4

17. World Health Organization. Global surveillance, prevention and control of chronic respiratory diseases: A comprehensive approach. – Geneva: WHO Press, 2007. – 156 p.

18. World Bank. Air Pollution and Health Impact in Central Asia. – Washington DC, 2022. – 115 p.

19. World Health Organization. Global Health Estimates 2023: Leading causes of death and disability. – Geneva: WHO, 2023. – 98 p.

ISBN: 978-625-90699-4-4

OILA QADRIYATLARI VA RISHTON AN'ANAVIY KULOLCHILIK MAKTABINING DAVOMCHISI BO'LISH – MENING HAYOT YO'LIM.

"FAMILY VALUES AND BECOMING A SUCCESSOR OF THE RISHTON TRADITIONAL POTTERY SCHOOL – MY LIFE PATH"

Kamronbek Sharofiddinov
is an Honored Art Worker of the Republic of Uzbekistan, an Academician of the Academy of Arts of Uzbekistan, a recipient of the "El-yurt hurmati" Order and the "Shuhrat" Medal, and a grandson-disciple of the renowned master potter Sharofiddin Yusupov.

Abstract

This article explores the history of the formation of the Rishton traditional pottery school, its artistic and stylistic features, technological processes, and its significance within the national cultural heritage. The author analyzes the preservation and development of Rishton pottery art based on family values, the master–apprentice tradition, and the continuity of generations.

Keywords: potter, art, Rishton pottery, traditional pottery school, folk applied arts, craftsmanship, ceramic изделия (ceramic products), secret of alkaline glaze, glazing technology, potter's wheel, ornamental patterns, master–apprentice tradition, Fergana Valley, cultural heritage, national values, artistic pottery, pottery technology.

Annotatsiya.

Mazkur maqolada Rishton an'anaviy kulolchilik maktabining shakllanish tarixi, badiiy-uslubiy xususiyatlari, texnologik jarayonlari hamda milliy madaniy merosdagi o'rni yoritilgan. Muallif tomonidan oila qadriyatlari, ustoz-shogird an'anasi va avlodlar davomiyligi asosida Rishton kulolchilik san'atining saqlanishi va rivojlanishi masalalari tahlil qilingan.

Kalit so'zlar*: kulol, san'at, Rishton kulolchiligi, an'anaviy kulolchilik maktabi, xalq amaliy san'ati, hunarmandchilik, sopol buyumlar, ishqor siri, sirlash texnologiyasi, kulolchilik charxi, bezak naqshlari, ustoz-shogird an'anasi, Farg'ona vodiysi, madaniy meros, milliy qadriyatlar, badiiy kulolchilik, kulolchilik texnologiyasi.*

Men — Sharofiddinov Kamronbek, O'zbekiston Respublikasida xizmat ko'rsatgan san'at arbobi, O'zbekiston Badiiy akademiyasi akademigi, "El-yurt hurmati" ordeni va "Shuhrat" medali sohibi, mashhur kulol ustoz Sharofiddin Yusupovning nabira-shogirdi sifatida o'z hayotimni shunday san'at yoliga bahshida etganimdan bag'oyat gururlanaman. O'zbekiston qadimdan hunarmandchilik rivojlangan hududlardan biri sifatida dunyoga mashhur bo'lib, kulolchilik san'ati uning eng qadimiy va yuksak rivojlangan tarmoqlaridan hisoblanadi. Ayniqsa, Farg'ona vodiysining Rishton shahri o'zining noyob kulolchilik maktabi bilan xalqaro miqyosda tanilgan.

Asrlar davomida shakllangan Rishton kulolchilik maktabi milliy an'analarni saqlab qolgan holda zamonaviy san'at bilan uyg'unlashib, bugungi kunda ham o'z ahamiyatini yo'qotmagan. Arxeologik tadqiqotlar Rishton hududida kulolchilik milodning dastlabki asrlaridayoq rivojlanganligini ko'rsatadi. Hududdagi sifatli qizil gil zaxiralari kulolchilikning taraqqiy etishida muhim omil bo'lgan.

Buyuk Ipak yo'li orqali amalga oshirilgan savdo aloqalari natijasida Rishton ustalarining mahsulotlari Markaziy Osiyo, Eron, Xitoy va boshqa mamlakatlarga tarqalgan.

XVIII–XIX asrlarda Rishton kulolchilik maktabi yanada rivojlanib, o'ziga xos badiiy uslubga ega bo'ldi. Mahalliy ustalar avloddan-avlodga o'tib kelayotgan sir tayyorlash, naqsh

ishlash va pishirish sirlarini saqlab qolganlar. Aynan shu davrda Rishton kulolchiligi o'zining ko'k va moviy ranglar ustun bo'lgan bezaklari bilan ajralib tura boshladi.

Rishton kulolchilik maktabining asosiy o'ziga xosligi tabiiy xomashyodan foydalanishidir. Mahalliy gil o'zining elastikligi va pishiqligi bilan ajralib turadi. Buyumlarni bezashda tabiiy mineral bo'yoqlar hamda "ishqor siri" deb ataluvchi maxsus sir qo'llaniladi. Natijada buyumlar yorqin, jiloli va uzoq muddat saqlanadigan ko'rinishga ega bo'ladi.

Naqshlarda islimiy, girih, bodom, anor, paxta guli, yaproq va quyosh ramzlari keng uchraydi. Ko'k, havorang, oq va yashil ranglarning uyg'unligi Rishton sopol buyumlariga o'ziga xos nafislik bag'ishlaydi. Har bir naqsh xalqning dunyoqarashi, tabiatga munosabati va estetik didini aks ettiradi.

Ishlab chiqarish texnologiyasi haqida so‘z borar ekan, an'anaviy kulolchilik jarayoni bir necha bosqichlardan : sifatli gilni qazib olish va tayyorlash; kulolchilik charxida buyumni shakllantirish; tabiiy sharoitda quritish; birinchi marotaba pishirish; sirlash va bezak berish; ikkinchi marotaba yuqori haroratda pishirishdan iborat jarayondir. Ushbu jarayonlarning har biri usta-kuloldan katta tajriba, sabr va mahorat talab qiladi. Ayniqsa, sir tayyorlash usuli Rishton kulollarining ko'p asrlik tajribasiga asoslangan bo'lib, har bir ustaning o'ziga xos sir saqlash an'anasi mavjud.

Rishton kulolchilik maktabining rivojlanishida ko'plab mohir ustalar katta hissa qo'shgan. Ular orasida Usto Alisher Nazirov, Rustam Usmonov, Sharofiddin Yusupov, Ismoiljon Komilov kabi kulollar milliy kulolchilik an'analarini rivojlantirib, xalqaro ko'rgazmalarda ham munosib ishtirok etganlar.

Ustoz-shogird tizimi Rishton kulolchilik maktabining eng muhim jihatlaridan biridir. Mazkur an'ana orqali kasb sirlari, bezak usullari va milliy qadriyatlar yosh avlodga yetkazib kelinmoqda.

Bugungi kunda men dunyoga mashhur Rishton an’anaviy kulolchilik maktabining to‘qqizinchi avlod vakili sifatida ota-bobolarimizning bebaho merosini davom ettirib kelmoqdaman. Bu men uchun shunchaki kasb emas, balki ajdodlarimning menga qoldirgan muqaddas omonatidir. Bolaligimdan otam va bobomning yonida yurib, loy qorish, charxda ishlash, sir tayyorlash va kulolchilikning nozik sirlarini o‘rganib ulg‘aydim. O‘sha paytlardanoq qalbimda bu hunarga cheksiz mehr uyg‘ondi. Vaqt o‘tib boshqa kasblarni ham sinab ko‘rdim, ammo qalbim baribir ota kasbimga qaytdi. Chunki angladimki, agar men bu yo‘ldan voz kechsam, necha asrlardan beri davom etib kelayotgan avlodlar zanjiri uzilishi mumkin. Rishton kulolchiligi bugungi kunda dunyoning ko‘plab davlatlarida qadrlanadi. Bizning oilaviy muzeyimiz va uy muzeyimizga har kuni turli mamlakatlardan sayyohlar tashrif buyuradilar.

Ularga Rishton kulolchiligining tarixi, yaratilish jarayoni va sir-asrorlarini amaliy tarzda namoyish qilamiz. Mehmonlar o‘z qo‘llari bilan sopol buyum yasab, uni yurtlariga esdalik sifatida olib ketadilar. Ularning samimiy minnatdorchiligi va iliq tilaklari bizning oilamiz uchun eng katta mukofotdir. Rishtonda kulolchilikning ikki yo‘nalishi mavjud: biri — asrlar davomida ota-bobolarimizdan meros bo‘lib kelayotgan an’anaviy kulolchilik, ikkinchisi esa zamonaviy kulolchilikdir. Har ikkala yo‘nalish bugungi kunda yuksak e’tirofga sazovor bo‘lmoqda. Men esa butun qalbim bilan aynan an’anaviy Rishton kulolchilik maktabini rivojlantirish va uni yanada kengroq dunyoga tanitishni o‘z oldimga maqsad qilib qo‘yganman. Kulolchilik — oddiy hunar emas. Inson tuproqdan yaralgan va yana tuproqqa qaytadi. Bizning san’atimiz ham aynan tuproq bilan bog‘liq. Shu bois men kulolchilikni yaratganning Rishton zaminiga bergan ulug‘ ne’mati deb bilaman. Har bir inson hech bo‘lmaganda bir marta loy bilan ishlab ko‘rishi kerak, chunki bu jarayon insonga sabrni, mehrni va yaratuvchanlikni o‘rgatadi.

Bugungi kunda Rishton kulolchiligi davlat tomonidan qo'llab-quvvatlanmoqda. Hunarmandlar uchun ko'rgazmalar, festivallar va xalqaro yarmarkalar tashkil etilib, mahsulotlarning eksport salohiyati kengaymoqda. Turizm rivojlanishi natijasida Rishton kulolchilik markaziga mahalliy va xorijiy sayyohlar soni ortib bormoqda.

ISBN: 978-625-90699-4-4

Shuningdek, zamonaviy dizayn va an'anaviy uslublarning uyg'unlashuvi natijasida yangi turdagi badiiy buyumlar yaratilmoqda. Bu esa kulolchilik san'atining raqobatbardoshligini oshirish bilan birga, milliy madaniy merosni asrashga xizmat qilmoqda.

Men oilam va ajdodlarim bilan cheksiz faxrlanaman. Bobom **Sharofiddin Yusupov** yaratgan san’at asarlari bugungi kunda Fransiyadagi Luvr muzeyi, AQSHdagi Metropolitan muzeyi, Rossiyadagi Ermitaj muzeyi, Kuskovo muzeyi, Etnografiya muzeyi, Sharq muzeyi, Koreya, Yaponiya va boshqa ko‘plab mamlakatlar muzeylarida, shuningdek, O‘zbekistondagi Islom sivilizatsiyasi markazi hamda yurtimizning turli muzeylarida saqlanmoqda. Bu bizning oilamiz uchun ulkan sharaf va faxrdir. Mening eng katta orzuim — bobom bosib o‘tgan sharafli yo‘lni munosib davom ettirish, undan ham yuksak marralarni zabt etish va o‘zim yaratgan san’at asarlarining ham dunyoning nufuzli muzeylaridan joy olishini ko‘rishdir. Men bor kuchim bilimim va mehnatim bilan bunga intilaman. Ishonamanki, milliy hunarmandchiligimizni asrab-avaylash, uni kelajak avlodlarga yetkazish va dunyoga tanitish har bir kulolning muqaddas burchidir. Men ham sulolamizning o‘ninchi avlodi bo‘ladigan farzandlarimga ushbu bebaho merosni topshirish, ularni ajdodlarimiz yo‘lida tarbiyalash va Rishton kulolchiligining dovrug‘ini yanada yuksaltirish uchun sidqidildan xizmat qilaman. Men uchun kulolchilik — bu kasb emas, bu hayot mazmuni, oilamning tarixi, xalqimning qadriyati va Vatanimga bo‘lgan muhabbatimning yorqin ifodasidir.

Rishton an'anaviy kulolchilik maktabi O'zbekiston xalq amaliy san'atining noyob namunasi hisoblanadi. Uning ko'p asrlik tarixi, tabiiy xomashyoga asoslangan texnologiyasi, betakror badiiy uslubi va ustoz-shogird an'analari milliy madaniyatimizning muhim tarkibiy qismidir. Mazkur maktabni asrash, ilmiy jihatdan tadqiq etish va xalqaro miqyosda targ'ib qilish nafaqat madaniy merosni saqlash, balki mamlakatimizning turistik va iqtisodiy salohiyatini oshirishda ham muhim ahamiyat kasb etadi.

Foydalanilgan adabiyotlar

1. Karimov Q. *O'zbek xalq amaliy san'ati*. Toshkent: O'qituvchi, 2018.
2. Bulatov S. *O'zbek xalq amaliy bezak san'ati*. Toshkent, 2010.
3. Mirzayev T. *Hunarmandchilik tarixi va rivojlanishi*. Toshkent, 2016.
4. O'zbekiston Respublikasi Fanlar akademiyasi nashrlari: xalq amaliy san'ati va kulolchilikka oid ilmiy maqolalar.
5. O'zbekiston Respublikasi Madaniyat vazirligi va Hunarmand uyushmasi materiallari.

ISBN: 978-625-90699-4-4

MODERN CLINICAL APPROACHES TO CHRONIC SUBDURAL HEMATOMA

Ph.D., Madamin Aminov[1]
Department of Urology and Clinical Pharmacology,
Central Asian Medical University, Fergana, Uzbekistan
[1]ORCID ID: https://orcid.org/0009-0005-2595-9968

Ph.D., Bakhtiyor K. Urinboev[2]
Fergana Branch of the republican Scientific
Center for Emergency Medical Car Fergana, Uzbekistan
[2]ORCID ID: https://orcid.org/0009-0008-9393-1192

Clinical Resident Farzona K. Sobirova[3]
Clinical Resident in Neurosurgery, Central Asian Medical University,
Fergana, Uzbekistan.
[3]ORCID ID: https://orcid.org/0009-0004-7535-1216

Abstract.
Advances in modern medicine continue to strengthen the efficacy of early disease detection and minimally invasive therapeutic interventions. Recent breakthroughs in neurosurgery have highlighted the critical value of early diagnosis and eradication of chronic subdural hematomas in preserving the health of the elderly population. Chronic subdural hematoma (cSDH) represents one of the most prevalent neurosurgical pathologies in elderly patients, with its incidence demonstrating a substantial increase in recent years. This upward trend is primarily driven by population aging, the widespread administration of anticoagulant and antiplatelet therapies, and a rising incidence of mild traumatic brain injuries. According to contemporary scientific paradigms, cSDH is no longer viewed as a mere mechanical accumulation of blood, but rather as an active biological process driven by chronic inflammation, pathological angiogenesis, and localized hyperfibrinolysis.
Keywords: chronic subdural hematoma (cSDH), neuroimaging, computed tomography, MRI, burr-hole drainage, middle meningeal artery embolization, minimally invasive neurosurgery.

INTRODUCTION

Chronic subdural hematoma (cSDH) is a pathological condition characterized by the prolonged accumulation of blood degradation products within the subdural space beneath the dura mater. This condition predominantly affects patients older than 65 years and remains a critical clinical challenge in contemporary neurosurgical practice.

Historically, cSDH was conceptualized as a passive mechanical fluid collection. However, current research indicates that immune-inflammatory responses and pathological neoangiogenesis play pivotal roles in its pathogenesis. Elevated levels of inflammatory mediators such as VEGF, IL-6, IL-8, and MMP-9 within the hematoma capsule trigger recurrent microhemorrhages through newly formed, fragile capillaries [4].

The elucidation of these pathogenetic mechanisms has fundamentally shifted the therapeutic paradigm. At present, the primary objective has evolved beyond simple surgical evacuation to targeting and disrupting the underlying mechanisms responsible for hematoma recurrence.

Relevance. Chronic subdural hematoma is one of the most frequent neurosurgical pathologies encountered in the elderly, and its incidence has escalated remarkably in recent years. This surge is attributed to demographic aging, extensive clinical utilization of anticoagulants and antiplatelets, and an increased frequency of mild head traumas. Contemporary scientific consensus establishes that cSDH is not merely a static blood collection, but an active, dynamic

biological process orchestrated by chronic inflammation, pathological angiogenesis, and aberrant fibrinolysis.

Objective. To analyze the efficacy of modern diagnostic modalities, minimally invasive surgical techniques, and novel endovascular treatment strategies in the management of chronic subdural hematoma.

MATERIALS AND METHODS

This study was conducted based on a comprehensive literature review.

Criteria for selecting scientific literature:

- Articles published between 2020 and 2025;
- Studies indexed in the Scopus, PubMed, and Web of Science databases;
- Randomized controlled clinical trials (RCTs);
- Systematic reviews and meta-analyses.

A thorough analysis of scientific literature and terminology was performed using targeted search terms including: "chronic subdural hematoma", "modern treatment strategies", "middle meningeal artery embolization", "burr-hole drainage", and "minimally invasive neurosurgery".

RESULTS

Modern Diagnostic Approaches

Computed Tomography (CT) remains the cornerstone of cSDH diagnostics. CT imaging is utilized to definitively evaluate:

- Hematoma volume;
- Density and internal architecture;
- Midline shift;
- Brain parenchyma compression;
- Septated or multi-loculated structures.

Magnetic Resonance Imaging (MRI) possesses superior diagnostic value in complex or ambiguous cases. Specifically, advanced sequences such as Susceptibility-Weighted Imaging (SWI), Fluid-Attenuated Inversion Recovery (FLAIR), and contrast-enhanced MRI enable precise evaluation of the biological activity within the hematoma membrane.

Furthermore, recent years have witnessed the integration of artificial intelligence (AI)-driven image analysis systems, expanding capabilities for automated hematoma volume calculation and individualized prognostic modeling based on CT scans [5].

Contemporary Principles of Surgical Treatment

Currently, burr-hole craniostomy combined with closed system drainage remains the established "gold standard" for treating cSDH. This approach is:

- Minimally invasive;
- Safe;
- Well-tolerated by elderly patients with multiple comorbidities.

Nevertheless, postoperative recurrence rates persist between 5% and 30%, which continues to drive the pursuit of novel therapeutic strategies [6].

Middle Meningeal Artery Embolization (MMAE)

One of the most significant and innovative milestones in recent years is middle meningeal artery (MMA) embolization. The core mechanisms of this approach involve:

- Reducing the arterial blood supply to the outer hematoma capsule;
- Arresting pathological angiogenesis;
- Preventing recurrent microbleeding.

Data from the STEM randomized controlled trial demonstrated that adding MMAE to standard care significantly lowers the risk of treatment failure. The primary outcome occurred in 16% of the MMAE group compared to 36% in the control group (OR 0.36; 95% CI 0.20–0.66) [1] (The New England Journal of Medicine).

ISBN: 978-625-90699-4-4

Similarly, the EMBOLISE trial demonstrated that combining MMAE with standard surgery reduced the rate of hematoma recurrence or the need for reoperation from 11.3% down to 4.1% [2] (The New England Journal of Medicine).
Subsequent meta-analyses published in 2024 have firmly validated that the deployment of MMAE yields a statistically significant reduction in recurrence risks [3] (PubMed).

DISCUSSION

Literature analysis indicates that modern clinical approaches to cSDH are transitioning from exclusive reliance on surgical evacuation toward targeting the biological and molecular mechanisms of the disease.
Today's comprehensive clinical algorithm encompasses:

1. **Precise Diagnostics:** Detailed assessment of hematoma characteristics using high-resolution CT and MRI.
2. **Minimally Invasive Surgery:** Utilizing burr-hole drainage or endoscopic evacuation techniques.
3. **Pathogenetic Therapy:** Implementing MMA embolization.

MMAE emerges as a highly promising intervention, particularly for patients at elevated risk for recurrence, individuals on mandatory anticoagulant regimens, and those presenting with recurrent hematomas.
Nonetheless, further extensive multi-center studies remain essential to establish long-term safety profiles and outline precise, standardized clinical indications for this procedure.

CONCLUSION

Modern clinical approaches to chronic subdural hematoma are anchored in a multi-modal combination of advanced diagnostics, minimally invasive surgery, and endovascular technologies.

While CT and MRI ensure accurate disease characterization, burr-hole drainage maintains its status as the current standard of surgical care. Concurrently, middle meningeal artery embolization is actively shaping the future as a highly effective, targeted strategy aimed at mitigating recurrences.

Looking forward, the development of patient-centric treatment algorithms—driven by artificial intelligence, novel biomarkers, and individualized prognostic frameworks—is poised to deliver optimal clinical outcomes. Ultimately, these advancements will play a pivotal role in extending life expectancy and improving the overall quality of life for the elderly population.

REFERENCES

1. Fiorella D, Monteith SJ, Hanel R, et al. Embolization of the Middle Meningeal Artery for Chronic Subdural Hematoma. N Engl J Med. 2025;392:855-864. DOI:10.1056/NEJMoa2409845. The New England Journal of Medicine
2. Davies JM, et al. Adjunctive Middle Meningeal Artery Embolization for Subdural Hematoma. N Engl J Med. 2025;392:1113-1123. DOI:10.1056/NEJMoa2313472. The New England Journal of Medicine
3. Middle Meningeal Artery Embolization Alone Versus Combined With Conventional Surgery in Chronic Subdural Hematoma: Systematic Review and Meta-analysis. Clin Neurol Neurosurg. 2024;108580. DOI:10.1016/j.clineuro.2024.108580. PubMed
4. Edlmann E, Giorgi-Coll S, Whitfield PC, et al. Pathophysiology of chronic subdural hematoma: inflammation and angiogenesis. Acta Neurochir. 2021.
5. Imre B, et al. Brain-shift analysis and artificial intelligence approaches in chronic subdural hematoma imaging. 2024. arxiv
6. Soleman J, Nocera F, Mariani L. Chronic subdural hematoma management and recurrence prevention. Acta Neurochir. 2022.

ISBN: 978-625-90699-4-4

FACTORS DEMONSTRATING THE CONNECTION BETWEEN ANCIENT IMAGES IN THE TERRITORY OF UZBEKISTAN AND THE ART OF MINIATURE PAINTING

I.Yuldashev
Senior Lecturer Department of Fine Arts. Fer.GU.
ORCID ID 0000-0003-4461-2458

Abstract
The article tells about the centuries-old past of the Uzbek people and the scientific study of ancient wall images and miniatures, which were studied as a result of research conducted on the territory of modern Uzbekistan.

Keywords. Color, Zaraut, relief, Archeology, Afrosyab, Moni, Muzahib, character, calligrapher, papermaking, Decorative, Murakka, Muarrih, image of alkors, savr tree, Kushaniya, introduction, graceful.

Introduction.

The visual art of the Uzbek people is very ancient, with its origins reaching back to the primitive communal period and the Stone Age. Numerous images painted on rocks using various colors have been found in the southern part of our republic, at the foothills of mountains. Art historians compare these places to a vast palace of art.

In recent years, serious efforts have been made in our country to study the rich and diverse cultural heritage of Eastern peoples deeply, comprehensively, and scientifically. This is certainly not without reason. No matter how distant the history of our ancestors may be from us, there are delicate ties that connect us with them: the spiritual values and works of visual art they left behind. These are among the sources that influenced the study of the world and its integral development together with human progress. As a result of research and study, unprecedented achievements have been attained in our country both materially and spiritually. Studying the past of our art and national culture, preserving cultural heritage, and ensuring that it serves our society today are among the urgent issues of the present day.

The requirements and scientific approaches adopted for the protection and use of historical and cultural monuments have acquired great importance in the socio-political, cultural, national, and spiritual life of our country. These requirements logically arise from the essence of the current stages of the development of our society; that is, the present era demonstrates the incomparable role of science, culture, and art in the education of members of society. [1; p. 11]

Among the ancient peoples of Central Asia, the Uzbek people have a centuries-old past. Archaeological excavations carried out in the territory of present-day Uzbekistan can be regarded as evidence supporting the scientific research of historians and art historians. In particular, the wall paintings, sculptural samples, and objects of applied art created at a high artistic level and found in the ruins of such ancient cities, fortresses, and temples as Varakhsha, Afrosiyob, Khalchayan, Toprakkala, Bolaliktepa, Ayritom, Dalvarzintepa, Koykirilgan Kala, Ajinatepa, Teshikkala, and a number of other sites are clear proof of this. Eastern Renaissance painting is understood primarily as Eastern miniature painting. It is known that a renaissance took place in the field of visual art in the medieval Eastern countries. In particular, miniature painting, a small-scale form of visual art closely connected with book graphics, developed widely and became popular. As a result, miniature painting schools emerged and established their place in the Arab world, Iran, Isfahan, Shiraz, Turkic regions, Movarounnahr, India, Azerbaijan, Herat, Bukhara, and Samarkand.

Varakhsha. This is the ruin of a fortress located 40 km west of the city of Bukhara. Today, the area has turned into desert. Archaeological excavations show that people lived in

ISBN: 978-625-90699-4-4

this territory for a thousand years before the Common Era, and several factors contributed to the preservation of the name Varakhsha to the present day. The largest building in Varakhsha occupied 9 hectares and was 10 meters high. The building contained the rulers' palace and temple, soldiers' quarters (a place for soldiers to live and rest), and a room for storing weapons. The rooms of the palace were decorated with mural paintings, various inscriptions, sculptures, and ornamental designs with images.

“One of the rooms in the palace is known as the ‘red’ room. The images and color scheme on the walls of these rooms are red, and hunting scenes are depicted there. They are preserved in the Hermitage Museum in St. Petersburg, Russia.”

Afrosiyob. Afrosiyob is the ruin of a city located near Samarkand, and it was created in the 4th-5th centuries BC. Excavations aimed at studying Afrosiyob began at the beginning of the 20th century and continue to this day. As a result of the excavations, it was determined that a huge fortress and palace existed in this area.

This building contains several rooms, one of which is known to have been a guest hall. Various mural paintings were created on all four sides of the guest hall, and one of the wall paintings depicts a man and a woman sitting and talking. The walls of the guest hall depict a wedding procession, bathing in a river, a ceremony of receiving an ambassador, and a hunting ceremony.

Dalvarzintepa. This is the ruin of a settlement located in the village of Dalvarzintepa on the outskirts of Andijan Region, discovered as a result of research in 1952. During excavations, a bronze-casting workshop, stone-paved pathways, storage facilities for grain and other foodstuffs, pottery, vessels, and relief sculptures depicting animals and people were found underground. At Dalvarzintepa, a woman's head made of plaster dating to the 2nd century BC and similar objects of applied art were also discovered. Even complex processes such as metalworking were carried out in that period.

Kuhtang. This refers to the Boysun foothill areas of Surkhandarya in the southern part of present-day Uzbekistan. The historical sacred monument in this area is known as “Zarautsoy.” Observing the various images in the hunting scenes at Zarautsoy helps us vividly imagine the life and way of living of ancient people. Hunting was one of the main forms of labor in the lives of primitive people; therefore, hunting scenes occupied a broad place in primitive images. These pictures show people's lively movements, the struggle for survival, and the realities of life between humans and animals. Although the figures and forms appear primitive and simple, they create a distinct impressionistic state for the viewer. Serious images and ideas, as well as a variety of themes, are expressed in these drawings.

The paintings on the rocks of Zarautsoy are also valuable because they demonstrate the ancient origins of the artistic activity of people who lived in the territory of Uzbekistan.

Among the earliest examples belonging to the primitive period of visual art are the images and inscriptions on the rock known as “Takatosh” in Jizzakh Region, which reflect such feelings as thought, sensation, emotion, and perception. It is evident that the main purpose of the images was connected with practical needs.

Ayritom. This is an ancient city located on the bank of the Amu Darya, 18 km from the city of Termez, and it was identified in 1932. During excavations carried out here, various reliefs, round sculptures, and friezes were found. The images on them depict women and men playing the chiltor, qo‘shnay, oud, and drum. Scholars have noted that these friezes are very similar to the sculpture of northern India in terms of their style of execution and compositional solution.

This situation is explained by the introduction and development of Buddhism in the territory of Uzbekistan in the 1st-2nd centuries. This indicates that religious relations in Central Asia were relatively free during that period. The age of the finds at this site has been recognized approximately or on the basis of historical sources. The history of the formation of visual-art

ISBN: 978-625-90699-4-4

development in the territory of Uzbekistan is closely connected with stages of evolution and is oriented toward the requirements for training modern specialists. Therefore, attempts have been made to substantiate works of art and our material cultural wealth through historical evidence, sources, and examples from various stages of development.

The survival of miniature works to the present day and the fact that the earliest lines of this art form reach far into the past show that visual art and artistic activity performed important functions in the formation of our ancestors' worldview and in their comprehensive study of the mysteries of life. The earliest people tried to convey their thoughts, attitudes, wishes, and various actions to one another through lines, simple forms, and primitive images.

Primitive people expressed their intention to go hunting by depicting hunting weapons, and by drawing simple, primitive images of wild bulls and various other animals, they indicated that they wished to hunt those animals. One of the examples of visual art found in the territory of present-day Uzbekistan is a scene painted in the Zarautsoy cave. In the paintings of this cave, one can see the

distinctive activity of ancient artists. This cave, located in an accessible part near the upper section of Mount Kuhtang where sunlight falls well, was also called the “Golden Fire” rock or the “Golden Fire Gorge.” This is because ‘zar’ was used in the meaning of gold, and ‘ot’ in the meaning of fire.

Mural images, ornamentation, calligraphy, and jewelry-making were among the very ancient crafts of our ancestors. Household objects made with refined taste and artistic elegance, beautifully copied books decorated with calligraphy and illustrations, and calligraphic pieces were honored in every household from ancient times. Ancient mansions, palaces, and chortaks were also decorated with ornamentation. All this became known and was studied thanks to archaeological finds and the research of our art historians. The architectural monuments, decorations, and finely copied artistic books of the peoples of Central Asia were repeatedly plundered by foreign invaders. According to Beruni, the Greek conqueror Alexander took the scientific treasures of the peoples of Central Asia to his own country. Works of art, masterpieces, and our spiritual and material possessions were looted by Alexander and his successors.

Amir Temur, the founder of a new dynasty, always kept chancery officials, scribes, secretaries, and writers at his court and took them with him even during military campaigns. Although historical sources contain much information that numerous letters, insignia, decrees, and victory proclamations were written by the Sahibqiran, Amir Temur's state documents have not survived to us fully and perfectly in their original form. We can learn about them and obtain information from historical works such as Ghiyosiddin Ali Yazdi's “Ruznomai Futuhoti Hind,” Nizomiddin Shami's “Zafarnama,” Rui Gonzalez de Clavijo's collection “Diaries,” and the later works Ibn Arabshah's “History of Amir Temur” and Sharafiddin Ali Yazdi's “Zafarnama.” [2; pp. 41-42]

As we all know, the formation of a huge centralized state at the end of the 14th century created the socio-economic and political foundation for the cultural development of Movarounnahr and Khurasan in subsequent centuries. Moreover, efforts were made to preserve to a certain extent and further develop the fame, culture, and traditions of urban improvement of the great centralized state. In this field, the attention paid by the political ruler Shahrukh Mirza and his descendants—Mirza Ulughbek in Samarkand and Movarounnahr, Mirza Baysunghur in Herat, and Ibrahim Mirza in Shiraz—to science, enlightenment, and the art of bookmaking led to an unparalleled development of these fields. Mirza Ulughbek's activity in Samarkand resulted in the construction of beautiful buildings, gardens, scientific centers, madrasas, and observatories, and served as a leading idea for the intellectuals of that period.

For the development and prosperity of the country, those involved in governing the state and representatives of the educated class personally engaged in tasks related to calligraphy and book decoration. The fact that the cultural history of the peoples of Central Asia is among the

ISBN: 978-625-90699-4-4

most ancient and reached a high level of development in many fields is now recognized by the scholarly community throughout the world.

The arrival of the Arabs in these territories had a very great influence on political and cultural development. In Central Asia, especially in Khorezm, cultural and scientific thought flourished remarkably. The entire world benefited from the scholarship and creativity of such internationally renowned great thinkers as al-Farabi, Ibn Sina, and al-Beruni.

The centuries-old rich culture of the Khorezmians and Sogdians in Central Asia developed through a natural historical process. The cultural monuments created by the peoples of Central Asia, including the Turkic peoples (especially the Uyghurs), before the Arab conquest are evidence of this view. In particular, the Afrosiyob archaeological monuments discovered in Samarkand in 1965 once again confirm the extraordinarily high level of development of the peoples of Central Asia before the Arab conquest. In the 13th-14th centuries, the Mongols devastated Central Asia and turned prosperous cities into ruins. Cultural monuments were destroyed, and thousands of manuscript books—treasures of science—were burned in bonfires. No matter how much the Mongol invaders destroyed, the creative people cherished their cultural heritage, and cultural life continued to move forward even under the most difficult conditions. In the 14th-15th centuries, during the Timurid period, a centralized state was established in Central Asia, albeit for a relatively short time, and economic, political, and cultural growth took place in the life of the country. Especially in the 15th century, the culture of the peoples of Central Asia experienced its most brilliant period in Herat and Samarkand. Mirza Ulughbek, Alisher Navoi, Abdurahman Jami, Khondamir, Behzad, Sultan Ali, and Mirza Babur were among the great minds of this era. The rule of the Safavids and Shaybanids caused cultural life to undergo a certain decline.

By the 19th century, especially as the economic and political ties of Central Asia with Russia grew stronger, changes began to occur again in cultural life. Thus, over approximately one thousand years of history, from the 9th to the 20th centuries, the great heritage created by the peoples of Central Asia in the fields of science and spiritual culture reached our time mainly in the form of manuscript books. A thousand years of cultural heritage written in Arabic script was passed from generation to generation in manuscript form. It was precisely through these manuscript books that the peoples of Central Asia were able to benefit from the cultural heritage left by their ancestors. These manuscripts also make it possible to see that every people living in Central Asia had its own history and that the peoples of Central Asia contributed to the development of world cultural history.

After the manuscript books mentioned above had been created by an author on separate sheets of paper, the person who performed the extremely complex, laborious, yet honorable task of making a clean copy and turning the work into a book was the scribe. The scribe may appear to be merely a person who copied the author's work letter by letter, but in reality this was not the case. In medieval history and cultural life, the profession of the scribe was considered one of the most honorable and sacred duties. First of all, the scribe's literacy alone raised him to a high social position in a system in which rulers and emirs were often illiterate.

In the process of copying books, a scribe absorbed the content of every book he reproduced, and as a result, a true scribe came to belong to the ranks of the educated and enlightened people of his time. Therefore, the calligraphers who copied books in the medieval Eastern countries should not be regarded simply as people performing mechanical copying; rather, each calligrapher should be understood as an educated, enlightened, progressive intellectual and a major cultural figure of his era.

Arabic script entered Central Asia together with Islam; therefore, a group of calligraphers who came from Arab countries to Central Asia engaged in copying the Qur'an and religious books. The task of copying the “kalomi tarif,” books about religion and Sharia, which were regarded as extremely sacred in their time, could not be entrusted to just anyone. The ruling class

ISBN: 978-625-90699-4-4

assigned such a responsible educational task to the most learned and capable people of the age—educated calligraphers.

This clearly demonstrates how important the scribe was in medieval society. In addition, history shows that a number of scholars, poets, and learned people who lived in the Middle Ages mastered the art of calligraphy from a young age and later became known as scribes as well. Such great figures copied not only their own works but also the works of other authors. For example, Hafiz Shirazi copied Khusraw Dehlavi's "Khamsa." Several members of the Timurid family (Baysunghur Mirza, Gharib Mirza, and Badiuzzaman) were engaged in bookmaking. Historical sources show that Alisher Navoi was a skilled calligrapher. Mirza Babur created a simplified script known as "Khatti Baburi," reforming Arabic graphics to make them more suitable for Turkic peoples. [3; pp. 62-63]

Munis Khorezmi wrote a treatise entitled "Savodi Ta'lim" on the art of calligraphy and copied Alisher Navoi's "Khamsa" in exceptionally beautiful handwriting. Muqimi copied bayaz collections in very fine nasta'liq and shikasta scripts. Finally, Ahmad Donish, the great 19th-century scholar and encyclopedic thinker and one of the last representatives of the Bukhara school of calligraphy, left more than ten beautifully copied manuscripts. All this shows that, in a period when printing technology had not yet been invented in Central Asia, the demand for scribes was extremely high. The profession of the scribe, in turn, was one of the factors indicating the level of development of cultural life. If we look at the educational work carried out in thousands of medieval madrasas and schools and consider that thousands upon thousands of textbooks were copied by hand to meet the needs of schools and madrasas, we can imagine the painstaking labor of the calligrapher who created these books, his role in cultural life, and how responsible and honorable his position in society was. Medieval ethics required a calligrapher not only to be capable and learned but, above all, to possess a noble nature, to be kind to people, to overcome selfish desires, and to have a pure heart in order to serve the people worthily. On this matter, Sultan Ali Mashhadi, the qibla of calligraphers in Navoi's era, wrote in his treatise on "Husnixat": the process and methods of book production occupied a special place in the division of labor in medieval society, and calligraphy became a specialized profession. As cultural life developed, demand for books steadily increased. This led to the establishment of book-production workshops. In famous cultural centers of the time such as Herat, Bukhara, Khiva, Samarkand, and Kokand, specialized enterprises for producing books were established, and book trade expanded widely in order to meet public demand. In producing not only valuable artistic manuscripts but also ordinary books, these tasks were carried out through the participation of specialists from several professions. In modern historical-geographical scholarly literature, Movarounnahr generally refers to the territories of Central Asia excluding Turkmenistan—that is, Uzbekistan, Tajikistan, Kyrgyzstan, and the southern part of Kazakhstan. [3; pp. 12, 26]

The term Movarounnahr was first mentioned in hadiths. The term was known among the Arabs even in the pre-Islamic period, when (in the 6th century AD) it referred to the lands of the Turkic Khaganate located northeast of the Sasanian state, beyond the Jayhun, that is, the Amu Darya. The Arab geographer Yaqut al-Hamawi, relying on information from ancient Persian sources, regarded the term "Movarounnahr" as the name of the land of Turan. During their earliest campaigns to the east (the second half of the 7th century and the beginning of the 8th century), the Arabs became familiar with two concepts: "madunannahr," meaning "this side of the river," and "mavaroannahr," meaning "the other side of the river." The first referred to the lands of Tokharistan east of Khurasan, south of the Amu Darya, as far as the Hindu Kush Mountains; the second included northern Tokharistan and Sogdiana north of the Amu Darya. Among the Arab geographers of the 9th-10th centuries who described Central Asia, only al-Istakhri and Ibn Hawqal specifically used the term Movarounnahr for these territories. Other

ISBN: 978-625-90699-4-4

Arab geographers used the term in a much narrower sense when discussing Central Asia, describing it as a continuation of Khurasan or as part of al-Mashriq (the East). In addition to Khurasan and Movarounnahr, they included India, China, and even islands in the Indian and Pacific Oceans as far as Japan within the concept of al-Mashriq (Ibn Khordadbeh). From the beginning of the 11th century, the territorial meaning of Movarounnahr included Sogdiana and Khorezm in some sources, and Sogdiana and northern Tokharistan in others. In terms of meaning, the term came to denote an administrative unit within Turkestan—that is, the Karakhanid state—and later within the Khorezmshah, Chagatai, Timurid, and Shaybanid states. Thus, the term Movarounnahr was interpreted in different ways in medieval sources. As a geographical area, it was first included in Turan, the Turkic Khaganate, or the country of Turkestan (until the 7th century), then in Khurasan (as stated in the source for the 16th-10th centuries), later in Turkestan (from the 11th century), and for a certain period in Khorezm (late 12th to early 13th century). Therefore, the term had a geographical meaning and, in different periods, functioned as an administrative unit within various states, including the Turkic Khaganate, the Arab Caliphate, the Samanid, Karakhanid, Khorezmshah, and other states. The combined information presented in various sources about this term does not territorially cover all the lands of the natural-geographical region of Turkestan denoted by the term "Central Asia." Northern Khurasan (Turkmenistan), Zhetysu (Kazakhstan), and southern Tokharistan (Afghanistan), which were part of this broader region, are not included in Movarounnahr in any sources. Therefore, in the broadest medieval use of the term Movarounnahr, it can conventionally be understood to include only the lands located between the Amu Darya and the Syr Darya. [4; pp. 101-110]

KHURASAN

Khurasan (Persian: sunrise, east) was the center of a historical kingdom in the northeastern part of Iran (250 BC-224 AD). The name Khurasan has been known since the Sasanian period. From the 13th century to the middle of the 18th century, Khurasan included the northeastern part of present-day Iran, the Merv oasis, the southern part of present-day Turkmenistan, and the northern and northwestern parts of Afghanistan. Mashhad, Nishapur, Merv, Balkh, Herat, Tus, Sarakhs, Abiward, Nisa, and Sabzevar were important cities of Khurasan. There is information, which has been studied, that the Arabs conquered it in the middle of the 7th century.

After the decline of the Arab Caliphate, Khurasan became part of the states of the Tahirids, Saffarids, Samanids, Ghaznavids, Seljuks, Khorezmshahs, Hulaguids, and Kartids (9th-14th centuries). Until the 720s, Khurasan was one of the most economically developed regions of the Near and Middle East.

It traded agricultural products, fruits, silk, wool, and fur with neighboring states. Silver, lead, copper and iron ores, gold, sulfur, tutiya, arsenic, marble, malachite, and other mineral resources were extracted in Khurasan, and textile production also flourished. In 1220 and 1223, the Mongols attacked and devastated Khurasan, killing much of its population, after which Khurasan was unable to regain its former status. At the end of the 14th century, Amir Temur incorporated Khurasan into his state; later it was subject to the Shaybanids and, from 1510 to 1736, to the Safavid state. Part of Khurasan (the Herat region and Balkh) was incorporated into Afghanistan, while another part was incorporated into Iran. As noted above, in the 14th-17th centuries the formation of cultural growth in Movarounnahr and Khurasan occupied an important and highly developed place.

Miniature art developed as a distinctive and separate direction in the Eastern countries and rose to the level of a specialized art form. Although its history began in the distant past, in the East this art reached maturity in the 14th-17th centuries. During this period, major schools of art were formed in Central Asia, India, Iran, and the Arab countries, including the "Bukhara School," the "Mughal" (Baburid) school of miniature painting, the "Shiraz School," the

ISBN: 978-625-90699-4-4

"Isfahan School," the "Yazd School," and the "Baghdad School." Scholars and historians of the former Soviet period and foreign countries produced scholarly works devoted to the activities of these art centers as a result of numerous studies. The well-known art historian of our republic, G. A. Pugachenkova, prepared many scholarly studies and collections on the history of the formation and activity of miniature schools in Movarounnahr (Central Asia). In the 16th-17th centuries, miniature art rose to new stages of development. New developments in the Movarounnahr school can be linked, as a major factor, to the decline of the Herat miniature school and the migration of artists from Herat toward Bukhara. The Movarounnahr school has also appropriately been referred to as the Bukhara and Samarkand school. Some sources suggest that such changes occurred under the influence of intensifying internal conflicts among the Timurids and the invasions of Shaybani Khan and Iranian troops.

Studies of the history of the Movarounnahr miniature school, including the research of Pugachenkova and Dolinskaya, discuss manuscript works considered to have been written in Central Asia in the 14th-15th centuries and descriptions of miniatures attributed to the Movarounnahr school. They also present considerations concerning the lives and activities of ornamental painters and artists included among the representatives of the Movarounnahr miniature school, the 16th-century Movarounnahr school of miniature painting, and the arrival of some Central Asian artists in India. The culture of Central Asia in the 9th-12th centuries, which adorned world culture with names such as Musa al-Khwarizmi, Ismail al-Bukhari, Abu Nasr al-Farabi, Abu Rayhan al-Beruni, Abu Ali ibn Sina, and al-Zamakhshari, was suddenly interrupted by dramatic historical events during the Renaissance period. [5; pp. 40-41]

At the beginning of the 13th century, the Khorezmshah state in Central Asia suffered a terrible and merciless attack by the armies of Genghis Khan. The invasion began in 1219 with the capture of the fortress of Otrar on the northern border of the Khorezmshah state, and in 1220-1221 the Khorezmshah capital, Old Urgench, fell into enemy hands. Although the Khorezmshah state was well armed, the intensification of internal disputes and disagreements, the dispersal of the army to defend individual cities, and the lack of unity meant that it could not withstand Genghis Khan's attack and quickly collapsed.

Cities and cultural centers were destroyed, and the population was massacred. The region became completely subject to Mongol rule. Conflicts and struggles also intensified among the Mongol khans who divided Central Asia into various districts; all of this negatively affected the country's socio-economic condition, and centers of culture declined. Many cultural treasures, centers of learning, madrasas, and libraries were destroyed. Representatives of art and science—scholars, poets and writers, astronomers, architects, and artists—were killed, while those who happened to survive fled to the provinces to save their lives.

The relentless struggle of the masses against foreign invaders significantly weakened Mongol rule in Central Asia and created favorable conditions for intensifying the struggle against them. Under such circumstances, Amir Temur emerged and quickly became prominent in the social process, and major changes took place in the life of the country. Amir Temur liberated the lands of Movarounnahr and Khurasan, which had been devastated by fragmentation and prolonged wars, from Mongol domination and united them into a single, independent, and strong state. An examination of the general factors of cultural growth under Temur and the Timurids shows that these factors were closely interconnected and could produce rapid cultural and spiritual development only as an integrated whole. At the same time, the visual and applied arts and architecture also developed.

Conclusion

By the 10th-11th centuries, we can see that visual art began to revive again. The Arab traveler Ibn Hawqal, who visited Samarkand in the second half of the 10th century, wrote that he saw images of animals on one of the walls along its streets and that the local people made images of horses, camels, oxen, and other creatures from cypress wood. Nizami Aruzi

ISBN: 978-625-90699-4-4

Samarqandi's work "Rare Stories" contains the following true story: after Sultan Mahmud subjugated Khorezm, he wrote to the Khorezmshah demanding that Abu Ali ibn Sina, Abdusal Masihi, and Abu Rayhan Beruni, who had become famous there, be sent to his court in Ghazna. Ibn Sina and Abu Sahl Masihi refused to go to Ghazna. The Khorezmshah then secretly helped them escape to Gurgan and presented the remaining scholars to the sultan's envoy. In order to capture Ibn Sina, Mahmud ordered Abunasr Araqa, who was also skilled in painting, to draw a portrait of Ibn Sina. He then summoned painters and ordered them to make forty copies of the portrait and sent messengers in every direction along with the royal decree. He appealed to the surrounding rulers: "There is a man with this appearance; he is called Abu Ali ibn Sina. Search for him, capture him, and send him to me!" After enduring the hardships of the road, Abu Ali ibn Sina reached Gurgan. Qabus, the ruler of Gurgan, was a great man, a philosophically minded and learned person. As soon as he saw Ibn Sina, he recognized him as the man in the portrait sent by Mahmud. From this it is clear that there was also an interest in visual art in Central Asia and that traditions of miniature painting existed there as well.

The rich history and culture of Uzbekistan began to be studied. As a result, scientific research was conducted, while many historical and precise facts were either eliminated or adapted to the politics of the period. Today, thanks to Independence, it has been established that Central Asia was one of the world's most ancient cultural centers. As a host country, opportunities are being provided for foreign scholars to visit for research. However, these studies have not been carried out easily, because all collected sources are being compared with one another and studied on the basis of facts in cooperation with historians and art historians.

REFERENCES

1. Decree No. PF-4947 of the President of the Republic of Uzbekistan dated February 7, 2017, "On the Action Strategy for the Further Development of the Republic of Uzbekistan." www.lex.uz
2. R. Hasanov. Fundamentals of Visual Art. Gafur Gulom Publishing House, Tashkent, 2009.
3. A. Madaminov, N. Normatov. Schools of Eastern Miniature Painting: Collection of Articles. Gafur Gulom Publishing House of Literature and Art, Tashkent, 1989.
4. A. Madraimov. Development of Miniature Art in the Timurid and Baburid Periods. Academy of Sciences of the Republic of Uzbekistan, State Museum of the History of the Timurids, pp. 101-110. Tashkent, 2019.
5. Shohalil Shoyoqubov. Contemporary Miniature Painting of Uzbekistan. Uzbekistan Publishing House, Tashkent, 2006.
6. A. A. Madraimov. Manuscripts of Alisher Navoi's Literary Works from the 15th-16th Centuries. State Museum of the History of the Timurids; Alisher Navoi State Museum of Literature. Tashkent, 2021.
7. Elmira Ismoilova. Schools of Eastern Miniature Painting, pp. 40-41. Gafur Gulom Publishing House, Tashkent, 1989.

ISBN: 978-625-90699-4-4

XALQ MUSIQASI YOSHLAR TA'LIM-TARBIYASINING AJRALMAS QISMI

FOLK MUSIC IS AN INTEGRAL PART OF YOUTH EDUCATION

Tokhirjon Shokirov Nurmamatovich
Fergana State University
Head of the Department of Music Education and Culture, Associate Professor
ORCID ID 0000 0002 2056 2970

Abstrakt
This paper examines the role and importance of folk music in the education and upbringing of young people. It analyzes the genres of folk music, its impact on moral and spiritual development, and its place in the modern education system. The study also highlights the role of musical heritage in shaping aesthetic taste and instilling national values in youth.
Keywords: spiritual and moral education, oral tradition, nationality, territoriality, vitality, folklorism, culture, rituals, holidays, mourning processes.

Annotatsiya
Ushbu maqolada xalq musiqasining yoshlar ta'lim-tarbiyasidagi o'rni va ahamiyati yoritiladi. Unda xalq musiqasining janrlari, ma'naviy-axloqiy tarbiyadagi roli hamda zamonaviy ta'lim tizimidagi o'rni tahlil qilinadi. Shuningdek, milliy musiqa orqali yoshlarning estetik didini shakllantirish va milliy qadriyatlarni singdirish masalalari ko'rib chiqiladi.
Kalit so'zlar: ma'naviy-axloqiy tarbiya, og'zaki an'ana , milliylik , hududiylik , hayotiylik, xalqchillik, madaniyat, marosimlar, bayramlar, motam jarayonlari.

Mustaqillik yillarida O'zbekistonda yoshlar tarbiyasi davlat siyosatining ustuvor yo'nalishlaridan biriga aylandi. Zamonaviy globallashuv jarayonlari, axborot oqimining keskin ortishi yoshlar ongiga turli madaniy ta'sirlarning kirib kelishiga sabab bo'lmoqda. Bunday sharoitda yosh avlodni milliy ruhda tarbiyalash, ularning ma'naviy dunyosini boyitish dolzarb vazifalardan biridir.Xalq musiqasi esa ana shu vazifani amalga oshirishda muhim vosita bo'lib xizmat qiladi. U xalqning tarixiy xotirasi, estetik qarashlari, ma'naviy qadriyatlarini o'zida mujassam etgan bebaho merosdir. Shu bois xalq musiqasining yoshlar ta'lim-tarbiyasidagi o'rnini o'rganish ilmiy va amaliy ahamiyatga ega.

Xalq musiqasi – bu muayyan xalq tomonidan yaratilgan, avloddan-avlodga og'zaki ravishda yetib kelgan musiqiy merosdir. Uning asosiy xususiyatlari quyidagilardan iborat: anonimlik (muallifining noma'lumligi)[1], og'zaki an'ana asosida rivojlanishi, milliylik va hududiylik, hayotiylik va xalqchillik asosida shakllanadi. Xalq musiqasi negizidagi bosh g'oya – ma'naviy faollik tovushlarda ifodalangan go'zallikdan bahramand bo'lish tuyg'ularini uyg'otishga qaratilgan. Unda behuda vajohatga, sarosimaga va to'qnashuvga o'rin yo'q. Aksincha, ma'lum ruhiy holatga kirish va uning girdobida haqiqatni anglash taqozo etiladi. Xalq musiqasi toifasidagi har qanday katta-kichik badiiy asar (yaxlit yoki ko'p qismli turkum) kuy, ashula, raqs yoki ularning aralash ko'rinishi asrlar davomida muayyan shakllardagi musiqiy ramzlar sifatida qaror topib, o'ziga xos majoziy nomlar bilan boyitib kelinmoqda. O'tmishdagi zabardas musiqashunoslarning maxsus risolalari xalq musiqasi ramziy ma'nolarining ta'rifu tavsiflariga bag'ishlangan.

Xalq musiqasi san'atining an'anaviy xayot tarzi, ahloq normalari hamda musiqaning ma'naviy oziq, insonni kamolatga undaydigan dunyoqarashlardan kelib chiquvchi boy mentaliteti mavjud. El-yurt orasida dong taratgan sozandalar, o'z kasbining piru ustozlari bizda doim xurmat va izzatda bo'lib kelgan. Amir Temur, Mirzo Ulug'bek, Husayn Bayqaror, Alisher Navoiy, Zahiriddin Bobur, Amir Umarxon, Feruz kabi yirik davlat arboblari, Forobiy, Beruniy, Ibn Sinodek olimu fuzalolar, Imom G'azzoliy, Ahmad Yassaviy, Najmiddin Kubro, Pahlavon, Mahmud, Baxovuddin Naqshband, Xo'ja Ahror Vali, Abdurahmon Jomiy, Boborahim Mashrab

kabi tasavvuf namoyandalari va boshqa din peshvolari musiqa va so‘z san’atiga hech qachon bid’at sifatida qaramaganlar. Aksincha, ular musiqani inson qalbiga chuqur ta’sir etuvchi ma’naviy omil hamda ilohiy ne’mat sifatida qadrlaganlar. Tasavvufiy qarashlarda kuy va ohang inson ruhiyatini poklash, uni yuksak ma’naviy holatga yetaklash vositasi sifatida talqin etiladi.

Xususan, Mavlono Abdurahmon Jomiy o‘zining *“Risolai musiqiy”* asarida Alloh taologa hamdu sanolar aytish bilan birga, kuy va ohangni ilohiy ne’mat sifatida e’tirof etadi. U musiqaning inson ruhiga ta’sirini chuqur falsafiy-axloqiy nuqtai nazardan asoslab, uni ma’naviy kamolotga xizmat qiluvchi vosita sifatida talqin qiladi. Ilmiy jihatdan qaraganda, Sharq tasavvuf falsafasida musiqa (samo‘) insonning ichki kechinmalarini uyg‘otuvchi, ruhiy poklanish va ma’naviy yuksalishga xizmat qiluvchi estetik hodisa sifatida qaralgan. Shu bois musiqa nafaqat san’at turi, balki inson ruhiy dunyosini tarbiyalovchi muhim omil sifatida ham baholanadi.

Xalq musiqasi inson hayotining barcha bosqichlarini – tug‘ilish, mehnat, marosimlar, bayramlar va motam jarayonlarini qamrab oladi. O‘zbek xalq musiqasi rang-barang janrlarga boy bo‘lib, ularga quyidagilar kiradi: qo‘shiqlar (marosim qo‘shiqlari, mehnat qo‘shiqlari), lapar va yalla, terma va doston qo‘shiqlari, maqom san’ati. Xalq musiqasining jamiyat hayotidagi o‘rni haqida so‘z borar ekan, xalq musiqasi jamiyatning ma’naviy hayotida estetik tarbiya vositasi, axloqiy qadriyatlarni targ‘ib qiluvchi omil, tarixiy xotirani saqlovchi manba hamda ijtimoiy birdamlikni mustahkamlovchi vosita kabi vazifalarni bajaradi. Yoshlar ta’lim-tarbiyasida xalq musiqasining ahamiyati quyidagilardan iborat bo‘lib ular ma’naviy-axloqiy tarbiya vositasi sifatida, xalq musiqasi yoshlarni ezgulik, halollik, vatanparvarlik, mehr-oqibat ruhida tarbiyalaydi. Qo‘shiqlarda aks etgan g‘oyalar yoshlar ongiga bevosita ta’sir qiladi[3]. Milliy musiqa yoshlarning o‘z avlod-ajdodlar ildizlarini anglashiga yordam beradi. Ular xalq kuy-qo‘shiqlari orqali ajdodlar hayoti, urf-odatlari va qadriyatlari bilan tanishadi.

Xalq musiqasi yoshlarning san’atga bo‘lgan qiziqishini oshiradi. Ayniqsa, maqom san’ati murakkabligi bilan ularning musiqiy tafakkurini rivojlantiradi. Musiqa inson ruhiyatiga bevosita ta’sir etuvchi kuchli vositadir. U yoshlarning hissiyotlarni uyg‘otadi, stressni kamaytiradi, ijobiy kayfiyatni shakllantiradi. Shu sababli xalq musiqasi tarbiya jarayonida samarali pedagogik vosita hisoblanadi[4].

Yoshlar ma’naviy tarbiyasida xalq musiqasi an’analaridan unumli va o‘rinli foydalanish bugungi kunda har qachongidanda dolzarb ta’limiy muomilaga aylanadi. O‘zbek musiqasining «internatsionallashuvi» natijasida o‘zbek xalq musiqasi an’analaridan foydalanishdan chetlashish hollari kuzatilmoqda. Shu nuqtai nazardan mazkur muammoning nazariy asoslarini tahlil qilish va uning xalq musiqasi an’analari mazmunini aniqlash, o‘zbek musiqasining yetakchi janrlari – xalq qo‘shiqlarining tarbiyaviy mohiyatini asoslash hamda ularning musiqiy tarbiya jarayoniga tadbiq etish, xullas, o‘quvchi yoshlarni xalq musiqasi an’analari vositasida tarbiyalashning ilmiy-pedagogik tizimini ishlab chiqish umumiy va musiqiy madaniyati – ahloqiy va ma’naviy qiyofasining shakllanishiga imkon beradi. Xalq musiqasi va zamonaviy ta’lim tizimi haqida fikr bildiradigan bo‘lsak, maktablarda musiqa fanini o‘qitish orqali o‘quvchilarga milliy kuy-qo‘shiqlar o‘rgatiladi. Bu esa o‘quvchilarning ma’naviy saviyasini oshiradi, ijodiy qobiliyatlarini rivojlantiradi va milliy g‘ururini shakllantiradi. Xalq musiqasini o‘rganish jarayonining o‘ziga xosligi akademik litseylarda, kollejlarda o‘quvchi yoshlarning xilma-xil nazariy va amaliy faoliyatlarining turlarini qo‘llanishini taqazo etadi.

Oliy ta’lim muassasalarida esa musiqa ta’limi pedagogika va san’at yo‘nalishlarida xalq musiqasi chuqur o‘rganiladi. Talabalar Oliy ta’lim muassasalarida - maqom asoslari bilimlariga ega bo‘ladilar, xalq cholg‘u asboblari va folklor san’ati bilan tanishadilar. Talabalar oliy ta’lim muassasalarida ta’lim jarayonida milliy musiqa merosini chuqur o‘rganish imkoniyatiga ega bo‘ladilar. Xususan, ular maqom asoslari bo‘yicha nazariy va amaliy bilimlarni egallab, maqomning tuzilishi, lad tizimi, ritmik xususiyatlari hamda ijrochilik

ISBN: 978-625-90699-4-4

an’analari haqida tasavvur hosil qiladilar. Bu bilimlar talabalarda nafaqat musiqiy tafakkurni rivojlantiradi, balki milliy san’atga nisbatan ongli munosabatni shakllantiradi.

Shuningdek, talabalar xalq cholg‘u asboblari bilan yaqindan tanishib, ularning tuzilishi, ovoz imkoniyatlari va ijro uslublarini o‘rganadilar. Amaliy mashg‘ulotlar orqali doira, dutor, tanbur, gijjak kabi cholg‘ularning ijrochilik imkoniyatlarini sinab ko‘rish, ansambl tarkibida ijro etish ko‘nikmalarini shakllantirish muhim ahamiyat kasb etadi. Bu esa ularning ijodiy qobiliyatini rivojlantirishga xizmat qiladi.

Bundan tashqari, folklor san’ati namunalarini o‘rganish jarayonida talabalar xalq og‘zaki ijodi, marosim qo‘shiqlari, lapar va yalla kabi janrlarning tarbiyaviy va estetik mohiyatini anglaydilar. Ilmiy nuqtai nazardan qaraganda, bu jarayon etnopedagogik yondashuv asosida amalga oshirilib, yoshlarning milliy o‘zlikni anglash, tarixiy xotirani saqlash va ma’naviy qadriyatlarga hurmat ruhida tarbiyalanishiga xizmat qiladi. Natijada, oliy ta’lim tizimida xalq musiqa merosini o‘rganish talabalarning nafaqat kasbiy bilimlarini, balki ularning ma’naviy-axloqiy kamolotini ham ta’minlovchi muhim omil sifatida namoyon bo‘ladi.

Xulosa

Xalq musiqasi yoshlar ta’lim-tarbiyasining ajralmas qismi bo‘lib, ularning ma’naviy, axloqiy va estetik rivojlanishida muhim o‘rin tutadi. U milliy o‘zlikni anglash, tarixiy xotirani saqlash hamda barkamol avlodni tarbiyalashda beqiyos ahamiyatga ega. Shu bois xalq musiqasini asrab-avaylash, uni ta’lim tizimiga chuqur singdirish va yoshlar orasida keng targ‘ib etish bugungi kunning dolzarb vazifalaridan biri hisoblanadi.

Foydalanilgan adabiyotlar

1. Karimov I.A. Yuksak ma’naviyat – yengilmas kuch. – Toshkent: Ma’naviyat, 2008.
2. Rajabov I. Maqom asoslari. – Toshkent: O‘qituvchi, 1992.
3. Fitrat A. O‘zbek klassik musiqasi va uning tarixi. – Toshkent, 1993.
4. Abdullayev R. Musiqa madaniyati asoslari. – Toshkent, 2005.
5. Qodirov D. Xalq og‘zaki ijodi va tarbiya. – Toshkent, 2010.
6. Yo‘ldoshev S. Pedagogika asoslari. – Toshkent, 2012.
7. Rasulov A. Musiqa va tarbiya. – Toshkent, 2015.

ISBN: 978-625-90699-4-4

THE NECESSITY AND CONDITIONS FOR IMPROVING SOCIO-CULTURAL TECHNOLOGIES IN ENHANCING YOUTH THINKING

Djalalova Nigora Khusanovna
Fergana State University, Department of Music Education and Culture, Fergana, Uzbekistan
ORCID: ID 0000-0003-0280-9957

ABSTRACT

In the contemporary period of global social transformation, the development of youth thinking has become one of the significant issues in social philosophy. The rapid expansion of the information environment, digital transformation, and intercultural interaction have significantly influenced the worldview, value orientations, and social activity of young people. Under these conditions, improving socio-cultural technologies aimed at the intellectual, spiritual, and social development of youth is becoming increasingly important.

The purpose of this study is to analyze the socio-philosophical essence of socio-cultural technologies and to identify their role, significance, and improvement conditions in enhancing youth thinking. The research examines socio-cultural technologies as a complex system of methods and mechanisms that ensure the transmission of cultural experience, the formation of social consciousness, and the development of creative and critical thinking among young people.

The study is based on systematic, comparative, historical-logical, and socio-philosophical approaches. The analysis demonstrates that libraries, museums, theaters, art institutions, and modern digital cultural platforms serve as important mechanisms for developing young people's intellectual potential and social awareness. The findings reveal that the integration of traditional cultural values with innovative technologies creates new opportunities for strengthening independent thinking, cultural competence, and social responsibility among youth.

The article concludes that the modernization of socio-cultural technologies is an essential condition for the spiritual renewal of society, the formation of an intellectually developed generation, and ensuring sustainable social development.

Keywords: youth thinking, socio-cultural technologies, social philosophy, cultural environment, social consciousness, globalization, digital culture, intellectual development, cultural values.

RELEVANCE

The processes of globalization occurring in the modern world have significantly transformed the structure of social relations, cultural communication, and mechanisms of human thinking. In contemporary society, the intellectual potential, worldview, and social activity of young people have become decisive factors determining the future development of nations. Therefore, the formation of an intellectually active, socially responsible, and culturally conscious young generation is one of the important objectives of social philosophy.

The twenty-first century is characterized by the rapid development of information and communication technologies, which have changed the traditional forms of knowledge acquisition and social interaction. Young people today exist within a complex information environment where large amounts of diverse information are constantly generated and distributed. However, access to information alone does not guarantee the development of advanced thinking. The ability to analyze information, distinguish reliable knowledge from superficial content, and form independent judgments has become a significant requirement of modern social development [1].

In this context, socio-cultural technologies acquire special importance as mechanisms that influence the formation of human consciousness, social behavior, and cultural identity.

These technologies represent a system of methods, approaches, and organizational forms aimed at preserving cultural experience, transmitting social values, and creating conditions for personal and intellectual development.

Culture has always served as one of the fundamental factors shaping human consciousness and social existence. According to E. Cassirer, human beings are not only biological creatures but also symbolic beings whose perception of reality is formed through cultural systems such as language, art, science, and social traditions [2]. This philosophical approach demonstrates that the development of human thinking is inseparably connected with the cultural environment in which an individual exists.

In modern conditions, traditional cultural institutions are undergoing significant transformation. Libraries, museums, theaters, and art centers are no longer limited to the preservation and presentation of cultural heritage. They are becoming active social spaces where young people acquire knowledge, develop creative abilities, and participate in cultural communication. The introduction of digital technologies into these institutions expands their educational and social potential, allowing them to reach wider audiences and create interactive cultural experiences.

The influence of globalization has also intensified the interaction between different cultural systems. On the one hand, this process creates opportunities for cultural exchange and intellectual development; on the other hand, it may lead to the weakening of traditional values and the spread of superficial cultural patterns. Therefore, strengthening the cultural identity and critical thinking abilities of young people becomes an important social task.

The concept of cultural capital proposed by P. Bourdieu provides an important theoretical basis for understanding this issue. According to his approach, knowledge, cultural experience, and values represent significant resources that determine an individual's social opportunities and position within society [3]. Consequently, the development of youth cultural capital through effective socio-cultural technologies contributes to the formation of a more active, knowledgeable, and socially responsible generation.

The relevance of improving socio-cultural technologies is therefore determined by the need to create a modern cultural environment capable of responding to the challenges of globalization, digital transformation, and changing social needs. The development of such technologies represents not only a cultural objective but also an important condition for the intellectual and spiritual progress of society.

AIM OF THE STUDY

The aim of this study is to provide a socio-philosophical analysis of the role of socio-cultural technologies in enhancing youth thinking and to identify the necessity and conditions for their improvement in the context of contemporary social development.

The study focuses on revealing the theoretical essence of socio-cultural technologies, determining their influence on the formation of youth worldview and social consciousness, and analyzing their potential in developing intellectual, creative, and socially active individuals.

The research also aims to identify effective approaches for modernizing socio-cultural technologies through the integration of traditional cultural values with innovative digital and communicative mechanisms. Particular attention is paid to the role of cultural institutions, including libraries, museums, theaters, and art centers, as important social spaces contributing to the intellectual and spiritual development of young people [4].

MATERIALS AND METHODS

The methodological foundation of the research is based on the principles of social philosophy, cultural studies, and interdisciplinary analysis. The study applies systematic, comparative, historical-logical, and socio-philosophical methods to examine the essence and functions of socio-cultural technologies in the process of youth intellectual development [5].

The research materials include scientific works of national and foreign scholars in the fields of social philosophy, cultural philosophy, sociology, and the theory of social

ISBN: 978-625-90699-4-4

development. The theoretical approaches of E. Cassirer, P. Bourdieu, M. Castells, A. Toffler, and other researchers were analyzed to understand the relationship between culture, social consciousness, and human thinking.

The systematic approach was used to consider socio-cultural technologies as an integral element of social development rather than as separate cultural activities. This approach made it possible to identify the relationship between cultural institutions, social communication processes, and the formation of youth thinking.

The comparative method was applied to analyze traditional and modern forms of socio-cultural technologies. In particular, the transformation of libraries, museums, theaters, and artistic institutions under the influence of digital technologies was examined. This analysis allowed identifying new possibilities for creating interactive cultural environments that meet the needs of contemporary youth[6].

The historical-logical method was used to study the evolution of socio-cultural mechanisms and their changing role in the formation of social consciousness. Through philosophical generalization, the study determined the main conditions necessary for improving socio-cultural technologies aimed at enhancing youth thinking.

RESULTS

The results of the study demonstrate that socio-cultural technologies represent one of the significant mechanisms influencing the formation and development of youth thinking in modern society. The analysis revealed that these technologies should not be understood only as methods of organizing cultural and educational activities; rather, they represent a complex social mechanism that contributes to the formation of worldview, social consciousness, and intellectual potential of young people.

The research findings indicate that the effectiveness of socio-cultural technologies is determined by their ability to combine historical-cultural experience with contemporary innovative approaches. Through this integration, young people not only acquire existing cultural values but also develop the ability to reinterpret them in accordance with modern social conditions.The study identified several important mechanisms through which socio-cultural technologies influence youth thinking.First, socio-cultural technologies contribute to the preservation and development of historical memory and cultural identity among young people. Interaction with cultural heritage, artistic works, historical sources, and national values expands young people's understanding of society and strengthens their awareness of social responsibility.

Second, these technologies serve as an important factor in developing independent and critical thinking. In the contemporary information environment, where young people are exposed to a large amount of diverse information, the ability to analyze, evaluate, and interpret information has become a crucial intellectual competence. Socio-cultural projects, creative activities, discussions, exhibitions, and cultural initiatives create favorable conditions for developing these abilities.

Third, the research established that the integration of digital technologies into socio-cultural processes significantly expands opportunities for youth intellectual development. Digital libraries, virtual museums, online cultural platforms, and multimedia projects provide young people with wider access to cultural resources and create new forms of cultural communication.

Fourth, socio-cultural technologies promote the creative activity and social engagement of young people. Participation in cultural projects, artistic activities, and collective initiatives develops communication skills, creativity, responsibility, and the ability to participate actively in social processes.

The analysis also identified several essential conditions required for improving socio-cultural technologies in order to enhance youth thinking:

ISBN: 978-625-90699-4-4

- modernization of cultural institutions through the introduction of innovative digital technologies;
- creation of interactive cultural environments that correspond to the interests and needs of young people;
- integration of national cultural heritage with modern technological opportunities;
- increasing youth participation in cultural and social projects;
- development of new communication mechanisms within the socio-cultural sphere.

The obtained results confirm that socio-cultural technologies have a strategic importance in the process of youth intellectual and spiritual development. Their effective implementation contributes to the formation of a generation capable of independent thinking, cultural awareness, and active participation in social development.

DISCUSSION

The findings of this study indicate that socio-cultural technologies have become an essential component of contemporary social development, significantly influencing the formation of youth thinking, cultural identity, and social participation. The results suggest that the development of young people's intellectual potential depends not only on formal education but also on their active involvement in socio-cultural environments that promote communication, creativity, and civic engagement [7].

The analysis demonstrates that the interaction between young people and cultural institutions has acquired new characteristics under conditions of digital transformation. Modern socio-cultural environments combine traditional cultural values with digital communication tools, creating broader opportunities for intellectual development, self-expression, and participation in social life. Consequently, socio-cultural technologies should be viewed as an integrated mechanism that strengthens both individual and collective cultural awareness [8].

The study further confirms that digital communication has substantially expanded access to cultural resources while simultaneously increasing the importance of media literacy and critical thinking. Although digital platforms provide unprecedented opportunities for cultural exchange, they also expose young people to fragmented information and diverse ideological influences. Therefore, the effectiveness of socio-cultural technologies depends on their capacity to cultivate analytical thinking, responsible information consumption, and conscious participation in cultural processes[9].

Another important finding is that socio-cultural technologies contribute to strengthening cultural identity through active participation rather than passive observation. Interactive projects, digital exhibitions, cultural forums, creative initiatives, and community-based activities encourage young people to become creators of cultural values instead of merely consumers of cultural products. Such participation positively influences intellectual independence, communication skills, and social responsibility[7].

The research also shows that the modernization of libraries, museums, theatres, and other cultural institutions significantly increases their educational and social potential. The integration of digital technologies into these institutions creates interactive learning environments that encourage dialogue, collaboration, and innovative thinking. As a result, socio-cultural institutions become important platforms for developing intellectual competence and civic consciousness among young people[8].

Overall, the discussion confirms that improving socio-cultural technologies should be considered one of the strategic priorities of contemporary social development. Their effectiveness depends on balancing digital innovation with national cultural traditions, expanding opportunities for youth participation, and creating an environment that supports intellectual growth, creativity, and responsible citizenship[9].

ISBN: 978-625-90699-4-4

CONCLUSIONS

The study has demonstrated that socio-cultural technologies represent an important socio-philosophical mechanism for enhancing youth thinking in the context of contemporary social development. Their significance is determined by their ability to influence the formation of worldview, social consciousness, cultural identity, and intellectual potential of young people.

The analysis revealed that youth thinking is shaped not only through individual intellectual activity but also under the influence of the social and cultural environment. Cultural institutions, social communication systems, and value orientations play a significant role in this process. Therefore, improving socio-cultural technologies is considered an essential condition for the intellectual and spiritual development of the younger generation.

The research findings indicate that the effectiveness of socio-cultural technologies depends on the integration of traditional cultural values with modern innovative approaches. Libraries, museums, theaters, art centers, and digital cultural platforms have significant potential to become active spaces for developing creativity, critical thinking, and social responsibility among youth.

It was established that digital transformation creates new opportunities for the development of socio-cultural technologies; however, it also requires the formation of analytical thinking skills among young people. In this regard, modern socio-cultural mechanisms should focus not only on providing information but also on developing the ability to interpret, evaluate, and creatively apply knowledge.

The study concludes that the modernization of socio-cultural technologies is one of the important factors in ensuring the spiritual renewal of society, strengthening cultural identity, and forming a generation capable of independent thinking and active participation in social processes [10].

REFERENCES

1. Castells M. The Rise of the Network Society. The Information Age: Economy, Society and Culture. Vol. 1. – Oxford: Blackwell Publishers, 1996. – 556 p.
2. Cassirer E. An Essay on Man: An Introduction to a Philosophy of Human Culture. – New Haven: Yale University Press, 1944. – 237 p.
3. Bourdieu P. The Forms of Capital. In: Richardson J. (Ed.). *Handbook of Theory and Research for the Sociology of Education.* – New York: Greenwood Press, 1986. – P. 241–258.
4. UNESCO. *Re|Shaping Policies for Creativity: Addressing Culture as a Global Public Good.* Paris: UNESCO Publishing, 2022. – 455 p.
5. OECD. *OECD Skills Outlook 2023: Skills for a Resilient Green and Digital Transition.* Paris: OECD Publishing, 2023. – 287 p.
6. UNESCO. *Global Education Monitoring Report 2023: Technology in Education: A Tool on Whose Terms?* Paris: UNESCO Publishing, 2023. – 434 p.
7. Tsaliki L. *Constructing Young Selves in a Digital Media Ecology: Youth Cultures, Practices and Identity* // Information, Communication & Society**.**– 2022. – Vol. 25, No. 4. – P. 477–484. DOI:10.1080/1369118X.2022.2039747.
8. Radwan M. *Effect of Social Media Usage on the Cultural Identity of Rural People: A Case Study of Bamha Village, Egypt* // Humanities and Social Sciences Communications**.** – 2022. – Vol. 9. – Article 248. DOI: 10.1057/s41599-022-01268-4.
9. Agai M. S. *Disconnectivity Synced with Identity Cultivation: Adolescent Narratives of Digital Disconnection* // Journal of Computer-Mediated Communication**.** – 2022. – Vol. 27, Issue 6. – Article zmac025. DOI: 10.1093/jcmc/zmac025.
10. Bynner J., Heinz W. R. (Eds.). *Youth Prospects in the Digital Society: Skills, Participation and Social Inclusion*. – Bristol: Policy Press, 2023. – 312 p.

ISBN: 978-625-90699-4-4

PHILOSOPHY OF TOURISM AND CULTURE: AXIOLOGICAL AND AESTHETIC FOUNDATIONS OF INTERCULTURAL DIALOGUE IN THE ERA OF GLOBAL MOBILITY

Bakhtiyor Mirzarakhimov
Associate Professor
Department of Philosophy (PhD), Fergana State University, Fergana, Uzbekistan
ORCID: https://orcid.org/0000-0003-2241-6747

ABSTRACT

The article examines tourism as a philosophically significant phenomenon of contemporary culture rather than a purely economic or leisure activity. Drawing on axiology, phenomenology and hermeneutics, the study analyses how sustained cross-cultural contact generated by global mobility reorganises the value-consciousness of both travelling and host communities. Particular attention is paid to the ethical dimension of hospitality and otherness, the aesthetic dimension of the tourist gaze, and the quasi-sacred structure of travel as a secular rite of passage. The article proposes a four-level model of axiological transformation — individual, interpersonal, sociocultural and civilizational — and situates it within a comparative typology of existing philosophical paradigms of tourism. The findings suggest that tourism operates as a dialogical mechanism of cultural transformation: it neither simply preserves nor simply destroys traditional values but continuously renegotiates their meaning and hierarchy through repeated intercultural encounter.

Keywords: philosophy of tourism, axiology, cultural transformation, intercultural dialogue, aesthetic experience, social consciousness, authenticity, liminality.

INTRODUCTION

Over the past half-century tourism has grown from a marginal leisure pursuit into one of the most powerful engines of cross-cultural contact in human history. According to the United Nations World Tourism Organization, international arrivals rose from a few tens of millions in the mid-twentieth century to well over one billion annually before the pandemic interruption, and the sector has since resumed its upward trajectory. Yet the philosophical literature has been comparatively slow to treat this mass movement of people as a subject in its own right, often leaving its analysis to economics, marketing and destination management. This article proceeds from the conviction that tourism deserves to be examined as a properly philosophical object: a phenomenon that reshapes how individuals and communities perceive beauty, judge moral obligation, and rank the values by which they organise their lives.

The urgency of such an inquiry is heightened by the ambivalence with which tourism is popularly regarded. On the one hand, it is celebrated as a vehicle of mutual understanding, economic opportunity and the preservation of heritage that might otherwise be forgotten. On the other, it is criticised for commodifying sacred sites, flattening living traditions into spectacle, and imposing an external, often Western, aesthetic template onto host cultures. A social-philosophical approach allows these seemingly contradictory tendencies to be understood not as an either/or dilemma but as two faces of a single dialectical process, in which values are simultaneously eroded and renewed.

The theme of the present congress — intercultural reflections and the traces art leaves upon culture — provides an apt frame for this inquiry, since tourism is, among other things, a mass practice of encountering art, ritual and landscape across cultural boundaries. The article therefore asks: through which mechanisms does tourism transform the axiological and aesthetic consciousness of the societies it touches, and what philosophical resources are best suited to describing that transformation?

AIM AND METHODOLOGY

The aim of the study is to construct a philosophical account of the relationship between tourism and culture that integrates the ethical, aesthetic and axiological dimensions of that relationship into a single explanatory model. The article combines several complementary methods. The axiological method is used to trace how the hierarchy of values held by travellers and host communities shifts under conditions of repeated intercultural contact. The phenomenological method, following the tradition inaugurated by Husserl and developed for tourism studies by Cohen (1979), is applied to the structure of the tourist's lived experience of place and otherness. The hermeneutic method, drawing on Gadamer (1975) and Ricoeur (1981), is used to interpret how meanings attached to cultural objects and rituals are reinterpreted as they pass between local and visiting horizons of understanding. Finally, a comparative-typological method is applied to systematise existing theoretical paradigms in tourism philosophy, the results of which are presented in Table 1 below.

RESULTS AND DISCUSSION

Tourism as an ontological and axiological phenomenon of culture

From a social-philosophical standpoint, tourism cannot be reduced to the physical displacement of persons from one geographical point to another. It is, more fundamentally, a structured encounter between two systems of meaning: the value-world the traveller carries with him, and the value-world embedded in the places, objects and people he visits. MacCannell (1976) was among the first to argue that this encounter is driven by a distinctly modern anxiety — the sense that everyday life in industrial society has become inauthentic, prompting the modern subject to seek an experience of authenticity elsewhere, in cultures perceived as less alienated from their own traditions. Whatever the merits of this diagnosis of modernity, it correctly identifies tourism as an axiological quest rather than a merely recreational one: the tourist travels, at least in part, in search of values — truth, beauty, rootedness, meaning — that are felt to be scarce at home.

This axiological quest, however, does not leave the visited culture unchanged. Once a site, craft or ritual becomes an object of touristic attention, it acquires what may be called a double value-status: it continues to carry whatever meaning it held within its own community, while simultaneously accruing a second, exhibitionary value assigned to it by outside observers. The tension between these two registers of value is the central axiological drama of tourism, and it is this tension, rather than tourism's economic dimension alone, that justifies treating the phenomenon as a proper subject of social philosophy.

A further consequence of this double value-status concerns the temporality of culture. Practices that were once transmitted informally, across generations, within a closed circle of practitioners, are increasingly required to be legible and repeatable on a fixed schedule dictated by touristic demand — a festival calendar, a museum opening time, a guided-tour itinerary. Philosophically, this represents a shift from what might be called organic cultural time, governed by ritual and seasonal necessity, to exhibitionary time, governed by visitor throughput. The shift is neither wholly negative nor wholly benign: it can rescue practices from outright disappearance by giving them an economic rationale for continued transmission, while at the same time altering the internal rhythm by which those practices are experienced by the community that originated them.

The ethical dimension: hospitality, otherness and responsibility

Hospitality has long occupied a central place in ethical reflection, from the ancient obligation of xenia to Levinasian accounts of responsibility toward the Other. Tourism institutionalises hospitality on an unprecedented scale, transforming what was once a personal, often reciprocal, ethical relation into a professionalised service industry. This transformation carries genuine moral risk: hospitality offered for payment can decay into mere performance,

ISBN: 978-625-90699-4-4

and the guest's otherness can be reduced to a consumable attraction rather than encountered as a genuine claim upon the host's ethical attention.

Yet the same institutionalisation also creates new possibilities for moral learning. Sustained, repeated contact with visitors compels host communities to articulate, and therefore to become more self-conscious of, the values embedded in their own hospitality practices — generosity, patience, the sharing of food and story. Uzbek philosophical scholarship, notably the axiological research of Nazarov, has emphasised that values become most visible to a community precisely at the moment they are called upon to be demonstrated to an outsider. Tourism, in this sense, functions as a mirror that renders latent ethical commitments explicit, for better or worse.

The aesthetic dimension: the tourist gaze and the transformation of perception

Urry and Larsen (2011) describe the manner in which tourists perceive their surroundings as a socially organised "gaze", trained in advance by photographs, films, guidebooks and the accounts of earlier travellers. Landscapes, buildings and even people are approached less as they are in themselves than as confirmations or departures from an already-formed aesthetic expectation. This has a formative effect on the aesthetic self-understanding of host communities as well: architecture, dress and craft are increasingly produced, restored or displayed with an eye to how they will appear within the visitor's anticipated frame.

Boorstin (1962) offered an early and sharply critical account of this process, arguing that mass tourism substitutes the "pseudo-event" — a spectacle staged for the camera — for authentic encounter. While this critique risks underestimating the genuine aesthetic and educational value that curated cultural presentation can offer, it correctly warns against an uncritical equation of visibility with authenticity. A philosophically adequate account must therefore hold two claims together: that touristic aesthetic exchange can genuinely enrich the perceptual and evaluative capacities of both host and guest, and that this same exchange can, if unreflectively pursued, hollow cultural forms into decorative surface.

It is worth noting that the aesthetic transformation described here runs in both directions. Just as host communities adjust their self-presentation to the anticipated gaze of visitors, travellers themselves often return home with an expanded, or at least altered, sense of what counts as beautiful, well-made, or worth attending to — a shift in taste that can gradually feed back into the aesthetic culture of the traveller's own society. Richards (2011) has described a parallel movement toward "creative tourism", in which visitors seek not merely to observe but to participate in local artistic and craft practices, thereby compressing the distance between the aesthetic categories of host and guest. Whether such participation deepens genuine aesthetic understanding or merely offers a more immersive form of spectacle remains, on the account developed here, an open and context-dependent question rather than one that can be settled in the abstract.

Sacred–profane dialectics: tourism as secular pilgrimage

Eliade (1959) distinguished the sacred, understood as a qualitatively distinct order of reality that irrupts into ordinary space and time, from the undifferentiated profane. Turner (1973) extended this distinction into the domain of travel, describing pilgrimage as a rite of passage structured by separation from ordinary social life, a liminal threshold phase, and eventual reincorporation with a transformed status. Contemporary tourism, even in its most secular forms, frequently reproduces this tripartite structure: the traveller separates from habitual routine, passes through a liminal period of heightened openness to new values, and returns home changed, however modestly, in outlook.

This parallel should not be overstated into a claim that all tourism is disguised religion. It does, however, explain why touristic destinations so often come to occupy a quasi-sacred status within the traveller's own value-system — a status that can, in turn, place unexpected pressure

ISBN: 978-625-90699-4-4

on host communities to preserve or perform their own sacred sites and practices in a manner legible to an outside pilgrim-gaze, sometimes at the cost of the sites' original ritual function.

A comparative typology of philosophical paradigms of tourism

The paradigms surveyed above are not mutually exclusive but capture different facets of a single, multidimensional phenomenon. Table 1 summarises the principal philosophical paradigms addressed in this article, together with the position developed here, which treats tourism as a mechanism of ongoing axiological transformation rather than as either pure authenticity-seeking, pure spectacle, or pure ritual.

Paradigm	Key theorist(s)	Core philosophical claim	Relation of culture to the tourist experience
Authenticity paradigm	MacCannell (1976)	Modern subjects seek an "authentic" Other as compensation for the fragmentation of everyday life	Culture is staged and re-staged as a marker of authenticity for the visiting gaze
Semiotic / gaze paradigm	Urry and Larsen (2011)	Perception is socially organised; the "tourist gaze" is trained by media, art and prior representation	Culture becomes a system of signs consumed visually rather than lived experientially
Pseudo-event paradigm	Boorstin (1962)	Mass tourism substitutes manufactured spectacle for genuine encounter	Culture risks reduction to commodified performance detached from its own value-context
Liminality / pilgrimage paradigm	Turner (1973); Eliade (1959)	Travel reproduces the sacred structure of rite of passage: separation, threshold, reincorporation	Culture supplies the symbolic centre toward which the liminal journey is oriented
Axiological-transformational paradigm	Author's position, building on Nazarov and Muzaffarov	Tourism functions as a mechanism that reorganises the hierarchy of values held by both host and guest communities	Culture is neither purely staged nor purely consumed but dialogically transformed through repeated contact

As the comparison shows, each paradigm illuminates a distinct mechanism — the search for authenticity, the organisation of visual perception, the manufacture of spectacle, or the reproduction of sacred structure — through which tourism engages culture. The axiological-transformational paradigm proposed in this article does not replace these accounts but synthesises them: it treats the tourist encounter as a site where authenticity-seeking, gaze-formation, spectacle and liminal experience jointly act upon the value-hierarchies of the communities involved.

A four-level model of axiological transformation

Building on this synthesis, the article proposes a four-level model describing the loci at which tourism-induced axiological transformation can be observed and studied. The model,

ISBN: 978-625-90699-4-4

summarised in Table 2, moves from the most immediate, individual level of value-reassessment to the broadest, civilizational level of intercultural value-formation.

Level	Locus of transformation	Characteristic axiological shift
I. Individual	The traveller's and the host's personal value-consciousness	Reassessment of habitual aesthetic and moral standards through direct confrontation with cultural difference
II. Interpersonal / communal	Face-to-face host–guest and intra-community relations	Emergence of new norms of hospitality, trust and reciprocal recognition; occasional erosion of local etiquette
III. Sociocultural	Institutions of heritage, ritual, craft and public memory	Re-signification of heritage objects and practices as they move between ritual and market registers
IV. Civilizational / global	National image, intercultural dialogue, global value discourse	Formation of a shared, though asymmetrical, repertoire of world-cultural values and mutual recognition

The value of distinguishing these four levels lies in the recognition that tourism's effects on culture are not uniform: what appears at the individual level as enriching self-reflection may, at the sociocultural level, coincide with the strain placed on institutions of heritage custodianship; what appears at the civilizational level as the welcome formation of shared value-vocabulary may mask persistent asymmetries of economic and representational power between host and guest societies. A social-philosophical analysis that attends to all four levels simultaneously is better placed to avoid both an uncritical celebration of tourism as intercultural harmony and an equally uncritical condemnation of it as cultural erosion.

Tourism, culture and national image: the Central Asian context

The theoretical framework developed above has direct relevance for Uzbekistan and Central Asia more broadly, where tourism has in recent years become an explicit instrument of national image-building alongside its economic function. Sites associated with the Great Silk Road, the architectural heritage of Samarkand and Bukhara, and the region's living traditions of craft, hospitality and pilgrimage are increasingly presented to an international audience through the same axiological mechanisms described above: authenticity-seeking travellers arrive with an already-formed aesthetic expectation, host communities respond by making latent values explicit, and the resulting encounter reshapes both the visitor's and the host's hierarchy of cultural values.

Muzaffarov's work on the sociocultural dimensions of value-transformation in Uzbek society is instructive here: it suggests that societies undergoing rapid modernisation are especially sensitive to the double value-status described earlier, since heritage objects must simultaneously serve a renewed function within national self-identity and an exhibitionary function within the international tourist gaze. Managing this double function without allowing either register to fully absorb the other is, on the account developed in this article, one of the central ethical-aesthetic tasks facing contemporary tourism policy in the region.

At the same time, the branding of place discussed by Anholt (2010) and Kavaratzis and Ashworth (2005) shows that the civilizational level of the four-level model is never purely spontaneous: national image is actively constructed through the selective emphasis of certain heritage narratives over others. For Uzbekistan, whose international image has in recent years been closely linked to its historical role on the Silk Road, this raises a further philosophical question of what may be called axiological selectivity — the choice, inevitable in any act of representation, of which values, among the many embedded in a culture's history, will be

ISBN: 978-625-90699-4-4

foregrounded for an international audience, and which will remain comparatively invisible outside the community itself.

CONCLUSION

This article has argued that tourism should be understood as a philosophically significant mechanism of cultural transformation, operating simultaneously through ethical, aesthetic and axiological registers. Reviewing the principal paradigms of tourism philosophy — the authenticity paradigm, the semiotic gaze paradigm, the pseudo-event paradigm, and the liminality-pilgrimage paradigm — the study has shown that each captures a genuine but partial mechanism of the tourist-culture encounter. The axiological-transformational model proposed here, together with its associated four-level analysis of individual, interpersonal, sociocultural and civilizational transformation, offers a more comprehensive framework for understanding how sustained intercultural contact reshapes the value-consciousness of both travelling and host societies.

For societies such as Uzbekistan, where tourism is being deliberately cultivated as both an economic resource and an instrument of national and civilizational self-presentation, this framework suggests that the philosophical task is not to resist the axiological transformation that tourism inevitably brings, but to guide it reflectively — preserving the ritual and communal integrity of cultural practices even as those practices are opened, ethically and aesthetically, to an increasingly mobile and interconnected world.

REFERENCES

1. Boorstin, D. J. The Image: A Guide to Pseudo-Events in America. New York: Atheneum, 1962.
2. Cohen, E. A Phenomenology of Tourist Experiences. Sociology, 13(2), 1979, pp. 179–201.
3. Eliade, M. The Sacred and the Profane: The Nature of Religion. New York: Harcourt, Brace & World, 1959.
4. Gadamer, H.-G. Truth and Method. New York: Seabury Press, 1975.
5. MacCannell, D. The Tourist: A New Theory of the Leisure Class. New York: Schocken Books, 1976.
6. McKercher, B., du Cros, H. Cultural Tourism: The Partnership Between Tourism and Cultural Heritage Management. New York: Haworth Press, 2002.
7. Nazarov, Q. Ijtimoiy falsafa: qadriyatlar tizimi va jamiyat taraqqiyoti. Toshkent: Universitet, 2014.
8. Muzaffarov, R. Zamonaviy o‘zbek jamiyatida ijtimoiy ong va qadriyatlar transformatsiyasi. Toshkent: Fan, 2018.
9. Richards, G. Creativity and Tourism: The State of the Art. Annals of Tourism Research, 38(4), 2011, pp. 1225–1253.
10. Ricoeur, P. Hermeneutics and the Human Sciences. Cambridge: Cambridge University Press, 1981.
11. Turner, V. The Center Out There: Pilgrim’s Goal. History of Religions, 12(3), 1973, pp. 191–230.
12. Turner, V., Turner, E. Image and Pilgrimage in Christian Culture: Anthropological Perspectives. New York: Columbia University Press, 1978.
13. Urry, J., Larsen, J. The Tourist Gaze 3.0. London: Sage, 2011.
14. UNWTO. International Tourism Highlights. Madrid: World Tourism Organization, 2023.
15. Kavaratzis, M., Ashworth, G. J. City Branding: An Effective Assertion of Identity or a Transitory Marketing Trick? Tijdschrift voor Economische en Sociale Geografie, 96(5), 2005, pp. 506–514.
16. Anholt, S. Places: Identity, Image and Reputation. Basingstoke: Palgrave Macmillan, 2010.

ISBN: 978-625-90699-4-4

UZBEK ASKIYA ART: PROBLEMS AND SOLUTIONS

Qambarov Abdumutal Ahadjonovich
Professor, Department of Philosophy,, Fergana State University,, Doctor of Philosophy (DSc)
ORCID ID: 0009-0001-1916-4174

Bakhtiyor Mirzarakhimov
Associate Professor, Department of Philosophy (PhD), Fergana State University, Fergana, Uzbekistan
ORCID: https://orcid.org/0000-0003-2241-6747

Abstract

This article analyzes the study of the cultural and spiritual heritage of representatives of the art of "Askiya," as well as issues relating to the further development of the theoretical foundations of the national art of "Askiya" — which helps to shape a healthy and wise spiritual-moral environment consistent with our contemporary way of life — and to its practical implementation.

Keywords: Askiya, qiziqchilik (folk comic art), humor and jest, sharp-witted, quick-witted, resourceful, payrov, rhyme, bahri-bayt, legend, radif, aytishuv (verbal contest), rabbiya.

INTRODUCTION

Every nation possesses its own genres of humor, jest, debate, and verbal contest, and among the Uzbek people the genre of Askiya has developed particularly widely alongside these. What distinguishes Uzbek Askiya from other forms of humor is that it is one of the few genres that has today risen to the level of a genuine art form. Askiya is a type of Uzbek oral folk creativity, a constituent part of folk comic art (qiziqchilik), and a widely practiced performing art.

Passing on the arts of Askiya and qiziqchilik — both forms of oral folk creativity — to the next generation is one of today's most pressing challenges. In carrying out this work, Resolution No. PQ-222 of the President of the Republic of Uzbekistan, dated 11 July 2023, "On Measures for the Further Development of the National Art of Askiya and Qiziqchilik in the Republic," is of great importance.[1]

Askiya is a popular genre of cheerful and comic performing art within Uzbek oral folk creativity. It is a genre of Uzbek folk performing art typically presented at public festivals, weddings, and other ceremonies. This genre originally developed most widely in the Fergana Valley and Tashkent region of Uzbekistan. As noted above, having risen to the level of genuine art, Askiya continues to be actively performed by the population of the Fergana Valley at wedding celebrations and state events. The shared laughter of the Askiya performers (askiyaboz) and their audience lends the genre its warmth and cheerfulness.

The word "Askiya" is of Arabic origin, meaning "sharp-witted, quick-witted, resourceful." It is a type of Uzbek oral folk creativity — a folklore genre representing an artistic verbal contest between two or more persons or groups on a given theme, performed at folk gatherings (festivals, weddings, celebrations).[2]

A meaningful, lively, and humorous Askiya performance requires quick-wittedness and improvisational skill on the part of both sides, as well as the ability to find words relevant to the theme and to use gestures appropriately. Askiya demands resourcefulness, sharpness of mind, and wisdom, together with a rich command of language and words and refined artistic-aesthetic taste, and it is conducted as a contest between two or more persons or a designated group. To ensure that the words spoken do not offend anyone personally, the performer must exercise extreme care in choosing every word and phrase. As is well known, self-awareness,

the expression of national consciousness and thought, and the spiritual bond between generations are all manifested through language.[3] We may confidently say that Askiya is one of our national values that expresses precisely this spiritual essence. This is because an askiyachi (Askiya performer) must have a thorough command of the rich possibilities of language and must be able to skillfully employ the full range of comic devices — wordplay, allusion, jest, irony, metaphor, sarcasm, simile, and hyperbole. The purpose of the art of Askiya is to lift people's spirits through laughter, to bring them delight, to broaden their knowledge on a given subject, to sharpen their minds and thinking, to encourage sharp-wittedness and resourcefulness, and, at the same time, to evoke gentle laughter at the shortcomings found in everyday life and in the conduct of certain individuals. Askiya also means responding to an opponent's verbal attack with resourcefulness while simultaneously going on the offensive oneself. Askiya has existed among the Uzbek people for many centuries, and masters of artistic speech have traditionally been identified through contests between two sides at weddings and festivals.

LITERATURE REVIEW

There is almost no written literature on the genre of Askiya. This genre has survived to the present day chiefly through the master–disciple (ustoz–shogird) tradition. Nevertheless, it is worth noting that a number of scholarly studies have been carried out on Uzbek national Askiya art. In particular, the compassionate poet and champion of enlightenment Cho'lpon addressed precisely this issue in his article "Qiziqlar" ("The Comedians"), published in the journal Guliston in 1936, specially emphasizing that time would not wait and that each of the famous comedians represented a manifestation of folk theater, and warning that they were in danger of soon being erased from the people's memory.

Scholarly interest in and academic research into the art of Askiya began in 1960. Prior to that, the extant materials included Sharif Rizo's article "Folk Artists," published in issue No. 4 of the journal Guliston in 1940; a section devoted to Askiya within A. L. Troitskaya's manuscript "The Uzbek Folk Theater"; several articles devoted to problems of Uzbek satire; and the 1960 booklet "Yusufjon Qiziq" by Tolqin Obidov.

Rasul Muhammadiyev was one of the first scholars to undertake a comprehensive, scholarly study of the art of Askiya. The results of his research were summarized in his 1962 scholarly work titled "Askiya" and in the 1970 collection also titled "Askiya."

During the expeditions organized between 1962 and 1965 to study the traditional theater of the Fergana Valley, Mukhsin Qodirov — Honored Scholar of Uzbekistan, Doctor of Art History, and professor — was among the researchers who devoted considerable attention to the scholarly study and recording of Askiya, and by 1991 he had completed his work "Yusufjon Qiziq."

Important sources for the scholarly study of Uzbek national Askiya art include Rasul Muhammadiyev's collection "Askiya" (1970); Mukhsin Qodirov's works "The Uzbek Folk Performing Art" (1981), "Episodes from the Past of the Performing Arts" (1983), and "The Uzbek Traditional Theater" (2010); the textbook "Masters of Laughter" (2008); Hasanboy Sultonov's "Askiya" (1998); Said Anvar's "What Does Abdulla Qiziq Say?" (2006); the booklets of Ubaydulla Abdulla and Iskandar Rahmon, "Those Who Laughed Are at Ease, Those Who Did Not Are Left Longing" (2007); the monograph "The Linguostylistics of the Askiya Text" (2015) by Doctor of Philology Hikmatullo Do'smatov; "Askiya — The Art of Wordplay" (2021); and the works of People's Artist of Uzbekistan and professor Sultonali Mannopov, including "The Art of Askiya and Qiziqchilik."

DISCUSSION

The results of these studies demonstrate that the art of Askiya has passed through several stages in its development. Written historical sources indicate that Askiya was already widespread in the fifteenth to seventeenth centuries. The poet and scholar Zayniddin Vosifiy

ISBN: 978-625-90699-4-4

(16th century) wrote that Askiya flourished widely in Herat and named Mavlono Abdulvoseh Munshiy as the most talented among dozens of skilled Askiya performers. Alisher Navoiy, Zahiriddin Muhammad Bobur, and Khondamir likewise provided information, each in his own era, about dozens of Askiya performers such as Mavlono Burhoniy, Hasan Voiz, and Said G'iyosiddin Sharafa.

The art of Askiya began to take shape as a distinct genre from the fifteenth century onward. As noted above, in the eighteenth and nineteenth centuries it developed extensively in the Fergana Valley and Tashkent. In this genre, people compete openly before a public audience through artistic verbal composition, wordplay, literary debate, and contests of wit. Uzbekistan has produced a great many Askiya performers, among them Jalil Buqoq of Marg'ilon, Sulaymon Qori, Mamajon Qovoq, Mulla Muhammad Buva, Mirzarahim Quloq of Qo'qon, Niyozboqi Sichqon, Zohid Burun, Matxoliq Askiya, and, from Tashkent, Abdulla Fonus, Saidahmad, and Ismat Askiya.

In the mid-twentieth century, prominent Askiya performers active in the field included Erka Qori Karimov, Ijroqum Buva, Tursun Buva Aminov, Yusufjon Qiziq Shakarjonov, Jo'rakhon Sultonov, Rasul Hoji Mamarasulov, Zaynobiddin and Madaminjon Yusupov, and Muhiddin Darveshov. Erka Qori Karimov created fourteen thematic Askiya riddles (payrov), including the well-known dialogues "O'xshatdim" ("I Compared It To..."), "Gulmisiz, Rayhonmisiz" ("Are You a Rose or a Basil"), "Afsana" ("The Legend"), "Ota-Bola" ("Father and Son"), and "Imorat Qurish" ("Building a House"), all of which became popular among the people.

The payrov (thematic dialogue) plot within Askiya is regarded as a distinct artistic work in its own right; as a refined and complex device of Askiya, it consists of a coherent flow of ideas that develops the meaning of a given theme from beginning to end. Askiya performers do not deviate from the chosen theme. In addition to traditional payrovs such as "O'xshatdim," "Bo'lasizmi" ("Will You Be..."), "Gulmisiz, Rayhonmisiz," "Bedana" ("The Quail"), "Afsana," "Qofiya" ("Rhyme"), "Bilganlar, Bilmaganlar" ("Those Who Know, Those Who Do Not"), and "Laqab" ("Nickname"), contemporary themes such as "Cotton," "Family," "Cinema," "Tightrope Walking," "Song," and "Football" have also found a place. A payrov must develop its chosen theme thoroughly and in depth; departing from the theme signals the performer's defeat. In Askiya, what matters most is the correct choice of theme, the ability to bring a coherent system of concepts and ideas to a logical conclusion, skill in improvisation, and the audience's recognition. Askiya is the product of the appropriate use of expressive devices, mastery in the use of words, and the harmony of quickness and gesture within the process of verbal exchange.

Representatives of the katta ashula (grand song) and maqom traditions native to the Fergana Valley and Tashkent oasis, as well as accomplished actors and composers, have also earned reputations as noted Askiya performers. Among them are Erka Qori Karimov, Mamadbuva Sattorov, Jo'rakhon Sultonov, Rasulqori Mamadaliyev, G'anijon Toshmatov, Shoqosim, Sholim, and Shoakbar Shojalilov, Abulqosim To'ychiyev, and Zaynobiddin and Madaminjon Yusupov.

A performer working in this art form, which is found nowhere else in the world, must possess a broad range of thought, strong analytical ability, and a high level of knowledge. In addition to having command of their own words, performers must be able to analyze the essence of every idea deeply as they speak. For a word is a jewel, and its meaning is worth gold; it must not be allowed to be tarnished by vulgar insinuations or cheap sarcasm.

Here I wish to give special mention to the late master of the spoken word and great champion of the art of Askiya and qiziqchilik, Yusufjon Qiziq Shakarjonov; to Jo'rakhon Po'latov, Honored Artist of Uzbekistan, who brought Askiya to its full artistic maturity and won a lasting place in the hearts of the people; to Abdulhay Mahsum Qozoqov, Hasanboy

ISBN: 978-625-90699-4-4

Sultonov, and Muhammadsiddiq Sherayev, who laid the foundations of the "master–disciple" (ustoz–shogird) tradition within Askiya; and, among those creating today, to Hotamjon Hakimjonov, Abdulla Akbarov, Anvarjon Ne'matdaliyev, Muhammadsiddiq Alixonov, and Mansurjon Ohunov.

Askiya is traditionally a genre associated with men, though today it can be observed becoming increasingly popular among women as well. Askiya is a spiritual treasury that embodies the thought, worldview, and social relations of the Uzbek people. Indeed, as a genre that draws attention to important issues on the basis of observations of everyday life connected with social traditions, Uzbek national Askiya art plays a significant role in conveying knowledge of cultured speech and language.

RECOMMENDATIONS FOR DEVELOPMENT

Today, just as every nation in the world studies its own art forms on a scholarly basis, we too are obliged to discover and study the scholarly foundations of this art form. First, if we do not study the art of Askiya thoroughly on a scholarly basis, it will be difficult for it to reach future generations. Second, the art of Askiya has come down to us from our ancestors to the present day as a form of oral folk creativity; as a result, the texts of Askiya performers' work have, for the most part, never been recorded. This means that unless the texts of Askiya performers' creative work are produced and written down, this genre risks disappearing altogether. Though it is bitter to say, today's Askiya and qiziqchilik performers, in their eagerness to make audiences laugh, sometimes resort to improper language.

Like other art forms, Askiya is an art that reveals and conveys the impure conduct and vices present in society (as exists in every society) through the magic of words and comic performance (havj). It should also be noted that, in recent times, an increasing number of people have taken to calling themselves "Askiyachi" or "Qiziqchi" while freely using obscene language. To rein in such self-styled, unregulated "Askiyachi" and "Qiziqchi" performers and bring them into proper order, Resolution No. PQ-222 of the President of the Republic of Uzbekistan, dated 11 July 2023, "On Measures for the Further Development of the National Art of Askiya and Qiziqchilik in the Republic," is of great significance.

For this reason, in order to further develop the art of Askiya and national qiziqchilik in the Republic, it is advisable today to carry out the following measures:

1. It is necessary to involve researchers currently conducting scholarly work in this field in restoring the disappearing regional dialect forms of comic genres associated with the masters of national Askiya and qiziqchilik art, and in recording their texts. To this end, creative and scholarly expeditions should be organized once every three months, in accordance with a decision of the Scientific and Creative Council of the Yusufjon Qiziq Shakarjonov Republican Center for Askiya and Qiziqchilik. Master's, doctoral, and postdoctoral researchers conducting scholarly work in this field should be sent on scholarly expeditions to the regions, and conditions should be created for recording the creative work of local Askiya and qiziqchilik performers in written form. In other words, organizing scholarly expeditions — as was done in earlier periods (such as in 1927, 1937, and 1950) — and providing them with adequate funding is one of the most urgent tasks.

2. Beginning in 2024, within the framework of future comedy festivals, it is advisable to organize the following: a national scientific-practical conference on "The Study of the History of Askiya Art and the Innovative Factors of Its Implementation in Practice"; an international scientific-practical conference on "The Place and Role of National Askiya and Qiziqchilik Art in the Spiritual Advancement of Society"; an international scientific-practical conference marking the 155th anniversary of People's Artist of Uzbekistan Yusufjon Qiziq Shakarjonov, on the theme "The Role of Yusufjon Qiziq Shakarjonov in Preserving Uzbek National Askiya and Qiziqchilik Art as a Value"; and, dedicated to the memory and 80th anniversary of Muhammadsiddiq Sherayev, Honored Artist of Uzbekistan

ISBN: 978-625-90699-4-4

and Honorary Academician of the Turon Academy of Sciences, a national scientific-creative conference on "The Art of Askiya and Qiziqchilik as a Factor of Spiritual Renewal."

3. To develop model curricula for the "Art of Askiya and Qiziqchilik" specialization for the 2024–2025 academic year and, in accordance with the established procedure, to recommend for publication, with the ministry's approval, the textbooks and teaching manuals produced year by year.

4. To create teaching manuals and textbooks such as "The History and Theory of the Art of Askiya," "The History and Theory of the Art of Qiziqchilik," "Askiya — The Art of Words," and "Masters of the Art of Askiya and Qiziqchilik," in order to supply the study circles of regional schools of mastery and cultural centers with the necessary teaching-methodological materials and literature.

5. To organize "master class" sessions for word-masters and study-circle leaders who are working on new pieces that meet the requirements of the art of Askiya and qiziqchilik.

Today, urgent measures must be taken, without further delay, to preserve and promote the unique forms of national Askiya and qiziqchilik art, such as payrov, qofiya (rhyme), bahri-bayt, afsona (legend), radif, aytishuv (verbal contest), and rabbiya. This is because, although video recordings exist of the talented word-masters of national Askiya and qiziqchilik art performing these unique forms, their written texts have almost never been recorded. For this reason, the following measures are necessary in order to record in writing the creative work of word-masters who have been active in this field for many years:

1. To assign researchers currently conducting scholarly work in this field to each Askiya and qiziqchilik performer and word-master, for the purpose of recording the verbal texts of the unique forms — payrov, qofiya, bahri-bayt, afsona, radif, aytishuv, and rabbiya — performed by Askiya and qiziqchilik artists.

2. To create staged works based on the unique forms of the word-masters' art — payrov, qofiya, bahri-bayt, afsona, radif, aytishuv, and rabbiya — and to establish archives (creative funds) of their work.

3. To produce specialized literature and teaching manuals based on the creative archives of master artists working in the field of national Askiya and qiziqchilik art, and to prepare special scholarly and popular monographs devoted to each of the widely recognized word-masters in this field.

4. To prepare an explanatory dictionary of words used in national Askiya and qiziqchilik art that are currently falling out of use.

5. To establish, as one of the necessary measures for preserving national Askiya and qiziqchilik art, a systematic program of scholarly research in this field, namely the writing of dissertations.

CONCLUSION

If we fail to study the art of Askiya and qiziqchilik on a scholarly basis and fail to attend to the essential meaning of the word, this art form — which has survived orally from ancient times to the present day — risks falling into the hands of shallow "askiyachi" and "qiziqchi" performers who do not understand the true essence of the word.

REFERENCES

1. Resolution No. PQ-222 of the President of the Republic of Uzbekistan, dated 11 July 2023, "On Measures for the Further Development of the National Art of Askiya and Qiziqchilik in the Republic."

2. O'zbekiston milliy entsiklopediyasi [The National Encyclopedia of Uzbekistan]. — Tashkent: O'zbekiston Milliy Entsiklopediyasi State Scientific Publishing House, 2000. — P. 456.

ISBN: 978-625-90699-4-4

3. Karimov I.A. Yuksak ma'naviyat — yengilmas kuch [High Spirituality Is an Invincible Force]. — Tashkent: Ma'naviyat, 2008. — P. 83.

4. Qodirov M. Yusufjon Qiziq. — Tashkent: Uzbekistan Academy of Sciences, Fan Publishing House, 1991. — P. 15.

5. Mirziyoyev Sh.M. Niyati ulug' xalqning ishi ham ulug', hayoti ulug' va kelajagi farovon bo'ladi [A Nation with Noble Aspirations Also Has Noble Deeds, a Noble Life, and a Prosperous Future]. — Tashkent: O'zbekiston NMIU, 2019. — P. 135.

[1] Resolution No. PQ-222 of the President of the Republic of Uzbekistan, dated 11 July 2023, "On Measures for the Further Development of the National Art of Askiya and Qiziqchilik in the Republic."

[2] O'zbekiston milliy entsiklopediyasi. — Tashkent: O'zbekiston Milliy Entsiklopediyasi State Scientific Publishing House, 2000. — P. 456.

[3] Karimov I.A. Yuksak ma'naviyat — yengilmas kuch. — Tashkent: Ma'naviyat, 2008. — P. 83.

ISBN: 978-625-90699-4-4

СОХРАНЕНИЕ НЕМАТЕРИАЛЬНОГО КУЛЬТУРНОГО НАСЛЕДИЯ: СИСТЕМНЫЙ АНАЛИЗ МУЗЫКАЛЬНОГО ФОЛЬКЛОРА И ЛЮБИТЕЛЬСКИХ КОЛЛЕКТИВОВ ФЕРГАНСКОЙ ДОЛИНЫ

PRESERVATION OF INTANGIBLE CULTURAL HERITAGE: SYSTEMATIC ANALYSIS OF FERGANA VALLEY MUSICAL FOLKLORE AND AMATEUR ENSEMBLES

Mirzayeva Gulsevar
Fergana State University, Faculty of Pedagogy-Psychology and Arts,
2nd-year Student in "Music Education"

Abstract. This article provides a systematic analysis of the musical folklore of the Fergana Valley and the activities of local folk amateur ensembles under the conditions of globalization. Within the scope of the study, the long-term creative trajectory, repertoire nature, and role in preserving regional cultural identity of such ethnic ensembles as "Kokand yor-yori", "Chodir jamol", and "Fergana gavhari" were comprehensively examined for the first time. Through the analysis of empirical results of the ensembles at national and international festivals, the patterns of integrating traditional ritual and seasonal folklore samples into contemporary performing arts and media space were revealed. The drawn conclusions hold significant practical value in preserving regional intangible cultural heritage as a "living heritage" and determining strategies for the sustainable development of the master-apprentice system.

Keywords: intangible cultural heritage, Fergana musical folklore, Kokand yor-yori, Chodir Jamol, Fergana gavhari, living heritage, scenic integration.

Аннотация. В данной статье осуществляется системный анализ музыкального фольклора Ферганской долины и деятельности местных народных любительских коллективов в условиях глобализации. В рамках исследования впервые комплексно изучены многолетняя творческая траектория, характер репертуара и роль в сохранении региональной культурной идентичности таких этнических ансамблей, как «Коканд ёр-ёри», «Чодир жамол» и «Фергана гавхари». На основе анализа эмпирических результатов участия коллективов в республиканских и международных фестивалях раскрыты закономерности интеграции образцов традиционного обрядового и сезонного фольклора в современную сценическую культуру и медиапространство. Полученные выводы имеют важное практическое значение для определения стратегий устойчивого развития системы «устоз — шогирд» (мастер — ученик) и сохранения регионального нематериального культурного наследия как «живой традиции».

Ключевые слова: нематериальное культурное наследие, музыкальный фольклор Ферганы, Коканд ёр-ёри, Чодир Жамол, Фергана гавхари, живая традиция, сценическая интеграция.

АКТУАЛЬНОСТЬ

В эпоху стремительной глобализации и цифровой трансформации сохранение, защита и популяризация нематериального культурного наследия стали одной из приоритетных задач глобального масштаба. Музыкальный фольклор служит фундаментальным фактором, отражающим историческую память, духовный опыт и идентичность каждого народа. В данном контексте Ферганская долина Узбекистана представляет собой уникальный историко-культурный регион, где сформировался самобытный Фергано-Ташкентский музыкальный стиль, охватывающий богатую систему жанров.

ISBN: 978-625-90699-4-4

Важную роль в непрерывной передаче музыкального наследия из поколения в поколение играют народные любительские и фольклорно-этнографические коллективы, действующие в Ферганском регионе, такие как «Коканд ёр-ёри», «Чодир жамол» и «Фергана гавхари». Эти коллективы не только осуществляют культурно-просветительскую деятельность, но и являются институциональной основой для сохранения и развития традиций «устоз — шогирд» (мастер — ученик). В условиях глобализации их деятельность приобретает актуальное значение в интеграции образцов живого фольклора в современную социокультурную среду посредством сценических интерпретаций.

Однако локальные особенности, жанрово-стилистическая специфика народных любительских коллективов Ферганы и их вклад в развитие регионального фольклора до сих пор не подвергались комплексному системному исследованию с научно-теоретической точки зрения. Необходимость раскрытия взаимосвязи между устным народным творчеством и современным любительским искусством, а также разработки стратегий по сохранению этого наследия определяет актуальность данного исследования.

ЦЕЛЬ ИССЛЕДОВАНИЯ

Цель данного исследования заключается в системном изучении деятельности народных любительских коллективов «Коканд ёр-ёри», «Чодир жамол» и «Фергана гавхари» в Ферганском регионе, а также в научном обосновании их социокультурной роли в сохранении и развитии традиций регионального музыкального фольклора.

МАТЕРИАЛЫ И МЕТОДЫ ИССЛЕДОВАНИЯ

В качестве материала исследования были взяты репертуар, исполнительские традиции и архивные документы народных любительских коллективов «Коканд ёр-ёри», «Чодир жамол» и «Фергана гавхари», действующих в Ферганском регионе.

При изучении темы использовались следующие научные методы:

Системно-аналитический метод: применялся для исследования жанровых особенностей музыкального фольклора Ферганы как целостной системы.

Историко-сравнительный метод: служил для сопоставления этапов развития региональных исполнительских традиций и изменений в репертуаре коллективов.

Эмпирическое наблюдение и интервью: использовались для непосредственного изучения современной динамики деятельности коллективов и практики традиций «устоз — шогирд» (мастер — ученик).

РЕЗУЛЬТАТЫ ИССЛЕДОВАНИЯ

Богатая и древняя музыкальная культура узбекского народа на протяжении веков служила одним из важнейших источников национальной духовности. Это музыкальное наследие, воплотившее в себе национальные традиции и ценности, и сегодня сохраняет свое художественно-эстетическое значение. [1,4] Узбекская музыкальная культура традиционно делится на два основных пласта: народная музыка и профессиональная музыка устной традиции. Ученые оценивают народную музыку как вид фольклора и применяют к ней термин «музыкальный фольклор». Фольклор означает общую совокупность таких образцов, как устное народное художественное творчество, музыка, обрядовые песни, загадки, анекдоты (латифа), дастаны, пословицы и поговорки.

В годы независимости возрождение и развитие национальной культуры стало приоритетным направлением государственной политики, и особое внимание было уделено развитию устного народного творчества (*xalq og‘zaki ijodi*) и видов традиционного искусства (*an’anaviy san’at turlari*). В частности, Ферганская долина выделяется как один из важнейших регионов с высокоразвитым народным творчеством и искусством.

ISBN: 978-625-90699-4-4

Художественное очарование музыкального фольклора Ферганы

Ферганская долина является одним из географически важных регионов Центральной Азии, отличающимся уникальной природой, благоприятным климатом и богатым историко-культурным наследием. В исторических источниках некоторые исследователи отмечают, что происхождение названия «Фергана» встречается в древних согдийских письменах в формах *«Паргана»* или *«Прагана»*. С лингвистической точки зрения в индо-санскрите оно означает «малая провинция», а в персидском языке — «долина между гор», что свидетельствует о расположении этого региона на перекрестке цивилизаций с древнейших времен.

Население региона отличается особым интересом к искусству, особенно к музыке и устному творчеству. По этой причине Ферганская долина также признана в народе «колыбелью мастеров искусства» (*san'atkorlar vatani*). Фергано-Ташкентский музыкальный стиль, являющийся важнейшим направлением узбекской традиционной музыки и отличающийся своей мелодичностью, лиризмом и богатой жанровой системой, сформировался именно в этом регионе. В рамках данного стиля гармонично развивались такие жанры, как детские песни, женский фольклор, *лапар*, *ялла*, *ашула*, *катта ашула* и *маком*.

Ферганское устное народное творчество также формировалось на протяжении веков и интерпретируется в различных направлениях. В основном широко распространены сезонные и обрядовые песни: *«Ёр-ёр»*, *« Келин салом»*, *«Омон ёр»*, *«Килпиллама»*. В настоящее время фольклорно-этнографические коллективы «Фергана гавхари», «Чодир жамол» и «Коканд ёр-ёри» демонстрируют нашу национальную самобытность широкой публике посредством различных сценических выступлений на мероприятиях и конкурсах по всей стране.

Народный фольклорно-этнографический ансамбль «Коканд ёр-ёри»

Национальные обычаи и фольклорное наследие являются важнейшими факторами, отражающими историческое развитие, духовные ценности и культурную идентичность народа, а их изучение и популяризация на научной основе выступает одной из актуальных задач сегодняшнего дня. Одним из таких фольклорно-этнографических коллективов является народный ансамбль «Коканд ёр-ёри», созданный в 2003 году Хурсаной Кодировой — обладательницей награды «Королева сценического искусства Узбекистана» и ученицей Рахимахон Мазохидовой, народной артистки Узбекистана, кавалера ордена «Шухрат мехнати» и почитаемой наставницы нашего фольклора. Главная цель этого коллектива — укоренить музыкальную жизнь Коканда в сердцах нашего народа и сформировать национальную музыкальную среду.

В самом названии ансамбля «Коканд ёр-ёри» заложена глубокая мудрость: «ёр-ёр» — это прежде всего обрядовая песня, исполняемая для того, чтобы объявить народу о том, что невеста приносит с собой благодать и достаток, вступая в новую жизнь со скромностью и целомудрием. При этом кокандский стиль исполнения «ёр-ёр» отличается особой изысканной привлекательностью. В этом символическом смысле ансамбль и получил название «Коканд ёр-ёри», стремясь радовать публику исполнением народных лапаров и песен в уникальном стиле.

Благодаря трудам своей наставницы Рахимахон-аи, Хурсаной Кодирова смогла объединить в сплоченный коллектив влюбленные в искусство сердца, творческих женщин, студентов и детей. На протяжении многих лет они расширяли свои музыкальные программы за счет устного народного творчества. Примером тому служат такие песни и композиции, как «Кокандим», «Омон ёр» (I-II-III-IV), «Гул уйини», «Узбекистон», «Халким бор», «Фаровон Узбекистоним», «Коканд холва», «Наврузнама», «Кокандлик хунармандлар», «Коканд патир», «Махаллам аёллари», «Ушламанг билагимни», «Ака дулдир той», «Богингиздаги олча», «Фергана уйини», «Ёр нималар

ISBN: 978-625-90699-4-4

дувдим сизге?», «Килпиллама», «Келинг ёр-ёр айтайлик», «Узбегимнинг кизлари» и «Кексалар».

Таблица 1

Деятельность фольклорно-этнографического ансамбля «Коканд ёр-ёри»

Год	Мероприятие	Результат / Значение
2006	Республиканский телефестиваль «Диёр оханглари»	Награжден дипломом II степени и памятными подарками
2006	Концертное турне Агитпоезда (Ташкент–Сырдарья, Джизак–Самарканд, Навои–Бухара)	10 дней активных выступлений, вклад в межрегиональный культурный обмен
2007	Узбекско-Кыргызский «Фестиваль дружбы» (город Ош)	Сравнительный анализ фольклора, возможность обмена опытом
2007	Присвоение звания «Народный коллектив»	Присуждено Министерством культуры Республики Узбекистан
2007	2000-летний юбилей города Маргилана	Активное участие, завоевание признания широкой публики
2010	19-летие Независимости Республики Узбекистан (Ташкент)	Выступления, направленные на пропаганду патриотического духа
2010	Художественные фильмы «Алла», «Кокандликлар», «Мажрух»	Пропаганда национальной культуры через аутентичное фольклорное исполнение
2012	Фестиваль «Тупроккала»	Диплом I степени за театрализованную сцену «Коканда келин салом»
2012	Концерты в Дангаринском и Фуркатском районах	Представлена сольная программа «Онамларни эъзозлаб келдим»
2014	Телепередача «Достлик оши»	Демонстрация программы на телеканале «Маданият ва маърифат»
2014	Смотр-конкурс «Ягонасан, мукаддас Ватан!»	Награжден дипломом II степени
Итог	**Фольклорная деятельность в целом**	**Весомый вклад в сохранение и широкую пропаганду национальной музыки, обычаев и обрядов**

Фольклор — это многовековая история, культура и традиции народа, развивавшиеся и формировавшиеся на протяжении столетий. Мы можем с уверенностью утверждать, что народный фольклорно-этнографический ансамбль «Коканд ёр-ёри», будучи подлинным продолжателем этой традиции в её аутентичном исполнении, сегодня вносит огромный вклад в развитие фольклорной музыкальной культуры. Их самоотверженность в широкой пропаганде музыкальной культуры Коканда, узбекской фольклорной музыки, обычаев и обрядовых песен заслуживает самого высокого признания.

Народный любительский коллектив «Чодир Жамол»

В годы независимости особое внимание было уделено возрождению и развитию наших национальных ценностей. С целью восстановления забываемых обычаев, обрядов и традиций, а также их передачи молодому поколению, была широко поддержана деятельность фольклорно-этнографических коллективов. В сотрудничестве с центрами культуры и махаллинскими организациями ведется активная пропаганда богатого наследия народа. Одним из коллективов, рационально использовавших такие возможности, является народный фольклорно-этнографический ансамбль «Чодир

ISBN: 978-625-90699-4-4

Жамол» при Центре культуры №15 отдела культуры города Маргилана. Программы «Каргалар», «Ковун сайли», «Маргилон атласи», «Полвон бола», «Божам», «Ёвма кетур», «Маргилонга бир келинг» и «Шарк бозори» прославили коллектив среди народа и стали его визитной карточкой.

Народный фольклорно-этнографический ансамбль «Чодир Жамол» изначально был сформирован в 1989 году из числа талантливых городских любителей. Коллектив подготовил программы, состоящие из песен и мелодий, воплотивших в себе этнические обычаи городского населения, и в том же году занял первое место на республиканском смотре-конкурсе фольклорно-этнографических коллективов, проходившем в Намангане.

Таблица 2

Хронология творческой деятельности и достижений народного фольклорно-этнографического коллектива «Чодир жамол»

Год	Мероприятие и место проведения	Результат / Достигнутые успехи
1990	2-й Международный фестиваль фольклорно-этнографических коллективов (Киев, Украина)	Звание дипломанта фестиваля
1991	Постановление коллегии Министерства культуры Узбекистана (21 июня, №5/10)	Присвоение звания «Народный любительский коллектив» и выделение 2 штатных единиц
1993–1997	Республиканские праздники «Навруз» и «Мустакиллик» (Ташкент)	Активное участие и выступления государственного масштаба
2002	I Международный фольклорный фестиваль «Бойсун бахори» (ЮНЕСКО, Бойсун)	Дипломант фестиваля и ценные памятные подарки
2011	Фестиваль традиционной культуры «Асрлар садоси» (ЮНЕСКО, Бухара)	Звание лауреата фестиваля и ценные подарки
2014	Традиционный фестиваль «Шелк и специи» (Бухара)	Активное участие и диплом участника фестиваля
2019	Международный музыкальный фестиваль «Великий шелковый путь» (Маргилан)	Почетное 2-е место и ценные подарки
2021	Торжества в честь всенародного праздника «Навруз» (Хумо Арена, Ташкент)	Активное участие в главной праздничной программе республики
2023	Всенародный праздник «Навруз» (Парк «Янги Узбекистон», Ташкент)	Совместная программа с мастерами искусства аския Ферганской области
2023	Международный фестиваль «Шелк и специи» (Бухара)	Презентация региональных фольклорных программ
2023	V Фестиваль национальных тканей «Атлас байрами» (Маргилан)	Программы «Ипак курти», «Шарк бозори», «Маргилон хон атласи»

ISBN: 978-625-90699-4-4

2023	II Международный фестиваль фольклорной музыки «Великий шелковый путь» (Маргилан)	**1-е место** в направлении фольклорного песенного исполнительства (премия $2500)

Народный любительский коллектив «Фергана гавхари»

Данный коллектив начал свою деятельность в 2009 году в Центре отдыха населения №4, расположенном в массиве Киргули города Ферганы. Руководителем коллектива является Бурханова Азизахон Турсунбоевна. Коллектив принимает активное участие со своими музыкально-творческими программами в городских, областных и республиканских культурных мероприятиях, смотрах-конкурсах и фестивалях, регулярно проводимых в течение года. Он неоднократно удостаивался особого признания и наград со стороны хокимията города. Коллектив также выступает на праздничных мероприятиях, организуемых в махаллях, колледжах, лицеях и в ряде организаций-партнеров, позволяя нашему народу наслаждаться образцами узбекского народного музыкального фольклора.[2,36]

Коллектив ежегодно проводит отчетные концерты по своим программам. Театрализованные праздничные программы, подготовленные к нашему национальному празднику «Навруз», который является символом обновления и считается новым годом для мусульманского мира, транслировались по teleradiokanalu «Yoshlar», телеканалу «Diyor», а также по телерадиоканалам «Фергана» и «Рухсор». В этих программах особого внимания заслуживает музыкальная композиция коллектива «Усма» и «Сурма», в которой ярко отражены национальные обычаи и традиции нашего народа. В данной программе театрализованно представлены процесс приготовления усьмы и сурьмы, которые женщины наносят на брови и глаза, их целебные свойства и особенности, что сопровождается исполнением народных песен в жанре *лапар*.

Следует особо отметить входящие в исполнительский репертуар коллектива песни, *лапары*, *ялла*, *омон-ёры*, *ёр-ёры*, а также постановочные музыкальные композиции, относящиеся к фольклорному творчеству узбекского и братских народов. Каждая исполняемая музыкальная постановка готовится на основе спроса и предложений и представляется на художественный суд слушателей. Разнообразные исполняемые песни, безусловно, дарят человеку душевное спокойствие и духовную пищу. Естественно, что люди, с восхищением слушающие нежные напевы этих песен, ощущают в своем внутреннем мире способность получать положительное вдохновение от жизни.

ОБСУЖДЕНИЕ РЕЗУЛЬТАТОВ

Анализ деятельности народных любительских коллективов Ферганы раскрывает следующие концептуальные выводы:

- **Институциональный рост:** Творческий путь коллективов от местного уровня до международных фестивалей (Киев, Бойсун, Маргилан) и обретение ими официального статуса свидетельствуют о возвышении локального фольклора до уровня сценической культуры.
- **Музыкальная трансформация и популяризация:** Семейно-обрядовые песни и этнокомпозиции в репертуаре коллективов «Коканд ёр-ёри» и «Фергана гавхари» успешно синтезируются с современной культурой посредством медиа и киноискусства.
- **Жизнеспособность и экономическая устойчивость:** Победы этнических традиций на международных конкурсах на примере коллектива «Чодир Жамол» на практике доказывают жизнеспособность нематериального культурного наследия как «живой традиции» (*living heritage*) и его потенциал социально-экономической устойчивости.

ISBN: 978-625-90699-4-4

ВЫВОДЫ

Научно обосновано, что музыкальный фольклор Ферганской долины является фундаментальным источником, определяющим региональную этнокультурную идентичность, и отличающимся своим жанрово-стилистическим богатством и уникальной лирической природой. Системный анализ деятельности исследованных народных любительских коллективов показал, что данные группы успешно интегрируют традиционные образцы обрядового, трудового и сезонного фольклора в современную сценическую культуру и медиапространство. Институциональная поддержка местных любительских коллективов, обеспечение их участия в международных фестивалях и системное продолжение традиций «устоз — шогирд» (мастер — ученик) служат наиболее эффективным стратегическим механизмом сохранения и передачи будущим поколениям нематериального культурного наследия Узбекистана в условиях глобализации.

СПИСОК ЛИТЕРАТУРЫ / REFERENCES

1. Achildiyeva, M. A., Shodiyeva, Sh. Sh., & Mirzayeva, G. M. (2026). *Farg‘ona xalq havaskorlik jamoalari* [Народные любительские коллективы Ферганы / Fergana Folk Amateur Ensembles] (Monograph). Fergana.
2. Madayev, O., & Sobitova, T. (2010). *Xalq og‘zaki poetik ijodi* [Устное народное поэтическое творчество / Oral Folk Poetic Creativity] (Textbook for academic lyceums). Tashkent: Sharq.
3. Madayev, O. (2010). *O‘zbek xalq og‘zaki ijodi* [Узбекское устное народное творчество / Uzbek Oral Folk Art]. Tashkent: Mumtoz so‘z.
4. Safarov, O. (2010). *O‘zbek xalq og‘zaki ijodi* [Узбекское устное народное творчество / Uzbek Oral Folk Art]. Tashkent: Musiqa.
5. O‘zbekiston milliy ensiklopediyasi. (2005). *O‘zbekiston milliy ensiklopediyasi* [Национальная энциклопедия Узбекистана / National Encyclopedia of Uzbekistan]. Tashkent: O‘zbekiston milliy ensiklopediyasi.

ISBN: 978-625-90699-4-4

РАЗВИТИЕ НЕГОСУДАРСТВЕННОГО ВЫСШЕГО ОБРАЗОВАНИЯ В КОНТЕКСТЕ СТРАТЕГИИ НОВОГО УЗБЕКИСТАНА

DEVELOPMENT OF NON-STATE HIGHER EDUCATION IN THE CONTEXT OF THE NEW UZBEKISTAN STRATEGY

Khakimov Nazar Khakimovich
Tashkent University of Applied Sciences,(DsC) Professor, Tashkent, Uzbekistan
ORCID ID: 0000-0001-9670-7673

ABSTRACT.
This article examines current reforms in the non-state higher education system in the context of the transformation of spiritual culture and the strategy for a new stage of Uzbekistan's development. Strategic directions, the modernization of non-state higher education institutions, and the creation of a legal framework for the formation of private universities are discussed. An attempt is made to demonstrate the role of non-state universities in training competitive personnel, which plays an important role in the development of spiritual culture in society. By establishing departments and recruiting faculty, non-state universities are becoming important centers for the development of science and higher education, especially in the country's regions. As a result, research and teaching teams are being formed, opportunities are opening up for research projects in relevant areas of science, and talented master's degree graduates are being invited to teach. The reforms are aimed at improving the quality of non-state higher education and training personnel capable of competing globally.
***Key words*:** development strategy, reform, university, quality, science, non-state higher education, personnel.

АННОТАЦИЯ.
В данной статье рассматриваются современные реформы в системе негосударственного высшего образования в контексте трансформации духовной культуры и стратегии нового этапа развития Узбекистана. Обсуждаются стратегические направления, процесс модернизации негосударственных высших образовательных учреждений, а также создание правовой базы для формирования частных университетов. Сделана попытка показать роль негосударственных университетов в подготовке конкурентоспособных кадров, играющих важную роль в развитии духовной культуры в обществе. В результате формирования кафедр и приема на работу профессорско-преподавательского состава негосударственные университеты становятся важным центром развития науки и высшего образования, особенно в регионах страны. В результате происходит формирование научно-педагогических коллективов, открываются возможности для выполнения научных проектов по актуальным направлениям науки, а также для приглашения талантливых выпускников магистратуры на преподавательскую работу. Реформы направлены на улучшение качества негосударственного высшего образования и подготовку кадров, способных к глобальной конкуренции.
Ключевые слова: стратегия развития, реформа, университет, качество, наука, негосударственное высшее образование, кадры.

АКТУАЛЬНОСТЬ.

В современном мире негосударственное высшее образование играет ключевую роль в формировании и развитии национальной духовной культуры и общества. В контексте стремительных изменений и вызовов, с которыми сталкивается Узбекистан, страна активно развивает свою систему негосударственного высшего образования, чтобы адаптироваться к новым требованиям и вызовам. На начало 2025/2026 учебного года

вместе с филиалами в стране действовали 215 вузов, в том числе негосударственных высших учебных заведений - 97. [1] Следовательно, актуальной научной проблемой является анализ сущности и основных направлений реформирования негосударственного высшего образования в Узбекистане в контексте Стратегии развития Нового Узбекистана, а также оценке перспектив и вызовов, стоящих перед этой системой в будущем.

Реформы в области негосударственного высшего образования Нового Узбекистана основываются на стратегических направлениях, направленных на повышение качества высшего образования и его актуализацию в глобальном контексте. В этой связи следует отметить, что в университетах страны рассматриваются ключевые стратегические мероприятия, такие как пересмотр учебных программ, внедрение современных методов обучения и укрепление международных академических связей. Важным аспектом реформирования негосударственного высшего образования является модернизация учебных заведений. Это предполагает инфраструктурные улучшения, использование новых инновационных педагогических технологий в учебном процессе, развитие цифровых технологий, а также создание стимулов для научно-исследовательской активности студентов и преподавателей [2].

В свете глобальной интеграции Узбекистан активно развивает международное сотрудничество в сфере негосударственного высшего образования. Университеты проявляют инициативу, направленную на увеличение мобильности студентов и преподавателей, а также на участие в международных образовательных программах. Наконец, стоит выявить перспективы и вызовы, с которыми сталкивается система негосударственного высшего образования Узбекистана в контексте реформ. Обсуждаются такие вопросы, как необходимость дальнейшей модернизации, обеспечение доступности негосударственного образования и подготовка кадров, способных эффективно конкурировать на мировой арене [3].

Современное общество Узбекистана живет и развивается в стремительно меняющемся мире, и реальность такова, что постоянное совершенствование отраслей экономики и социального сектора стало необходимым условием прогресса страны. Республика Узбекистан уверенно и динамично движется к достижению своей главной цели - вхождению в число развитых демократических государств. Основным механизмом такого стремления выступает система негосударственного высшего образования, построенная на процессах систематизации, творческой переработки и использования опыта предшествующих поколений [4].

ЦЕЛЬ ИССЛЕДОВАНИЯ.

Исследование процесса реформирования и оценка эффективности системы негосударственного высшего образования в Узбекистане в условиях нового этапа развития общества.

МАТЕРИАЛЫ И МЕТОДЫ ИССЛЕДОВАНИЯ.

Анализ методами социологических исследований, экономической статистики и сопоставительного анализа помог выявить ключевые проблемы системы негосударственного высшего образования в Узбекистане. Подход, основанный на анализе данных и экспертных мнений, позволил выявить факторы, ограничивающие развитие негосударственного высшего образования, такие как недостаток доступа для определенных групп молодежи, несоответствие учебных программ потребностям рынка труда и недостаточное внедрение современных педагогических технологий и методик обучения будущих специалистов. В условиях нового этапа развития высшее негосударственное образование должно соответствовать актуальным запросам общества и выступает одной из приоритетных задач государства. В условиях совершенствования всех сфер общественно-экономической жизни и формирования

ISBN: 978-625-90699-4-4

институтов гражданского общества важным фактором выступает дальнейшее развитие высших учебных заведений, обеспечивающих инновационный прорыв посредством подготовки квалифицированных кадров. Важнейшим условием стало внедрение в деятельность негосударственных вузов основных положений Стратегии инновационного развития страны, в которой определено, что главной целью является развитие человеческого капитала как основного фактора конкурентоспособности страны на мировой арене. Комплексный анализ работы негосударственных высших учебных заведений в современных условиях выявил ряд проблем, отрицательно влияющих на уровень и качество подготовки бакалавров и магистров. Национальная образовательная система еще не до конца адаптировалась к глубоким переменам в обществе, что привело к ограничению доступа к негосударственному высшему образованию для социально уязвимых слоев населения и малоимущих семей. Недостаточный охват молодежи студенческого возраста системой высшего образования в Узбекистане остается низким по региональным и международным меркам, несмотря на то, что общемировой тенденцией является повышение числа студентов в университетах. В республике ощущается дефицит квалифицированных кадров для новых отраслей экономики, бизнеса и совместных предприятий, особенно в таких направлениях, как космические исследования, атомная энергетика, цифровая экономика, искусственный интеллект, тяжелое машиностроение и фармацевтическая промышленность. При этом негосударственные университеты в основном готовят кадры по гуманитарным специальностям. Наблюдается недостаточная связь негосударственных университетов с частным бизнесом. Иностранные компании и зарубежные инвесторы, выходящие на рынок Узбекистана, сталкиваются с трудностями при поиске квалифицированных специалистов. Современным требованиям не отвечает уровень материально-технической базы отдельных негосударственных университетов. Сохраняется низкий уровень использования цифровых технологий в учебном процессе, а также наблюдается недостаточно высокий научный потенциал педагогов, работающих в негосударственных вузах. Остро не хватает преподавателей со знанием иностранных языков для ведения занятий по профилирующим дисциплинам. В негосударственных университетах страны пока еще мало обучающихся иностранных студентов. Высшие учебные заведения нуждаются в системном повышении квалификации профессорско-преподавательского состава, в том числе в зарубежных университетах. В связи с переходом на кредитно-модульную систему требуется коренное совершенствование организации самостоятельной работы студентов [5].

РЕЗУЛЬТАТЫ

Исследование показало, что в республике проводится комплексная работа по дальнейшему развитию негосударственных университетов. Так, за последние годы в стране созданы 71 частный университет и 51 негосударственный техникум, в которых в настоящее время обучаются более 1,7 миллиона студентов. В результате охват молодежи высшим образованием в стране вырос с 9 до 44 процентов [6].

Требуется дальнейшее совершенствование системы подготовки докторов наук и работы специализированных советов по защите диссертаций. В условиях нового этапа развития Узбекистана возникла задача дальнейшего совершенствования системы негосударственного высшего образования, а именно:

- повышение статуса профессорско-преподавательского состава, внедрение гибкой системы оплаты труда в зависимости от результатов научно-исследовательской и учебной работы, освобождение времени для основной деятельности за счет снижения бюрократической нагрузки;

ISBN: 978-625-90699-4-4

- кардинальное улучшение качества обучения посредством внедрения новых современных образовательных программ, совершенствования содержания учебников и учебных пособий нового поколения, педагогических и smart-технологий в учебном процессе;
- принятие мер по внедрению национальной системы оценки качества негосударственного высшего образования и его влияния на уровень инновационного развития страны;
- повышение охвата высшим образованием молодежи всех слоев населения посредством увеличения числа негосударственных высших учебных заведений;
- дальнейшее расширение взаимосвязей вузов с зарубежными партнерами, участие в международных программах стажировок студентов и ученых, расширение программ фондов и стипендий по обучению за рубежом;
- усиление работы по укомплектованию кафедр вузов молодыми талантливыми кадрами.

Необходимо отметить, что в секторе негосударственного высшего образования прилагаются значительные усилия для соответствия требованиям социально-экономического развития, что требует подготовки конкурентоспособных бакалавров и магистров, отвечающих приоритетам рыночной экономики. Исследование подтверждает, что существуют негосударственные университеты, которые в определенной степени не отвечают требованиям рыночных отношений в роли драйверов инновационных подходов и генераторов новых идей. В условиях углубления рыночных реформ государственными органами совместно с вузами принимаются меры по обеспечению молодежи равного доступа к высшему образованию.

ОБСУЖДЕНИЕ РЕЗУЛЬТАТОВ

В настоящее время в системе негосударственного высшего образования имеются недостатки по ее доступности, отдельные вузы используют устаревшие механизмы подготовки специалистов и обеспечения качества учебного процесса. Данное обсуждение сконцентрировано на вопросах стратегического видения, доступа, управления, обеспечения качества, финансирования системы негосударственного высшего образования и ее соответствия новому периоду развития страны. Узбекистан, как многие другие страны, сталкивается с вызовами и возможностями в области частного высшего образования в современном мире [7]. Развитие инновационных технологий, экономические и социокультурные изменения, а также глобальная конкуренция требуют изменений и совершенствования системы негосударственного высшего образования. Приоритетной задачей государства является стратегические направления реформирования системы конкурентоспособных кадров, а также их влияние на развитие страны. Первым ключевым направлением реформирования частного высшего образования является модернизация учебных программ. В современном глобальном мире знания быстро меняются, и учебные программы должны быть гибкими и актуальными. Это охватывает следующие аспекты:

- необходимость пересмотра и обновления учебных программ на разных уровнях образования. Это включает в себя не только добавление новых курсов и предметов, но и адаптацию существующих курсов к современным требованиям рынка;
- внедрение в учебный процесс актуальных учебных материалов, включая цифровые ресурсы, онлайн-курсы и интерактивные учебники. Это поможет студентам более эффективно учиться и осваивать актуальные навыки [8];
- увеличение доли практического обучения, включая стажировки и проектную деятельность. Это поможет студентам приобретать реальный опыт и готовиться к будущей карьере. Качество образования является одним из ключевых показателей эффективности системы высшего образования. Следует подчеркнуть, что повышение

ISBN: 978-625-90699-4-4

квалификации специалистов, профессорко-преподавательского состава активно поддерживаются государством. Так, по линии Фонда «Эл-юрт умиди» 2 225 стипендиатов направлены в 45 стран, при этом из бюджета было выделено 1,5 трлн сумов. На сегодняшний день более 1400 выпускников вернулись в Узбекистан и работают в секторах экономики, образования, науки, медицины и государственного управления. В настоящее время 748 стипендиатов обучаются в престижных университетах, входящих в топ-300 мировых рейтингов. [9]

Исследование подтверждает, что для улучшения качества негосударственного высшего образования в Узбекистане необходимо принимать следующие меры:

- внедрение системы оценки качества негосударственного высшего образования и обратной связи от студентов и работодателей. Это поможет идентифицировать слабые места и улучшать образовательные программы;
- обновление квалификации преподавательского состава, внедрение программ повышения квалификации и стимулирование преподавательской активности;
- разработка стандартов качества образования и их строгое соблюдение при оценке и аккредитации учебных заведений. Исследования и инновации играют важную роль в современном мире. Поэтому развитие исследовательской активности студентов и преподавателей в системе негосударственного высшего образования является неотъемлемой частью реформирования, как выделение средств и создание научных лабораторий для поддержки научных исследований в различных областях [10], а также содействие публикациям в научных журналах и участию в международных конференциях для продвижения результатов исследований. Предпринимать меры по дальнейшему укрепления международного сотрудничества является ключевым фактором успешного реформирования высшего образования и включает [11]:
- расширение партнерских отношений с зарубежными университетами и обмен опытом в области высшего образования и научных исследований, содействие стажировкам и обмену студентами и преподавателями для расширения горизонтов и получения международного опыта. Установление партнерских отношений с частными компаниями для организации стажировок и практического обучения студентов;
- участие в международных научных исследовательских проектах, что способствует обмену знаний и решению глобальных проблем. Система высшего образования должна адаптироваться к изменяющимся потребностям рынка труда, для этого требуются разработка образовательных программ, соответствующих потребностям и требованиям работодателей, внедрение курсов и программ, направленных на развитие мягких навыков, коммуникационных умений и предпринимательской активности. Реформирование системы негосударственного высшего образования требует достаточного финансирования и ресурсов:
- модернизация учебных помещений, библиотек, лабораторий и компьютерных классов для создания комфортных условий для обучения и исследований. Эффективное управление и мониторинга реформ в системе частного высшего образования также имеют важное значение.
- внедрение системы оценки результатов реформ с использованием ключевых показателей и индикаторов. Содействие прозрачности и отчетности в системе высшего образования для обеспечения отслеживания и оценки результатов. Реформы в системе частного высшего образования также важны с социокультурной точки зрения, это:
- поддержка и развитие культурного разнообразия в учебных заведениях и образовательной среде;
- обеспечение доступности высшего образования для всех слоев населения, включая лиц с ограниченными возможностями;

ISBN: 978-625-90699-4-4

• содействие развитию гражданской активности среди студентов и их участие в социальных и культурных мероприятиях. Реформы в системе высшего образования должны быть устойчивыми и ориентированными на долгосрочное развитие. Это предполагает:

• разработку долгосрочных стратегий развития системы частного высшего образования с учетом текущих и будущих вызовов;

• поддержку инновационного мышления и гибкости в системе высшего образования, что бы адаптироваться к изменяющимся условиям;

• обеспечение обучения и развития кадров, способных эффективно реализовывать реформы и обеспечивать их устойчивость; Для эффективного реформирования системы негосударственного высшего образования необходимо устанавливать критерии и показатели успеха:

• измерение достижений и результатов реформ с использованием объективных данных и метрик;

• сопоставление результатов системы высшего образования Узбекистана с мировыми стандартами и лучшими практиками.

Реформирование системы негосударственного высшего образования в Узбекистане является сложным и многомерным процессом, который требует координации усилий со стороны государственных органов, высших образовательных учреждений и общества в целом. Однако при правильном подходе и соблюдении ключевых стратегических направлений Узбекистан может достичь высокого уровня высшего образования, что способствует развитию страны и ее граждан.

ВЫВОДЫ

Во-первых, проведённое исследование демонстрирует, что реформирование системы негосударственного высшего образования в контексте развития нового этапа развития Узбекистана представляет собой важный период в стратегическом развитии страны. В рамках данной статьи были рассмотрены ключевые аспекты этой реформы, включая стратегические направления, модернизацию учебных заведений, международное сотрудничество и вызовы, стоящие перед системой высшего образования. Современные реформы направленые на повышение качества образования, улучшение доступности для всех слоев населения и подготовку кадров, способных смело смотреть в будущее и конкурировать на мировой арене. Множество инициатив, таких как пересмотр учебных программ, развитие научно-исследовательской активности и международная интеграция, создают уникальные возможности для студентов и преподавателей Узбекистана. Однако, несмотря на все усилия, существуют вызовы, такие как обеспечение финансирования, адаптация к новым образовательным технологиям и сохранение качества образования в условиях быстрого роста.

Во-вторых, установлено, что реформы в области негосударственного высшего образования - это сложный, но важный путь к развитию и достижению устойчивого будущего для Узбекистана. Реализация мероприятий по усовершенствованию системы частного высшего образования будет продолжать способствовать росту и процветанию страны. В результате научного анализа становятся явными некоторые основные направления реформирования системы высшего образования в Узбекистане. Продвижение тесного взаимодействия с бизнес-сектором, адаптация образовательных программ к потребностям рынка и развитие практических навыков у студентов позволят снизить дефицит квалифицированных специалистов для работы в высоко технологических отраслях экономики и социального сектора. Важно также обратить внимание на повышение уровня подготовки и квалификации преподавателей, включая их обучение за рубежом.

ISBN: 978-625-90699-4-4

В-третьих, исследование подтверждает, что с целью интеграции в мировое образовательное пространство и улучшения образовательных стандартов необходимо активно развивать дистанционное обучение, послевузовское образование, обеспечивая возможность студентам и молодым специалистам постоянно обновлять, совершенствовать профессиональные знания и навыки. Реализация данных рекомендаций позволит повысить уровень системы негосударственного высшего образования, способную эффективно реагировать на вызовы глобализации, способствуя интенсивному развитию экономики, науки и культуры Узбекистана.

ИСПОЛЬЗОВАННАЯ ЛИТЕРАТУРА:

1.Баёнов Х. Сколько вузов в Узбекистане? https://uza.uz/ru/posts/skolko-vuzov-v-uzbekistane_865435
2.ЮНЕСКО. (2021). Высшее образование в Узбекистане: развитие и вызовы.
3.Сагдуллина В.И. Модернизация системы высшего образования Узбекистана: история, те кущее состояние и перспективы. Ташкент, 2019.стр 45.
4.Stepanova D.I., Garnov A.P., Brykin A.V., Jancikova E. Irrational behavior of youth when taking financial decisions. International Journal of Economics and Business Administration. Volume 7. 2019. p. 378-387.
5.Умаров А.В., Хакимов Н.Х. Самостоятельная работа студентов Монография, Ташкент, “Firdavs-Shoh nashriyoti“, 2024, -184 стр.
6.Мирзиеев Ш.М. Президент поставил перед системой образования новые цели. kun.uz/kr/news/2025/04/30. kun.uz/kr/news 2026/07/11.
7.Mutalimov V., Volkovitckaia G., Buymov A., Syzdykov S., & Stepanova D. (2021). Professional Entrepreneurial Competencies and Creativity Skills Formation Under the Influence of Educa tional Practices of Start-Up Projects Develop ment. Journal of Technical Education and Training, 13(4), pp.42-55.
8.Всемирный банк. (2021). Узбекистан - Проект модернизации высшего образования.
9.Шавкат Мирзиёев. В Узбекистане подготовка перспективных кадров будет организована на основе новых подходов. https://news.mail.ru/economics/66010368
10.Умаров А.В., Хакимов Н.Х. Негосударственное образование в Узбекистане. Монография, Ташкент, “Firdavs-Shoh nashriyoti“, 2025, -338 стр.
11. Zotov V.B., Koniagina M.N., Shapkina E.A., Pikalova E.A., Stepanova D.I. Experience in im plementing student business incubator in entre preneurship education. Journal of Entrepreneur ship Education. 2019. Т. 22. № 4. p. 396.

ISBN: 978-625-90699-4-4

EVOLUTIONARY NATURE OF SMALL-SCALE MODES IN UZBEK MUSICAL FOLKLORE WITHIN THE CONTEXT OF EASTERN MUSICAL THEORY

Achildiyeva Muyassarxon Adiljonovna
Senior Lecturer, Department of "Music Education and Culture", Faculty of Pedagogy-Psychology and Arts, Fergana State University

Abstract. This article provides a systematic analysis of the structural-functional and evolutionary nature of small-scale modes in Uzbek musical folklore within the context of the principles of classical Eastern musical theory. Within the scope of the study, the modal foundations of Uzbek folk songs, lapars, yallas, ritual folklore (yor-yor, alla), and the katta ashula genre were comprehensively examined. For the first time, narrow-range pitch structures such as dichords, trichords, tetrachords, and pentachords are analyzed not merely as static elements, but as a dynamic system shaping the intonational code of traditional monody. The paper scientifically substantiates the patterns of genre formulaic stability, modal variability, and chain polymodal modulation through specific modal pivots (ustons). The drawn conclusions hold significant theoretical and practical value for a deep understanding of the genesis and genre typology of Uzbek traditional monody, as well as for implementing this system into the practice of music education.

Keywords: Eastern musical theory, small-scale modes, Uzbek musical folklore, monody, genre typology, intonational evolution, variability, katta ashula.

INTRODUCTION

One of the fundamental problems of contemporary ethnomusicology and musicology consists in the scientific investigation of the pitch systems and constructive principles of traditional monodic systems. Small-scale (narrow-range) modes-dichords, trichords, tetrachords, and pentachords-which form the pitch foundation of Uzbek musical folklore, are considered the primary intonational code of national musical thinking as scale structures within a range narrower than an octave. Although pitch issues were uniquely systematized in the treatises of ancient Eastern musical theory (Al-Farabi, Ibn Sina, Al-Urmavi), the necessity for a comprehensive study of the evolutionary nature of these micro-modal structures within the dynamics of Uzbek folk musical creativity genres remains urgent today.

The relevance of this study is determined by the need to scientifically and methodologically synthesize the modal-pitch foundations of genres starting from ritual and children's folklore, which possess primitive, simple recitative characteristics, up to highly complex lyrical songs, lapars, yallas, and the "katta ashula" genre specific to the Fergana Valley performance school. Under the conditions of globalization, there is a risk of losing the tonal zone and micro-chromatic features in traditional folk performance pitch systems due to the influence of harmonic and tempered instruments. Therefore, analyzing the functional structure of small-scale modes and scientifically substantiating their role in Uzbek traditional monody carries high theoretical and practical importance in perfectly teaching the internal laws of Uzbek music to students within the system of higher and secondary specialized music education.

AIM OF THE STUDY

The primary objective of this research is to scientifically and theoretically substantiate the structural-functional composition and intonational evolution of small-scale modes in the genres of Uzbek musical folklore, drawing upon the foundational principles of Eastern musical theory.

ISBN: 978-625-90699-4-4

MATERIALS AND METHODS

The research materials comprise the musical notations, lyrical and ritual songs of Uzbek folk music creativity (alla, yor-yor, lapar, yalla), as well as scientific sources related to Eastern musical theory (treatises of Al-Farabi, Ibn Sina, and Al-Urmavi).

The following scientific methods were employed comprehensively to investigate the topic:

- **Structural-functional pitch analysis:** Applied to determine the modal pivots and pitch relationships within small-scale modes (dichords, trichords, tetrachords, pentachords).
- **Intonational-acoustic comparative method:** Served to compare the melodic development stages from simple recitative forms of children's and ritual folklore to ashula and katta ashula genres.
- **Genre-typological classification:** Used to systematize the functional interconnectedness of micro-modal systems with the genres of folk music creativity.

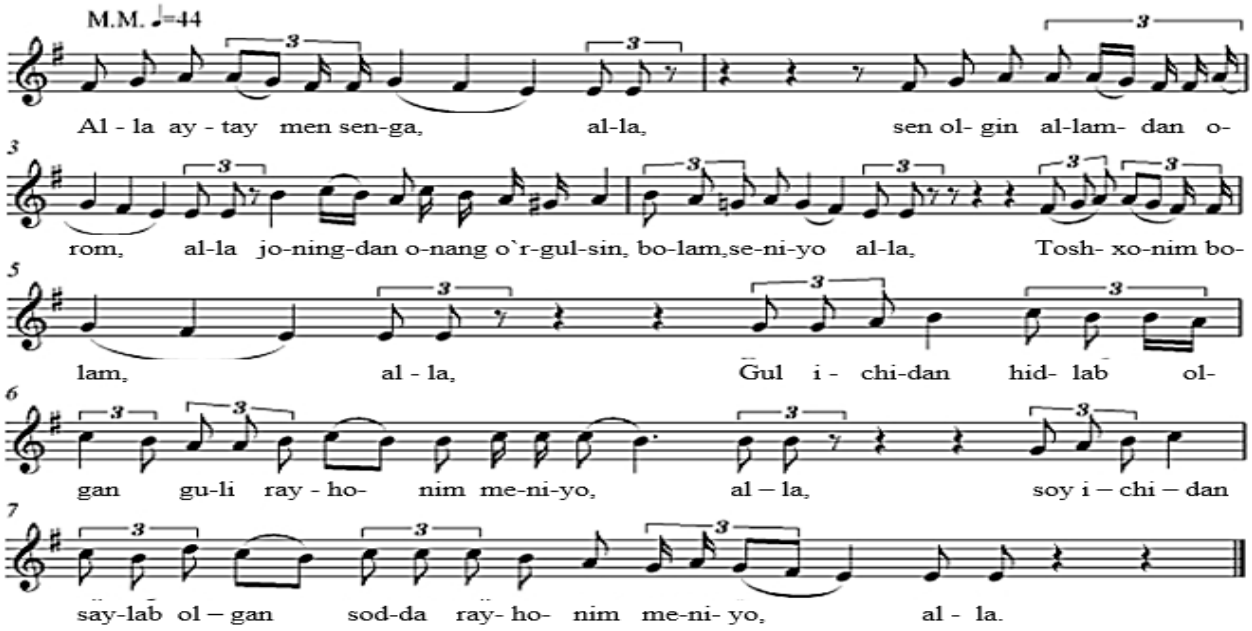
RESEARCH RESULTS

As a result of analyzing the samples of Uzbek folk music creativity based on pitch-systemic and ethnomusicological principles, the functional structure of small-scale modes, which constitute the fundamental basis of traditional monody, was identified in the following systemic form:

1. Acoustic and Pitch Description of Micro-Modal Systems

In the most ancient layers of Uzbek musical folklore (ritual and children's songs), the vocal range is significantly narrower than an octave; however, micro-modes possessing an internal functional hierarchy remain dominant:

- **Dichord systems:** Observed primarily in lullabies (**"Alla"**) and children's folklore. Analyses have shown that the melodic foundation in these genres relies on the pitch interval of a major second or a minor second. Within the mode, there is one central pivot tone (*uston*), while the second sound functions as an upper or lower adjunct (*olofa* – a second-based embellishment) relative to it. This ensures the sonorous-recitative and formulaic nature of the melody **[1, p. 34]**.



ISBN: 978-625-90699-4-4

- **Trichord and Tetrachord systems: "Yor-yor"** wedding-ritual songs possess an exceptionally stable pitch formula, often based on natural tetrachords within the range of a perfect fourth or trichords within the span of a minor/major third. Here, the melodic movement has a circular (revolving) character: the melody revolves around a core-intonation, constantly returning to the main pivot tone (*uston*), which serves as a mechanism for maintaining pitch stability during collective choral performance.

2. Pentachordal Hierarchy in Advanced Melodic Systems

When analyzing lyrical-dance genres such as **"Lapar"** and **"Yalla"**, it became evident that the pitch functions of small-scale modes are significantly more complex:

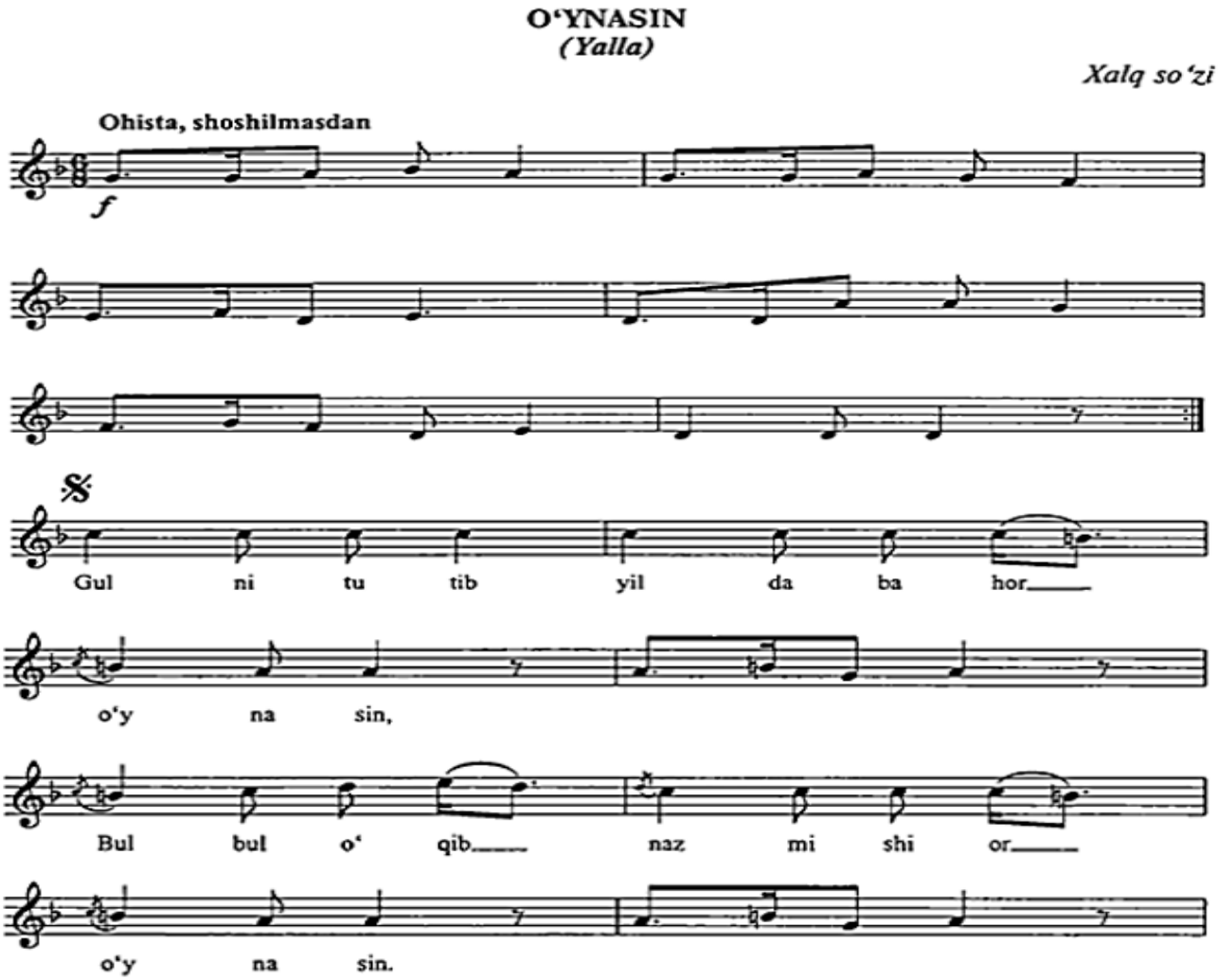
- The melodic structure relies fully on the framework of natural tetrachords and



pentachords within the range of a perfect fifth.

ISBN: 978-625-90699-4-4

- Within this range, the functional hierarchy of tones is clearly stratified: the functions of the initial melody (initial), the transient support at the climax, and the cadential (final) pivot tone (*uston*) are distinctly differentiated. The dialogic structure of the lapar causes internal modal variability (*peremenallik*) within a narrow range that does not exceed a fifth.



3. Chain Polymodality in the "Katta Ashula" Genre

When investigating the pitch structure of the **"Katta Ashula"** genre, which represents the pinnacle of the Fergana Valley performance tradition, an entirely unique, chain-like dynamic of micro-modes was identified:

- Although the overall range of the work spans one and a half to two octaves, it does not constitute a unified harmonic scale; rather, it consists of a combination of independent tetrachords and pentachords (micro-segments) that are interconnected in a chain-like manner.
- The melodic development and the *avj* (culmination) system are realized through stepwise modulation (the shifting of pitch pivots) from one small-scale mode to another. This characteristic allows singers to freely execute modal changes in the upper register with an open breath **[2, p. 76]**.

ISBN: 978-625-90699-4-4

OH KIM



In order to systematize all obtained empirical and pitch-systemic indicators, the following scientific table has been structured:

Table 1.

Pitch-Functional Parameters of Small-Scale Modes in the Genres of Uzbek Musical Folklore

No.	Name of the Folklore Genre	Dominant Type of Small-Scale Mode	Pitch Range (Interval)	Pivot (*Uston*) Functions and Dynamics	Acoustic-Intonational Character
1	**Alla**	Dichord, minor trichord	Second, minor third	Centralized single *uston*, adjacent tones function as embellishment (*olofa*)	Sonorous-recitative, subordinate to word phonetics
2	**Yor-yor**	Trichord, natural tetrachord	Minor third, perfect fourth	Circular system, revolving melodic movement around the main core tone	Stable formulaic, adapted for collective performance
3	**Lapar and Yalla**	Extended tetrachord, pentachord	Perfect fourth, perfect fifth	Hierarchical system: initial, transient support, and final *ustons*	Dance-like, dialogic discourse, modal variability

ISBN: 978-625-90699-4-4

4	**Katta ashula**	Chain polymodal structures	Wide range (segmental synthesis)	Modational system: stepwise and chain-like shifting of pitch *ustons*	Free metrorhythmic, upper-register *avj* (culmination) system

RESULTS AND DISCUSSION

The analysis of the structural-functional mechanisms of small-scale modes in the genres of Uzbek musical folklore reveals a number of conceptual issues for traditional monody theory and brings them to the center of scientific discussion:

- **Interpretation of Classical Eastern Musical Theory Principles:** Abu Nasr Al-Farabi in his treatise *Kitab al-Musiqa al-Kabir*, as well as Ibn Sina and Safi al-Din al-Urmavi in their works, fundamentally substantiated the theory of the internal division of scales, namely the concept of *jins* (tetrachords and pentachords). The research results we achieved demonstrate that the pitch foundation of folk songs, lapars, and yallas is the living and practical manifestation of this very historical system of *jins* **[3, p. 52]**. The pitch relationships, calculated mathematically and acoustically by Eastern thinkers, prove to be musical constants that are preserved with exceptional accuracy and stability at an instinctive and intonational level in folk creativity.
- **The Problem of Intonational Archetype and Pitch Evolution:** The developmental line extending from the simplest and primary dichordal cores in *allas* to the complex chain-like polymodal structures in *katta ashula* enriches the theory of "intonational evolution" in ethnomusicology (for instance, the conceptual views of E. Alekseyev). This process reflects the internal stages of development of traditional monody from a primitive spoken-recitative character to the highest artistic forms within the oral professional tradition. In other words, parallel to the expansion of the pitch range, the internal functional hierarchy has also become more sophisticated.
- **The Modal-Pitch Framework of Genre Typology:** Musicologists Yu. Kon and S. Galitskaya, in their respective studies, specifically noted the functional nature and zonal characteristics of modal systems in Uzbek traditional music. Our analyses indicate that the unique metrorhythmic and lyrical nature of each genre (such as the formulaic stability in *yor-yor* or the dance-like dynamics in *yalla*) determines its pitch structure. Particularly, the micro-modal systems characteristic of the Fergana–Toshkent musical style format the unique intonational code of Uzbek national musical thinking by giving rise to variable (*peremenal*) or stable *ustons* within a specific genre discourse.

CONCLUSION

The investigation of Uzbek musical folklore genres within the context of Eastern musical theory principles has scientifically substantiated the fundamental and systematizing role of small-scale modes in the traditional monody system. The analyses demonstrated that narrow-range pitch structures extending from dichords to pentachords are not merely static scales, but rather a primary system of intonational codes determining the compositional architectonics and emotional-artistic climate of ritual and lyrical genres. The developmental stages, ranging from the formulaic stability in cradle and wedding songs possessing primitive spoken-recitative characteristics to the functional hierarchy in lyrical-dance lapars and yallas, and up to the chain polymodal modulation in the katta ashula genre specific to the oral professional tradition, demonstrate a consistent evolutionary trajectory of national musical thinking. Systematizing the theory of small-scale modes and their functional-acoustic parameters in this manner holds high practical importance in ensuring the effectiveness of teaching the laws of Uzbek traditional monody on a fundamental, scientific, and methodological basis within the higher and secondary specialized music education system.

ISBN: 978-625-90699-4-4

REFERENCES

1. Rajabov, I. (1963). *Maqomlar masalasiga doir* [К вопросу о макомах / On the Issue of Maqoms]. Tashkent: O‘zbekiston davlat badiiy nashriyoti.
2. Matyoqubov, O. (2004). *Maqomot* [Макомот / Maqomat]. Tashkent: Musiqa.
3. Ismoilov, M. (1985). *O‘zbek xalq musiqasi ijodiyoti* [Узбекское народное музыкальное творчество / Uzbek Folk Musical Creativity]. Tashkent: O‘qituvchi.
4. Oripova, S. L., & Achildiyeva, M. A. (2024). *O‘zbek xalq musiqa ijodiyotida kichik hajmli ladlar* [Малообъемные лады в узбекском народном музыкальном творчестве / Small-Scale Modes in Uzbek Folk Musical Creativity] (Educational manual). Fergana.
5. Alekseyev, E. (1973). *Problemy formirovaniya lada* [Проблемы формирования лада / Problems of Mode Formation]. Moscow: Muzyka.
6. Galitskaya, S. P. (1981). *Teoreticheskiye voprosy monodii* [Теоретические вопросы монодии / Theoretical Issues of Monody]. Tashkent: Fan.
7. Yelatov, V. I. (1964). *Ladovye osnovy belorusskoy narodnoy muzyki* [Ладовые основы белорусской народной музыки / Modal Foundations of Belarusian Folk Music]. Minsk.
8. Romanovskaya, E. (1937). *O‘zbek xalq qo‘shiqlari* [Узбекские народные песни / Uzbek Folk Songs] (Book I). Tashkent.

ISBN: 978-625-90699-4-4

THE MECHANISM FOR DEVELOPING THE ARTISTIC-PEDAGOGICAL COMPETENCE OF FUTURE FINE ARTS TEACHERS BASED ON VISUAL CULTURE

Karimova Mukaddas Otajonovna
Associate Professor, Fergana State University, Candidate of Pedagogical Sciences
ORCID: https://orcid.org/0000-0001-7393-3061

Akhmedbekova Maxpuzaxon Kaxarovna
Lecturer, Department of Fine Arts, Fergana State University

Abstract. The article examines ways to improve the mechanism for preparing future fine arts teachers for professional practice based on visual culture. It presents an integrated system of knowledge, skills, abilities, values, and competencies, including sociocultural competencies that determine an individual's relationship with art. This system encompasses the conscious perception of works of fine art; analysis of their content, artistic concept, compositional solution, and means of expression; evaluation according to aesthetic criteria; independent artistic creativity; and the understanding and appreciation of national and world cultural heritage.

Keywords: future fine arts teachers, visual culture, preparation for professional activity.

Research aimed at improving the mechanism for preparing future fine arts teachers for professional activity on the basis of visual culture is of significant scientific relevance to both the theory and practice of pedagogy. The results of such research can serve as a scientific and methodological foundation for improving the content of higher pedagogical education, enriching modern methodological support, and training competitive, creative, and highly qualified fine arts teachers.

In the process of reforming the education system, developing the professional competence of teaching personnel in accordance with international standards is one of the priority tasks. This requirement creates a need to prepare future fine arts teachers on the basis of modern pedagogical and artistic competencies.

Under the conditions of globalization and informatization, the growing flow of visual information requires the development of learners' visual culture, aesthetic thinking, and critical thinking. The effective fulfillment of this task is closely connected with the preparation of teachers who possess a well-developed visual culture.

In the practice of higher pedagogical education, an integrated pedagogical mechanism, scientific and methodological support, and diagnostic criteria for developing visual culture as an important component of professional preparation have not yet been sufficiently elaborated. This situation gives rise to certain gaps between theoretical preparation and practical activity.

The integration of national cultural heritage, folk applied arts, and contemporary visual art trends into the educational process requires the development of new pedagogical approaches. In developing national self-awareness, aesthetic taste, and artistic thinking among the younger generation, this process also requires further enhancement of the professional potential of future fine arts teachers.

The development of the digital educational environment has made the preparation of teachers capable of effectively using graphic design, computer graphics, artificial-intelligence-based visual platforms, electronic learning resources, and multimedia technologies an urgent scientific and practical task. This need strengthens the necessity of developing a preparation mechanism aimed at advancing visual culture through the integration of traditional and digital art.

ISBN: 978-625-90699-4-4

Improving the mechanism for preparing future fine arts teachers for professional activity creates the scientific and pedagogical conditions necessary to enhance the quality of education, teachers' professional competence, creative potential, methodological mastery, and indicators of learners' aesthetic and artistic development.

Visual culture is a complex and multifaceted pedagogical phenomenon that ensures an individual's artistic and aesthetic development, promotes an understanding of art, forms aesthetic thinking, and develops creative potential. It represents an integrated system of knowledge, skills, abilities, values, and competencies related to the conscious perception of works of fine art; analysis of their content, artistic idea, compositional solution, and expressive means; evaluation on the basis of aesthetic criteria; engagement in independent artistic creation; and understanding and appreciation of national and world cultural heritage. This system ensures the interconnected development of a person's spiritual and moral maturity, aesthetic taste, cultural worldview, and creative thinking.

From a scientific perspective, visual culture is regarded as a body of theoretical knowledge in fine arts and as a system of sociocultural competencies that determine a person's interaction with art. Through this system, an individual understands the role of art in the development of society, as well as its educational, aesthetic, and spiritual functions, and gains the ability to apply artistic values in everyday life. Therefore, visual culture is one of the important factors in developing aesthetic consciousness, cultivating the ability to perceive and evaluate beauty, achieving a deeper understanding of reality through art, and forming a creative approach.

The structural composition of visual culture consists of several closely interconnected components. The cognitive component encompasses knowledge of fine arts theory, art history, artistic styles, genres, composition, painting, graphics, sculpture, and applied decorative arts. The operational-activity component includes skills in carrying out visual-art activities, effectively using various artistic techniques and technologies, and expressing creative ideas through visual means. The axiological component reflects respect for art, commitment to national and universal values, aesthetic taste, and responsibility for preserving artistic heritage, while the reflective-creative component reflects the ability to analyze, evaluate, and improve one's own creative activity and to generate new artistic ideas.

In modern pedagogical approaches, visual culture is interpreted as an important component of competency-based education. The main emphasis is placed not only on learners' acquisition of theoretical knowledge, but also on developing their competencies to apply that knowledge in real-life situations, critically and aesthetically analyze works of art, creatively solve artistic problems, and actively participate in cultural dialogue. As a result, individuals develop an understanding of art, the ability to substantiate their aesthetic views, an appreciation of artistic heritage, and a responsible attitude toward transmitting it to future generations.

Visual culture is an integrated system of a person's knowledge, skills, abilities, values, and competencies related to understanding, perceiving, evaluating, creating, and effectively using fine art in sociocultural life. It is an important cultural phenomenon that develops an individual's aesthetic worldview, artistic taste, and creative potential.

The development of visual culture also plays an important role in fostering national self-awareness and strengthening cultural identity. By studying examples of national fine art, an individual becomes closely acquainted with the historical development, customs, traditions, aesthetic views, and spiritual values of the people.

The analysis of masterpieces of world art, in turn, creates opportunities to develop respect for the cultural heritage of different peoples, readiness for intercultural dialogue, and an understanding of universal human values. In this way, visual culture emerges as an important factor that helps individuals understand the interrelationship between national and global cultural spaces.

ISBN: 978-625-90699-4-4

Developing visual culture in the process of preparing future fine arts teachers has particular pedagogical significance. One of the main factors determining a teacher's professional competence is a high level of artistic and aesthetic culture, a deep understanding of art, and the ability to develop learners' aesthetic taste and creative thinking. In higher education institutions, the development of visual culture requires the effective use of interactive methods that support the integration of theoretical knowledge with practical activity, innovative pedagogical technologies, digital art tools, project- and portfolio-based learning methods, museum pedagogy, and creative activity, as presented below.

Table 1

Area	Applied teaching methods
Integration of theoretical knowledge with practical activity	Practical classes, laboratory work (creative workshop), demonstration, exercises, master class (mentor-apprentice method)
Innovative pedagogical technologies	Problem-based learning, Project-Based Learning, Flipped Classroom, Blended Learning, STEAM approach
Use of digital art tools	Digital project method, practical computer-graphics assignments, electronic portfolio, multimedia presentation, virtual laboratory
Project- and portfolio-based learning	Project method, portfolio method, Case Study, presentation and defense method
Museum pedagogy	Excursion method, observation method, analysis of exhibits, virtual museum tour, learning based on museum assignments
Development of creative activity	Brainstorming, cinquain, cluster method, Concept Map, creative assignments, discussion, group work

Table 1. Interactive methods for developing visual culture in higher education institutions

Thus, visual culture is an integrated pedagogical system that develops an individual's aesthetic consciousness, artistic thinking, creative potential, and cultural competence. It constitutes an important theoretical and practical basis for spiritual maturity, commitment to national and universal values, understanding art, and effectively engaging in artistic and creative activity. In higher pedagogical education, the consistent development of visual culture is recognized as one of the priority conditions for enhancing the professional competence of future fine arts teachers, strengthening their readiness for innovative activity, and improving the quality of education.

From a pedagogical perspective, visual culture is an important component of the professional preparation of future fine arts teachers. It develops artistic and aesthetic knowledge, practical visual-art skills, methodological competence, creative thinking, and aesthetic values in an integrated manner. Visual culture is recognized as one of the important pedagogical factors in forming the future teacher's professional competence, effectively organizing the educational process, and ensuring learners' artistic and aesthetic development.

A future teacher who has mastered visual culture is able to analyze works of art from scientific and aesthetic perspectives, effectively use means of visual expression, design the educational process by taking into account learners' age and individual characteristics, and demonstrate competence in integrating modern pedagogical and information-and-communication technologies into the learning process.

Therefore, from a pedagogical standpoint, visual culture is an integrated system of competencies that ensures the professional preparation of future fine arts teachers. By

ISBN: 978-625-90699-4-4

harmoniously developing artistic and aesthetic knowledge, practical skills, methodological mastery, creative thinking, pedagogical reflection, and innovative activity, it becomes an important factor in improving the quality of education and strengthening the professional potential of teachers.

REFERENCES

1. Abdullaev S., Mamatov D. Pedagogical foundations in the teaching of folk arts and crafts of Uzbekistan in the training of teachers of fine arts // E3S Web of Conferences. 2023. Vol. 420.
2. Djalolovich Y. N. Improving the professional training of fine art teachers // European Science. 2021. No. 2.
3. Rasulova M. Fundamentals of Fine Arts Pedagogy. Tashkent: Fan, 2020.
4. Sobirov R. Methodological Approaches in Art Education. Tashkent, 2019.
5. Xasanov A. Theory and Practice of Fine Arts. Tashkent, 2018.
6. Karimov B. Methodology of Aesthetic Education. Samarkand, 2021.

ISBN: 978-625-90699-4-4

PEDAGOGICAL CONDITIONS FOR DEVELOPING ARTISTIC-PEDAGOGICAL COMPETENCE IN FUTURE FINE ARTS TEACHERS BASED ON VISUAL CULTURE

[1]Axmedbekova Maxpuzaxon Kaxarovna
Fergana State University, Lecturer, Department of Fine Arts

[2]Dadadjanova Madinabonu Yoqubbek qizi
Fergana State University, Lecturer, Department of Fine Arts

Abstract. This article addresses the educational process, competency-based and person-centered approaches, visual culture, theoretical knowledge, practical artistic activity, integration, examples of national and world art, innovative pedagogy, digital technologies, students, creative inquiry, artistic analysis, pedagogical reflection, development of professional motivation, continuous self-development, development of artistic-pedagogical competence, pedagogical factors ensuring professional formation, harmonizing theoretical knowledge with practical activity, developing aesthetic thinking, refining artistic taste, enhancing pedagogical mastery, shaping professional reflection, and other related aspects.
Keywords: visual culture, artistic-pedagogical competence, pedagogical conditions.

The article examines the educational process, competency-based and person-centered approaches, visual culture, theoretical knowledge, practical artistic activity, integration, examples of national and world art, innovative pedagogy, digital technologies, students, creative inquiry, artistic analysis, pedagogical reflection, the development of professional motivation, continuous self-development, the formation of artistic-pedagogical competence, pedagogical factors of professional development, the harmonization of theoretical knowledge and practical activity, the development of aesthetic thinking, the refinement of artistic taste, the enhancement of pedagogical mastery, the formation of professional reflection, and other related issues.

This article addresses the educational process, competency-based and person-centered approaches, visual culture, theoretical knowledge, practical artistic activity, integration, examples of national and world art, innovative pedagogy, digital technologies, students, creative inquiry, artistic analysis, pedagogical reflection, development of professional motivation, continuous self-development, development of artistic-pedagogical competence, pedagogical factors ensuring professional formation, harmonizing theoretical knowledge with practical activity, developing aesthetic thinking, refining artistic taste, enhancing pedagogical mastery, shaping professional reflection, and more.

Keywords: visual culture, artistic-pedagogical competence, pedagogical conditions.

In the modern education system, the quality of teacher training is one of the priority areas of educational reform. In particular, in preparing future fine arts teachers for professional practice, the development of their artistic-pedagogical competence has emerged as an important scientific and practical task. The professional success of a fine arts teacher depends on theoretical knowledge and practical skills in fine arts, a deep understanding of visual culture, the ability to conduct scientific and aesthetic analysis of works of art, the integration of national and universal artistic values into the educational process, and the competence to develop students' aesthetic taste and creative thinking. Therefore, identifying

ISBN: 978-625-90699-4-4

and scientifically substantiating the pedagogical conditions that contribute to the formation of artistic-pedagogical competence is an urgent scientific problem.

Developing artistic-pedagogical competence in future fine arts teachers requires the integration of students' aesthetic perception, artistic thinking, a creative approach grounded in historical and national values, and methodological mastery. To organize this process effectively, several important pedagogical conditions are required:

Creating an aesthetic environment and developing artistic perception: increasing students' interest in masterpieces of national and world fine art, organizing visits to museums and galleries, and developing skills in analyzing works of art.

Implementing a creative approach and innovative technologies: making effective use of digital graphic technologies, art-therapy methods, and project-based (design) thinking in the educational process.

Pedagogical and psychological preparation: planning art lessons, mastering the fundamentals of fine arts teaching methodology, and linking an individual creative approach with a methodological system.

The need for the consistent implementation of a competency-based approach in teaching fine arts disciplines at pedagogical higher education institutions, the effective use of digital educational technologies, the application of innovative methods, and the integration of practical classes with creative activity necessitates the scientific improvement of the pedagogical conditions for developing artistic-pedagogical competence.

A high level of artistic-pedagogical competence in future fine arts teachers requires the educational process to be organized on a scientific basis. Such competence does not arise spontaneously; rather, it develops through a purposefully organized pedagogical environment, modern methodological approaches, educational technologies that support creative activity, and continuous reflective practice. Identifying pedagogical conditions and implementing them in educational practice is therefore an important factor in developing future teachers' professional competence.

This necessity is determined by several factors: first, the need to systematically integrate the content of visual culture into the professional training process; second, the need to improve methodological mechanisms that ensure the harmony of artistic and pedagogical activity; third, the need to create a pedagogical environment aimed at the comprehensive development of future teachers' creative, aesthetic, and methodological competencies; and fourth, the need to organize the quality of education in accordance with international competency requirements.

The pedagogical conditions for developing artistic-pedagogical competence based on visual culture are understood as an integrated system of didactic, methodological, psychological, organizational, and information-educational factors that contribute to the effective formation and development of a future fine arts teacher's professional competence. This system envisages the organic coordination of educational content, teaching methods, instructional tools, practical training, creative projects, independent study, reflective activity, and assessment mechanisms.

The content of pedagogical conditions encompasses the following areas: organizing the educational process on the basis of competency-based and person-centered approaches; integrating theoretical knowledge of visual culture with practical artistic activity; using examples of national and world art for pedagogical purposes; introducing innovative pedagogical and digital technologies into the educational process; engaging students in creative inquiry, artistic analysis, and pedagogical reflection; developing professional motivation; and creating an educational environment oriented toward continuous self-development.

ISBN: 978-625-90699-4-4

The essence of the pedagogical conditions for developing artistic-pedagogical competence based on visual culture lies in organizing, as a unified system, the pedagogical factors that ensure the professional formation of future fine arts teachers and in ensuring their coherent interaction. These conditions serve to integrate students' theoretical knowledge with practical activity, develop aesthetic thinking, refine artistic taste, enhance pedagogical mastery, and shape professional reflection.

The core of this approach is to interpret visual culture not merely as a set of aesthetic values, but as a pedagogical resource that develops the future teacher's professional competence. As a result, the student develops into a qualified fine arts teacher who is able to conduct scientific and aesthetic analysis of works of art, organize artistic activity effectively, apply modern pedagogical technologies, develop students' creative abilities, and integrate national and universal cultural values into the educational process. Therefore, pedagogical conditions constitute the most important component of the mechanism for developing artistic-pedagogical competence and the scientific-pedagogical foundation for ensuring the effectiveness of the educational process.

In conclusion, the pedagogical conditions for developing artistic-pedagogical competence in future fine arts teachers based on visual culture constitute a holistic pedagogical system that ensures the effectiveness of professional training. Based on the integration of didactic, methodological, psychological, organizational, and information-educational factors, this system contributes to the consistent development of the future teacher's theoretical knowledge, practical artistic activity, pedagogical mastery, aesthetic thinking, and creative potential.

Such an approach presents visual culture as an important pedagogical resource for forming professional competence and ensures the effective integration of national and world artistic heritage, innovative pedagogical technologies, and reflective activity in the educational process. As a result, the future fine arts teacher develops into a qualified specialist who meets contemporary educational requirements, possesses a high level of artistic-pedagogical competence, thinks creatively and innovatively, and is able to organize students' aesthetic and creative development effectively.

REFERENCES

1. Ibraimov X., Shovdirov S. Theoretical Principles of the Formation of Study Competencies Regarding Art Literacy in Students // Science and Innovation. - 2023. - Vol. 2. - No. B10. - P. 192-198.

2. Shavdirov S. A. On Fine and Applied Arts // International Scientific Review of the Problems and Prospects of Modern Science and Education. - 2018. - P. 84-85.

3. Shovdirov S. Teaching Students Logical and Abstract Thinking in the Formation of Learning Competencies in Visual Literacy // Eurasian Journal of Academic Research. - 2023. - Vol. 3. - No. 12. - P. 193-196.

4. Baymetov B. B., Shovdirov S. A. Methods of Organizing Practical and Theoretical Classes for Students in the Process of Teaching Fine Arts // International Journal on Integrated Education. - 2023. - Vol. 4. - No. 3. - P. 60-66.

ISBN: 978-625-90699-4-4

ОЦЕНКА ИЗМЕНЕНИЙ СИНОВИАЛЬНОЙ ЖИДКОСТИ У ПАЦИЕНТОВ В ЗАВИСИМОСТИ ОТ СТАДИИ РАЗВИТИЯ ОСТЕОАРТРОЗЕ КОЛЕННОГО СУСТАВА

EVALUATION OF CHANGES IN SYNOVIAL FLUID IN PATIENTS DEPENDING ON THE STAGE OF DEVELOPMENT OF OSTEOARTHRITIS OF THE KNEE JOINT

Ismailov Akhroridin Zakhridinovich
Central Asian Medical University
https://orcid.org/ 0009-0004-9555-9567

Abstract: Aim: to evaluate quantitative and qualitative changes in synovial fluid in patients with knee osteoarthritis depending on disease stage.
A retrospective comparative study included 120 patients with knee osteoarthritis (stages II–IV) and 40 healthy controls. Physicochemical, cellular and cytokine parameters of synovial fluid were analyzed.
The results demonstrated a progressive decrease in viscosity and hyaluronic acid concentration along with a significant increase in cellularity and pro-inflammatory cytokines (IL-1β, TNF-α) as the disease progressed.
These findings confirm the active role of synovial fluid in osteoarthritis pathogenesis and its potential value as a diagnostic and prognostic tool.
Keywords: synovial membrane, knee joint, osteoarthritis, synovial fluid, inflammation, destructive process.

Аннотация: Цель исследования — оценить количественные и качественные изменения синовиальной жидкости у пациентов с остеоартрозом коленного сустава в зависимости от стадии заболевания.

Проведено ретроспективное сравнительное исследование с участием 120 пациентов с остеоартрозом коленного сустава II–IV стадий и 40 условно здоровых лиц. Изучались физико-химические, клеточные и цитокиновые параметры синовиальной жидкости.

Результаты показали прогрессирующее снижение вязкости и концентрации гиалуроновой кислоты, а также значительное увеличение клеточности и уровня провоспалительных цитокинов (IL-1β, TNF-α) по мере утяжеления заболевания.

Полученные данные свидетельствуют о важной роли синовиальной жидкости в патогенезе остеоартроза и подтверждают целесообразность её использования в качестве дополнительного диагностического и прогностического маркера.
Ключевые слова: синовиальная оболочка, коленный сустав, остеоартроз, синовиальная жидкость, воспаление, деструктивный процесс.

Введение. Остеоартроз коленного сустава является прогрессирующим дегенеративно-воспалительным заболеванием, сопровождающимся разрушением суставного хряща, ремоделированием субхондральной кости и нарушением функций синовиальной оболочки, что приводит к выраженному снижению качества жизни пациентов. В последние годы остеоартроз рассматривается как заболевание всего сустава в целом, а не только хрящевой ткани.

Синовиальная оболочка играет ключевую роль в поддержании гомеостаза сустава за счёт продукции синовиальной жидкости, обеспечивающей смазку суставных поверхностей, амортизацию и питание хряща. При остеоартрозе коленного сустава происходят существенные морфофункциональные изменения синовиальной оболочки,

ISBN: 978-625-90699-4-4

сопровождающиеся изменением реологических и биохимических свойств синовиальной жидкости, что усугубляет деструктивные процессы.

Изменения вязкости, концентрации гиалуроновой кислоты, клеточного состава и уровня провоспалительных цитокинов в синовиальной жидкости способствуют прогрессированию воспаления и катаболизма суставных структур. В этой связи анализ синовиальной жидкости приобретает важное значение для оценки стадии заболевания и активности патологического процесса.

Цель исследования - статистически оценить изменения параметров синовиальной жидкости при различных стадиях остеоартроза коленного сустава.

Материалы и методы (Materials and Methods)

Дизайн исследования

Ретроспективное сравнительное исследование.

Характеристика выборки

- **Основная группа:** 120 пациентов с остеоартрозом коленного сустава
  - II стадия — 42 пациента
  - III стадия — 46 пациентов
  - IV стадия — 32 пациента
- **Контрольная группа:** 40 условно здоровых лиц без признаков суставной патологии

Средний возраст пациентов основной группы — **61,4 ± 7,8 года**, контрольной — **58,9 ± 6,5 года** ($p > 0,05$).

Исследуемые показатели

- объём синовиальной жидкости (мл);
- вязкость (относительные единицы);
- концентрация гиалуроновой кислоты (мг/мл);
- общее количество клеток (клеток/мкл);
- уровень IL-1β и TNF-α (пг/мл).

Статистический анализ

- проверка нормальности распределения — критерий Шапиро–Уилка;
- сравнение групп — ANOVA и t-критерий Стьюдента;
- корреляционный анализ — коэффициент Пирсона;
- уровень статистической значимости — **$p < 0,05$**.

Результаты исследования

Таблица 1. Физико-химические характеристики синовиальной жидкости

Показатель	Контроль	II стадия	III стадия	IV стадия
Вязкость (отн. ед.)	**3,1 ± 0,4**	**2,4 ± 0,3**	**1,8 ± 0,2**	**1,2 ± 0,2**
Гиалуроновая кислота (мг/мл)	**3,6 ± 0,5**	**2,7 ± 0,4**	**1,9 ± 0,3**	**1,1 ± 0,2**

Таблица 2. Клеточный и цитокиновый состав синовиальной жидкости

ISBN: 978-625-90699-4-4

Показатель	Контроль	II стадия	III стадия	IV стадия
Клетки (клеток/мкл)	120 ± 35	420 ± 80	780 ± 110	1240 ± 160
IL-1β (пг/мл)	18 ± 6	46 ± 12	82 ± 15	134 ± 20
TNF-α (пг/мл)	22 ± 7	58 ± 14	96 ± 18	151 ± 24

Результаты

Физико-химические показатели. Отмечено прогрессирующее снижение вязкости и концентрации гиалуроновой кислоты по мере утяжеления остеоартроза ($p < 0,05$). Выявлена выраженная отрицательная корреляция между стадией заболевания и вязкостью синовиальной жидкости ($r = -0,71$).

Клеточный и цитокиновый состав. У пациентов с III–IV стадиями заболевания наблюдалось достоверное увеличение общего количества клеток, а также уровней IL-1β и TNF-α по сравнению с контрольной группой ($p < 0,05$), что свидетельствует о хронизации воспалительного процесса.

Полученные результаты подтверждают, что остеоартроз коленного сустава сопровождается не только механической деградацией суставного хряща, но и выраженными биохимическими и иммуновоспалительными изменениями синовиальной жидкости.

Снижение концентрации гиалуроновой кислоты приводит к ухудшению амортизационных и смазочных свойств сустава, тогда как рост провоспалительных цитокинов усиливает катаболические процессы и ускоряет прогрессирование заболевания. Выявленная корреляция подчёркивает активную роль синовиальной жидкости в патогенезе остеоартроза.

ISBN: 978-625-90699-4-4

Диаграмма 1. Изменение вязкости синовиальной жидкости

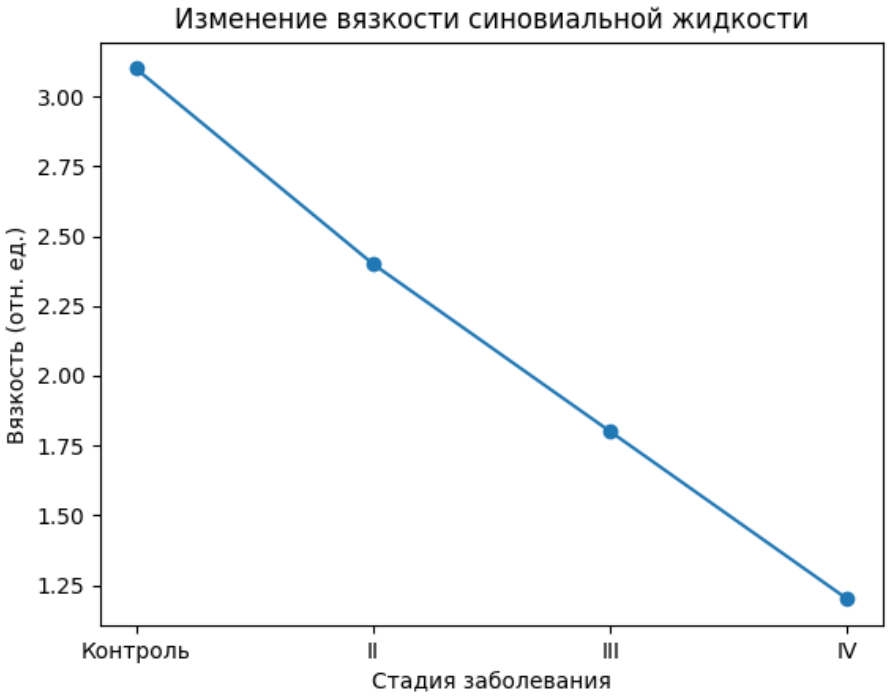
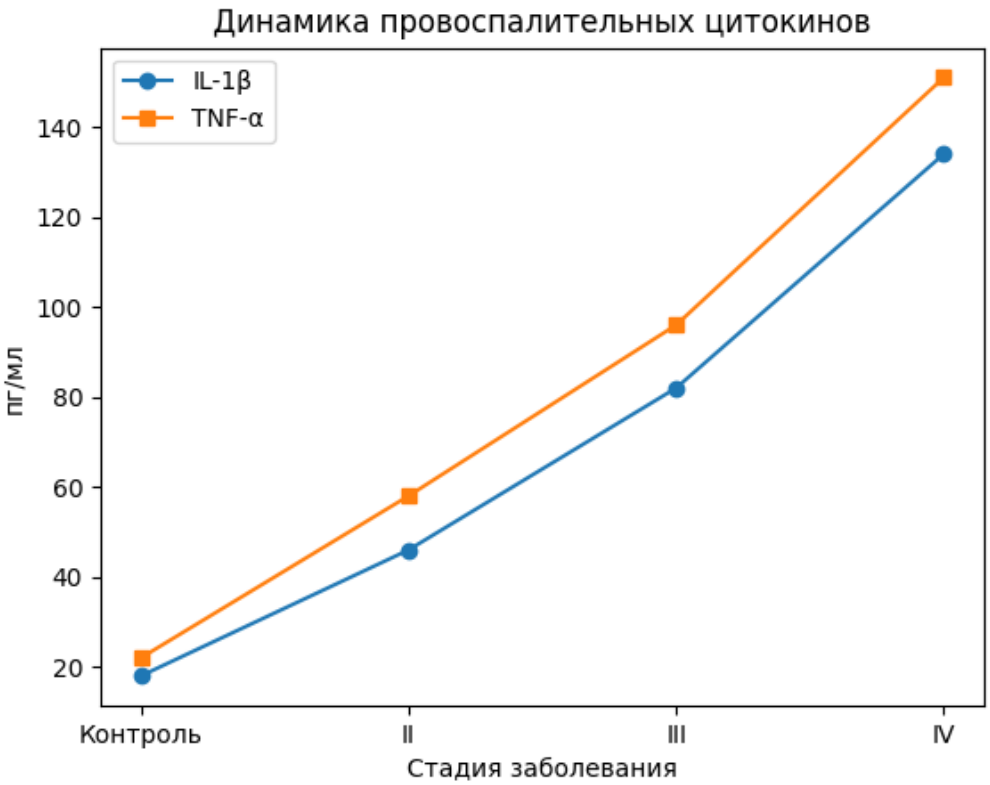


Диаграмма 2. Динамика провоспалительных цитокинов



Заключение. Проведённое исследование показало, что остеоартроз коленного сустава сопровождается выраженными количественными и качественными изменениями синовиальной жидкости, отражающими как дегенеративные, так и воспалительные

ISBN: 978-625-90699-4-4

механизмы развития заболевания. Установлено, что по мере прогрессирования остеоартроза происходят значимые нарушения физико-химических, клеточных и биохимических свойств синовиальной жидкости.

Одним из ключевых результатов исследования является выявленное прогрессирующее снижение вязкости синовиальной жидкости и концентрации гиалуроновой кислоты, что приводит к ухудшению амортизационных и смазочных свойств сустава. Данные изменения способствуют увеличению механической нагрузки на суставные поверхности, ускорению деградации суставного хряща и прогрессированию деструктивных процессов в коленном суставе.

Одновременно с этим отмечено достоверное увеличение общего количества клеток в синовиальной жидкости, а также рост уровней провоспалительных цитокинов IL-1β и TNF-α, особенно на III–IV стадиях заболевания. Повышение концентрации данных медиаторов воспаления свидетельствует о хронизации воспалительного процесса и активации катаболических реакций, направленных на разрушение компонентов суставного хряща и синовиальной оболочки.

Выявленная статистически значимая корреляция между стадией остеоартроза и изменениями показателей синовиальной жидкости подтверждает её активную роль в патогенезе заболевания, а не только функцию пассивного компонента суставной среды. Таким образом, синовиальная жидкость может рассматриваться как чувствительный биологический индикатор тяжести патологического процесса.

На основании полученных данных можно заключить, что комплексный анализ синовиальной жидкости имеет высокую диагностическую и прогностическую ценность. Использование показателей вязкости, концентрации гиалуроновой кислоты, клеточного состава и уровней провоспалительных цитокинов может служить дополнительным инструментом для оценки стадии остеоартроза коленного сустава, мониторинга эффективности проводимой терапии и прогнозирования течения заболевания.

В целом результаты исследования подчёркивают необходимость раннего выявления воспалительных и дегенеративных изменений в синовиальной жидкости и обосновывают целесообразность внедрения данных показателей в клиническую практику при ведении пациентов с остеоартрозом коленного сустава.

Список литературы

1. Иванов П.В., Смирнова А.И. Морфологические изменения синовиальной оболочки при остеоартрозе. *Российский журнал ревматологии*. 2020;18(2):45–52.
2. Петрова Е.С. Воспаление и фиброз в синовиальной оболочке: механизмы и лечение. *Вестник ортопедии*. 2018;24(4):22–29.
3. Hunter D.J., Bierma-Zeinstra S. Osteoarthritis. *Lancet*. 2019;393(10182):1745–1759.
4. Fischer P. et al. Biomarkers in osteoarthritis. *J Rheumatol*. 2017;44(9):1296–1304.
5. Loeser R.F. et al. Osteoarthritis: a disease of the joint as an organ. *Arthritis Rheum*. 2012;64(6):1697–1707.

ISBN: 978-625-90699-4-4

TAVSIFNOMA

Mangasaryan Arsen Arsenovich Central Asian Medical University xalqaro tibbiyot universiteti “1-Ichki kasalliklar” kafedrasida asistent, kardiolog shifokor va shu bilan birga faol o‘qituvchilik faoliyatini olib bormoqda.

Umumiy tibbiy amaliyot tajribasi 7 yildan ortiq bo‘lib, shuningdek pedagogik va ilmiy-tadqiqot faoliyatida ham katta tajribaga ega. Ish faoliyati davomida Arsen Arsenovich ichki kasalliklar, ayniqsa kardiologiya sohasida chuqur bilimga ega yuqori malakali mutaxassis sifatida o‘zini ko‘rsatdi. Hozirgi kunda zamonaviy diagnostika, davolash va yurak-qon tomir kasalliklarini oldini olish usullarini mukammal egallagan, dalillarga asoslangan tibbiyot yutuqlarini klinik amaliyotga joriy etadi. Tahliliy tafakkuri, klinik intuitsiyasi, tibbiy hujjatlarni aniq va to‘g‘ri yuritishi hamda bemorlarga mas'uliyatli munosabati bilan ajralib turadi.

Klinik faoliyati bilan birga, A.A. Mangasaryan ichki kasalliklar fanidan dars beradi, amaliyot va seminar mashg'ulotlarini olib boradi. Uning darslari yuqori metodik darajaga ega bo‘lib, tushunarli va mantiqiy tarzda tashkil etilgan, zamonaviy tibbiy yutuqlarga va har bir talabaga alohida e'tibor qaratiladi. Talabalar uning muloyimligi, yaxshi munosabati va samarali o‘qitish muhitini yaratish qobiliyatini alohida ta'kidlaydilar. Arsen Arsenovich ilmiy-tadqiqot ishlarida faol ishtirok etadi.

Dissertatsiya tayyorlash doirasida keng qamrovli klinik tadqiqot o‘tkazgan bo‘lib, ilmiy mustaqillik, metodologiyani chuqur bilish va statistik ma'lumotlarni qayta ishlash ko‘nikmalarini namoyon etdi. U profil'li ilmiy jurnallarda maqolalar chop etgan va tibbiy konferensiyalar hamda simpoziumlarda ishtirok etadi.

A.A.Mangasaryanning yuqori darajada tashkilotchilik qobiliyati, vaqtini samarali boshqarishi, mehnatsevarligi va kasbiy hamda ilmiy o‘sishga intilish bilan ajralib turadi. Hamkasblari va rahbariyat uni mas'uliyatli, tinch, tashabbuskor va etik mutaxassis sifatida baholaydilar.

Central Asian Medical University
xalqaro tibbiyot universiteti rektori **N.Sh Mamasadikov.**

ISBN: 978-625-90699-4-4

TIME-DEPENDENT DYNAMICS OF MORPHOLOGICAL CHANGES IN THE LIVER AND BILE DUCTS IN EXPERIMENTAL CHOLESTEROL LITHOGENESIS

MD, DSc, Associate Professor J.T. MAMASAIDOV[1]
[1]*CAMU, Department of Morphology, Fergana, Uzbekistan*
[1]ORCID ID: https://orcid.org/0009-0006-2643-495X

Nigora Ravshanbek qizi MADRAKHIMOVA[2]
[2]*Fergana Medical Institute of Public Health, Department of Morphology, Fergana, Uzbekistan*
[2]ORCID ID: https://orcid.org/0000-0002-8027-5404

ABSTRACT

Because the clinical manifestations of gallstone disease appear at an advanced stage, the earliest phases of lithogenesis cannot be studied directly in patients, and conventional imaging modalities provide no information on the microstructure of hepatocytes and the bile duct wall; experimental modelling therefore remains the principal tool for such investigation. The aim of this study was to establish the time-dependent dynamics of morphological changes in the liver and bile ducts under experimental cholesterol lithogenesis. Twenty-five healthy male laboratory rabbits weighing 2.5–3.0 kg were allocated to five groups of five animals: an intact control group and four experimental groups fed a lithogenic cholesterol diet and examined on days 7, 14, 21 and 30. Tissue samples were fixed in 10% neutral buffered formalin for at least 48 hours, dehydrated in ascending alcohols, embedded in paraffin, sectioned at 4–5 μm, stained with haematoxylin and eosin and examined under a ZEISS Primo Star light microscope; changes were graded on a 0–3 semi-quantitative scale covering cholestasis, cholangitis, periductal fibrosis, ductular reaction and epithelial atypia. On day 7, reversible vacuolar and hydropic dystrophy of hepatocytes, sinusoidal blood stasis, activation of Kupffer cells and initial signs of biliary stasis were observed. By day 14, cholestasis intensified, lymphoplasmacytic infiltration of the portal tracts increased and biliary epithelial hyperplasia became evident. On day 21, chronic inflammation with periductal infiltration, biliary detritus and microlith-prone structures developed. By day 30, deep parenchymal dystrophy, foci of necrobiosis, periportal collagenisation, marked periductal fibrosis and luminal narrowing were established. The cumulative semi-quantitative score increased consistently from 2.0 ± 0.4 in controls to 8.3 ± 0.7, 14.3 ± 1.1, 19.6 ± 1.3 and 25.6 ± 1.5 on days 7, 14, 21 and 30 respectively. Thus, morphological alterations progress in a stepwise, time-dependent manner — dystrophic changes, followed by inflammation with epithelial desquamation, microlith formation and finally fibrosclerotic remodelling with cholestasis — and the reversible changes detected on day 7 may serve as early morphological markers of biliary injury.

Keywords: experimental model, rabbit, cholesterol lithogenesis, liver, bile ducts, dystrophy, cholestasis, periductal fibrosis.

UDC: 616.108.230.142.593

КЛИНИЧЕСКИЕ ОСОБЕННОСТИ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ И ОЖИРЕНИЯ У МОЛОДЫХ ПАЦИЕНТОВ

CLINICAL FEATURES OF ARTERIAL HYPERTENSION AND OBESITY IN YOUNG PATIENTS

Ubaydullayeva Salomat Rakhmidinovna
Central Asian Medical University, Assistant of the Department of Internal Medicine in Family Medicine, Fergana, Uzbekistan ,
ORCID ID: https://orcid.org/0009-0003-5374-904X,

Abstract

In recent years, the prevalence of arterial hypertension and obesity among young individuals has been steadily increasing, becoming a significant medical and social problem. The aim of this study was to investigate the clinical and pathophysiological characteristics of arterial hypertension in young patients with obesity. The study included 80 participants aged 18–35 years, of whom 50 patients formed the main group (with obesity and hypertension), while 30 individuals constituted the control group. Anthropometric, laboratory, and instrumental examinations were performed. The results demonstrated elevated blood pressure levels, insulin resistance, dyslipidemia, and endothelial dysfunction in the main group. In addition, ambulatory blood pressure monitoring revealed abnormal circadian patterns, and echocardiographic assessment identified left ventricular hypertrophy. The findings confirm that obesity is a significant factor in the development of arterial hypertension and is associated with an increased risk of early cardiovascular complications in young patients. Therefore, early diagnosis, prevention, and comprehensive management of these conditions are essential.

Keywords: arterial hypertension, obesity, young patients, insulin resistance, metabolic syndrome, cardiovascular risk, endothelial dysfunction, ABPM.

Аннотация

В последние годы распространённость артериальной гипертензии и ожирения среди молодых людей неуклонно растёт, что становится значимой медико-социальной проблемой. Целью данного исследования было изучение клинических и патофизиологических особенностей артериальной гипертензии у молодых пациентов с ожирением. В исследование были включены 80 участников в возрасте 18–35 лет, из которых 50 пациентов составили основную группу (с ожирением и гипертензией), а 30 человек контрольную группу. Проведены антропометрические, лабораторные и инструментальные исследования. Результаты показали повышение уровня артериального давления, наличие инсулинорезистентности, дислипидемии и эндотелиальной дисфункции в основной группе. Кроме того, суточное мониторирование артериального давления выявило патологические циркадные ритмы, а эхокардиография гипертрофию левого желудочка. Полученные данные подтверждают, что ожирение является значимым фактором развития артериальной гипертензии и связано с повышенным риском ранних сердечно-сосудистых осложнений у молодых пациентов. Следовательно, ранняя диагностика, профилактика и комплексное лечение данных состояний имеют важное значение.

Ключевые слова: артериальная гипертензия, ожирение, молодые пациенты,инсулинорезистентность, метаболический синдром, сердечно-сосудистый риск, эндотелиальная дисфункция, суточное мониторирование артериального давления

Introduction. In recent years, the prevalence of arterial hypertension and obesity among young individuals has been steadily increasing worldwide. The coexistence of these two pathological conditions contributes to the early development of cardiometabolic risk factors and significantly elevates the likelihood of future cardiovascular diseases, including myocardial infarction and stroke [1]. In young patients, the often subclinical or asymptomatic course of these conditions complicates early diagnosis and timely preventive interventions. The pathogenesis of obesity is closely linked to the endocrine activity of adipose tissue. Adipokines, leptin, and insulin resistance play a crucial role in activating the sympathetic nervous system and stimulating the renin-angiotensin-aldosterone system (RAAS), leading to persistent elevation of blood pressure. In addition, vascular remodeling, endothelial dysfunction, and oxidative stress are recognized as key pathophysiological mechanisms in the development of arterial hypertension.

In young populations, arterial hypertension frequently presents with mild or no symptoms, resulting in delayed diagnosis [2] . Obesity not only contributes to the onset of hypertension but also promotes more severe and treatment-resistant forms of the disease [3]. Epidemiological studies demonstrate a direct correlation between increased body mass index and elevated blood pressure levels. The relevance of this issue lies in the fact that cardiometabolic disorders formed at a young age tend to persist throughout life, imposing a substantial burden on healthcare systems [4] . Therefore, comprehensive investigation of the relationship between arterial hypertension and obesity in young patients, along with the development of effective early diagnostic and preventive strategies, is of paramount importance [5-9] .

Relevance. The growing prevalence of arterial hypertension and obesity among young individuals represents a significant public health concern worldwide. These conditions are increasingly being diagnosed at an earlier age, contributing to the early onset of cardiovascular and metabolic complications. The coexistence of obesity and hypertension accelerates the progression of endothelial dysfunction, vascular remodeling, and metabolic disturbances, thereby increasing long-term morbidity and mortality risks.

Aim. To investigate the clinical and pathophysiological features of arterial hypertension in young patients with obesity, as well as to assess their interrelationship and impact on cardiovascular risk factors.

Materials And Methods. This study was conducted to investigate the clinical and pathophysiological characteristics of arterial hypertension in young patients with obesity. The research was designed as an observational and analytical study and carried out among individuals aged 18–35 years. A total of 80 participants were enrolled in the study and divided into two groups: the main group (n=50) included patients diagnosed with both obesity and arterial hypertension, while the control group (n=30) consisted of individuals with normal body mass index and without arterial hypertension. Anthropometric parameters were assessed in all participants, including body weight, height, body mass index (BMI), and waist circumference. Obesity was defined according to WHO criteria (BMI ≥30 kg/m²). Blood pressure was measured using standard procedures, with at least two repeated measurements to ensure accuracy.

Laboratory investigations included fasting blood glucose, lipid profile (total cholesterol, LDL, HDL, triglycerides), and insulin levels. Insulin resistance was evaluated using the HOMA-IR index. Additionally, markers of endothelial dysfunction and systemic inflammation were

assessed. Instrumental examinations included electrocardiography (ECG) and echocardiography to evaluate cardiac structure and function. In selected patients, 24-hour ambulatory blood pressure monitoring (ABPM) was performed to analyze circadian blood pressure patterns. Statistical analysis was performed using standard software packages. Quantitative variables were expressed as mean ± standard deviation (M±SD), while qualitative variables were presented as percentages. Group comparisons were conducted using Student's t-test and chi-square (x^2) test. A p-value of <0.05 was considered statistically significant.

In recent years, the prevalence of arterial hypertension and obesity among young individuals has become a significant global public health concern. According to data from international health organizations, the incidence of obesity continues to rise steadily, including among individuals aged 18–35 years. Numerous epidemiological studies have demonstrated a direct correlation between increased body mass index (BMI) and elevated blood pressure levels in this population. A considerable proportion of young patients with obesity are also diagnosed with arterial hypertension, highlighting a strong interrelationship between these two conditions. Key contributing factors include sedentary lifestyle, unhealthy dietary patterns characterized by high caloric and fat intake, psychosocial stress, and genetic predisposition.

Importantly, arterial hypertension in young individuals is often underdiagnosed due to its asymptomatic or mildly symptomatic course. In many cases, elevated blood pressure is detected incidentally during routine medical examinations. Therefore, the actual prevalence may be higher than reported. The coexistence of obesity and hypertension at a young age leads to the early development of cardiometabolic risk factors, significantly increasing the likelihood of future cardiovascular diseases. Thus, studying the epidemiology of these conditions in young populations is crucial for developing effective prevention and early detection strategies.

Obesity is a complex metabolic disorder in which excess adipose tissue plays a central role not only as an energy storage site but also as an active endocrine organ. Adipose tissue secretes biologically active substances known as adipokines, including leptin, adiponectin, and resistin, which regulate metabolic processes, inflammation, and vascular function. In obesity, elevated leptin levels contribute to the activation of the sympathetic nervous system, resulting in increased heart rate and peripheral vascular resistance, ultimately leading to elevated blood pressure. Additionally, insulin resistance is a key feature of obesity, causing hyperinsulinemia, which enhances renal sodium reabsorption and contributes to hypertension.

Activation of the renin–angiotensin–aldosterone system (RAAS) plays a critical role in the pathogenesis of hypertension associated with obesity. Angiotensin II induces vasoconstriction, while aldosterone promotes sodium and fluid retention, both of which contribute to increased blood pressure. Endothelial dysfunction is another important mechanism, characterized by reduced nitric oxide (NO) bioavailability and increased oxidative stress. This leads to impaired vasodilation and promotes the development of hypertension. Overall, obesity contributes to arterial hypertension through multiple interconnected pathophysiological pathways, making it a major risk factor in young populations.

Arterial hypertension in young patients often presents with distinct clinical characteristics, the most notable being its asymptomatic or mildly symptomatic course. Many young individuals consider themselves healthy and remain unaware of elevated blood pressure levels until detected during routine examinations. When symptoms are present, they are usually nonspecific and may include headaches, dizziness, fatigue, and palpitations. However, these manifestations are often underestimated or attributed to other non-cardiovascular causes. A notable feature of hypertension in young individuals is its potential for rapid progression, particularly when associated with obesity. In such cases, early target organ damage may develop, including left ventricular hypertrophy, vascular remodeling, and metabolic disturbances. Secondary causes of

ISBN: 978-625-90699-4-4

hypertension are relatively more common in younger patients, including endocrine disorders and renal pathologies, necessitating careful differential diagnosis.

Ambulatory blood pressure monitoring (ABPM) often reveals abnormal circadian patterns in young patients, such as “non-dipper” or “night-peaker” profiles, which are associated with a poorer prognosis. The clinical course of arterial hypertension in young patients is characterized by subtle presentation and potential for early complications, underscoring the importance of timely diagnosis and management. Obesity plays a crucial role in increasing the severity and progression of arterial hypertension, particularly in young patients. Excess adipose tissue contributes to multiple metabolic and hemodynamic alterations that exacerbate blood pressure elevation. One of the key mechanisms is the development of insulin resistance, which leads to compensatory hyperinsulinemia and promotes sodium retention in the kidneys, thereby increasing intravascular volume. Additionally, obesity is associated with chronic low-grade inflammation, characterized by elevated levels of inflammatory cytokines such as TNF-α and interleukins, which negatively affect vascular function.

Another important factor is dyslipidemia, commonly observed in obese individuals, including elevated triglycerides and low levels of high-density lipoprotein (HDL). These lipid abnormalities contribute to atherosclerosis and increased arterial stiffness. Furthermore, obesity is strongly linked to activation of the renin–angiotensin–aldosterone system (RAAS), which enhances vasoconstriction and fluid retention, worsening hypertension. In young patients, the coexistence of obesity and hypertension significantly increases the risk of developing metabolic syndrome, type 2 diabetes mellitus, and early cardiovascular complications. These conditions often progress silently, leading to subclinical organ damage such as left ventricular hypertrophy and endothelial dysfunction. Importantly, obesity is also associated with resistant hypertension, where blood pressure remains elevated despite standard treatment. Therefore, obesity not only contributes to the onset of arterial hypertension but also intensifies its clinical course and promotes the development of multiple comorbidities, making early detection and management essential in young populations.

Early diagnosis of arterial hypertension in young individuals with obesity is essential for preventing long-term cardiovascular complications. A comprehensive diagnostic approach includes clinical evaluation, anthropometric assessment, laboratory investigations, and instrumental methods. Measurement of body mass index (BMI) and waist circumference provides important information about general and central obesity, both of which are closely associated with increased cardiovascular risk. Blood pressure measurement should be performed under

standardized conditions, with repeated readings to ensure accuracy. However, single measurements may not reflect true blood pressure levels; therefore, ambulatory blood pressure monitoring (ABPM) is considered the gold standard for detecting masked or nocturnal hypertension. ABPM also allows assessment of circadian blood pressure patterns, such as “nondipper” status, which is associated with worse prognosis.

Laboratory tests play a vital role in identifying metabolic abnormalities associated with obesity and hypertension. These include fasting glucose, insulin levels, and lipid profile. The HOMA-IR index is commonly used to assess insulin resistance. Additionally, biomarkers of inflammation and endothelial dysfunction may provide further insight into disease progression. Instrumental examinations such as electrocardiography and echocardiography are important for evaluating cardiac involvement, including left ventricular hypertrophy and structural changes. Early detection of these abnormalities allows timely intervention. Overall, a multidisciplinary and systematic approach to diagnosis is necessary to identify arterial hypertension at an early stage and reduce the risk of complications in young obese patients.

ISBN: 978-625-90699-4-4

Prevention and management of arterial hypertension in young patients with obesity require an integrated and individualized approach. Lifestyle modification remains the cornerstone of both prevention and treatment. Weight reduction through a balanced diet and regular physical activity has been shown to significantly lower blood pressure and improve metabolic parameters. Dietary interventions include reducing salt intake, limiting saturated fats, and increasing the consumption of fruits, vegetables, and whole grains. Physical activity, such as aerobic exercise and resistance training, improves cardiovascular fitness, enhances insulin sensitivity, and contributes to weight loss. Behavioral interventions, including stress management and sleep regulation, are also important components of a comprehensive treatment strategy.

In cases where lifestyle modifications are insufficient, pharmacological treatment may be necessary. Antihypertensive medications such as ACE inhibitors, angiotensin receptor blockers, calcium channel blockers, and diuretics are commonly used, with the choice depending on individual patient characteristics and comorbidities. Importantly, early intervention in young patients not only helps control blood pressure but also prevents the progression of cardiovascular and metabolic diseases later in life. Patient education and long-term follow-up are essential to ensure adherence to treatment and sustained lifestyle changes. Thus, effective prevention and management strategies play a critical role in reducing the burden of arterial hypertension and its complications in young individuals with obesity.

Results. A total of 80 participants were included in the study, of whom 50 patients comprised the main group with combined arterial hypertension and obesity, while 30 individuals formed the control group with normal body mass index and without hypertension. The analysis of anthropometric data revealed that the mean body mass index (BMI) in the main group (n=50) was significantly higher (32.8 ± 2.4 kg/m²) compared to the control group (n=30), where it averaged 22.6 ± 1.8 kg/m² ($p<0.001$). Waist circumference was also markedly increased in the main group, indicating a predominance of abdominal obesity.

Hemodynamic assessment showed that systolic and diastolic blood pressure levels were significantly elevated in the main group (SBP: 148.5 ± 10.2 mmHg; DBP: 92.3 ± 6.8 mmHg) compared to the control group (SBP: 118.4 ± 7.5 mmHg; DBP: 74.6 ± 5.2 mmHg, $p<0.001$). According to ambulatory blood pressure monitoring (ABPM), 31 out of 50 patients (62%) in the main group demonstrated a “non-dipper” circadian pattern, while this pattern was observed in only 6 out of 30 individuals (20%) in the control group. Laboratory findings indicated significant

metabolic abnormalities in the main group. Fasting blood glucose levels were higher (5.9 ± 0.8 mmol/L) compared to the control group (4.8 ± 0.6 mmol/L, $p<0.01$). Elevated insulin levels and increased HOMA-IR index confirmed the presence of insulin resistance in the majority of patients in the main group. Additionally, lipid profile analysis showed increased total cholesterol and triglycerides, along with decreased HDL levels, indicating an atherogenic lipid pattern.

Markers of endothelial dysfunction and systemic inflammation were significantly elevated in the main group, suggesting early vascular impairment. Echocardiographic examination revealed left ventricular hypertrophy in 19 out of 50 patients (38%) in the main group, whereas only 2 out of 30 individuals (6.7%) in the control group showed minimal structural changes. The results obtained from 80 participants demonstrate that young patients with obesity and arterial hypertension exhibit significant metabolic, hemodynamic, and structural alterations compared to healthy controls, highlighting the increased risk of early cardiovascular complications in this population.

ISBN: 978-625-90699-4-4

Discussion. The results of this study clearly demonstrate the interrelationship between arterial hypertension and obesity in young patients, as well as their combined impact on the cardiometabolic system. The findings indicate that patients with obesity exhibit significantly higher blood pressure levels, confirming that obesity is a major modifiable risk factor in the development of hypertension. Anthropometric parameters, particularly increased body mass index and waist circumference, reflect the predominance of central (abdominal) obesity, which is closely associated with metabolic disturbances. The presence of insulin resistance, dyslipidemia, and elevated fasting glucose levels observed in this study suggests the early development of metabolic syndrome components in these patients.

The results of ambulatory blood pressure monitoring (ABPM) revealed a high prevalence of the "non-dipper" circadian pattern among patients in the main group. This pattern is considered an unfavorable prognostic marker, as it is associated with an increased risk of cardiovascular complications. Furthermore, echocardiographic findings of left ventricular hypertrophy indicate the presence of early structural cardiac changes. Elevated markers of endothelial dysfunction and systemic inflammation further support the presence of early vascular damage in young patients with obesity and hypertension. These pathological changes create a foundation for the future development of atherosclerosis and other cardiovascular diseases. The findings of this study are consistent with previously published research, confirming the significant role of obesity in the pathogenesis and progression of arterial hypertension. In young individuals, the coexistence of these conditions may lead to a more aggressive disease course and earlier onset of complications.

Therefore, early detection, prevention, and comprehensive management of obesity and arterial hypertension in young populations are essential. Implementing timely interventions may significantly reduce the long-term burden of cardiovascular diseases and improve overall health outcomes. The present study demonstrated that the coexistence of arterial hypertension and obesity in young patients is associated with significant metabolic, hemodynamic, and structural alterations. Elevated body mass index and central obesity were strongly correlated with increased blood pressure levels and the development of insulin resistance, dyslipidemia, and early signs of endothelial dysfunction.

Conclusion. In conclusion, the present study demonstrated that the coexistence of arterial hypertension and obesity in young patients is associated with significant metabolic, hemodynamic, and structural alterations. Elevated body mass index and central obesity were strongly correlated

with increased blood pressure levels and the development of insulin resistance, dyslipidemia, and early signs of endothelial dysfunction. The findings indicate that young individuals with combined obesity and hypertension are at a higher risk of developing early cardiovascular complications, including left ventricular hypertrophy and abnormal circadian blood pressure patterns. These changes may progress silently, emphasizing the importance of early diagnosis and regular monitoring. Obesity was identified as a key modifiable risk factor contributing to both the onset and progression of arterial hypertension. Therefore, targeted preventive strategies, including lifestyle modification, weight management, and early therapeutic interventions, are essential in reducing long-term cardiovascular risk. Comprehensive and individualized approach to the management of young patients with obesity and hypertension is crucial for improving clinical outcomes and preventing future cardiovascular diseases.

ISBN: 978-625-90699-4-4

Used literature:

1. Blüher M.. Obesity: global epidemiology and pathogenesis. Nature Reviews Endocrinology.2023;19(2):101–115.

2. Hall J.E., do Carmo J.M., da Silva A.A. Obesity, hypertension, and chronic kidney disease.International Journal of Nephrology and Renovascular Disease. 2021;14:45–56.

3. Hruby A., Hu F.B. The epidemiology of obesity: a big picture. Pharmacoeconomics.2022;40(1):1–14.

4. Khan M.A.B., Hashim M.J., King J.K., et al. Epidemiology of obesity in young adults. International Journal of Environmental Research and Public Health. 2020;17(15):5372.

5. Kotsis V., Jordan J., Micic D., et al. Obesity and cardiovascular risk: a call for action. Journal of Hypertension. 2022;40(3):465–479.

6. NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019. The Lancet.

2021;398(10304):957–980.

7. Schiffrin E.L.. Hypertension and obesity: pathophysiology and clinical implications. Hypertension. 2021;78(6):1591–1601. 8. Whelton P.K.. Care of hypertension in 2021 and beyond. Journal of the American College of Cardiology. 2021;77(15):1903–1913.

9. Williams B., Mancia G., Spiering W., et al. 2020 International Society of Hypertension global hypertension practice guidelines. Hypertension. 2020;75(6):1334–1357.

10. Zhou B., Carrillo-Larco R.M., Danaei G., et al. Worldwide trends in blood pressure from 1975 to 2015. The Lancet Global Health. 2021;9(6):e782–e798.

ISBN: 978-625-90699-4-4

YURAK-QON TOMIR TIZIMINING EKSTREMAL OMILLAR TA'SIRIGA MOSLASHUVCHANLIGI FIZIOLOGIK MEXANIZMLARI

PHYSIOLOGICAL MECHANISMS OF CARDIOVASCULAR SYSTEM ADAPTATION TO EXTREME FACTORS

Ubaydullayeva Salomat Rakhmidinovna
Central Asian Medical University, Assistant of the Department of Internal Medicine in Family Medicine, Fergana, Uzbekistan ,
ORCID ID: https://orcid.org/0009-0003-5374-904X,

Annotation This scientific article provides a systematic analysis of the adaptation processes of the cardiovascular system (CVS), which is considered the main integrative and transport system of the human body, to various extreme factors (extreme physical exertion, acute and chronic hypoxia, high and low temperature environments, and prolonged psychoemotional stress). The study thoroughly examines the physiological mechanisms of rapid and long-term adaptation at the neurohumoral, hemodynamic, metabolic, and cellular-molecular levels. The role of the sympathetic-adrenal and hypothalamic-pituitary-adrenocortical systems in maintaining homeostasis under extreme conditions, as well as the principles of mobilization of the functional reserves of the myocardium, are highlighted.
Keywords: cardiovascular system, physiological adaptation, extreme factors, hypoxia, sympathetic-adrenal system, myocardium, hemodynamics, homeostasis, cardiomyocyte, hypertrophy, stress-protective systems.

Mavzuning dolzarbligi. Zamonaviy fundamental tibbiyot va ekologik fiziologiyaning eng markaziy muammolaridan biri — inson organizmining noqulay, keskin va uzoq muddatli ekstremal tashqi muhit hamda ichki stress omillariga moslashish imkoniyatlari chegarasini va ularning fiziologik mexanizmlarini aniqlashdan iborat. Insoniyat faoliyat doirasining kengayishi (kosmik parvozlar, chuqur suv osti tadqiqotlari, baland tog'li hududlarni o'zlashtirish, professional sport yuklamalarining ortishi va surunkali ijtimoiypsixologik stress) organizmning barcha tizimlaridan o'ta yuqori funksional faollikni talab qiladi.

Ushbu jarayonlarda **yurak-qon tomir tizimi (YQTT)** organizmda har qanday ekzogen yoki endogen qo'zg'atuvchiga birinchi bo'lib javob beradigan, stress-reaksiyalarni o'zida aks ettiruvchi va adaptatsiya jarayonlarining universal "unversal indikatori" (ko'rsatkichi) hisoblanadi. Ekstremal omillar ta'sir qilganda, periferik to'qimalar va hayotiy muhim a'zolarning (bosh miya, yurak) kislorod hamda energetik substratlarga (glyukoza, erkin yog' kislotalari) bo'lgan ehtiyoji keskin, ba'zan bir necha barobar ortadi. Mazkur ehtiyojni ta'minlash maqsadida YQTT o'zining genetik dasturlashtirilgan kompensator-moslashuv mexanizmlarini ishga tushiradi. Ushbu mexanizmlarni mukammal o'rganish kardiologik patologiyalarning oldini olish va ekstremal sharoitlarda inson mehnat faoliyatini optimallashtirish imkonini beradi.

Tadqiqotning maqsadi: Yurak-qon tomir tizimining turli tabiatsiz va ekstremal omillar ta'siriga shoshilinch hamda uzoq muddatli moslashuvining zamonaviy fiziologik, biokimyoviy va tarkibiy mexanizmlarini tizimli tahlil qilish va umumlashtirish.

Metodlar va materiallar Ushbu tadqiqot tizimli yondashuv, qiyosiy-fiziologik tahlil hamda fundamental va klinik kardiologiya, ekologik fiziologiya va ekstremal tibbiyot sohasidagi so'nggi ilmiy adabiyotlarning metamahlili (meta-analysis) asosida olib borildi. Tajribaviy va klinik tadqiqotlar natijalari o'rganilib, inson organizmiga gipoksiya (baland tog' iqlimi), jismoniy yuklama (professional sportchilar va harbiy xizmatchilar) hamda termik omillar (gipertermiya va gipotermiya) ta'sir etgandagi gemodinamik ko'rsatkichlar — yurak

qisqarishlar tezligi (YQT), arterial bosim (AB), yurakning urish hajmi (UH), daqiqalik qon hajmi (DQH) hamda umumiy periferik tomirlar qarshiligi (UPTQ) kabi ko‘rsatkichlarning dinamik o‘zgarishlari tahlil qilindi va tizimlashtirildi.

Natijalar va Ularning Tahlili Akademik F.Z. Meerson va boshqa yetakchi fiziologlarning klassik konsepsiyalariga ko‘ra, YQTTning ekstremal omillarga moslashuvi ikki asosiy bosqichda kechadi: **shoshilinch (fenotipik) adaptatsiya** va **surunkali (uzoq muddatli) adaptatsiya**.

1. Shoshilinch adaptatsiyaning neyrogumoral va gemodinamik mexanizmlari

Ekstremal omil paydo bo‘lishi bilan organizmda "hujum yoki qochish" (fight or flight) reaksiyasi ishga tushadi. Markaziy nerv tizimi (MNT) hamda gipotalamus darajasida **simpatik-adrenal tizim (SAT)** va **gipotalamo-gipofizar-adrenokortikal tizim (GGAT)** keskin faollashadi.

- **Katexolaminlar effekti:** Qonga va sinapslarga ko‘p miqdorda adrenalin va noradrenalin ajralib chiqadi. Ular miokardning beta1-adrenoretseptorlarini qo‘zg‘atib, ijobiy xronotrop (YQT oshishi), inotrop (qisqarish kuchi ortishi), dromotrop (o‘tkazuvchanlik yaxshilanishi) va batmotrop (qo‘zg‘aluvchanlik ortishi) effektlarni keltirib chiqaradi.
- **Qon aylanishining sentralizatsiyasi (markazlashishi):** Periferik qon tomirlardagi alpha1-adrenoretseptorlarning qo‘zg‘atilishi natijasida teri, buyrak va qorin bo‘shlig‘i a’zolarining tomirlari torayadi (vazokonstriksiya). Aksincha, hayotiy muhim a’zolar (yurak va miya) tomirlari kengayadi. Bu qon oqimining qayta taqsimlanishini va eng zarur a’zolarning gipoksiyadan himoyalanishini ta'minlaydi.
- **Gemodinamik siljishlar:** Shoshilinch bosqichda DQH 4-5 barobargacha ortishi mumkin. Ammo bu bosqich energetik jihatdan samarasiz bo‘lib, yurak resurslarining tezda tugashiga (shok yoki o‘tkir yurak yetishmovchiligiga) olib kelishi xavfi yuqori bo‘ladi.

2. Uzoq muddatli adaptatsiyaning tarkibiy va molekulyar asoslari

Agar ekstremal omil uzoq vaqt yoki davriy ravishda takrorlanib tursa, shoshilinch bosqich uzoq muddatli adaptatsiyaga o‘tadi. Buning asosi — **funksiya intensivligining ortishi hisobiga hujayralarda genetik apparatning faollashishi** hisoblanadi.

Ekstremal Omil (Surunkali) ➔ SAT va Gomonal Stimulyatsiya ➔ Kardiomiotsitlar Genomi Faollashishi ➔ Oqsil va RNK Sintezi Kuchayishi ➔ Miokard Gipertrofiyasi va Kapillyarizatsiya

- **Miokardning adaptiv gipertrofiyasi:** Kardiomiotsitlar ichida miofibrillalar va mitoxondriyalar soni mutanosib ravishda ortadi. Yurak devori qalinlashadi, bu esa yurakning har bir qisqarishida kamroq energiya sarflab, ko‘proq qon haydashini ta’minlaydi.
- **Kapillyarizatsiya va Angiogenez:** Surunkali gipoksiya yoki jismoniy mashqlar ta’sirida to‘qimalarda *VEGF (tomirlar endoteliysi o‘sish omili)* sintezi ortadi va miokardda yangi mikrotomirlar (kapillyarlar) tarmog‘i shakllanadi, bu yurak mushagining oziqlanishini yaxshilaydi.
- **Sport bradikardiyasi:** Uzoq muddatli moslashgan organizmda (masalan, yuqori klassli sportchilarda) tinch holatda parasimpatik nerv tizimi (nervus vagus) tonusi ustunlik qiladi. Natijada tinch holatda YQT 40-50 zarba/daqigacha pasayadi, bu yurakning dam olish (diastola) vaqtini uzaytiradi va uning metabolik zaxirasini tejaydi.

ISBN: 978-625-90699-4-4

3. Turli ekstremal omillarga xos moslashuv xususiyatlari (Tizimli tahlil)

Ekstremal omilturi	Shoshilinch moslashuv mexanizmlari (Tezkor javob)	Uzoq muddatli moslashuv natijalari (Barqaror adaptatsiya)
Gipoksiya *(Balandtog‘ sharoiti, havoda O_2 kamayishi)*	Gidrotseptorlar vaxemoretseptorlar qo‘zg‘alishi; YQT va o‘pka shamollatilishi (ventilyatsiyasi) ortishi;DQH o‘sishi.	Buyrakda **eritropoetin** sintezi oshishi; gemoglobin va eritrotsitlar miqdori ko‘payishi; to‘qimalarda kislotali muhit va ATFalmashinuvi barqarorlashishi.
Yuqori Jismoniy Yuklama *(Og‘ir sport yoki harbiy harakatlar)*	Venoz qonning yurakka qaytishi ortishi; Urish Hajmi (UH) va arterial bosim (AB) keskin ko‘tarilishi.	**Eksentrik yoki konsentrik miokard gipertrofiyasi**; yurakning sistolik zaxirasi kengayishi; tinch holatdagi bradikardiya va gipotoniya.
Gipertermiya*(Yuqori tashqi muhitharorati)*	Periferik tomirlar (teri va teri osti) keskin kengayishi; qon depolaridan qonning chiqishi; terlash va YQT ortishi.	Qon plazmasi hajmining adaptiv ortishi; tomir urishi labilligining pasayishi; issiqlik shoki oqsillari (**HSP - Heat Shock Proteins**) sintezi.
Gipotermiya *(Pasttashqi muhit harorati)*	Periferik tomirlar spazmi (vazokonstriksiya); qonning ichki a’zolarga o‘tishi; mushaklar titrashi hisobiga issiqlik ishlab chiqarish.	Qo‘ng‘ir yog‘ to‘qimasi almashinuvining faollashishi; mikrotsirkulyatsiyaning sovuqqa chidamliligi oshishi; tomirlar tonusi boshqaruvining barqarorlashishi.
Psixoemotsional Stress *(Ruhiy yuklama, xavf reaksiyasi)*	Limbik-retikulyar kompleks faollashuvi; qonga kortizol va adrenalin otilib chiqishi; AB va UPTQning o‘tkir ko‘tarilishi.	Stress-limitlovchi (anti-stress) tizimlarning (GARK-ergik, opioid, NO-tizim) faollashishi; baroretseptorlar sezgirligining qayta moslashishi.

4. Molekulyar va metabolik qayta qurilishlar

Hujayra darajasida miokard energetik substratlardan foydalanishni tubdan o'zgartiradi. Oddiy sharoitda miokard o‘z energiyasining (ATF) 60-70 foizini erkin yog‘ kislotalarining beta-oksidlanishidan oladi (bu jarayon ko‘p kislorod talab qiladi). O‘tkir gipoksiya va o‘ta yuqori jismoniy yuklamada kislorod tanqisligini kompensatsiya qilish uchun kardiomiotsitlar **glikoliz (glyukozaning anaerob parchalanishi)** va glyukozaning to‘g‘ridan-to‘g‘ri oksidlanishi yo‘liga o‘tadi. Glikoliz kamroq ATF bersa-da, bir birlik kislorod sarfiga nisbatan samaraliroq hisoblanadi.

Shuningdek, uzoq muddatli adaptatsiyada hujayralarni erkin radikallar va peroksidli oksidlanishdan himoya qiluvchi **antioksidant tizimlar** (superoksiddismutaza, katalaza, glutationperoksidaza) faolligi keskin oshadi.

Xulosa Yurak-qon tomir tizimining ekstremal omillar ta’siriga moslashishi — bu organizmning genetik salohiyati hamda funksional zaxiralarini tizimli safarbar etuvchi murakkab, ko‘p bosqichli moslashuvchan jarayondir. Shoshilinch adaptatsiya asosan neyrogumoral tizim (simpatik-adrenal o‘q) effekti va energetik resurslarni maksimal sarflash hisobiga amalga oshsa, uzoq muddatli adaptatsiya miokard va tomirlarning tarkibiy, funksional hamda

ISBN: 978-625-90699-4-4

metabolik o‘zgarishlari (gipertrofiya, angiogenez, kardiomiotsitlar chidamliligi) orqali ta’minlanadi.

Ushbu adaptiv mexanizmlar va ularning o‘tish chegaralarini chuqur o‘rganish:

1. Ekstremal sharoitlarda (aviatsiya, kosmonavtika, harbiy soha, chuqur suv osti ishlari, tog‘-kon sanoati) ishlovchi shaxslarning salomatligini muhofaza qilish;
2. Professional sportchilarning funksional imkoniyatlarini to'g'ri baholash va toliqish (destruktsiya) bosqichiga o‘tib ketishining oldini olish;
3. Yurakning ishemik kasalligi, arterial gipertenziya va miokard infarktini davolashda adaptiv kardioproteksiyaning yangi usullarini ishlab chiqishda muhim amaliy va fundamental ahamiyatga ega.

Foydalanilgan Adabiyotlar Ro‘yxati

1. Almatov K.T., Allamuratov SH.I. *Odam va hayvonlar fiziologiyasi*. – Toshkent: "Universitet", 2018. – 412 b.
2. Meerson F.Z., Pshonnikova M.G. Adaptatsiya k stressornim situatsiyam i fizicheskim nagruzkam. – Moskva: "Meditsina", 1988. – 256 s.
3. Sudakov K.V. Normalnaya fiziologiya: Uchebnik dlya studentov meditsinskix vuzov. – Moskva: "GEOTAR-Media", 2015. – 800 s.
4. To‘lanboyeva M.E. Yurak-qon tomir tizimining ekstremal omillar ta’sirida o‘zgarishi va kompensator imkoniyatlari // O‘zbekiston tibbiyot jurnali. – Toshkent, 2025. – №3. – B.45-50.
5. Guyton A.C., Hall J.E. Textbook of Medical Physiology. – 14th Edition. – Elsevier, 2021.– 1152 p.

ISBN: 978-625-90699-4-4

EARLY DETECTION OF LATENT IRON DEFICIENCY IN WOMEN OF REPRODUCTIVE AGE

Yusupova Mamlakat Mutalibovna
Central Asian Medical University, Department of propaedeutics of Internal diseases and pediatric surgery, Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0007-5716-8700

Ubaydullayeva Salomat Rakhmidinovna
Central Asian Medical University,
Assistant of the Department of Internal Medicine in Family Medicine,
Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0003-5374-904X,

Abstract. Iron deficiency is regarded by the World Health Organization as a priority public health problem, and women of reproductive age constitute the principal risk group because of recurrent menstrual blood loss, the increased iron requirements of pregnancy and lactation, short interpregnancy intervals and diets dominated by non-haem iron sources of limited bioavailability. In Central Asia, including Uzbekistan, these factors are compounded by high parity and by nutritional habits — refined carbohydrates, tea with meals and low red meat intake — that reduce intestinal iron absorption. The clinical importance of the problem is determined not only by anaemia itself but also by the consequences of tissue iron depletion in its absence: impaired physical and cognitive performance, decreased work capacity, restless legs syndrome, hair and nail changes, and, in the event of pregnancy, an increased risk of low birth weight and preterm delivery. Since haemoglobin falls only after the storage and transport iron pools are largely depleted, haemoglobin-based screening identifies patients late, when treatment is longer and less well tolerated. Early identification of the latent, pre-anaemic stage is therefore a realistic opportunity for prevention in therapeutic and primary-care practice.

Keywords: Latent Iron Deficiency, Iron Deficiency Anaemia, Reproductive Age, Serum Ferritin, Early Detection, Screening.

Iron deficiency develops through consecutive stages: depletion of storage iron, iron-deficient erythropoiesis without anaemia (latent deficiency), and finally manifest iron deficiency anaemia. The latent stage may persist for months or years and is expressed by non-specific complaints frequently attributed to overwork, stress or hypotension, while serum ferritin, the most sensitive indicator of storage iron, may be falsely elevated in inflammation as an acute-phase reactant, which limits its interpretation in isolation; soluble transferrin receptor and the soluble transferrin receptor/log ferritin index are less influenced by inflammation, although their use in routine outpatient practice remains limited. The aim of the present study was accordingly to determine the prevalence and clinical-laboratory features of latent iron deficiency among women of reproductive age and to assess which laboratory criteria provide the most accurate early identification of this condition. The study included 110 women aged 18 to 45 years attending outpatient care for reasons unrelated to haematological disease, all of whom gave informed consent; exclusion criteria were pregnancy, active non-uterine bleeding, malignancy, chronic kidney disease, inflammatory disease with C-reactive protein above 10 mg/L, thalassaemia trait, and iron supplementation within the preceding three months. Each woman underwent a structured interview covering menstrual history, parity, interpregnancy interval, dietary intake of haem iron, tea consumption with meals and characteristic complaints; anthropometry with calculation of body mass index; a complete blood count including mean corpuscular volume, mean corpuscular haemoglobin and red cell distribution width; and biochemical assessment of serum ferritin, serum iron, total iron-binding capacity, transferrin

ISBN: 978-625-90699-4-4

saturation, soluble transferrin receptor and C-reactive protein. Anaemia was defined as haemoglobin below 120 g/L and latent iron deficiency as serum ferritin below 30 µg/L with haemoglobin within the reference range, so that participants were allocated to three groups: iron-replete women, women with latent deficiency and women with iron deficiency anaemia; statistical analysis included Student's t-test and the χ^2 test, Spearman correlation analysis, multivariate logistic regression and ROC analysis, with significance accepted at $p<0.05$. Iron-replete status was established in 41 women (37.3%), latent iron deficiency in 42 (38.2%) and iron deficiency anaemia in 27 (24.5%), so that iron deficit of some form was present in 62.7% of the cohort and in more than one-third of participants would have remained undetected by haemoglobin alone. Mean haemoglobin in the latent deficiency group was 124.6 ± 6.8 g/L, formally normal yet significantly lower than in iron-replete women (133.9 ± 7.4 g/L; $p<0.001$), while ferritin averaged 18.4 ± 6.2 against 61.9 ± 20.7 µg/L ($p<0.001$), transferrin saturation 16.8 ± 4.1% against 28.5 ± 6.3% ($p<0.001$) and soluble transferrin receptor 3.14 ± 0.62 against 1.87 ± 0.41 mg/L ($p<0.001$); mean corpuscular volume and mean corpuscular haemoglobin decreased only modestly and did not reach the threshold of microcytosis, whereas red cell distribution width was already increased (14.8 ± 1.3% versus 12.9 ± 0.9%; $p<0.01$), indicating that anisocytosis appears earlier than a fall in cell size. Women with latent deficiency reported fatigue in 61.9% of cases, hair loss in 45.2%, reduced exercise tolerance in 38.1% and restless legs symptoms in 21.4%, all more frequent than in iron-replete women ($p<0.01$), which confirms that symptoms precede anaemia. Multivariate analysis identified heavy or prolonged menstrual bleeding as the strongest independent risk factor (odds ratio 3.42; 95% confidence interval 1.58–7.41; $p<0.01$), followed by three or more deliveries (2.61; 1.19–5.73; $p<0.05$), low dietary intake of haem iron (2.34; 1.08–5.07; $p<0.05$) and regular tea consumption with meals (1.96; 1.02–3.77; $p<0.05$), and ferritin correlated inversely with menstrual blood loss score ($r = –0.46$; $p<0.001$) and positively with red meat consumption ($r = 0.33$; $p<0.01$). ROC analysis showed that ferritin at a cut-off of 30 µg/L identified iron-deficient erythropoiesis with 84.2% sensitivity and 78.6% specificity (AUC 0.86), transferrin saturation at 20% with 76.1% and 81.0% (AUC 0.83), and the soluble transferrin receptor/log ferritin index at 1.5 with 88.9% and 85.4% (AUC 0.91), the superiority of the combined index reflecting its relative independence from inflammatory influence on ferritin. These findings are consistent with international data indicating that iron depletion in women of reproductive age is considerably more prevalent than anaemia and demonstrate that haemoglobin-based screening detects only the final stage of a long process, although the study is limited by its single-centre design, modest sample size and absence of long-term follow-up. It may therefore be concluded that latent iron deficiency is present in more than a third of women of reproductive age and is accompanied by measurable laboratory and clinical changes despite normal haemoglobin, that heavy menstrual bleeding, high parity, low haem iron intake and tea with meals are independent risk factors, and that the soluble transferrin receptor/log ferritin index offers the highest diagnostic accuracy. Accordingly, it is recommended that screening of women of reproductive age include serum ferritin rather than being limited to haemoglobin, with particular attention to those reporting heavy menstrual bleeding, high parity or a short interpregnancy interval; that ferritin below 30 µg/L without anaemia prompt further evaluation, iron repletion and correction of the underlying cause of loss; that the soluble transferrin receptor/log ferritin index be used as the confirmatory test where ferritin is confounded by inflammation or obesity; and that counselling address dietary haem iron, avoidance of tea with meals and timely assessment of abnormal uterine bleeding.

ISBN: 978-625-90699-4-4

CLINICAL FEATURES AND RESPONSE TO IMMUNOSUPPRESSIVE AND BIOLOGIC THERAPY IN CHILDREN WITH JUVENILE DERMATOMYOSITIS

Dilbar Kabilova
Central Asian Medical University, Ferghana, Uzbekistan
ORCID ID: 0009-0009-2500-3068

Javlon Mamanazirov
Central Asian Medical University, Ferghana, Uzbekistan
ORCID ID: 0009-0004-2245-8431

Soibjon Hakimov
Central Asian Medical University, Ferghana, Uzbekistan
ORCID ID: 0009-0004-4352-0839

ABSTRACT

Idiopathic inflammatory myopathies (IIMs) are a heterogeneous group of disorders characterized by muscle weakness, predominantly affecting the proximal muscles, and inflammatory changes in skeletal muscle. IIMs include several subtypes, such as dermatomyositis, polymyositis, inclusion body myositis, and amyopathic dermatomyositis.

Juvenile dermatomyositis (JDM) accounts for approximately 80% of idiopathic inflammatory myopathies in children. It primarily affects the skin and muscles; however, its clinical manifestations are heterogeneous and may involve other organs and systems.

JDM occurs in all regions of the world. Between 1995 and 1998, the estimated incidence of JDM in the United States ranged from 2.5 to 4.1 cases per million children per year. Retrospective studies conducted in Sweden and in the United Kingdom and Ireland reported annual incidences of 2.4 and 1.9 cases per million children, respectively. In the United States, annual incidence rates were similar among White and non-Hispanic African American children, whereas a relatively lower incidence was observed among Hispanic children.

The peak age at onset of JDM is approximately 7 years. JDM is more common in girls than boys, with reported female-to-male ratios ranging from 1.6:1 to 2.5:1. In contrast, in our study, boys constituted the majority of patients, with a male-to-female ratio of 2:1.

Juvenile dermatomyositis is a rare systemic inflammatory disease characterized by proximal muscle weakness, characteristic cutaneous manifestations, and varying degrees of systemic involvement. Early diagnosis and timely initiation of adequate immunosuppressive therapy are important for preventing persistent muscle dysfunction and disease-related complications. The aim of this study was to evaluate the clinical characteristics and response to immunosuppressive and biologic therapy in children with JDM.

Twelve children aged 5–16 years with JDM were evaluated, including 8 boys and 4 girls. All patients presented with symmetrical proximal muscle weakness, fatigue, fever, heliotrope rash, photosensitive rash, and facial erythema. Arthralgia/arthritis, Gottron papules, Raynaud phenomenon, and calcinosis were observed in more than half of the patients. Dysphagia and/or dysphonia occurred in 3 patients with severe disease manifestations. Laboratory investigations demonstrated elevated muscle and inflammatory markers, including creatine phosphokinase (500–2200 U/L), lactate dehydrogenase (300–1600 U/L), AST (100–900 U/L), ALT (90–1000 U/L), C-reactive protein (15–30 mg/L), ESR (24–60 mm/h), and ferritin levels up to 2000 ng/mL. Electromyography demonstrated preserved nerve conduction with findings consistent with myopathic muscle weakness. Muscle biopsy was performed in 9 patients, and JDM was confirmed in all cases.

ISBN: 978-625-90699-4-4

All patients received systemic corticosteroids, corticosteroid pulse therapy, and methotrexate. Four patients initially received tocilizumab followed by rituximab, while five patients received rituximab. Three patients did not receive biologic therapy. Clinical improvement was observed within two weeks after initiation of treatment. At three months, 9 patients (75%) demonstrated substantial improvement in muscle function, with Hybrid Manual Muscle Testing/Childhood Myositis Assessment Scale (Hybrid MMT/CMAS) scores improving from approximately 35 to 60 points. The remaining three patients showed incomplete functional recovery; these patients had not received biologic therapy. Among patients who demonstrated improvement, those who did not receive biologic therapy regularly and on schedule showed a relatively lower clinical response.

The findings suggest that early diagnosis and comprehensive immunosuppressive treatment in JDM may contribute to significant recovery of muscle function in children. The observed clinical improvement may be associated with the use of biologic therapy, particularly rituximab, especially in severe or refractory cases, suggesting a potential therapeutic benefit. However, larger prospective studies are required to determine the comparative efficacy of biologic agents and establish their optimal role in the treatment of JDM. The rarity of JDM represents an important limitation to conducting large-scale studies of this disease.

Keywords: Juvenile dermatomyositis, children, proximal muscle weakness, myositis, immunosuppressive therapy, biologic therapy, rituximab, tocilizumab, Hybrid MMT/CMAS.

THE SIGNIFICANCE OF ANTHROPOMETRIC FACIAL PARAMETERS IN DIAGNOSING AESTHETIC DEFECTS IN PATIENTS WITH DENTITION DEFECTS

Tursunaliyev Ziloliddin
Central Asian Medical University international medical university Assistent, Burhoniddin Marg_inoniy Street-64, Phone: +998 95 485 00 70,
Orcid: 0009-0009-0181-0674

Restoration of the anthropological parameters of the face can be achieved with anatomically correctly designed prostheses, where the upper dental arch is formed taking into account the prosthetic plane and overlaps the lower dental arch, and the midline between the upper central incisors coincides with the midline between the lower central incisors.

In a relaxed state of the upper lip, the upper central incisors are positioned 1 mm below it. With a broad smile, the teeth look natural. Such a clinical and anthropological approach creates a comfortable psycho-emotional state for the patient, and the smile appears attractive.

In the clinic, it is possible to fabricate anatomically correct orthopedic prostheses by observing all the rules listed below: taking free-anatomical impressions with a dense impression material to create individual trays; fabricating individual trays from heat-cured acrylic baseplate material (on the upper jaw – over the second layer of wax, on the lower jaw – over the first layer of wax, and only with a mobile alveolar ridge – over the second layer of wax); fitting individual trays using Herbst's tests; border molding the edges of individual trays (upper – along the posterior border, lower – in the sublingual space, with complete atrophy – additionally along the entire border); taking functional-suction impressions with the selection of impression material according to the condition of the alveolar processes and mucous membrane, using Herbst's tests; boxing the functional-suction impressions on the outer surface, receding 2–3 mm from the border before pouring plaster models; fabricating the bases of future prostheses from heat-cured plastic (on the upper base with an incisal stop 17 mm wide); forming the prosthetic plane with a Larin apparatus; determining the interalveolar height using the anatomical and physiological method; establishing the mandible in centric occlusion using functional tests. Tooth setting should be performed using the average anatomical method; forming the outer surfaces of the bases at the stage of checking the design of the prostheses; correcting multiple tooth contacts during mandibular movements at the fitting stage of complete removable dentures.

The existing connection between the anthropological parameters of the face and intraoral parameters allows for the construction of complete removable dentures with the restoration of individual anatomical and functional features, which, in turn, restores the aesthetics of the external facial appearance, chewing and speech functions, improves the psycho-emotional state, and creates social and professional comfort.

Effective orthopedic treatment of patients with complete edentulism is possible only when individual anthropological parameters are taken into

account, allowing for facial reconstruction through adequate construction of complete removable dentures.

The scientific and practical works of anthropologists and dentists have a close interrelationship. Anthropologists use teeth to reconstruct the soft tissues of the face, and prosthodontists use anthropological parameters of the face to construct dental prostheses, in particular complete removable dentures for patients with complete edentulism.

ISBN: 978-625-90699-4-4

REFERENCE;

1. Nigmatov R.N., Nigmatova I.M., Kadyrov Z.M., Kholmirzaev R.A. Differentiated Approach to Speech Correction in Children with Open Bite. // Stomatologiya: Scientific and Practical Journal. No. 2 (79), Tashkent, 2020. – P. 59-63

2. Nigmatova I.M., Nigmatov R.N., Nodirkhonova M.O., Mavlyanova M.A. Treatment of Vertical Anomalies Using the LM-Activator in Children with Speech Function Disorders during the Mixed Dentition Period. // Stomatologiya: Scientific and Practical Journal. No. 3 (80), Tashkent, 2020. – P. 32-36.

3. Aliyeva N.M., Nigmatova I.M., Yakupov I.T., Ochilova M.U. Application of Aligners Prior to Prosthetics in Secondary Deformations of the Dentition in Children. // Stomatologiya: Scientific and Practical Journal. No. 3 (80), Tashkent, 2020. – P. 74-77.

4. Nigmatov R.N., Akbarov K.S., Nigmatova I.M., Abduganieva N.A., Razzakov U.M. The Frequency of Crossbite Occurrence in Children with Mixed Dentition and Provision of Dental Care. // Stomatologiya: Scientific and Practical Journal. No. 4 (81), Tashkent, 2020. – P. 27-30.

5. Prikhodko O.G. Logopedic Massage in the Correction of Dysarthric Speech Disorders in Children of Early and Preschool Age.

6. Sokolova N.D., Kalinnikova L.V. (Ed.). Children with Disabilities:Problems and Innovative Trends in Education and Upbringing. Reader for the Course "Corrective Pedagogy and Special Psychology". – Moscow, 2001. – Ch. 5.

7. Nigmatov R.N., Shomukhamedova F.A. Orthodontics. – Tashkent, 2020.

8. Nigmatov R.N., Nigmatova I.M. Orthodontics. – Tashkent, 2021.

ISBN: 978-625-90699-4-4

DEVELOPMENT AND EVALUATION OF THE EFFECTIVENESS OF INDIVIDUAL ORAL HYGIENE MEASURES IN PATIENTS UNDERGOING ORTHODONTIC TREATMENT

Khabibjonova Yoqutkxon Khamidullo qizi
Fergana City Central Asian Medical University

Abstract: The study investigates the development and assessment of individualized oral hygiene measures for patients undergoing orthodontic treatment. Orthodontic appliances often complicate daily oral care, increasing the risk of plaque accumulation, gingival inflammation, and dental caries. This research aims to design personalized hygiene protocols tailored to the needs of orthodontic patients and to evaluate their effectiveness in improving oral health outcomes. The study involved a sample of patients undergoing fixed orthodontic treatment, with interventions including individualized instruction on brushing techniques, interdental cleaning, and the use of auxiliary oral hygiene tools. Evaluation was performed using clinical indices of plaque accumulation, gingival health, and patient adherence.

Keywords: Orthodontic treatment; oral hygiene; individualized hygiene program; plaque control; gingival health; patient compliance.

INTRODUCTION

Orthodontic treatment is widely used to correct malocclusions and improve bothfunctional and aesthetic aspects of the dentition. However, the presence of fixed or removable orthodontic appliances can complicate routine oral hygiene, leading to increased plaque accumulation, gingival inflammation, and a higher risk of dental caries. Maintaining proper oral hygiene during orthodontic treatment is therefore a critical factor in preventing complications and ensuring successful treatment outcomes. Individualized oral hygiene measures are designed to address the specific needs of each patient, taking into account the type of orthodontic appliance, oral anatomy, and patient habits. Tailored interventions, including personalized instruction on brushing techniques, interdental cleaning, and the use of auxiliary hygiene tools, can enhance patient compliance and promote better oral health. Despite the recognized importance of individualized hygiene protocols, there is limited research evaluating their effectiveness in orthodontic patients. This study aims to develop a structured program of personalized oral hygiene measures and assess its impact on plaque control, gingival health, and patient adherence, providing evidence-based recommendations for clinical practice in orthodontics.

Methods

This study was conducted to develop and evaluate individualized oral hygiene measures for patients undergoing orthodontic treatment. Study Design and Participants: A total of 60 patients undergoing fixed orthodontic treatment, aged 12– 25 years, were recruited from the orthodontic department. Patients with systemic diseases or poor baseline oral hygiene were excluded. Intervention: An individualized oral hygiene program was designed for each patient, which included: Personalized instruction on proper brushing techniques adapted to orthodontic appliances. Guidance on interdental cleaning using floss, interdental brushes, or water flossers.

Recommendations on the use of auxiliary oral hygiene tools such as fluoride mouth rinses and specialized toothbrushes. Oral health was assessed at baseline and after 8 weeks of intervention using: Plaque Index (PI) to measure dental plaque accumulation.

Gingival Index (GI) to evaluate gingival inflammation. Patient adherence based on self-reported daily hygiene practices and frequency of appliance cleaning.

Results

The implementation of the individualized oral hygiene program led to significant improvements in oral health among orthodontic patients. After 8 weeks of intervention, the

ISBN: 978-625-90699-4-4

mean Plaque Index (PI) decreased from 2.3 ± 0.5 at baseline to 1.2 ± 0.4 ($p < 0.001$), indicating a substantial reduction in dental plaque accumulation. The Gingival Index (GI) also showed significant improvement, decreasing from 1.8 ± 0.4 to 0.9 ± 0.3 ($p < 0.001$), demonstrating reduced gingival inflammation. Patient compliance with the recommended hygiene measures increased notably. At baseline, only 45% of patients reported regular adherence to brushing and interdental cleaning, whereas after the intervention, adherence rose to 88%. Patients reported greater confidence in performing daily oral hygiene, improved comfort with orthodontic appliances, and increased motivation to maintain oral health.

Discussion

The findings of this study demonstrate that individualized oral hygiene measures significantly improve oral health outcomes in patients undergoing orthodontic treatment. The reduction in plaque accumulation and gingival inflammation confirms that tailored interventions, which consider the type of orthodontic appliance and patient-specific oral conditions, are more effective than general hygiene instructions.

Enhanced patient adherence observed in this study highlights the importance of personalized education and hands-on guidance. When patients receive clear, tailored instructions and practical support, they are more likely to maintain consistent oral hygiene practices, leading to better long-term outcomes. These results are consistent with previous research indicating that orthodontic appliances can hinder effective oral hygiene and that structured, individualized interventions improve both compliance and clinical outcomes. The study underscores the necessity of integrating patient-specific hygiene programs into routine orthodontic care to prevent complications such as caries, gingivitis, and enamel demineralization.

Conclusion

The study demonstrates that individualized oral hygiene measures are highly effective for patients undergoing orthodontic treatment. Personalized instruction on brushing techniques, interdental cleaning, and the use of auxiliary hygiene tools significantly reduced plaque accumulation, improved gingival health, and increased patient adherence. These findings emphasize the critical role of tailored oral hygiene programs in preventing common orthodontic complications, such as dental caries and gingival inflammation. Implementing individualized hygiene protocols in clinical practice enhances patient compliance, promotes long-term oral health, and contributes to the overall success of orthodontic treatment.

References:

1. Renkema, A.M., & Freihofer, H.P.M. (2010). Oral Hygiene in Orthodontic Patients: Clinical and Educational Considerations. Journal of Clinical Orthodontics, 44(3), 157–164.
2. Al-Jewair, T.S., Halboub, E., & Fayed, M. (2015). Effectiveness of Oral Hygiene Interventions in Orthodontic Patients: A Systematic Review. American Journal of Orthodontics and Dentofacial Orthopedics, 148(3), 403–416.
3. Zachrisson, B.U., & Alstad, T. (1977). Effect of Orthodontic Appliances on Oral Hygiene and Gingival Health. American Journal of Orthodontics,72(1),1–11.
4. Stolin, V.V., & Volkova, A.N. (2015). Psychology of Marital Relationships and Marital Satisfaction. Moscow: Academic Project. (used as reference for patient compliance studies)
5. Proffit, W.R., Fields, H.W., & Sarver, D.M. (2018). Contemporary Orthodontics (6th ed.). St. Louis: Elsevier.
6. Benson, P.E., & Mandall, N.A. (2004). Patient Compliance and Oral Hygiene in Orthodontics. British Dental Journal, 196(9), 523–528.
7. Harradine, N.W. (2001). Self-Ligating Brackets and Oral Hygiene Outcomes: A Clinical Study. Angle Orthodontist, 71(1), 52–56.
8. Bishara, S.E., & Ostby, A.E. (2008). Oral Hygiene Practices and Dental Health in Orthodontic Patients. Seminars in Orthodontics, 14(1), 50–58.

ISBN: 978-625-90699-4-4

ВЛИЯНИЕ МУЗЫКИ НА ЧАСТОТУ СЕРДЕЧНЫХ СОКРАЩЕНИЙ, УРОВЕНЬ АРТЕРИАЛЬНОГО ДАВЛЕНИЯ И ПСИХОЭМОЦИОНАЛЬНОЕ СОСТОЯНИЕ ПАЦИЕНТОВ

THE INFLUENCE OF MUSIC ON HEART RATE, BLOOD PRESSURE, AND THE PSYCHO-EMOTIONAL STATE OF PATIENTS

Kazimova Sevara Baxtiyorovna
Assistant, Department of Infectious Diseases and Dermatovenereology
ORCID ID: 0009-0000-7666-9411

Abstract: The psycho-emotional state of patients is an important factor that may influence cardiovascular function during medical observation and treatment. This study aimed to evaluate the influence of musical exposure on heart rate, systolic and diastolic blood pressure, and the psycho-emotional state of patients. The study included 60 patients aged 20–60 years who were divided into a main group (n=30) and a control group (n=30). A comprehensive clinical and functional assessment was performed before and after the intervention. The results demonstrated a more pronounced reduction in heart rate, systolic and diastolic blood pressure, and anxiety levels in the main group compared with the control group. The obtained findings indicate that musical exposure may have a positive effect on cardiovascular and psycho-emotional parameters and may be considered as an additional non-pharmacological approach in clinical practice.

Keywords: Music, musical exposure, heart rate, blood pressure, systolic blood pressure, diastolic blood pressure, psycho-emotional state, anxiety, cardiovascular system, non-pharmacological intervention.

Аннотация: Психоэмоциональное состояние пациентов является важным фактором, способным оказывать влияние на функциональное состояние сердечно-сосудистой системы в процессе медицинского наблюдения и лечения. Целью настоящего исследования явилась оценка влияния музыкального воздействия на частоту сердечных сокращений, уровень систолического и диастолического артериального давления, а также психоэмоциональное состояние пациентов. В исследование были включены 60 пациентов в возрасте 20–60 лет, разделённых на основную группу (n=30) и контрольную группу (n=30). До и после вмешательства проводилась комплексная клинико-функциональная оценка состояния пациентов. Установлено, что в основной группе по сравнению с контрольной наблюдалось более выраженное снижение частоты сердечных сокращений, систолического и диастолического артериального давления, а также уровня тревожности. Полученные результаты свидетельствуют о возможном положительном влиянии музыкального воздействия на сердечно-сосудистые и психоэмоциональные показатели и позволяют рассматривать его в качестве дополнительного немедикаментозного подхода в клинической практике.

Ключевые слова: Музыка, музыкальное воздействие, частота сердечных сокращений, артериальное давление, систолическое артериальное давление, диастолическое артериальное давление, психоэмоциональное состояние, тревожность, сердечно-сосудистая система, немедикаментозное вмешательство.

Introduction

Music is one of the external factors that can influence the functional state of the human body. In medical practice, particular interest is focused on its potential effects on the cardiovascular system and the psycho-emotional state of patients. Changes in heart rate and

blood pressure may reflect the body's response to various external stimuli, including auditory and emotional effects associated with music. The psycho-emotional state of a patient plays an important role in the overall course of illness, tolerance of diagnostic and therapeutic procedures, and recovery process. Increased anxiety, emotional tension, and stress may be accompanied by changes in heart rate and blood pressure. Therefore, the search for additional non-pharmacological methods that may contribute to the stabilization of patients' functional state is of practical interest in modern medicine. Musical exposure can be considered as one of the accessible non-pharmacological approaches to supporting psycho-emotional well-being. The characteristics of music, including its tempo, rhythm, and duration of exposure, may influence the intensity of physiological and emotional responses. Calm and structured musical compositions may contribute to the reduction of emotional tension and may be associated with changes in cardiovascular activity. A comprehensive assessment of the body's response to musical exposure is particularly important. Simultaneous evaluation of heart rate, blood pressure, and psycho-emotional state makes it possible to assess potential changes in patients' functional condition more objectively. Such an approach allows the effects of music to be considered not only from the perspective of subjective emotional perception but also through objective physiological indicators.

Relevance

In modern clinical medicine, the cardiovascular and psycho-emotional responses of patients to external environmental factors are of considerable scientific and practical interest. Heart rate and blood pressure are important functional indicators reflecting the activity of the cardiovascular system, while the psycho-emotional state characterizes the patient's response to stress, anxiety, and emotional tension. Changes in these parameters may occur during medical examination, hospitalization, diagnostic procedures, and treatment. Psycho-emotional stress is particularly important in patients undergoing medical care, as increased anxiety and emotional tension may be accompanied by changes in cardiovascular parameters. An increase in heart rate and blood pressure may reflect the activation of physiological stress responses. Therefore, identification of simple and accessible approaches that may contribute to the stabilization of the patient's emotional and functional state remains relevant for clinical practice.

Music is a commonly available environmental stimulus that can influence emotional perception and physiological responses. The tempo, rhythm, intensity, and duration of musical exposure may contribute to changes in the level of relaxation, emotional tension, and autonomic cardiovascular activity. For this reason, the study of music as a complementary non-pharmacological intervention has attracted increasing interest in modern medical research.

At the same time, assessment of the effect of music should not be limited to subjective changes in mood or emotional comfort. Objective cardiovascular indicators, including heart rate and systolic and diastolic blood pressure, provide important information about the physiological response of patients. The simultaneous assessment of these parameters together with psycho-emotional status makes it possible to obtain a more comprehensive characterization of the patient's response to musical exposure.

The clinical significance of this approach is related to the possibility of using music as an additional, accessible, and non-invasive supportive intervention during medical care. However, the magnitude of its effects may depend on the patient's initial condition, the characteristics and duration of musical exposure, and individual sensitivity to auditory stimuli. Therefore, further clinical assessment using objective physiological and psycho-emotional indicators is necessary.

Thus, studying the influence of music on heart rate, blood pressure, and the psycho-emotional state of patients represents a relevant medical research direction. A comprehensive assessment of these parameters may provide additional evidence regarding the potential role of

ISBN: 978-625-90699-4-4

musical exposure in supporting cardiovascular stability and psycho-emotional well-being in patients.

Aim

To evaluate the influence of musical exposure on heart rate, systolic and diastolic blood pressure, and the psycho-emotional state of patients through a comprehensive clinical and functional assessment.

Materials and methods

The study included 60 patients aged 20–60 years who were under medical observation. The participants were divided into a main group (n=30) and a control group (n=30). Patients in the main group received standardized musical exposure in addition to routine medical observation, whereas patients in the control group remained under similar conditions without additional musical exposure. The groups were formed with consideration of age, sex, and baseline functional parameters to ensure comparability between the study groups. A comprehensive clinical and functional assessment was performed to evaluate the cardiovascular and psycho-emotional status of the patients. The primary parameters assessed were heart rate, systolic blood pressure, diastolic blood pressure, and psycho-emotional status. Measurements were performed before the beginning of musical exposure and immediately after its completion, allowing the dynamics of the studied parameters to be assessed.

Heart rate was measured at rest and recorded according to standard clinical procedures. Blood pressure was assessed under standardized conditions with separate recording of systolic and diastolic values. The psycho-emotional state of the patients was evaluated using a standardized anxiety scale, which allowed the severity of anxiety symptoms and emotional tension to be quantified.

Musical exposure was performed under calm and standardized conditions with the same duration of the session for all patients in the main group. During the intervention, patients remained at rest without physical activity or additional medical procedures. Patients in the control group remained at rest for the same period without musical exposure. To objectively evaluate the effects of music, heart rate, systolic and diastolic blood pressure, and anxiety levels were compared before and after the intervention. The obtained results in the main group were subsequently compared with the corresponding indicators in the control group. Statistical analysis was performed by calculating mean values and standard deviations. The statistical significance of differences between the studied parameters was assessed using an appropriate statistical test, with $p<0.05$ considered statistically significant. This methodological approach made it possible to evaluate changes in cardiovascular and psycho-emotional parameters associated with musical exposure.

Results

At the initial stage of the study, a comparative assessment of the main clinical and functional parameters was performed in 60 patients included in the study. The patients were divided into two comparable groups: the main group consisted of 30 patients who received standardized musical exposure in addition to routine medical observation, while the control group included 30 patients who remained under similar conditions without musical exposure. The groups were compared according to age, heart rate, systolic blood pressure, diastolic blood pressure, and psycho-emotional status. Statistical analysis demonstrated no significant differences between the groups at baseline ($p>0.05$), indicating that the groups were comparable and suitable for subsequent comparative assessment.

ISBN: 978-625-90699-4-4

Table 1. Baseline clinical and functional characteristics of the patients

Indicator	Main group (n=30)	Control group (n=30)	p
Age, years	38.6 ± 8.4	37.9 ± 8.1	>0.05
Heart rate, beats/min	78.4 ± 6.2	77.9 ± 5.8	>0.05
Systolic blood pressure, mmHg	128.6 ± 8.4	127.9 ± 8.1	>0.05
Diastolic blood pressure, mmHg	79.3 ± 5.6	78.8 ± 5.4	>0.05
Anxiety score, points	42.1 ± 5.7	41.8 ± 5.5	>0.05

As shown in Table 1, the mean age of patients in the main group was 38.6±8.4 years, compared with 37.9±8.1 years in the control group. The difference between the groups was not statistically significant (p>0.05), confirming their comparability by age. The baseline heart rate was 78.4±6.2 beats/min in the main group and 77.9±5.8 beats/min in the control group. The absence of a statistically significant difference indicates that the functional activity of the cardiovascular system was similar before the intervention.

The assessment of blood pressure also demonstrated comparable baseline values. Systolic blood pressure was 128.6±8.4 mmHg in the main group and 127.9±8.1 mmHg in the control group. Diastolic blood pressure was 79.3±5.6 mmHg and 78.8±5.4 mmHg, respectively. The differences were statistically insignificant (p>0.05), indicating the absence of substantial baseline differences in cardiovascular parameters.

The psycho-emotional assessment showed similar findings. The mean anxiety score was 42.1±5.7 points in the main group and 41.8±5.5 points in the control group. No statistically significant difference was identified between the groups (p>0.05). Therefore, the patients demonstrated comparable psycho-emotional conditions before the beginning of the intervention.

Thus, the baseline data confirmed the statistical homogeneity of the two groups with respect to the principal clinical, cardiovascular, and psycho-emotional parameters. This comparability provided an appropriate basis for evaluating the subsequent changes associated with musical exposure.

Following the intervention, a comparative assessment of the studied parameters demonstrated more pronounced changes in patients of the main group. In particular, patients exposed to music showed a reduction in heart rate, systolic and diastolic blood pressure, as well as a decrease in the anxiety score. The magnitude of these changes was greater than that observed in the control group.

Table 2. Dynamics of cardiovascular and psycho-emotional parameters after the intervention

Indicator	Main group before	Main group after	Control group before	Control group after	p
Heart rate, beats/min	78.4±6.2	72.6±5.4	77.9±5.8	76.7±5.6	<0.001
Systolic BP, mmHg	128.6±8.4	121.8±7.6	127.9±8.1	126.2±7.9	<0.01
Diastolic BP, mmHg	79.3±5.6	75.1±4.9	78.8±5.4	77.8±5.2	<0.05
Anxiety score, points	42.1±5.7	34.6±5.1	41.8±5.5	40.2±5.3	<0.001

As shown in Table 2, after the intervention, the mean heart rate in the main group decreased from 78.4±6.2 to 72.6±5.4 beats/min. In the control group, the corresponding reduction was considerably smaller, from 77.9±5.8 to 76.7±5.6 beats/min. The difference

ISBN: 978-625-90699-4-4

between the groups was statistically significant ($p<0.001$), suggesting a more pronounced cardiovascular response among patients exposed to music.

A similar positive tendency was observed in blood pressure parameters. In the main group, systolic blood pressure decreased from 128.6±8.4 to 121.8±7.6 mmHg, while in the control group it decreased from 127.9±8.1 to 126.2±7.9 mmHg. The between-group difference was statistically significant ($p<0.01$). Diastolic blood pressure decreased from 79.3±5.6 to 75.1±4.9 mmHg in the main group, whereas the control group demonstrated a smaller change from 78.8±5.4 to 77.8±5.2 mmHg ($p<0.05$).

The most pronounced changes were observed in the assessment of psycho-emotional status. The mean anxiety score in the main group decreased from 42.1±5.7 to 34.6±5.1 points. In the control group, the corresponding indicator changed from 41.8±5.5 to 40.2±5.3 points. The difference between the groups was statistically significant ($p<0.001$). This finding indicates that musical exposure was associated with a more substantial reduction in anxiety and emotional tension compared with routine observation alone.

The simultaneous improvement in cardiovascular and psycho-emotional parameters demonstrates that the response to musical exposure was not limited to subjective emotional changes. The reduction in heart rate and blood pressure together with the decrease in anxiety scores indicates a coordinated change in the functional state of the patients.

The obtained data also demonstrate that the degree of change differed between the studied parameters. The greatest relative difference was observed in the psycho-emotional indicator, while cardiovascular parameters demonstrated moderate but statistically significant changes. This pattern may indicate that the emotional response to music is closely associated with changes in autonomic cardiovascular activity. Therefore, the results demonstrate a positive tendency in the main group across all evaluated parameters. The reduction in heart rate, systolic and diastolic blood pressure, and anxiety level was more pronounced than in the control group. The statistical significance of the observed differences supports the potential usefulness of standardized musical exposure as an additional non-pharmacological approach for supporting the psycho-emotional and functional state of patients.

Discussion

The obtained results demonstrate that musical exposure was associated with positive changes in both cardiovascular and psycho-emotional parameters in the main group. The decrease in heart rate observed after the intervention indicates a reduction in physiological activation and may reflect a state of greater relaxation during musical exposure. In comparison with the control group, the changes were more pronounced, suggesting that the observed dynamics were not solely related to resting conditions. A similar tendency was identified in arterial blood pressure. The reduction in systolic and diastolic blood pressure in the main group was greater than in the control group, indicating a possible influence of musical exposure on cardiovascular regulation. These changes may be associated with a decrease in emotional tension and a reduction in the physiological response to stress. At the same time, the magnitude of cardiovascular changes was moderate, which emphasizes the importance of considering music as a complementary rather than a replacement method in clinical care.

The most pronounced improvement was observed in the psycho-emotional state of patients. The reduction in anxiety scores in the main group was substantially greater than in the control group. This finding suggests that musical exposure may have a more noticeable effect on emotional well-being than on individual physiological parameters. Reduction of anxiety and emotional tension may, in turn, contribute to stabilization of cardiovascular indicators. The simultaneous improvement in heart rate, blood pressure, and anxiety level indicates a relationship between the psycho-emotional and cardiovascular responses of patients. The obtained findings support the potential use of music as an additional non-pharmacological intervention aimed at improving patient comfort during medical observation and treatment.

ISBN: 978-625-90699-4-4

However, the effectiveness of musical exposure may depend on individual characteristics of patients, their initial emotional state, musical preferences, duration of exposure, and the characteristics of the selected musical compositions. Therefore, standardized conditions of musical exposure and objective assessment of physiological parameters are important for obtaining reproducible results.

Conclusions

The results of the study indicate that musical exposure may have a positive effect on both cardiovascular and psycho-emotional parameters in patients. A more pronounced reduction in heart rate and systolic and diastolic blood pressure was observed in the main group compared with the control group. The most significant changes were identified in the psycho-emotional state, with a marked decrease in anxiety levels following musical exposure. The simultaneous improvement of cardiovascular and psycho-emotional indicators suggests a possible relationship between emotional relaxation and functional cardiovascular responses. Therefore, music may be considered a simple, non-invasive, and accessible additional non-pharmacological approach for supporting the psycho-emotional well-being and functional stability of patients during medical care. Further studies involving larger patient populations and standardized musical interventions are required to confirm these findings and determine the most effective conditions for clinical application.

References

1. Cao M., Zhang Z. Adjuvant music therapy for patients with hypertension: a meta-analysis and systematic review // *BMC Complementary Medicine and Therapies*. 2023. Vol. 23.
2. Lin Y., et al. Benefits of music intervention on anxiety, pain, and physiologic response in adults undergoing surgery: a systematic review and meta-analysis // *Journal of Clinical Nursing*. 2023. Vol. 32. P. 4561–4578.
3. Silva M. A., et al. Effect of music-based interventions on anxiety and stress-related vital signs in patients undergoing cardiac catheterization: a systematic review and meta-analysis // *Complementary Therapies in Medicine*. 2024. Vol. 83.
4. Lima T. R., et al. Music to relieve pain and anxiety in cardiac catheterization: a systematic review and meta-analysis // *Heliyon*. 2024. Vol. 10, № 14.
5. Meda S., Gyamfi J., Patel K., et al. Assessment of musical interventions and its effect on blood pressure among United States populations: a systematic review and meta-analysis // *Frontiers in Cardiovascular Medicine*. 2024. Vol. 11.
6. Bradt J., Dileo C., Potvin N. Music for stress and anxiety reduction in coronary heart disease patients // *Cochrane Database of Systematic Reviews*. 2023. № 12.
7. Effects of a music-based intervention on psychophysiological outcomes of patients undergoing medical imaging procedures: a systematic review and meta-analysis // *Complementary Therapies in Medicine*. 2024. Vol. 82.
8. The effectiveness of music in improving the recovery of cardiothoracic surgery: a systematic review with meta-analysis and trial sequential analysis // *Frontiers in Surgery*. 2024. Vol. 11.
9. Music therapy for the treatment of anxiety: a systematic review with multilevel meta-analyses // *Psychological Medicine*. 2025. Vol. 55. P. 1–14.

ISBN: 978-625-90699-4-4

THE ROLE OF NUTRIENT DEFICIENCY IN DELAYED SPEECH DEVELOPMENT IN CHILDREN

Kurbonova Gulnora
Central Asian Medical University, Assistant, Department of Pediatrics
ORCID 0009-0005-4099-**5238**

Berdiyeva Xilola Umarjonovna, PhD
Fergana Medical Institute of Public Health
ORCID: 0000-0001-5164-5931

Abstract. This thesis analyzes, on the basis of foreign clinical and epidemiological studies, the relationship between delayed speech development in children and deficiencies of certain nutrients – particularly iron and vitamin B12 – as well as chronic undernutrition (stunting). The theoretical foundations of the problem, clinical evidence, and practical conclusions are presented in a consistent manner.

Keywords: speech development, delay, iron deficiency, vitamin B12, stunting, chronic undernutrition, micronutrients, child neuropsychology.

Today, delayed speech development in children is one of the most widespread problems in pediatrics, speech therapy, and preschool pedagogy. According to foreign research data, the prevalence of speech development delay among preschool-age children ranges from 2.1% to 11.4%, and among school-age children it can reach nearly 20%[1]. In Europe, delayed speech development has been recorded in approximately 5.8 million children and adolescents. These figures indicate that the problem carries not only medical but also socio-pedagogical significance. Another important aspect of the problem is that, aside from hereditary, neurological, and social factors, most causes of speech delay may be linked to nutritional factors that are relatively easy to address or prevent – a fact of great importance for preventive medicine and pedagogy.

A clinical study published in the Cerrahpaşa Medical Journal in 2025 compared 94 children under the age of 5 diagnosed with isolated speech delay with 94 healthy children. The study found that serum iron levels in the speech-delay group (67.95 µg/dL) were statistically significantly lower than in the control group (81.59 µg/dL)[2]. The authors concluded that iron and vitamin B12 deficiency may be among the factors contributing to delayed speech development, and that identifying and treating vitamin-mineral deficiencies in such cases is of considerable importance.

Longitudinal studies conducted by B. Lozoff have likewise demonstrated that children who experienced iron deficiency in infancy and early childhood face an elevated risk of long-term delays in cognitive, motor, socio-emotional, and neurophysiological development[3]. A study published in the journal Pediatrics in 2022 found that early-learning scores among children with chronic iron deficiency were significantly lower than those of their healthy peers, and that this gap did not fully resolve over time[4]. A recent study conducted in Gambia found

[1]Prevalence and risk factors of developmental language delay in a sample of children aged <6 years old in the Aseer region, Saudi Arabia: A community-based study, 2024.
[2]Sürücü Kara İ., Dolğun İ., Mertoğlu C. The nutritional parameters in children with delays in speech // Cerrahpaşa Medical Journal. – 2025. – Vol. 49. – P. 1–5.
[3]Lozoff B. Iron Deficiency and Child Development // Food and Nutrition Bulletin. – 2007. – Vol. 28, No. 4. – P. S560–S571.
[4]Chronic Iron Deficiency and Cognitive Function in Early Childhood // Pediatrics. – 2022. – Vol. 150, No. 6. – e2021055926.

ISBN: 978-625-90699-4-4

that the effects of iron deficiency begin to manifest as early as the first months of life and persist through preschool age, underscoring the priority of early prevention[5]. Furthermore, iron deficiency has been shown to affect attention, memory, and cognitive function, indirectly leading to reduced speech activity[6].

A systematic review conducted in 2024 examined the relationship between stunting and delayed speech development in children aged 6–36 months; a statistically significant association (relative risk ranging from 2.45 to 4.12) was found in 11 of the 12 included studies (91.7%). The authors suggest that chronic undernutrition disrupts myelination and synaptogenesis in the brain's white matter and corpus callosum, negatively affecting the interconnectivity of speech-related regions[7] An observational study of hospitalized children with severe acute malnutrition (SAM) in Central India recorded delayed speech development in 75% of the children, further confirming the direct effect of severe undernutrition on speech function[8]

The evidence presented above indicates that the assessment of a child with delayed speech should not be limited to speech-therapy evaluation alone, but should also include an assessment of the child's overall nutritional status, including height-and-weight indicators and serum iron and vitamin B12 levels. This is of particular importance during the first 1,000 days of life – that is, from conception to the age of two – since this is the period of the most intensive brain development, during which the effects of nutritional deficiency are most severe.

The scientific evidence reviewed above shows that delayed speech development in children is a complex, multifactorial process in which nutrient deficiencies – particularly iron and vitamin B12 deficiency, as well as chronic undernutrition (stunting) – play a significant role. Accordingly, alongside speech-therapy and pedagogical correction, an integrated approach should include pediatric and neurological examination of the child, identification and correction of nutrient deficiencies through laboratory testing where necessary, and regular monitoring of the child's anthropometric indicators. Such an integrated approach enables the early detection and effective correction of speech disorders.

References:

1. Sürücü Kara İ., Dolğun İ., Mertoğlu C. The nutritional parameters in children with delays in speech // Cerrahpaşa Medical Journal. – 2025. – Vol. 49. – P. 1–5.

2. Lozoff B. Iron Deficiency and Child Development // Food and Nutrition Bulletin. – 2007. – Vol. 28, No. 4. – P. S560–S571.

3. Chronic Iron Deficiency and Cognitive Function in Early Childhood // Pediatrics. – 2022. – Vol. 150, No. 6. – e2021055926.

4. Prevalence and risk factors of developmental language delay in a sample of children aged <6 years old in the Aseer region, Saudi Arabia: A community-based study, 2024.

5. Association of Malnutrition with Delayed Speech among Children 2–6 Years Undergoing Speech Therapy at Rehabilitation Center: Systematic Review, 2024.

[5]Iron status in early infancy is associated with trajectories of cognitive development up to pre-school age in rural Gambia, 2023.
[6]Jáuregui-Lobera I. Iron deficiency and cognitive functions // Neuropsychiatric Disease and Treatment. – 2014. – Vol. 10. – P. 2087–2095.
[7]Association of Malnutrition with Delayed Speech among Children 2–6 Years Undergoing Speech Therapy at Rehabilitation Center: Systematic Review, 2024.
[8]Determinants of motor, language, cognitive, and global developmental delay in children with complicated severe acute malnutrition at the time of discharge: An observational study from Central India // PMC. – 2020.

ISBN: 978-625-90699-4-4

6. Determinants of motor, language, cognitive, and global developmental delay in children with complicated severe acute malnutrition at the time of discharge: An observational study from Central India // PMC. – 2020.

7. Iron status in early infancy is associated with trajectories of cognitive development up to pre-school age in rural Gambia, 2023.

8. Jáuregui-Lobera I. Iron deficiency and cognitive functions // Neuropsychiatric Disease and Treatment. – 2014. – Vol. 10. – P. 2087–2095.

ISBN: 978-625-90699-4-4

WAYS TO SUPPORT SPEECH DEVELOPMENT IN PRESCHOOL CHILDREN THROUGH PROPER NUTRITION

Kurbonova Gulnora
Central Asian Medical University, Assistant, Department of Pediatrics
ORCID 0009-0005-4099-5238

Berdiyeva Xilola Umarjonovna, PhD
Fergana Medical Institute of Public Health
ORCID: 0000-0001-5164-5931

Abstract. This thesis examines preventive approaches to supporting speech development in preschool children through the organization of proper and balanced nutrition, including the significance of iodine deficiency, breastfeeding and complementary feeding practices, and the practical application of the "language nutrition" principle. Practical recommendations for parents and educators have been developed.

Keywords: preschool education, nutrition culture, iodine deficiency, stunting, breastfeeding, language nutrition, prevention, working with parents.

Preventing delayed speech development is considerably more effective and cost-efficient than treating it after the fact. In modern pediatrics and speech therapy, the preventive approach – that is, eliminating risk factors before a problem arises in the child – is gaining increasing importance. For this reason, cultivating a culture of proper child nutrition in preschool institutions and families is of particular significance. Such an approach yields not only medical but also substantial economic benefits, since the subsequent correction of speech disorders demands considerably more time, funding, and specialist effort.

According to international data, in 2022 approximately 149 million children under the age of five worldwide were affected by stunting (impaired height-for-age and weight-for-age growth resulting from chronic undernutrition). The scientific literature emphasizes that stunting has a long-term negative effect not only on physical growth but also on cognitive and speech development, and that in some cases this effect persists throughout life. A systematic review of children aged 6–36 months identified being the child of a working mother, premature birth, early introduction of complementary feeding, and low dietary diversity as significant risk factors for delayed speech and overall development. These findings once again confirm the importance of properly organizing nutrition within the preschool education system.

Exclusive breastfeeding during the first six months of life, followed by the timely introduction of complementary feeding with adequate frequency and dietary variety, establishes an important foundation for a child's subsequent speech and cognitive development. Studies have shown that early or improperly organized complementary feeding significantly increases the risk of developmental delay. For this reason, providing parents with proper guidance on breastfeeding and complementary feeding should be a joint responsibility of preschool education and healthcare professionals.

The scientific literature indicates that iodine deficiency during pregnancy and early childhood disrupts thyroid hormone production, negatively affecting brain development, including the formation of expressive speech. Correcting mild-to-moderate iodine deficiency has been shown to improve cognitive performance in school-age children Iron deficiency, too, affects attention, memory, and cognitive function, which may indirectly lead to reduced speech activity. Accordingly, ensuring the regular inclusion of iodized salt and seafood in preschool meal planning is an important preventive measure.

Alongside physical nutrition, researchers also put forward the concept of "language nutrition" – the quality of an adult's verbal interaction with a child, shared reading, and social engagement. Numerous studies have confirmed the positive effect of this factor on speech and

ISBN: 978-625-90699-4-4

cognitive development in children at risk. Mealtime, therefore, can also be regarded as a valuable opportunity for verbal communication: talking with the child about the name, taste, and smell of food helps expand the child's vocabulary. Within this approach, it is recommended that caregivers and parents treat feeding not merely as the satisfaction of a physiological need, but as an active tool of pedagogical communication.

1) Regularly including foods rich in iron, vitamin B12, vitamin D, and iodine (liver, eggs, dairy products, iodized salt, seafood) in the daily diet of children in kindergartens and at home; 2) Advising parents to maintain breastfeeding for at least 6 months and to introduce complementary feeding in a timely manner using a variety of foods; 3) Regularly monitoring the child's height and weight indicators and referring the child to a pediatrician immediately if signs of stunting are detected; 4) Ensuring that educators and speech therapists conduct awareness-raising work with parents on the relationship between nutrition and speech development; 5) Turning the feeding process into a means of verbal communication; 6) Referring children with delayed speech for pediatric examination and, where necessary, laboratory testing.

Organizing proper nutrition for preschool children is one of the important, yet often overlooked, directions in supporting speech development. From breastfeeding and complementary feeding practices to micronutrient provision and the cultivation of language nutrition, this issue can be comprehensively addressed through the coordinated efforts of healthcare professionals, educators, and parents at every stage. Such an integrated preventive approach serves to improve not only the speech and cognitive potential of the individual child, but that of society as a whole.

References:

1. Spatial distribution of stunting among breast feeding children in Sub-Sahara Africa // PMC. – 2024.
2. Impact of Stunting on Development of Children between 1–3 Years of Age // PMC. – 2022.
3. Hubungan Stunting dengan Keterlambatan Perkembangan Bahasa pada Anak Usia 6–36 Bulan: A Systematic Review, 2025.
4. Iodine deficiency and its consequences for cognitive and psychomotor development of children, 2014.
5. Jáuregui-Lobera I. Iron deficiency and cognitive functions // Neuropsychiatric Disease and Treatment. – 2014. – Vol. 10. – P. 2087–2095.
6. Influence of Language Nutrition on Children's Language and Cognitive Development: An Integrated Review // Early Childhood Research Quarterly. – 2016. – Vol. 36. – P. 318–333.

ISBN: 978-625-90699-4-4

МОНИТОРИНГ УРОВНЯ ТЕСТОСТЕРОНА У МУЖЧИН С ИСПОЛЬЗОВАНИЕМ ИММУНОКОМПЛЕКСНЫХ МЕТОДОВ

MONITORING TESTOSTERONE LEVELS IN MEN USING IMMUNOCOMPLEX METHODS

Sharofiddin Xolmatov[1]
Assistant, Central Asian Medical University, Fergana, Uzbekistan
https://orcid.org/0009-0006-1718-1065

Orifjon Aripov[2]
[2]*D.Sc., Professor, Center for Professional Development of Medical Workers, Tashkent, Uzbekistan*
https://orcid.org/0009-0000-6472-4604

Muzaffar Xabibulloyevich[3]
[3]*Anesthesiologist-Intensivist, Fergana Branch of the Republican Scientific Center for Emergency Medical Care, Fergana, Uzbekistan*
https://orcid.org/0009-0000-7935-8475

Abstract:Testosterone deficiency is recognized as a complex clinical and biochemical condition that often remains undiagnosed, overlooked, or inadequately differentiated in a significant portion of the modern male population, presenting in either symptomatic or asymptomatic forms. Accordingly, this paper aims to evaluate various spectrums of testosterone deficiency states while performing a comparative analysis of the most optimal immunocomplex laboratory methods utilized for accurate diagnostic assessment.

Keywords: Chemiluminescent immunoassay (CLIA), Enzyme-linked immunosorbent assay (ELISA), testosterone deficiency, immunocomplex, free testosterone, andropause, hypogonadism, libido, luteinizing hormone (LH), follicle-stimulating hormone (FSH), 5-alpha reductase, dihydrotestosterone (DHT).

Аннотация

Дефицит тестостерона признается клинико-биохимическим процессом, который у значительной части современного мужского населения остается недифференцированным и в большинстве случаев оставляет без внимания симптоматические или асимптоматические проявления. В связи с этим в данной статье на фоне обсуждения различных степеней дефицита тестостерона запланирован сравнительный анализ наиболее оптимальных иммунокомплексных методов лабораторной диагностики.

Ключевые слова: Иммунохемилюминесцентный анализ (ИХЛА), иммуноферментный анализ (ИФА), дефицит тестостерона, иммунокомплекс, свободный тестостерон, андропауза, гипогонадизм, либидо, лютеинизирующий гормон, фолликулостимулирующий гормон, 5-альфа-редуктаза, дигидротестостерон.

Введение

Дефицит или снижение секреции тестостерона также фиксируется как возрастное состояние: снижения секреции тестостерона до 10% у мужчин в возрасте около 30 лет и до 40% у мужчин в возрасте около 70 лет регистрируются как андропауза или гипогонадизм [1]. В настоящее время доказано, что дефицит тестостерона оказывает негативное влияние на ряд физиологических процессов в мужском организме. К ним относятся снижение полового либидо, эректильная дисфункция, общее энергетическое состояние организма, настроение, когнитивный статус нервной системы, мышечная масса, степень плотности костной ткани и накопление избыточных жировых молекул [3].

Тем не менее дефицит тестостерона до сих пор остается без должного внимания как широко распространенное состояние. Пациенты с изменениями, вызванными дефицитом тестостерона, должны проходить гормональную коррекцию с осторожностью под наблюдением терапевтов, эндокринологов и урологов. Вопросы контроля и точного определения уровня тестостерона в терапевтическом или диагностическом процессе также рассматриваются как еще одна проблема, находящаяся в центре внимания.

Механизм возникновения дефицита тестостерона:

Чтобы сформировать полную картину состояния дефицита тестостерона, нам необходимо прежде всего ознакомиться с ролью тестостерона в биохимических и физиологических процессах, а также с процессами его синтеза. 90% тестостерона в организме человека синтезируется клетками Лейдига в семенниках под управлением гормонов ЛГ и ФСГ гипофиза на основе стимуляции гонадотропин-рилизинг гормоном (ГнРГ) гипоталамуса. Если учесть, что фолликулостимулирующий гормон участвует в сперматогенезе, связываясь с клетками Сертоли, то для процессов синтеза и секреции тестостерона большее значение имеет лютеинизирующий гормон. Оставшиеся 10% секретируются надпочечниками.

В процессе обмена веществ тестостерон переходит в форму дигидротестостерона и эстрадиола, оказывая обратное ингибирующее действие на гипофиз. Тестостерон проявляет свое эффективное действие путем связывания с андрогеновыми рецепторами.

В некоторых случаях тестостерон и дигидротестостерон являются про- и активными гормонами. По своему биологическому эффекту скорость связывания с андрогеновыми рецепторами у дигидротестостерона обладает в несколько раз более высокой активностью по сравнению с тестостероном. Превращение тестостерона в дигидротестостерон катализируется ферментом 5-альфа-редуктазой. В организме человека встречаются две формы фермента альфа-редуктазы в различных частях тела. Первая форма, каталитическая скорость которой не зависит от андрогенов, расположена в печени, коже и головном мозге. Вторая форма расположена в предстательной железе и канальцах семенников [10].

В плазме крови тестостерон встречается в двух формах: связанной и несвязанной (свободной). В большинстве случаев до 97–98% концентрации тестостерона находится в связанном с белками плазмы состоянии. При этом глобулин, связывающий половые гормоны (ГСПГ), образует прочный комплекс с тестостероном, вследствие чего не оказывает никакого регуляторного эффекта. Определенная часть свободного тестостерона образует слабую связь с белком альбумином, а оставшаяся часть

ISBN: 978-625-90699-4-4

циркулирует в кровотоке в свободной форме и представляет собой основную действующую концентрацию гормона.

Изменение уровня тестостерона в плазме крови: Определение уровня тестостерона находится под влиянием ряда физиологических и внешних факторов. Для получения максимального эффекта на преаналитическом этапе образец крови у пациента должен браться в утренние часы — от 8 до 10 утра. На секрецию тестостерона могут влиять вариации даже в течение суток (заход солнца) и в середине дней недели [4-5-6]. Острые заболевания и другие виды изменений создают различные препятствия для определения реальной концентрации. На аналитическом этапе необходимо выбрать наиболее оптимальные методы анализа для определения уровня тестостерона и правильно проанализировать их специфичность, чувствительность, надежность и экономическую эффективность.

Уровень тестостерона снижается в зависимости от возраста на 1% в год после определенного возраста; возрастные изменения не ограничиваются только снижением секреции — глобулины, связывающие половые гормоны и связывающие основную концентрацию тестостерона, с возрастом также достигают более высоких концентраций. В результате этого мы можем наблюдать еще большее ослабление биологической активности свободного тестостерона [8]. По критерию оценки дефицита гормона тестостерона не установлено четкой нижней или верхней границы, однако средняя концентрация гормона тестостерона в плазме крови менее 15 нмоль/л клинически прямо связывается с дефицитом тестостерона.

Материалы и методы:

С целью функциональной оценки гормонального дисбаланса, связанного с дефицитом тестостерона, а также для проведения сравнительного анализа двух типов иммунокомплексных методов, которые могут быть использованы в данном процессе, и выбора наиболее оптимального из них, с помощью методов ИХЛА (CLIA) и ИФА (ELISA) одновременно были отобраны образцы крови 87 мужчин экспериментальной группы и 10 мужчин интактной группы в возрасте 25–35 лет, не имеющих сопутствующих заболеваний. Образцы анализировались с соблюдением всех правил преаналитического, аналитического и постаналитического контроля качества.

Для иммуноферментного метода использовался набор «Свободный-Тестостерон-ИФА» компании ХЕМА. В качестве анализатора применялся прибор MR-96A фирмы Mindray.

Иммунохемилюминесцентный метод: на анализаторе Maglumi X3 фирмы Snibe с использованием CLIA Testosterone (100t). Температура хранения реагентов составляла 2–8 °C. Сыворотки крови, полученные для образцов с первичными показателями 12–20 нг/мл, разводили 0,9% физиологическим раствором NaCl при комнатной температуре 25 °C в соотношениях 1:2, 1:5, 1:10 и 1:20.

ISBN: 978-625-90699-4-4

Анализ и результаты:

Таблица №1

	Исходная концентрация	**1:2**	**1:5**	**1:10**	**1:20**	**Норма**
Экспериментальная группа ИХЛА	33,2 ± 0,3 пг/мл	22,2 ± 0,3 пг/мл	15,2 ± 0,3 пг/мл	10,2 ± 0,3 пг/мл	7,2 ± 0,3 пг/мл	4,5 – 42,0 пг/мл
Экспериментальная группа ИФА	16,4 ± 0,3 нг/мл	12,2 ± 0,2 нмоль/л	9,1 ± 0,2 нмоль/л	2,2 ± 0,3 нмоль/л	0,2 ± 0,3 нмоль/л	2,36 – 38 нмоль/л

При обсуждении результатов на основе Таблицы 1: если начальная средняя концентрация свободного (free) тестостерона в 87 образцах составляла 17,2 ± 0,3 нг/мл и 16,4 ± 0,3 нг/мл для методов ИХЛА и ИФА соответственно, то при последовательном разведении в соотношениях 1:10 и 1:20 в методе ИХЛА уровень гормона тестостерона не опускался ниже нижней границы. В методе же ИФА именно при соотношениях разведения 1:10 и 1:20 были зафиксированы ложноотрицательные результаты.

Заключение:

На основании сравнительного анализа чувствительности нижнего предела иммунокомплексных методов при мониторинге гормона тестостерона можно прийти к следующему выводу: если начальная концентрация свободного тестостерона в сыворотке крови составляла 33,2 ± 0,3 пг/мл (ИХЛА) и 16,4 ± 0,3 нг/мл (ИФА), то при доведении соотношений разведения до 1:10 и 1:20 анализатор ИХЛА достоверно сохранял положительный результат концентрации гормона в биоматериалах, зафиксировав показатели 7,2 ± 0,3 пг/мл и 4,5–42,0 пг/мл соответственно. Однако при использовании метода ИФА при аналогичном разведении были зарегистрированы ложноотрицательные результаты. Одним словом, метод ИХЛА превосходит анализатор ИФА по чувствительности к концентрации гормона в биоматериале и служит наиболее оптимальным выбором для последующих клинических и биологических исследований.

ISBN: 978-625-90699-4-4

Список литературы:

1. **Bhasin, S., Brito, J. P., Cunningham, G. R., et al.** (2018). Testosterone Therapy in Men With Hypogonadism: An Endocrine Society Clinical Practice Guideline. *The Journal of Clinical Endocrinology & Metabolism*, 103(5), 1715–1744.
2. **Wu, F. C. W., Tajar, A., Beynon, J. M., et al.** (2010). Identification of Late-Onset Hypogonadism in Middle-Aged and Elderly Men. *The New England Journal of Medicine*, 363(2), 123–135.
3. **Morgentaler, A., Zitzmann, M., Traish, A. M., et al.** (2016). Fundamental Concepts Regarding Testosterone Deficiency and Treatment: International Expert Consensus Resolutions. *Mayo Clinic Proceedings*, 91(7), 881–896.
4. **Brambilla, D. J., Matsumoto, A. M., Araujo, A. B., & McKinlay, J. B.** (2007). The effect of diurnal variation on clinical measurement of serum testosterone and other sex hormone levels in men. *The Journal of Clinical Endocrinology & Metabolism*, 92(3), 853–858.
5. **Diver, M. J., Imtiaz, K. E., Ahmad, A. M., et al.** (2003). Diurnal rhythmicity and other sources of variation in serum testosterone concentrations in healthy middle-aged men. *Clinical Endocrinology*, 58(6), 710–716.
6. **Plaza-Diaz, J., Perez-Ferreirós, A., & Gil, A.** (2020). Pre-analytical and analytical considerations in testosterone measurement: Methodological approaches. *Journal of Clinical Medicine*, 9(4), 1120.
7. **Spratt, D. I., O'Dea, L. S., Schoenfeld, D., et al.** (1988). Neuroendocrine responses to physiological concentrations of testosterone in men. *American Journal of Physiology-Endocrinology and Metabolism*, 254(5), E658–E666.
8. **Kiprovski, M., & Tsiotra, P.** (2019). Age-related decline in serum free testosterone and the role of Sex Hormone-Binding Globulin (SHBG). *Steroids*, 148, 45–52.
9. **Rosner, W., Auchus, R. J., Azziz, R., et al.** (2007). Position statement: Utility, limitations, and pitfalls in measuring testosterone: An Endocrine Society position statement. *The Journal of Clinical Endocrinology & Metabolism*, 92(2), 405–413.
10. **Russell, D. W., & Wilson, J. D.** (1994). Steroid 5α-reductase: Two genes/two enzymes. *Annual Review of Biochemistry*, 63(1), 25–61.

ISBN: 978-625-90699-4-4

RANGTASVIR DARSLARIDA SUN'IY INTELLEKT TEXNOLOGIYaLARIDAN FOYDALANIShNING NAZARIY VA AMALIY ASOSLARI

THEORETICAL AND PRACTICAL BASES OF USING ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN PAINTINGS LESSONS

A'zamjonov Axadjon A'zamjonovich
Fergana State University
Faculty of Pedagogy, Psychology and Art History
Senior Lecturer, Department of Fine Arts,
Member of the Academy of Arts of Uzbekistan

ABSTRAKT: This article studies the theoretical, methodological and practical foundations of integrating artificial intelligence technologies into the process of teaching painting in higher education institutions in the context of digital transformation. The study highlights the potential of artificial intelligence tools in developing artistic and aesthetic thinking, visual analysis, compositional thinking, understanding color relationships, independent creative decision-making and reflexive skills in students. The use of artificial intelligence in painting classes is based on the fact that it is considered not as a means of creating a finished artistic product or replacing the student's practical work, but as a means of creative research, comparison of alternative options, visual analysis and methodological support. The article proposes a three-stage model of still life development: observation and sketching of nature, compositional and color analysis using artificial intelligence, and independent practical painting using the results of the analysis. The issues of pedagogical effectiveness of using artificial intelligence, academic integrity, copyright and preservation of the student's personal creative style are also analyzed.

Keywords: painting, artificial intelligence, generative artificial intelligence, digital education, art education, still life, composition, color relationships, visual analysis, creative thinking, pedagogical technology, academic integrity.

ANNOTATSIYa: Mazkur maqolada raqamli transformatsiya sharoitida oliy ta'lim muassasalarida rangtasvir fanini o'qitish jarayoniga sun'iy intellekt texnologiyalarini integratsiya qilishning nazariy, metodik va amaliy asoslari tadqiq etilgan. Tadqiqotda sun'iy intellekt vositalarining talabalarda badiiy-estetik tafakkur, vizual tahlil, kompozitsion fikrlash, rang munosabatlarini anglash, mustaqil ijodiy qaror qabul qilish va refleksiv ko'nikmalarni shakllantirishdagi imkoniyatlari yoritilgan. Rangtasvir mashg'ulotlarida sun'iy intellektdan foydalanish tayyor badiiy mahsulotni yaratish yoki talabaning amaliy mehnatini almashtirish vositasi sifatida emas, balki ijodiy izlanish, muqobil variantlarni taqqoslash, vizual tahlil va metodik qo'llab-quvvatlash vositasi sifatida qaralishi asoslangan. Maqolada natyurmort ishlanishining uch bosqichli modeli taklif etilgan: naturani kuzatish va eskizlash, sun'iy intellekt yordamida kompozitsion-rangli tahlil, hamda tahlil natijalaridan foydalangan holda mustaqil amaliy rangtasvirni bajarish. Shuningdek, sun'iy intellektdan foydalanishning pedagogik samaradorligi, akademik halollik, mualliflik huquqi va talabaning shaxsiy ijodiy uslubini saqlash masalalari tahlil qilingan.
Tayanch so'zlar: *rangtasvir, sun'iy intellekt, generativ sun'iy intellekt, raqamli ta'lim, badiiy ta'lim, natyurmort, kompozitsiya, rang munosabatlari, vizual tahlil, ijodiy tafakkur, pedagogik texnologiya, akademik halollik.*

АННОТАЦИЯ: В статье исследуются теоретические, методические и практические основы интеграции технологий искусственного интеллекта в процесс преподавания

живописи в высших образовательных учреждениях в условиях цифровой трансформации. Рассматриваются возможности искусственного интеллекта в развитии художественно-эстетического мышления студентов, визуального анализа, композиционного мышления, понимания цветовых отношений, самостоятельного творческого принятия решений и рефлексивных навыков. Обосновывается положение о том, что искусственный интеллект в обучении живописи должен использоваться не как средство замены практической деятельности студента или автоматического создания готового художественного продукта, а как инструмент творческого поиска, сравнительного анализа, визуальной интерпретации и методической поддержки. Предлагается трехэтапная модель работы над натюрмортом: наблюдение и выполнение эскиза с натуры, композиционно-цветовой анализ с использованием искусственного интеллекта и самостоятельное выполнение живописной работы на основе результатов анализа. Особое внимание уделяется вопросам академической добросовестности, авторского права и сохранения индивидуального художественного стиля студента.

Ключевые слова: *живопись, искусственный интеллект, генеративный искусственный интеллект, цифровое образование, художественное образование, натюрморт, композиция, цветовые отношения, визуальный анализ, творческое мышление, педагогическая технология, академическая добросовестность.*

.

KIRISh

Zamonaviy ta’lim tizimida raqamli texnologiyalarning jadal rivojlanishi o‘qitish mazmuni, pedagogik metodlar va talabalarning mustaqil ta’lim olish mexanizmlarini qayta ko‘rib chiqishni taqozo etmoqda. Ayniqsa, sun’iy intellektning generativ modellari paydo bo‘lishi ta’lim jarayonida vizual materiallarni yaratish, tahlil qilish, g‘oyalarni shakllantirish va individual ta’lim traektoriyalarini qo‘llab-quvvatlash uchun yangi imkoniyatlarni yuzaga keltirdi. Sun’iy intellekt texnologiyalari ta’limning turli sohalarida qo‘llanilayotgani kabi tasviriy san’at ta’limida ham yangi metodik imkoniyatlarni shakllantirmoqda. Biroq rangtasvir fani o‘zining amaliy va ijodiy xususiyati bilan boshqa o‘quv fanlaridan farq qiladi. Rangtasvirni o‘rganish faqat vizual axborotni qabul qilish bilan cheklanmaydi. U naturani kuzatish, shakl va nisbatlarni aniqlash, perspektiva qonunlarini anglash, rang munosabatlarini his qilish, material xususiyatlarini o‘rganish, kompozitsion yaxlitlikka erishish va bevosita amaliy faoliyatni talab qiladi.

Shu nuqtai nazardan sun’iy intellektni rangtasvir ta’limiga joriy etish masalasiga ehtiyotkorlik bilan yondashish zarur. Texnologiya talabaning o‘rniga rasm chizishi emas, balki uning badiiy fikrlashini rivojlantirishi kerak.

UNESCO tomonidan tayyorlangan generativ sun’iy intellekt va ta’limga bag‘ishlangan qo‘llanmada ham ushbu texnologiyalarni inson markazidagi yondashuv, pedagogik maqsad va mas’uliyat tamoyillari asosida qo‘llash zarurligi ta’kidlangan [3]. Bu yondashuv tasviriy san’at ta’limi uchun ham muhim ahamiyatga ega.

R. Arnxeym vizual idrokni san’atni anglash va ijodiy tafakkurning muhim tarkibiy qismi sifatida ko‘radi. Uning fikricha, inson tasvirni faqat ko‘z bilan emas, balki tafakkur orqali ham qabul qiladi [4]. Demak, rangtasvir darsida raqamli texnologiyalardan foydalanish talabaning vizual idrokini pasaytirmasdan, aksincha, uni tahliliy fikrlash bilan boyitishi lozim.

Shuningdek, J. Itten ranglarning o‘zaro ta’siri va kontrast munosabatlarini o‘rganishda rangni faqat fizik hodisa sifatida emas, balki inson idroki bilan bog‘liq badiiy kategoriya sifatida baholaydi [5]. Bu qarash sun’iy intellektdan rangtasvir ta’limida foydalanishning metodik asoslarini ishlab chiqishda muhim nazariy manba bo‘lib xizmat qiladi.

Muallifning avvalgi tadqiqotlarida ham sun’iy intellekt texnologiyalarini madaniyat va san’at ta’limiga integratsiya qilish masalalari ko‘rib chiqilgan. Jumladan, A’zamjonov A.A. tomonidan «Madaniyat va san’at ta’limida sun’iy intellekt texnologiyalaridan foydalanishning

nazariy va amaliy asoslari» mavzusidagi tadqiqotda mazkur texnologiyalarning san'at ta'limidagi imkoniyatlari tahlil qilingan [6].

Shu asosda mazkur maqolada masala aynan **rangtasvir darslari**, xususan, **natyurmort ishlanishi jarayoni** misolida chuqurlashtiriladi.

TADQIQOT MAQSADI

Tadqiqotning asosiy maqsadi - rangtasvir darslarida sun'iy intellekt texnologiyalaridan pedagogik maqsadga muvofiq foydalanishning nazariy va amaliy asoslarini ishlab chiqish hamda natyurmort ishlanishi misolida samarali metodik modelni asoslashdan iborat.

Maqsadga erishish uchun quyidagi vazifalar belgilandi:

- rangtasvir ta'limida sun'iy intellektdan foydalanish imkoniyatlarini aniqlash;
- sun'iy intellektning talabalar vizual tafakkuriga ta'sirini tahlil qilish;
- kompozitsion va rangli yechimlarni izlashda raqamli vositalardan foydalanish usullarini belgilash;
- natyurmort ishlanishining uch bosqichli metodik modelini ishlab chiqish;
- sun'iy intellektdan foydalanishda akademik halollik va mualliflik masalalarini yoritish;
- o'qituvchi va talabaning texnologiyadan foydalanishdagi funksional vazifalarini belgilash.

TADQIQOT METODOLOGIYaSI

Tadqiqotda nazariy tahlil, qiyosiy tahlil, pedagogik kuzatuv, vizual materiallarni tahlil qilish, metodik modellashtirish va umumlashtirish usullaridan foydalanildi.

Tadqiqot metodologiyasining asosini shaxsga yo'naltirilgan ta'lim, faoliyatga asoslangan yondashuv, raqamli ta'lim texnologiyalari va ijodiy-ta'limiy yondashuvlar tashkil etadi.

Rangtasvir ta'limida sun'iy intellektdan foydalanishning samaradorligi texnologiyaning mavjudligi bilan emas, balki uning aniq didaktik maqsadga xizmat qilishi bilan belgilanadi.

RANGTASVIR TA'LIMIDA SUN'IY INTELLEKTNING PEDAGOGIK IMKONIYaTLARI

Rangtasvir mashg'ulotlarida sun'iy intellektdan foydalanishning birinchi muhim imkoniyati - **ijodiy g'oyalarni shakllantirish**dir.

Talaba muayyan mavzu bo'yicha bir nechta kompozitsion yechimlarni tahlil qilishi mumkin. Masalan, «Milliy buyumlar ishtirokida natyurmort» mavzusida ishlash jarayonida turli kompozitsion variantlarni taqqoslash orqali predmetlarning joylashuvi, kompozitsion markaz, muvozanat va ritm haqida xulosa chiqarish mumkin.

Ikkinchi imkoniyat - **rang munosabatlarini tahlil qilish**.

Rangtasvir ta'limida talabalar uchun eng murakkab masalalardan biri - predmetning lokal rangini emas, balki uning atrof-muhit bilan munosabatini ko'ra bilishdir. Sun'iy intellekt yordamida turli rang gammalari, issiq-sovuq munosabatlar va kontrastlar vizual tarzda taqqoslanishi mumkin.

Uchinchi imkoniyat - **individual ta'limni qo'llab-quvvatlash**.

Talabalarning tayyorgarlik darajasi bir xil emas. Ayrim talabalar kompozitsiyani tez o'zlashtirsa, boshqalari rang munosabatlarida qiynalishi mumkin. Raqamli vositalar individual mashq va vizual tahlil uchun qo'shimcha materiallar tayyorlashga yordam beradi.

To'rtinchi imkoniyat - **refleksiv ta'lim**.

Talaba o'z ishini tayyorlab bo'lgach, uni tahlil qilishi, «Men kompozitsion markazni to'g'ri belgiladimmi?», «Ranglar o'rtasidagi munosabat qanday?», «Qaysi detallar asosiy va qaysilari ikkinchi darajali?» kabi savollar asosida o'z ishiga qayta baho berishi mumkin.

3 BOSQIChLI NATYuRMORT IShLANISh MODELI

Rangtasvir darslarida sun'iy intellektdan foydalanishni amaliyotda sinab ko'rish uchun natyurmort ishlanishini uch bosqichga ajratish maqsadga muvofiq.

1-rasm. Natyurmort ishlanishining uch bosqichli modeli: 1 - naturadan eskiz va kuzatish; 2 - sun'iy intellekt yordamida kompozitsion-rangli tahlil; 3 - mustaqil amaliy rangtasvir.

1-BOSQICh. NATURANI KUZATISh VA ESKIZ

Birinchi bosqichda talaba natyurmortni bevosita naturadan kuzatadi. Bu jarayonda predmetlarning o'zaro nisbati, gorizontal va vertikal yo'nalishlar, kompozitsion markaz, yorug'lik manbai va fazoviy munosabatlar aniqlanadi.

ISBN: 978-625-90699-4-4

Talaba dastlab qalamda bir nechta kichik eskizlar ishlaydi. Eskizlar kompozitsiyaning umumiy qurilishi haqida dastlabki tasavvurni beradi.

Bu bosqichda sun'iy intellektdan foydalanish shart emas. Aksincha, talaba avval o'zining shaxsiy kuzatuvi va badiiy tafakkuri asosida yechim izlashi muhim.

Shu orqali talabaning **naturani mustaqil ko'ra olish qobiliyati** saqlanadi.

2-BOSQICh. SUN'IY INTELLEKT YoRDAMIDA TAHLIL

Ikkinchi bosqichda talabaning eskizi yoki natyurmort fotosurati raqamli muhitda tahlil qilinadi.

Bu yerda sun'iy intellektdan tayyor rasm yaratish uchun emas, balki muqobil vizual yechimlarni ko'rib chiqish va tahlil qilish uchun foydalanish maqsadga muvofiq.

Talaba quyidagi savollar asosida tahlil olib borishi mumkin:

- kompozitsion markaz qaerda joylashgan?
- predmetlar o'rtasidagi vizual muvozanat qanday?
- qaysi predmet asosiy va qaysilari yordamchi?
- yorug'lik manbasi kompozitsiyada qanday ta'sir ko'rsatmoqda?
- qaysi ranglar issiq va qaysilari sovuq?
- fon va predmet o'rtasida qanday kontrast mavjud?
- umumiy rang gammasini qanday yaxlitlash mumkin?

Bu jarayonda sun'iy intellektning takliflari **tavsiya** sifatida qabul qilinishi kerak. Yakuniy badiiy qaror esa talabaning o'ziga tegishli bo'ladi.

3-BOSQICh. MUSTAQIL AMALIY RANGTASVIR

Uchinchi bosqichda talaba o'zining dastlabki eskizi, natura kuzatuvlari va raqamli tahlildan olgan xulosalari asosida amaliy rangtasvir ishini bajaradi.

Bu bosqich eng muhim hisoblanadi, chunki aynan shu yerda talaba o'zining badiiy mahoratini namoyon etadi.

Talaba ranglarni aralashtiradi, tonal munosabatlarni belgilaydi, predmetlarning hajmini ochadi, yorug'lik va soya munosabatlarini ishlaydi hamda kompozitsion yaxlitlikka erishishga harakat qiladi.

Shu tariqa sun'iy intellekt talabaning o'rniga rasm chizmaydi. U **ijodiy qaror qabul qilish jarayonini qo'llab-quvvatlovchi analitik vosita** vazifasini bajaradi.

NATYuRMORT MISOLIDA METODIK MODEL

Uch bosqichli modelni quyidagi pedagogik zanjir sifatida ifodalash mumkin:

Naturani kuzatish → shaxsiy eskiz → raqamli tahlil → muqobil variantlarni taqqoslash → badiiy qaror → amaliy rangtasvir → refleksiya.

Mazkur zanjirda eng muhim jihat - talabaning mustaqil qaror qabul qilish jarayonidir.Agar talaba sun'iy intellekt yaratgan tayyor tasvirni ko'chirsa, mazkur jarayonning ta'limiy qiymati pasayadi. Agar talaba raqamli variantlarni tahlil qilib, ulardan faqat metodik ma'lumot sifatida foydalansa, aksincha, uning vizual savodxonligi va tanqidiy fikrlashi rivojlanadi.

Shu sababli o'qituvchi topshiriqni «rasm yaratish» emas, balki **«rasmni tahlil qilish va asoslangan badiiy qaror qabul qilish»** shaklida tashkil qilishi maqsadga muvofiq.

SUN'IY INTELLEKT VA RANGTASVIRDA IJODIY TAFAKKUR

Ijodiy tafakkur tasviriy san'at ta'limining markaziy kategoriyalaridan biri hisoblanadi. Talaba tayyor yechimni qabul qilish emas, balki muammoni ko'rish, uni tahlil qilish va o'z yechimini ishlab chiqish qobiliyatiga ega bo'lishi kerak.

E. Eisner san'at ta'limi insonning murakkab vaziyatlarda qaror qabul qilish, noaniqlikni qabul qilish va vizual tafakkurini rivojlantirish imkoniyatlariga e'tibor qaratgan [8].

Ushbu yondashuv sun'iy intellektdan foydalanishda ham muhim. Chunki texnologiya qanchalik kuchli bo'lmasin, uning natijasini tanlash, rad etish yoki o'zgartirish uchun insonning estetik mezonlari zarur.

Demak, sun'iy intellekt talabaning ijodkorligini avtomatik ravishda oshirmaydi. Uning pedagogik samarasi texnologiyadan **qanday foydalanishga** bog'liq.

ISBN: 978-625-90699-4-4

SUN'IY INTELLEKTDAN FOYDALANIShDA O'QITUVChINING ROLI

Raqamli texnologiyalarning ta'limga kirib kelishi o'qituvchining rolini kamaytirmaydi. Aksincha, uning metodik vazifalarini murakkablashtiradi.

O'qituvchi:

- sun'iy intellektdan foydalanish maqsadini belgilaydi;
- talabaga to'g'ri savol va topshiriq beradi;
- vizual natijalarni tanqidiy tahlil qilishga o'rgatadi;
- texnologiya natijasining badiiy qiymatini baholaydi;
- talabaning mustaqil ijodini nazorat qiladi;
- akademik halollik qoidalarini tushuntiradi.

Shu nuqtai nazardan o'qituvchi zamonaviy ta'limda «axborot beruvchi»dan tashqari **metodik yo'naltiruvchi va badiiy ekspert** vazifasini ham bajaradi.

AKADEMIK HALOLLIK VA MUALLIFLIK MASALASI

Sun'iy intellektdan foydalanishning eng dolzarb masalalaridan biri akademik halollikdir. Talaba sun'iy intellekt tomonidan yaratilgan tasvirni o'zining mustaqil ijodiy ishi sifatida taqdim etmasligi kerak. Agar raqamli generatsiyadan foydalanilgan bo'lsa, uning vazifasi va darajasi belgilanishi maqsadga muvofiq.

Rangtasvir fanini baholashda esa talabaning:

- naturani kuzatish qobiliyati;
- kompozitsion yechim topishi;
- ranglarni to'g'ri munosabatga keltira olishi;
- shakl va hajmni ochishi;
- material bilan ishlash texnikasi;
- mustaqil badiiy qaror qabul qilishi;
- yakuniy ishini himoya qila olishi

asosiy mezonlar bo'lishi lozim.

Bu yondashuv sun'iy intellektdan foydalanishni cheklash emas, balki uni **ta'limiy maqsadga bo'ysundirish** hisoblanadi.

NATIJALAR

Tadqiqot natijalarini umumlashtirish asosida rangtasvir darslarida sun'iy intellektdan foydalanishning quyidagi pedagogik imkoniyatlari aniqlandi:

Birinchidan, talabalarga bir mavzu doirasida turli kompozitsion yechimlarni taqqoslash imkoni paydo bo'ladi.

Ikkinchidan, rang munosabatlari va tonal yechimlarni vizual tahlil qilish imkoniyati kengayadi.

Uchinchidan, talabalarda vizual axborotni tanqidiy qabul qilish ko'nikmasi shakllanadi.

To'rtinchidan, mustaqil ta'lim jarayonida talabaning o'z ishini qayta ko'rib chiqishi va refleksiya qilishi osonlashadi.

Beshinchidan, o'qituvchi individual topshiriqlar va qo'shimcha vizual materiallarni tayyorlashda raqamli vositalardan samarali foydalanishi mumkin.

Biroq mazkur imkoniyatlar texnologiyaning o'ziga emas, balki uning pedagogik jihatdan to'g'ri tashkil etilishiga bog'liq.

MUHOKAMA

Olingan natijalar sun'iy intellektni rangtasvir ta'limiga joriy etishda ikki qarama-qarshi tendensiya mavjudligini ko'rsatadi.

Birinchi tendensiya - texnologiyadan ijodiy izlanishni kuchaytirish uchun foydalanish. Ikkinchi tendensiya - texnologiya natijasiga haddan tashqari bog'lanib qolish. Birinchi holatda talaba texnologiyadan foydalanib, ko'proq savol beradi, variantlarni taqqoslaydi va o'z qarorini asoslaydi. Ikkinchi holatda esa u tayyor vizual natijani qabul qilib, mustaqil ijodiy faoliyatdan voz kechishi mumkin. Shuning uchun rangtasvir ta'limida sun'iy intellektdan foydalanishning eng maqbul modeli **«inson - o'qituvchi - texnologiya» hamkorligi**ga asoslanishi lozim.Bunda

ISBN: 978-625-90699-4-4

inson - ijodiy qaror qabul qiluvchi sub'ekt; o'qituvchi - metodik rahbar; sun'iy intellekt esa - yordamchi analitik vosita sifatida ishtirok etadi.

XULOSA

Tadqiqot natijalaridan kelib chiqib, rangtasvir darslarida sun'iy intellekt texnologiyalaridan foydalanish zamonaviy badiiy ta'limning istiqbolli yo'nalishlaridan biri ekanini ta'kidlash mumkin.

Sun'iy intellekt kompozitsiya, rang, vizual tahlil va ijodiy g'oyalarni shakllantirish jarayonida qo'shimcha imkoniyatlar yaratadi. Biroq uning asosiy vazifasi talabaning amaliy faoliyatini almashtirish emas, balki uning ijodiy-tahliliy imkoniyatlarini kengaytirishdan iborat bo'lishi kerak.

Maqolada taklif etilgan uch bosqichli natyurmort ishlanish modeli - **«kuzatish va eskiz - sun'iy intellekt yordamida tahlil - mustaqil amaliy rangtasvir»** - texnologiyani badiiy ta'lim mazmuniga maqsadli integratsiya qilish imkonini beradi.

Mazkur model talabani tayyor raqamli natija iste'molchisi emas, balki vizual axborotni tahlil qiluvchi, tanlov qiluvchi va mustaqil badiiy qaror qabul qiluvchi sub'ekt sifatida shakllantirishga xizmat qiladi.

Shu bilan birga, rangtasvir ta'limida naturadan ishlash, eskiz, etyud, kompozitsiya, rang munosabatlari va amaliy texnika kabi an'anaviy mashg'ulotlar o'z ahamiyatini to'liq saqlab qolishi zarur.

Demak, kelajakdagi badiiy ta'lim modeli raqamli va an'anaviy usullarning raqobatiga emas, balki ularning ilmiy-metodik jihatdan asoslangan integratsiyasiga qurilishi lozim.

FOYDALANILGAN ADABIYoTLAR

1. O'zbekiston Respublikasi Oliy attestatsiya komissiyasi. Ilmiy jurnallarda chop etiladigan ilmiy maqolalar mazmuni va sifatiga qo'yiladigan umumiy talablar. - Toshkent.
2. Holmes W., Bialik M., Fadel C. Artificial Intelligence in Education: Promises and Implications for Teaching and Learning. - Boston: Center for Curriculum Redesign, 2019.
3. UNESCO. Guidance for Generative AI in Education and Research. - Paris: UNESCO, 2023.
4. Arnheim R. Art and Visual Perception: A Psychology of the Creative Eye. - Berkeley: University of California Press, 2004.
5. Itten J. The Art of Color. - New York: Wiley, 1997.
6. A'zamjonov A.A. Madaniyat va san'at ta'limida sun'iy intellekt texnologiyalaridan foydalanishning nazariy va amaliy asoslari. - Ilmiy maqola.
7. A'zamjonov A.A. Raqamli ta'lim muhitida sun'iy intellekt texnologiyalaridan foydalanish samaradorligi. - Ilmiy maqola.
8. Eisner E.W. The Arts and the Creation of Mind. - New Haven: Yale University Press, 2002.
9. Gardner H. Frames of Mind: The Theory of Multiple Intelligences. - New York: Basic Books, 2011.
10. Russell S., Norvig P. Artificial Intelligence: A Modern Approach. - Pearson, 2021.
11. Holmes W. Artificial Intelligence in Education: A Critical Review of Emerging Technologies and Pedagogical Applications. - London, 2024.
12. Pedagogika va san'at ta'limida raqamli texnologiyalardan foydalanish bo'yicha zamonaviy ilmiy-metodik manbalar.

ISBN: 978-625-90699-4-4

МЕТОДИКА СОГЛАСОВАНИЯ СОДЕРЖАНИЯ ИНТЕГРАТИВНОГО ОБУЧЕНИЯ МЕДИЦИНСКОЙ БИОЛОГИИ С ПРОФЕССИОНАЛЬНЫМИ КОМПЕТЕНЦИЯМИ

METHODOLOGY FOR ALIGNING THE CONTENT OF INTEGRATIVE MEDICAL BIOLOGY TEACHING WITH PROFESSIONAL COMPETENCIES

ALIYEV ZOKHIDJON ZOKIRJON UGLI
Central Asian Medical University, international medical university,
Assistant at the Department of Medical Chemistry and Biological Sciences
https://orcid.org/0009-0000-2806-4450

Abstract: This article substantiates a methodology for aligning the content of integrative medical biology teaching with the professional competencies of future physicians. The aim of the study was to develop a model that links biological knowledge with clinical content, systematizes interdisciplinary connections, and ensures its transfer to professional activity through integrative tasks. Systems analysis, the competency-based approach, content analysis, pedagogical modeling, and curriculum mapping were applied. As a result, the target, content, procedural, and assessment-reflective blocks of integrative content, the structure of competencies, professionally oriented topics, and task criteria were defined. The methodology promotes thinking in a clinical context and the formulation of substantiated professional conclusions based on biological knowledge.

Keywords: medical biology, integrative teaching, professional competence, interdisciplinary connection, clinical context, integrative task.

Аннотация: В статье обоснована методика согласования содержания интегративного обучения медицинской биологии с профессиональными компетенциями будущих врачей. Цель исследования заключается в разработке модели, связывающей фундаментальные знания с клиническим контекстом, междисциплинарными связями и профессионально ориентированными заданиями. Использованы системный анализ, компетентностный подход, контент-анализ, педагогическое моделирование и картирование содержания. Определены целевой, содержательный, процессуальный и оценочно-рефлексивный блоки, структура компетенций, комплекс профессионально ориентированных тем и критерии интегративных заданий. Предложенная методика обеспечивает перенос биологических знаний в профессиональные ситуации, развитие причинно-следственного анализа и формирование обоснованного клинического суждения.

Ключевые слова: медицинская биология, интегративное обучение, профессиональная компетентность, междисциплинарные связи, клинический контекст, интегративное задание

INTRODUCTION

In higher medical education, fundamental sciences constitute the theoretical foundation that shapes the future physician's clinical thinking, professional worldview, and ability to make evidence-based decisions. Within this system of disciplines, medical biology enables the laws governing life at the cellular, molecular, genetic, ontogenetic, and population levels to be understood from a medical perspective. Clinical phenomena such as cellular injury, dysregulation of gene expression, hereditary diseases, mutational processes, developmental abnormalities, parasitic diseases, and population-level risks cannot be explained without their

biological foundations. Therefore, the content of this discipline must develop in students not only a body of theoretical knowledge but also readiness to apply that knowledge in professional situations [14].

Medical biology content is often presented as a sequence of separate sections and concepts. Although students master DNA replication, mutation, the cell cycle, patterns of heredity, or ontogenesis, they do not always understand how these relate to clinical phenomena, diagnostic data, and preventive decisions. Consequently, the transfer of knowledge from the learning situation to the professional situation is weakened, creating a substantive gap between fundamental and clinical training. Integrative teaching brings the biological concept, clinical phenomenon, evidence, and professional action together within a single logical system.

In contemporary medical education, the competency-based approach requires the educational process to be designed from the final learning outcomes that students are expected to achieve. Professional competence is not limited to knowing information; it denotes the ability to apply knowledge, practical skills, clinical reasoning, communication, ethical responsibility, and reflection in an integrated manner in real situations [5, pp. 226-235]. Therefore, aligning medical biology content with professional competencies does not require increasing the volume of topics; rather, it requires clearly defining the professional significance of the learning material, showing interdisciplinary links, and creating a system of tasks that stimulates students to think and act.

International standards identify strengthening horizontal and vertical integration between fundamental and clinical disciplines as a priority [12; 13]. Integration reduces content duplication and strengthens interdisciplinary continuity, professional motivation, and knowledge retention. To implement it in medical biology, the criteria for selecting content, the structure of competencies, the map of interdisciplinary links, professionally oriented topics, and the principles for designing integrative tasks must be clearly defined.

The aim of the study was to develop a methodology for aligning the content of integrative medical biology teaching with the professional competencies of future physicians and to provide a scientific and methodological justification for its components. In accordance with this aim, the study determined the structure of integrative teaching content, described the components of professional competencies, constructed a system of interdisciplinary links, formed a set of professionally oriented topics, and established criteria for developing integrative tasks. The scientific novelty lies in the development of a methodological model that organizes medical biology content in the sequence “fundamental knowledge - interdisciplinary connection - clinical context - integrative activity - reflective assessment.”

LITERATURE REVIEW

Professional competence is interpreted as the integrated manifestation of knowledge, skills, professional values, clinical reasoning, and personal qualities in a specific situation. Epstein and Hundert describe professional competence as the ability to use communication, knowledge, technical skills, clinical reasoning, values, and reflection judiciously [5, pp. 226-235]. In medical biology, this approach requires students not merely to describe a process, but also to explain its clinical significance, analyze laboratory or pedigree data, identify risk factors, and draw a substantiated conclusion.

ISBN: 978-625-90699-4-4

In outcome-based education, the learning objective, content, activity, and assessment tools must be mutually aligned. Harden argues that the outcomes a graduate is expected to demonstrate should first be defined and that content and assessment should then be aligned with those outcomes [9, pp. 625-629]. Biggs and Tang's concept of constructive alignment likewise requires tasks, learning activities, and assessment criteria to follow a common logic [1]. Thus, when professional competence is defined as the final outcome, the content of medical biology is composed of the concepts, clinical situations, and types of activity that develop that outcome.

An integrated curriculum does not involve mechanically combining the content of disciplines; it creates connections among them at the levels of goals, concepts, and activities. Harden, Sowden, and Dunn describe levels of integration ranging from interdisciplinary awareness to a transdisciplinary approach [7, pp. 551-557]. Brauer and Ferguson define horizontal integration as linking disciplines taught concurrently and vertical integration as ensuring continuity between the fundamental and clinical stages [2, pp. 312-322]. In medical biology, linking cell biology with histology and biochemistry, and genetics and ontogenesis with clinical genetics, pediatrics, and obstetrics, provides both forms of integration.

Curriculum mapping is an effective tool for managing interdisciplinary connections. A content map demonstrates alignment among topics, competencies, learning activities, and assessment [8, pp. 123-137]. In medical biology, such a map determines which clinical discipline each concept supports, in which professional task it is applied, and through which outcome it is assessed.

International documents emphasize that medical education should be linked to healthcare needs, oriented toward competencies, and integrate fundamental and clinical training [6; 12; 13]. These requirements show that medical biology content must be designed not merely as theoretical information, but as a system that develops the biological foundations of clinical thinking. Therefore, the professional value of topics and their application in subsequent disciplines should be planned in advance.

Student-centered active learning transforms integrative content into practical activity. A problem situation, clinical-biological case, small-group discussion, and reflective question enable students to search for evidence, explain a mechanism, and defend a decision rather than merely reproduce ready-made information [11, pp. 1280-1283]. Accordingly, integration should not be limited to connecting content; it must be reinforced through the student's active analytical actions.

Local medical biology textbooks consistently present cellular biology, genetics, human biology, parasitology, and evolutionary principles [14]. To orient this fundamental foundation toward professional competence, the clinical potential of topics must be identified, interdisciplinary logical chains must be constructed, and knowledge must be applied in problem-based tasks. Thus, the integrative methodology does not replace biological content; rather, it gives that content clinical and functional meaning.

RESEARCH CONTENT

1. Research Idea and Methodological Foundations

The study was theoretical and methodological in nature and focused on coordinating the content of medical biology, professional competency requirements, and the foundational concepts of clinical disciplines. Systems analysis was used to identify the structural components

ISBN: 978-625-90699-4-4

of the discipline's content; content analysis was used to distinguish the categories of integration, competence, and outcome-based education in scientific sources; and comparative analysis was used to compare local biological content with international approaches to medical education. Pedagogical modeling was then used to develop the structure of integrative content and the mechanism by which knowledge is transformed into clinical competence.

The methodological framework consisted of competency-based, systems-activity, integrative, contextual, and reflective approaches. The competency-based approach defined outcomes through performance indicators; the integrative approach ensured connections between biological and clinical content; the contextual approach focused on applying knowledge in professional situations; and the reflective approach required students to analyze their own thinking.

Scientific validity, clinical significance, interdisciplinary linkage, applicability in professional activity, correspondence with the student's level of preparation, and assessability were used as content-selection criteria. For each topic, a foundational biological concept, clinical connection, expected competence, integrative task, and assessment indicator were specified. Such content mapping reduced unnecessary repetition and enabled the learning material to be closely linked with professional outcomes.

2. Structure of Integrative Teaching Content

The content of integrative medical biology teaching consists of four interrelated blocks. The target block defines the professional competencies, learning outcomes, and performance indicators to be developed in the future physician. The content block encompasses fundamental biological concepts, their clinical significance, interdisciplinary connections, and a set of professionally oriented topics. The procedural block includes activities such as problem questions, clinical-biological cases, analysis of laboratory data, simulation, concept mapping, and mini-projects. The assessment-reflective block uses criteria to determine the accuracy and application of knowledge, the analytical justification and logic of decisions, and the student's evaluation of their own activity.

Within the content block, biological material is organized at three levels. The first level comprises foundational scientific concepts and laws: cell structure, genetic information, heredity, variation, ontogenesis, population processes, and biological relationships. The second level is the clinical context: the biological mechanism of disease, risk factors, laboratory or instrumental indicators, diagnostic significance, and preventive approaches. The third level is professional activity: analyzing information, formulating a hypothesis, assessing risk, explaining information to a patient or family, and developing an evidence-based recommendation. Continuity among these three levels transforms biological knowledge into clinical competence.

When designing integrative content, it is advisable to use the "central clinical problem" method. Under this approach, several biological concepts are integrated around a single professional problem. For example, in a topic on hereditary anemia, gene mutation, protein biosynthesis, erythrocyte biology, autosomal recessive inheritance, population frequency, laboratory indicators, and genetic counseling are incorporated into one coherent learning situation. By analyzing this situation, the student recognizes the connections among biology, biochemistry, physiology, hematology, and clinical genetics.

ISBN: 978-625-90699-4-4

3. Structure of Professional Competencies

The professional competencies aligned with medical biology content comprise cognitive, practical-operational, analytical-clinical, communicative-collaborative, axiological-reflective, and information-digital components. The cognitive component involves mastery of biological concepts, terms, laws, and cause-and-effect relationships. The practical-operational component is manifested in activities such as constructing a pedigree, interpreting a karyotype or molecular diagram, classifying laboratory data, and identifying biological risk. The analytical-clinical component encompasses linking biological information with a clinical situation, explaining the biological basis of a problem, comparing evidence, and drawing a substantiated conclusion.

The communicative-collaborative component reflects the student's ability to discuss a problem in a small group, explain genetic or biological content in understandable language, defend a decision with evidence, and consider other viewpoints. The axiological-reflective component is associated with a responsible attitude toward human life, hereditary information, and biological safety, an understanding of professional ethical norms, and analysis of one's own activity. The information-digital component includes the ability to select a reliable electronic source, work with biological databases, interpret a digital image or genomic data, and present results visually.

Assigning competencies to topic content enables the teacher to define the expected outcome of each lesson precisely. For example, in the topic "Gene Mutations," the cognitive outcome is to explain types of mutations, whereas the analytical-clinical outcome is to justify the effect of a given nucleotide change on the protein and phenotype. The practical-operational outcome is manifested in interpreting a genetic table or laboratory data, and the communicative outcome in presenting the group's conclusion using scientific terminology. Such alignment transforms the lesson objective from a general statement into observable activity. The teacher defines the assessment criterion in advance, and the student understands what evidence and practical action will demonstrate achievement of the outcome.

4. System of Interdisciplinary Connections

The system of interdisciplinary connections is organized in three dimensions: horizontal, vertical, and spiral integration. Horizontal integration ensures content unity among biology, anatomy, histology, physiology, biochemistry, and biophysics taught at the same stage of study. Vertical integration provides for the concepts and methods acquired in medical biology to be reapplied in later disciplines, including pathological anatomy, pathophysiology, pharmacology, microbiology, pediatrics, oncology, obstetrics, and clinical genetics. In spiral integration, the same concept is repeatedly applied in progressively more complex clinical situations; for example, the cell cycle is first studied as a normal biological process and later in relation to regeneration, tumor development, and drug action.

The methodological unit of interdisciplinary connection is the chain "concept - mechanism - clinical sign - diagnostic evidence - professional decision." When planning a topic, the teacher first identifies the foundational biological concept, then its pathological or clinical mechanism, the observable sign and data, and finally the professional action the student must perform. For example, in a topic on cell membrane transport, the structure of an ion channel is the foundational concept; impaired channel function is the mechanism; changes in muscle or

ISBN: 978-625-90699-4-4

nerve activity are the clinical sign; an electrolyte or functional indicator is the diagnostic evidence; and biological substantiation of the data is the professional action.

To support interdisciplinary cooperation organizationally, teachers should develop a topic map, a unified terminological minimum, a bank of integrative tasks, and assessment rubrics. Different interpretations of the same topic across disciplines, or presenting it at mismatched times, prevent students from forming an integrated understanding. Therefore, interdepartmental coordination is an important pedagogical condition for the stability of integrative content.

5. Set of Professionally Oriented Topics

The set of professionally oriented topics combines sections of the medical biology course with high clinical potential. The first area, "Cell and Disease," covers the clinical significance of the cell membrane, organelles, the cell cycle, apoptosis, necrosis, and regeneration. The second area, "Genetic Information and Disease," integrates the gene, genome, gene expression, mutation, repair, epigenetic regulation, and hereditary syndromes. The third area, "Hereditary Risk and Genetic Counseling," links genealogical, twin, cytogenetic, biochemical, and molecular genetic methods with professional tasks.

The fourth area, "Ontogenesis and Reproductive Health," encompasses gametogenesis, embryonic development, critical periods, teratogenic factors, and the biological foundations of congenital abnormalities. The fifth area, "Population Risk and Prevention," addresses the gene pool, allele frequencies, Hardy-Weinberg equilibrium, screening, and epidemiological risk. The sixth area, "Parasitism and Biological Safety," integrates parasite life cycles, transmission mechanisms, laboratory diagnosis, prevention, and sanitary and hygienic measures. Each area enables several topics to be organized into modules around a professional task.

When compiling the set of topics, students' needs at subsequent stages of study are also taken into account. At the first stage, clinical situations should not require excessively complex diagnostic decisions; instead, they should guide students to identify the biological mechanism, distinguish relevant evidence, and draw a simple substantiated conclusion. In this way, professional orientation does not replace fundamental knowledge with clinical disciplines; rather, it creates a substantive bridge to subsequent clinical training. The sequence of topics should progress from simple cellular and genetic mechanisms to multifactorial diseases, population risk, and preventive decisions. Spiral revisiting enables a previously studied concept to be applied more deeply in a new clinical situation.

6. Criteria for Developing Integrative Tasks

An integrative task is a didactic tool that combines biological knowledge, interdisciplinary connection, and professional activity within a single assignment. The first criterion for its development is scientific validity: the situation, terminology, and evidence must correspond to contemporary biological and medical knowledge. The second criterion is professional orientation: the task should reflect information, a problem, and a decision encountered in, or closely related to, a physician's work. The third criterion is integrativity: the task must require the coordinated application of knowledge from at least two disciplines or two levels.

The fourth criterion is problem orientation and analytical demand: the task should not contain a ready-made answer; the student must select evidence, construct a cause-and-effect

ISBN: 978-625-90699-4-4

relationship, and compare alternative explanations. The fifth criterion is a gradual increase in cognitive complexity. Students are first required to explain and classify, then to apply and analyze, and finally to argue and develop a new solution. The sixth criterion is assessability: task performance must be evaluated using predetermined indicators and a rubric. The seventh criterion is reflectivity: the student should explain which knowledge was used, what evidence supported the decision, and which error should be corrected.

The recommended structure of an integrative task comprises five stages: a description of the professional situation; information that helps identify the problem; interdisciplinary questions; a substantiated solution or recommendation; and reflection and self-assessment. For example, in a task involving a trait observed across several generations of a family, the student constructs a pedigree, determines the mode of inheritance, explains the biological mechanism, assesses the probable risk, and discusses the ethical aspects of genetic counseling. A single task thus develops cognitive, practical, analytical, and communicative competencies in an integrated manner. The task condition should provide only the necessary information, although additional facts may help the student distinguish the principal problem. In assessing the response, the selection of evidence, substantiation of the biological mechanism, and coherence of reasoning should be considered in addition to the final conclusion. The task bank is classified by topic, integrated discipline, competency component, level of complexity, and assessment criterion. This classification makes it possible to adapt tasks to different educational programs, balance the learning load, compare outcomes, monitor the student's individual development trajectory, and provide timely corrective feedback.

7. Role of Digital Technologies in Integrative Content

Digital technologies facilitate visual and interactive mastery of integrative content. Virtual microscopy, animations of cellular processes, and tools for constructing karyotypes and pedigrees make it possible to connect complex biological mechanisms with clinical situations. A digital tool is selected not as an end in itself, but as a means of analyzing biological evidence and developing a competency outcome.

Learning platforms can present integrative tasks step by step, support assessment using electronic rubrics, and provide prompt feedback. When a digital task requires the selection of a reliable source, interpretation of an image or dataset, and substantiation of a conclusion with evidence, it also develops information-digital competence. Technology does not replace the teaching objective; it serves that objective.

RESULTS

The principal result of the study is the development of a content-methodological system linking medical biology content with professional competencies. Within the system, topics were mapped according to their degree of integration with clinical disciplines, professional significance, and the competency outcome they develop. This map enables the teacher to plan precisely which biological concept should be presented through which clinical context, which task should activate it, and which indicator should be used for assessment.

The integration of medical biology topics with clinical disciplines is presented in Table 1. For each topic, the table specifies the disciplines to be integrated, the professionally oriented content, and the expected competency outcome. In addition to revealing the clinical significance

ISBN: 978-625-90699-4-4

of each topic in the curriculum, this approach helps to purposefully develop the foundational knowledge required for subsequent disciplines.

Table 1

Integration of Medical Biology Topics with Clinical Disciplines

Medical Biology Topic	Disciplines Integrated	Professionally Oriented Content	Expected Competency Outcome
Cell membrane, organelles, and the cell cycle	Histology, physiology, biochemistry, pathological anatomy	Membrane transport, receptors, cell injury, apoptosis, necrosis, regeneration, and carcinogenesis	Links cellular processes to clinical phenomena and explains the biological mechanism.
Gene, genome, gene expression, and epigenetic regulation	Biochemistry, molecular biology, clinical genetics, pharmacology	Hereditary disease, biomarkers, dysregulation of gene expression, pharmacogenetic differences	Provides a scientific explanation of how genetic information affects phenotype and treatment.
DNA replication, repair, and mutations	Oncology, pathophysiology, pharmacology, radiobiology	Mutagenic factors, genotoxicity, tumor development, hereditary syndromes	Analyzes the causes and consequences of mutational processes and identifies risk factors.
Patterns of heredity and pedigree analysis	Clinical genetics, pediatrics, obstetrics and gynecology	Risk of hereditary disease, pedigree construction, determination of inheritance pattern, genetic counseling	Analyzes pedigree data and explains probable genetic risk.
Ontogenesis and developmental biology	Embryology, pediatrics, obstetrics, teratology	Critical developmental periods, teratogenic factors, biological foundations of congenital abnormalities	Explains the relationship between prenatal factors and developmental disorders.
Population genetics	Epidemiology, public health, preventive medicine	Allele frequencies, population risk, screening, gene pool, and prevention	Assesses the medical and preventive significance of population indicators.
Parasitism and medical parasitology	Microbiology, infectious diseases, epidemiology, hygiene	Life cycle, transmission mechanism, laboratory diagnosis, biological safety, and prevention	Explains the relationship among the parasitic factor, route of transmission, and preventive measures.

ISBN: 978-625-90699-4-4

Medical Biology Topic	Disciplines Integrated	Professionally Oriented Content	Expected Competency Outcome
Effects of environmental and biological factors on human health	Hygiene, ecology, public health, toxicology	Biological and environmental risks, adaptation, mutagenic and teratogenic factors	Analyzes the biological effects of environmental factors and formulates a preventive conclusion.

The relationships shown in the table do not imply that medical biology topics should duplicate clinical disciplines. On the contrary, each topic is addressed at the level of the biological mechanism required to understand a clinical phenomenon. For example, the clinical diagnosis of neoplastic disease falls within the remit of oncology, whereas medical biology establishes the fundamental basis of carcinogenesis through the disruption of cell-cycle control, mutation, repair, and apoptosis. Clearly defining this boundary protects interdisciplinary integration from unnecessary content duplication.

The structure of professional competencies and indicators of their manifestation are systematized in Table 2. The indicators are important because they express learning outcomes as observable activities. General formulations such as “knows” or “understands” were replaced by measurable outcomes such as “links the biological mechanism to the clinical situation,” “interprets laboratory data from a biological perspective,” and “develops an evidence-based conclusion.”

This classification of competency components makes it possible to move beyond assessing only cognitive outcomes in medical biology classes and to evaluate students’ practical, analytical, communicative, and reflective activity as well. For example, a rubric for assessing an integrative case evaluates the correct identification of the problem, explanation of the biological mechanism, use of interdisciplinary evidence, logical coherence of the conclusion, clarity of presentation, and reflection as separate criteria.

The mechanism by which biological knowledge is transformed into clinical competence is represented as a sequence of stages in Figure 1. Fundamental knowledge is first expanded through interdisciplinary connections, contextualized within a clinical situation, actively applied through an integrative task, and reinforced by reflection. The outcome of this process is the student’s ability to understand a problem on a biological basis, analyze information, and formulate an evidence-based professional conclusion.

The structure of the content of integrative medical biology teaching is presented in Figure 2 as the relationship among the target, content, procedural, and assessment blocks. At the center of the model is a content core comprising biological concepts, clinical significance, interdisciplinary connections, and a set of professionally oriented topics. This core is guided by the competency outcomes in the target block, transformed into activity through the procedural block, and monitored through the assessment-reflective block.

ISBN: 978-625-90699-4-4

Table 2

Structure of Professional Competencies and Indicators of Their Manifestation

Competency Component	Content	Indicators of Manifestation
Cognitive	Mastery of biological concepts, laws, terms, and cause-and-effect relationships.	Defines concepts accurately; explains a biological process in sequence; uses interdisciplinary terminology appropriately.
Practical-operational	Application of biological knowledge and methods in educational and professional tasks.	Constructs a pedigree; classifies genetic or laboratory data; interprets diagrams, karyotypes, and images.
Analytical-clinical	Linking biological information to a clinical problem, comparing evidence, and drawing conclusions.	Identifies the biological mechanism of the problem; constructs cause-and-effect relationships; develops an evidence-based solution.
Communicative-collaborative	Clear presentation of professional content and collaborative problem solving.	Participates in group discussion; defends a viewpoint using scientific terminology; presents the conclusion clearly.
Axiological-reflective	Responsible attitude toward human health, hereditary information, and biological safety; analysis of one's own activity.	Considers ethical aspects; identifies errors; evaluates the consequences of the selected solution; performs self-assessment.
Information-digital	Purposeful use of digital sources, biological databases, and visual tools.	Selects a reliable source; analyzes digital images and data; presents results in an electronic table, map, or presentation.

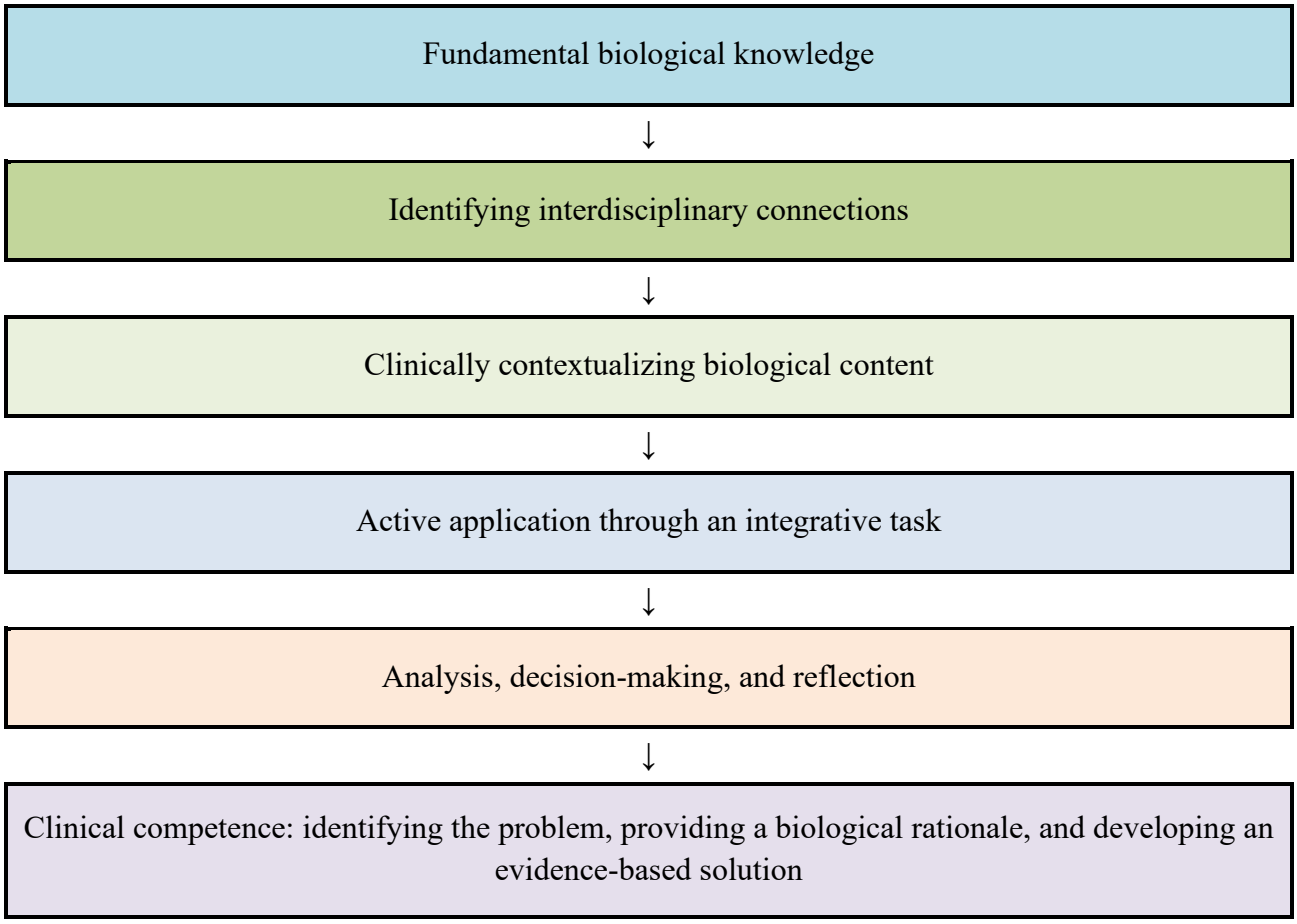
Each stage of the mechanism is supported by a specific methodological action on the part of the teacher. At the fundamental-knowledge stage, the main concepts and laws are identified; at the interdisciplinary-connection stage, shared elements with foundational concepts from other disciplines are shown; during clinical contextualization, the biological process is transferred to a real or modeled situation; in the integrative task, the student engages in active analysis and decision-making; and during reflection, the conclusion, evidence, and errors are reviewed. Therefore, the mechanism is not merely a didactic sequence but an algorithm for transforming knowledge into activity.

The practical application of the model involves designing a lesson in six stages. In the first stage, the professional competence and its indicator are defined. In the second stage, the biological concept that develops this outcome is selected. In the third stage, the clinical and interdisciplinary context is identified. In the fourth stage, an integrative task is developed. In the fifth stage, assessment criteria and evidence are specified. In the sixth stage, reflective questions are used to analyze the student's own thinking process. This algorithm ensures alignment among the topic, task, and assessment.

ISBN: 978-625-90699-4-4

The proposed methodology enables teachers to select and systematize content on the basis of professional outcomes and enables students to recognize the clinical value of biological knowledge. Its practical effect is expected to be manifested in stronger preparation for clinical disciplines, purposeful use of biological terminology, deeper understanding of cause-and-effect relationships, and the ability to transfer knowledge to problem situations.

Figure 1. Mechanism for Transforming Biological Knowledge into Clinical Competence



RELIABILITY OF THE RESULTS OBTAINED

Because the study is theoretical and methodological, empirical group indicators and statistical differences are not presented. The reliability of the results was ensured through source triangulation, logical consistency of concepts, content mapping, and correspondence among the model elements. Sources on competency-based education, integrated curricula, and international standards were compared [1; 2; 7; 9; 12; 13]; the clinical significance of medical biology topics was checked against the content of a fundamental textbook [14]; and constructive alignment among objectives, content, tasks, and assessment was verified.

In a subsequent experimental study, the content validity of the model should be tested through expert evaluation. The necessity of the elements may be determined using the Lawshe coefficient, agreement among expert judgments using Kendall's W, and the internal consistency of the assessment rubric using Cronbach's alpha. These indicators make it possible to verify mathematically the scientific validity of the model's structure and assessment tools.

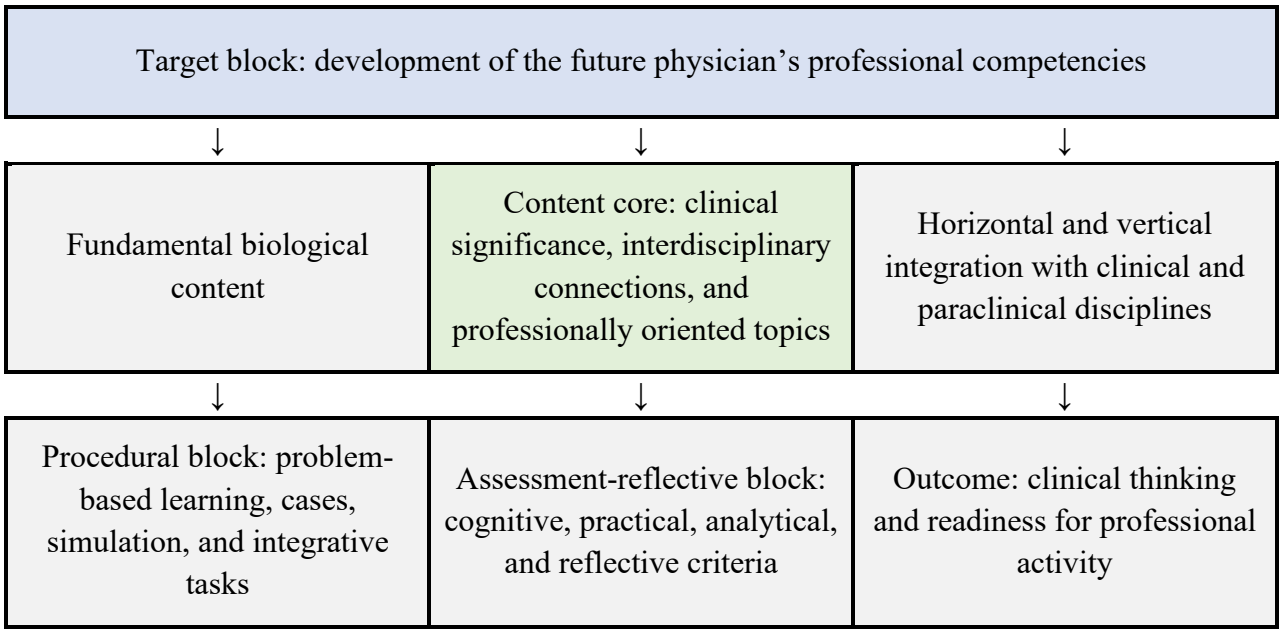
In a pedagogical experiment, competency levels are determined through baseline and final diagnostics. Depending on the data distribution, the results of the experimental and control

ISBN: 978-625-90699-4-4

groups are compared using Student's t-test or the Mann-Whitney U test; Cohen's d is calculated to assess the educational effect. Case solutions, reflective writing, and group discussions are examined through criterion-based content analysis and interpreted together with the quantitative results.

The proposed model has so far been substantiated at the theoretical and methodological levels. Its effectiveness must therefore be examined separately in an actual educational process. This limitation prevents overgeneralization of the results and clearly identifies the direction of subsequent research.

Figure 2. Structure of the Content of Integrative Medical Biology Teaching



CONCLUSION

Aligning the content of integrative medical biology teaching with professional competencies is a systematic methodological process that ensures the transfer of fundamental knowledge to clinical activity. Its basis is not an increase in the volume of content, but a clear definition of the clinical significance of biological concepts, their interdisciplinary function, and their role in solving professional tasks.

The study substantiated a structure of integrative teaching content consisting of target, content, procedural, and assessment-reflective blocks. Professional competencies were described through cognitive, practical-operational, analytical-clinical, communicative-collaborative, axiological-reflective, and information-digital components. These components made it possible to express learning outcomes as observable and assessable performance indicators.

Horizontal, vertical, and spiral integration of medical biology topics with clinical disciplines was constructed on the basis of the chain "concept - mechanism - clinical sign - diagnostic evidence - professional decision." The set of professionally oriented topics encompassed cell and disease, genetic information and hereditary pathology, ontogenesis and reproductive health, population risk, and parasitism and biological safety.

Scientific validity, professional orientation, integrativity, problem orientation, cognitive complexity, assessability, and reflectivity were proposed as criteria for designing integrative

ISBN: 978-625-90699-4-4

tasks. Clinical-biological cases, interpretation of laboratory data, pedigree analysis, concept maps, and simulation tasks based on these criteria ensure the active application of biological knowledge.

The proposed methodology can be used to revise medical biology curricula, create topic maps, strengthen interdepartmental cooperation, and develop task banks and assessment rubrics.

In subsequent studies, the methodology should be tested in experimental and control groups, and its content validity, internal consistency, competency dynamics, and effect size should be evaluated using mathematical and statistical methods.

REFERENCES

1. Biggs J., Tang C. Teaching for Quality Learning at University. 4th ed. - Maidenhead: Open University Press, 2011.
2. Brauer D.G., Ferguson K.J. The integrated curriculum in medical education: AMEE Guide No. 96 // Medical Teacher. - 2015. - Vol. 37, No. 4. - P. 312-322. - DOI: 10.3109/0142159X.2014.970998.
3. Cook D.A., Bordage G., Schmidt H.G. Description, justification and clarification: a framework for classifying the purposes of research in medical education // Medical Education. - 2008. - Vol. 42, No. 2. - P. 128-133. - DOI: 10.1111/j.1365-2923.2007.02974.x.
4. Dent J.A., Harden R.M., Hunt D. A Practical Guide for Medical Teachers. 5th ed. - Edinburgh: Elsevier, 2017.
5. Epstein R.M., Hundert E.M. Defining and assessing professional competence // JAMA. - 2002. - Vol. 287, No. 2. - P. 226-235. - DOI: 10.1001/jama.287.2.226.
6. Frenk J., Chen L., Bhutta Z.A. et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world // The Lancet. - 2010. - Vol. 376, No. 9756. - P. 1923-1958. - DOI: 10.1016/S0140-6736(10)61854-5.
7. Harden R.M., Sowden S., Dunn W.R. The integration ladder: a tool for curriculum planning and evaluation // Medical Education. - 2000. - Vol. 34, No. 7. - P. 551-557. - DOI: 10.1046/j.1365-2923.2000.00697.x.
8. Harden R.M. AMEE Guide No. 21: Curriculum mapping: a tool for transparent and authentic teaching and learning // Medical Teacher. - 2001. - Vol. 23, No. 2. - P. 123-137. - DOI: 10.1080/01421590120036547.
9. Harden R.M. Outcome-Based Education: the future is today // Medical Teacher. - 2007. - Vol. 29, No. 7. - P. 625-629. - DOI: 10.1080/01421590701729930.
10. Harden R.M., Laidlaw J.M. Essential Skills for a Medical Teacher: An Introduction to Teaching and Learning in Medicine. 2nd ed. - Edinburgh: Elsevier, 2017.
11. Spencer J., Jordan R. Learner centred approaches in medical education // BMJ. - 1999. - Vol. 318. - P. 1280-1283. - DOI: 10.1136/bmj.318.7193.1280.
12. World Federation for Medical Education. WFME Global Standards for Quality Improvement: Basic Medical Education. - Copenhagen: WFME, 2020.
13. World Health Organization. Transforming and scaling up health professionals' education and training: World Health Organization Guidelines 2013. - Geneva: WHO, 2013. - 122 p. - ISBN 978-92-4-150650-2.
14. Xoliqov P.X., Qurbonov A.Q., Daminov A.O., Tarinova M.V. Tibbiy biologiya va genetika: darslik [Medical Biology and Genetics: textbook]. - Toshkent: Zamin nashr, 2019.

SALOMATLIKNI SAQLASHDA KASBIY AMALIY KO‘NIKMALARNI RIVOJLANTIRUVCHI JISMONIY MASHQLAR VA SPORT O‘YINLARINING AHAMIYATI

THE IMPORTANCE OF PHYSICAL EXERCISES AND SPORTS GAMES THAT DEVELOP PROFESSIONAL PRACTICAL SKILLS IN MAINTAINING HEALTH

Babayev Anvar Axmedovich
Assistant Central Asian Medical University
ORCID: 0009 0004 5277 6377

Abstrakt. This article highlights the role of physical exercises and sports games in developing professional practical skills among medical students. The study analyzes the importance of regular physical activity in improving stress resistance, motor coordination, teamwork ability, and the speed of clinical reactions. The results indicate that sports activities strengthen not only the physical fitness of medical students but also enhance their psychological stability and professional reflexes.

Keywords: Medical students, physical exercises, sports games, practical skills, stress tolerance, coordination, reflex, professional competence.

Annotatsiya. Ushbu maqolada tibbiyot talabalari uchun jismoniy mashqlar va sport o‘yinlarining kasbiy amaliy ko‘nikmalarni shakllantirishdagi o‘rni yoritilgan. Tadqiqotda muntazam jismoniy faollikning stressga bardoshlilik, harakat muvofiqligi, jamoada ishlash qobiliyati va tezkor klinik reaktsiyalarni rivojlantirishdagi ahamiyati tahlil qilingan. Natijalar shuni ko‘rsatadiki, sport faoliyati tibbiyot talabasining nafaqat jismoniy tayyorgarligini, balki psixologik barqarorligini va professional reflekslarini ham mustahkamlaydi.

Kalit so‘zlar: Tibbiyot talabalari, jismoniy mashqlar, sport o‘yinlari, amaliy ko‘nikma, stressga bardoshlilik, koordinatsiya, refleks, kasbiy kompetensiya.

Dolzarbligi. Bugungi kunda tibbiyot sohasi inson salomatligini saqlash, kasalliklarni erta aniqlash, ularni samarali davolash hamda reabilitatsiya jarayonlarini takomillashtirishda eng muhim va mas’uliyatli yo‘nalishlardan biridir. Shu sababli, ushbu sohada faoliyat yurituvchi mutaxassislar — shifokorlar, hamshiralar, fizioterapevtlar va laboratoriya xodimlari — nafaqat chuqur nazariy bilim, balki yuqori darajadagi jismoniy, ruhiy va psixologik tayyorgarlikka ham ega bo‘lishlari lozim.

Tibbiy faoliyatning o‘ziga xos jihati shundaki, har bir klinik vaziyat tezkor tahlil, to‘g‘ri qaror va aniqlikni talab etadi. Shifokor yoki hamshira uzoq muddatli navbatchilik, yuqori mas’uliyat, ruhiy bosim va doimiy stress sharoitida ishlaydi. Bunday holatlarda insonning jismoniy tayyorgarligi, psixologik barqarorligi va stressga bardoshliligi bevosita kasbiy muvaffaqiyatga ta’sir qiladi. Shu sababli, tibbiyot oliygohlarida jismoniy tarbiya va sport faoliyatini o‘quv jarayonining ajralmas tarkibiy qismi sifatida yo‘lga qo‘yish zarurdir.

Jismoniy mashqlar va sport o‘yinlari tibbiyot talabalarining sog‘lig‘ini mustahkamlash bilan birga, ularning kasbiy amaliy ko‘nikmalarini shakllantirishda ham muhim rol o‘ynaydi. Sport faoliyati talabalarning mushak-motor koordinatsiyasini yaxshilaydi, refleks tezligini oshiradi, stressni kamaytiradi, jamoada ishlash madaniyatini rivojlantiradi va kasbiy faoliyatda zarur bo‘lgan chidamlilikni shakllantiradi.

Shuningdek, sport o‘yinlari (futbol, voleybol, stol tennisi, yengil atletika va boshqalar) orqali talabalarda o‘zaro hamkorlik, yetakchilik, tezkor fikrlash, raqobatbardoshlik va mas’uliyat hissi kuchayadi. Ushbu sifatlar kelgusidagi shifokorlik faoliyatida – bemor bilan muloqot, klinik vaziyatda tezkor tahlil va qaror qabul qilishda – katta ahamiyat kasb etadi.

O‘zbekiston Respublikasida sog‘lom turmush tarzini targ‘ib qilish, yoshlar o‘rtasida sportni ommalashtirish va oliy ta’lim muassasalarida jismoniy sog‘lomlashtirish dasturlarini kengaytirish davlat siyosatining ustuvor yo‘nalishlaridan biridir. Shu nuqtai nazardan, tibbiyot universitetlarida jismoniy tarbiya mashg‘ulotlarini kasbiy tayyorgarlikning psixofiziologik asosi sifatida tashkil etish zamon talabi hisoblanadi.

Demak, jismoniy mashqlar va sport o‘yinlari tibbiyot talabalari uchun nafaqat sog‘lomlashtiruvchi vosita, balki ularning kasbiy kompetensiyasini mustahkamlovchi, stressni kamaytiruvchi, koordinatsiyani yaxshilovchi va psixologik barqarorlikni rivojlantiruvchi samarali mexanizmdir.

Material va usullar.

Tadqiqot 2024–2025 o‘quv yilida Central Asian Medical University (CAMU) tibbiyot fakultetining 120 nafar talabalari (60 nafar o‘g‘il va 60 nafar qiz) ishtirokida olib borildi. Tadqiqot ishtirokchilari sog‘lom, o‘rtacha jismoniy tayyorgarlikka ega, harakatchanlik darajasi o‘rtacha bo‘lgan 18–23 yoshdagi talabalar edi.

Tadqiqotning maqsadi – jismoniy mashqlar va sport o‘yinlarining tibbiyot talabalari kasbiy amaliy ko‘nikmalariga, refleks faoliyatiga, stressga bardoshlilik darajasiga hamda o‘z-o‘zini baholash ko‘rsatkichlariga ta’sirini aniqlashdan iborat bo‘ldi.

Ishtirokchilar ikki guruhga bo‘lindi:

1-guruh (nazorat guruhi) – muntazam jismoniy mashg‘ulotlarsiz ta’lim olgan talabalar;

2-guruh (tajriba guruhi) – haftasiga 3 marta 45 daqiqalik mashg‘ulotlar o‘tkazgan talabalar, ularning mashg‘ulot dasturi futbol, voleybol va stol tennisi elementlarini, shuningdek, nafas mashqlari va koordinatsiya mashqlarini o‘z ichiga olgan.

Qo‘llanilgan metodlar:

Jismoniy ko‘rsatkichlar tahlili: yugurish tezligi, yurak urish chastotasi (HR), refleks reaksiyasi va mushak koordinatsiyasi.

Psixologik testlar: “Stressga bardoshlilik shkalasi” va “motivatsion holat indeksi” yordamida ruhiy tayyorgarlik darajasi baholandi.

Amaliy ko‘nikmalarni baholash: simulyatsion amaliyotlarda (masalan, bemorga birinchi yordam ko‘rsatish, tez tibbiy harakatlar bajarish) reaksiya tezligi va aniqlik darajasi qayd etildi.

Statistik tahlil: natijalar tahlilida o‘rtacha qiymatlar, dispersiya va Studentning t-testi ($p < 0,05$) qo‘llanildi.

Tajriba 8 hafta davom etdi, har bir mashg‘ulotdan oldin va keyin yurak urish tezligi, refleks reaksiyasi, ruhiy holat va ishga tayyorlik darajasi qayd etilib borildi.

Tadqiqot natijalari

Tajriba guruhida 8 haftalik sport mashg‘ulotlaridan so‘ng kuzatilgan o‘zgarishlar quyidagi jadvalda keltirilgan:

Ko‘rsatkich	Dastlabki holat	8-hafta natijasi	O‘zgarish (%)
Yurak urish tezligi (HR)	84 ± 3 zarba/min	76 ± 2 zarba/min	−9,5 %
Refleks reaksiyasi (sekund)	0,38 ± 0,05	0,29 ± 0,04	+23,7 % tezlashish
Stressga bardoshlilik (ball)	5,6 ± 1,1	7,9 ± 0,8	+41 %
Amaliy muvofiqlik (ko‘nikma testi)	72 %	88 %	+16 %

ISBN: 978-625-90699-4-4

Natijalar tahlilidan ma'lum bo'ldiki, sport o'yinlari tibbiyot talabalari organizmining umumiy funksional imkoniyatlarini sezilarli darajada yaxshilaydi. Yurak urish tezligi va nafas chastotasi me'yorlashgan, refleks reaksiyasi tezlashgan, stressga bardoshlilik indeksi oshgan.

Fiziologik jihatdan, muntazam mashg'ulotlar yurak-qon tomir tizimi faoliyatini barqarorlashtirgan, qon aylanishini yaxshilagan va kislorod bilan ta'minlanishni oshirgan.

Psixologik tomondan, talabalar o'zini yanada tetik, ishonchli va faol his qilgan, bu esa ularning o'quv va amaliy jarayonlardagi motivatsiyasiga ijobiy ta'sir ko'rsatgan.

So'rovnoma natijalariga ko'ra, talabalarni 85 foizi mashg'ulotlar natijasida o'zini "ruhan yengil", "energetik jihatdan faol" deb baholagan. Ularning 78 foizi darslarda diqqatni jamlash va eslab qolish qobiliyati oshganini bildirgan.

Simulyatsion amaliyotlarda esa aniqlik, reaksiya tezligi va muvofiqlik ko'rsatkichlari o'rtacha 15–20 % ga yaxshilangan. Tajriba guruhi talabalari klinik topshiriqlarni bajarishda xatolik sonini kamaytirgan va ishni tezroq yakunlagan.

Ushbu natijalar shuni ko'rsatadiki, sport mashg'ulotlari tibbiyot talabalari uchun kasbiy reflekslar, tezkor qaror qabul qilish va stressga bardoshlilikni rivojlantiruvchi samarali amaliy vositadir.

Xulosa

Tibbiyot talabalari uchun jismoniy mashqlar va sport o'yinlari:
- kasbiy amaliy ko'nikmalarni mustahkamlaydi;
- stressni kamaytiradi va ruhiy barqarorlikni oshiradi;
- refleks tezligini, muvozanatni va jamoaviy ishlashni rivojlantiradi;
- sog'lom turmush tarzini shakllantiradi.

Shuning uchun tibbiyot oliygohlarida jismoniy tarbiya darslarini faqat nazariy emas, balki kasbiy kompetensiyalarni rivojlantiruvchi mashg'ulot sifatida tashkil etish muhimdir. Bunday yondashuv tibbiyot sohasida faoliyat yurituvchi yosh mutaxassislarning professional yetukligi va stressga bardoshliligini oshiradi.

Foydalanilgan adabiyotlar

1.Qodirov M. "Tibbiyotda jismoniy tayyorgarlik va sog'lomlashtiruvchi mashqlar." – Toshkent: Tibbiyot nashriyoti, 2023.
2.Rasulova N. "Sport o'yinlari va psixofiziologik rivojlanish." – Samarqand, 2021.
3.World Health Organization. *Physical Activity and Mental Health: Evidence Review*, 2022.
4.Central Asian Medical University Metodik qo'llanmasi: "Talabalarda jismoniy sog'lomlashtirish dasturlari", 2024.
5.Abdullaev, U. R. (2025). STAGED AND INDIVIDUAL APPROACHES IN PHYSICAL EDUCATION OF STUDENTS IN GENERAL SCHOOLS. Экономика и социум, (3-2 (130)), 14-19.
6.Nishonov, S., & Abdullaev, U. (2024). AGENDA AND PHYSICAL ACTIVITY. International Bulletin of Applied Science and Technology, 4(1), 22-25.
7. Abdullaev, U. R., & Nishonov, S. A. (2024). SPORT IS THE GUARANTEE OF A HEALTHY LIFE. Eurasian Journal of Academic Research, 4(1-1), 62-66.
8. Abdullayev, U. (2023). JISMONIY RIVOJLANISH VA JISMONIY TARBIYA ASOSLARI. Finland International Scientific Journal of Education. Social Science & Humanities, 11(3), 104-108

ПЕДАГОГИЧЕСКИЕ ПРОБЛЕМЫ, ПРЕПЯТСТВУЮЩИЕ ПРИМЕНЕНИЮ БУДУЩИМИ ВРАЧАМИ ЭКОЛОГО-БИОЛОГИЧЕСКИХ ЗНАНИЙ В КЛИНИЧЕСКИХ СИТУАЦИЯХ

PEDAGOGICAL BARRIERS TO FUTURE PHYSICIANS' APPLICATION OF ECOLOGICAL AND BIOLOGICAL KNOWLEDGE IN CLINICAL SITUATIONS

G'ANIYEV KOMOLIDIN XALILOVICH
Central Asian Medical University, Candidate of Biological Sciences, Associate Professor
Fergana, Uzbekistan
ORCID:0009-0007-2989-7834

ABSTRACT. The purpose of this article is to identify and systematize the pedagogical barriers that prevent future physicians from applying ecological and biological knowledge in clinical situations and to substantiate didactic directions for overcoming them. An integrative analytical review was conducted. Twenty peer-reviewed sources published between 2000 and 2025 on medical education, transfer of basic science knowledge to clinical reasoning, integrated curricula, planetary health, case-based learning, simulation, and programmatic assessment, together with two regulatory documents of the Republic of Uzbekistan, were purposively selected. Content, comparative-pedagogical, causal-problem, and matrix analyses were used. Eight groups of barriers were identified: curricular fragmentation; decontextualization of ecological and biological content; dominance of reproductive teaching; assessment focused on recall; insufficient interdisciplinary coordination and faculty integrative competence; lack of locally relevant clinical cases and simulation/digital resources; excessive cognitive load and weak professional motivation; and a clinical learning environment in which environmental determinants are treated as peripheral. The central problem is therefore not merely a shortage of knowledge, but the absence of educational mechanisms that activate, integrate, and transform knowledge into clinical decisions. A corrective model based on environmental history taking, contextual clinical-biological cases, interdisciplinary teaching, simulation, OSCE, portfolios, and reflective debriefing is proposed.

Keywords: *ecological and biological knowledge, future physician, clinical situation, knowledge transfer, integrated education, environmental history, clinical reasoning, simulation, OSCE, pedagogical barrier.*

АННОТАЦИЯ. Цель статьи — выявить и систематизировать педагогические проблемы, препятствующие применению будущими врачами эколого-биологических знаний в клинических ситуациях, а также обосновать дидактические направления их преодоления. Исследование выполнено в формате интегративно-аналитического обзора. Целенаправленно отобраны 20 рецензируемых источников, опубликованных в 2000–2025 гг. и посвящённых медицинскому образованию, переносу фундаментальных знаний в клиническое мышление, интегрированным учебным программам, планетарному здоровью, кейс-методу, симуляции и программному оцениванию, а также 2 нормативно-правовых документа Республики Узбекистан. Применены контент-анализ, сравнительно-педагогический, причинно-проблемный и матричный анализ. Выделены восемь групп барьеров: фрагментарность учебного содержания; отрыв эколого-биологических знаний от клинического контекста; доминирование репродуктивных методов; ориентация оценивания на воспроизведение фактов; недостаточная межкафедральная координация и интегративная компетентность преподавателей; дефицит локальных клинических кейсов и симуляционно-цифровых ресурсов;

избыточная когнитивная нагрузка и слабая профессиональная мотивация; второстепенное положение экологических факторов в клинической образовательной среде. Установлено, что ключевая проблема связана не столько с объёмом знаний, сколько с недостаточностью педагогических механизмов их актуализации, интеграции и преобразования в клиническое решение. Предложена коррекционная модель, включающая экологический анамнез, контекстные клинико-биологические задачи, междисциплинарное обучение, симуляцию, OSCE, портфолио и рефлексивный разбор.

Ключевые слова: *эколого-биологические знания, будущий врач, клиническая ситуация, перенос знаний, интегративное обучение, экологический анамнез, клиническое мышление, симуляция, OSCE, педагогический барьер.*

RELEVANCE

Human health is determined not only by the body's internal biological mechanisms, but also by the interaction of the living environment, the quality of water and food, ambient air, occupational hazards, climatic and seasonal factors, biodiversity, infectious agents, and socio-environmental conditions. Therefore, a modern physician must be able to analyze clinical symptoms not only at the level of an organ or system, but within the "organism–environment–disease" system. The concept of planetary health demonstrates that human health is directly dependent on the sustainability of natural systems and requires this relationship to be integrally connected with clinical decision-making in the content of medical education [3–5].

The regulatory documents governing the development of higher education in Uzbekistan identify the orientation of the educational process toward practical skills, the introduction of advanced pedagogical technologies, and the formation of competencies aligned with labor-market needs as priority objectives [1, 2]. In higher medical education, this requirement entails consistently linking the content of basic sciences with subsequent clinical disciplines and assessing and strengthening students' ability to apply theoretical information in patient-related situations.

In practice, however, concepts related to ecology and medical biology are often taught as a set of isolated topics: a student may be able to define adaptation, gene–environment interaction, the parasite–host system, environmental mutagens, population processes, or ecological risk factors, yet have difficulty integrating them with a patient's complaints, history, epidemiological context, laboratory findings, and preventive recommendations. This produces inert knowledge of the "knows but cannot apply" type. Medical education research has shown that the transfer of basic-science knowledge to a clinical situation does not occur automatically and that content and cognitive integration must be deliberately designed [8–10].

The relevance of the problem lies in the fact that failure to use ecological and biological knowledge weakens important components of clinical reasoning: a physician may fail to obtain a complete environmental and occupational history, overlook the causal relationship between a symptom and an external exposure, neglect regional and seasonal risks in differential diagnosis, or provide preventive recommendations in overly general terms. Thus, the issue cannot be resolved merely by adding new facts to the curriculum; pedagogical conditions are required that enable knowledge to be recognized, activated, integrated, and transformed into a decision in a clinical situation.

The international literature shows that planetary health and sustainable medicine are increasingly being incorporated into medical curricula; however, they often remain at the level of awareness, while practical competencies, feedback, and assessment mechanisms remain insufficiently developed [15–18, 21, 22]. Therefore, the systematic classification of pedagogical problems that hinder the transfer of ecological and biological content to clinical situations, the elucidation of their cause-and-effect mechanisms, and the identification of corrective directions are of both scientific and practical importance.

AIM OF THE STUDY

To identify and systematize the pedagogical problems that prevent future physicians from applying ecological and biological knowledge in clinical situations, to substantiate the mechanisms by which these problems affect knowledge transfer, and to develop a set of didactic solutions aimed at overcoming these barriers.

MATERIALS AND METHODS

The study was designed as an integrative analytical review. The material comprised 20 scientific sources published between 2000 and 2025 that directly addressed the integration of basic and clinical sciences in medical education, knowledge transfer, clinical reasoning, cognitive load, case-based learning, simulation-based education, programmatic assessment, planetary health, and education for sustainable healthcare, as well as two regulatory legal documents of the Republic of Uzbekistan concerning the development of higher education [1–22].

The following criteria were applied in selecting the sources: 1) relevance to the context of medical or health professions education; 2) examination of the transfer of theoretical knowledge to practical or clinical situations; 3) identification of barriers and solutions related to the curriculum, teaching methods, assessment, or learning environment; and 4) availability of a complete bibliographic description. Materials that addressed ecological problems without linking them to medical education, did not explain the pedagogical mechanism, or duplicated previously identified content were excluded from the analysis.

The analysis was conducted in four stages. In the first stage, the operational components of "applying ecological and biological knowledge in a clinical situation" were defined. In the second stage, the barriers reported in the sources were openly coded and grouped according to semantic similarity. In the third stage, a chain was constructed for each barrier: "pedagogical cause → student learning behavior → disruption of knowledge transfer → clinical consequence." In the fourth stage, a corrective matrix was developed that included the barrier, diagnostic indicator, pedagogical solution, assessment tool, and expected outcome.

Content analysis, comparative pedagogical analysis, cause-and-effect analysis, systematization, and matrix modeling were used. The study did not involve human participants, and no personal or clinical data were processed; therefore, the reported results should be interpreted not as a statistical experiment but as a pedagogical synthesis of the selected sources.

RESULTS

The analysis showed that the clinical use of ecological and biological knowledge is a multistage activity that differs from simple recall. This activity includes at least four interrelated stages: recognizing an environmental cue in the clinical situation; activating the relevant biological knowledge from memory; integrating it with clinical, epidemiological, and laboratory data; and transforming the conclusion into a decision related to diagnosis, prevention, communication, or risk management. If any of these stages is not practiced sufficiently during the educational process, knowledge transfer is disrupted.

The clinically functional components of ecological and biological knowledge include identifying the patient's living and working environment, water and food sources, possible contact with allergens or toxicants, exposure associated with animals and vectors, seasonal and climatic conditions, migration, and regional factors; explaining the organism's adaptive and compensatory capacities; assessing gene–environment interactions; linking clinical signs to biological mechanisms; and substantiating individual and population-level preventive measures. Thus, environmental history taking is not a separate list of questions, but an etiological and preventive component of clinical reasoning.

ISBN: 978-625-90699-4-4

Coding and causal grouping of the sources revealed eight types of pedagogical barriers. Together, they form a continuous system extending from the curriculum level to the hidden learning environment of clinical practice. The barriers do not operate independently; they have a multiplying effect: a fragmented curriculum reinforces reproductive teaching, reproductive teaching is consolidated by recall-oriented assessment, and such assessment leads students to regard ecological content as "secondary."

The first barrier is curricular fragmentation. Integration does not mean listing the names of different disciplines on one page; it means coordinating concepts, activities, and assessment around a shared clinical outcome. Harden's integration ladder and the AMEE guide on the integrated curriculum indicate the need to strengthen interdisciplinary links progressively [6, 7]. If ecological and biological content is taught separately in the first year and is not reactivated in subsequent clinical modules, students encode the knowledge as a completed theoretical block rather than as a tool for solving clinical problems.

Table 1.

Pedagogical problems hindering the transfer of ecological and biological knowledge to clinical situations

No.	Barrier group	Main manifestation	Consequence for knowledge transfer and clinical reasoning
1	**Curricular fragmentation**	Topics in ecology, biology, and clinical disciplines are not coordinated in terms of timing, terminology, and objectives; horizontal and vertical links are not shown.	The student does not know which biological concept to activate or when; the knowledge remains in a separate "subject compartment."
2	**Lack of clinical context**	Definitions, classifications, and mechanisms are not linked to a patient, history, regional factor, or diagnostic decision.	Inert knowledge develops; the environmental cue is not recognized in the clinical situation and is not incorporated into etiological reasoning.
3	**Dominance of reproductive teaching methods**	Lectures, retelling, and ready-made answers prevail over problem situations, cases, simulation, and reflective analysis.	Analysis, causal explanation, evidence selection, and decision-making are not practiced sufficiently.
4	**Assessment misaligned with transfer**	Assessment questions mainly measure recall of facts; environmental history taking, clinical integration, and preventive decision-making are not assessed.	Students do not devote time to a competence that is not assessed; the practical value of knowledge declines.
5	**Limited interdepartmental collaboration and teacher competence**	Basic-science and clinical teachers do not jointly develop shared outcomes, cases, and assessment criteria.	Content is duplicated or interrupted; the same concept is interpreted inconsistently or without connection across disciplines.

ISBN: 978-625-90699-4-4

No.	Barrier group	Main manifestation	Consequence for knowledge transfer and clinical reasoning
6	**Shortage of local and simulation resources**	Region-specific environmental situations, virtual patients, exposure maps, and laboratory and epidemiological datasets are insufficient.	Students are deprived of safe practice and repeated feedback in complex situations that approximate real conditions.
7	**Cognitive load and professional motivation problems**	Because of extensive terminology, parallel disciplines, and limited clinical experience, ecological content is perceived as theory unrelated to the profession.	Important cues are not distinguished, superficial memorization increases, and long-term retention and transfer ability weaken.
8	**Clinical learning environment and hidden curriculum**	Environmental questions are rarely asked in practice, supervisors do not verbalize their analysis of environmental factors during decision-making, and feedback is episodic.	Students do not regard formal classroom knowledge as a clinical norm; environmental history taking and preventive reasoning do not become habitual.

The second barrier is the separation of content from the clinical context. Mechanism-based foundational knowledge can create causal coherence among signs and provide a basis for subsequent clinical memory and diagnostic reasoning [8]. However, this potential is realized only when students are shown how the same biological mechanism manifests in different clinical presentations, through which pathogenetic pathway an external exposure produces a symptom, and which additional question can test that relationship. Without such a clinical bridge, a list of facts is not activated in a clinical situation.

The third barrier is the dominance of reproductive teaching. Because ecological and biological problems are multifactorial, uncertain, and context-dependent, they require the selection of evidence, prioritization of causes, and interpretation of risk rather than the reproduction of ready-made answers. Case-based learning makes the clinical problem the organizing center of the content, while simulation enables students to observe the consequences of a decision in a safe environment and to practice repeatedly [12, 13]. Nevertheless, a case or simulation alone is insufficient: prerequisite knowledge must be activated before the task, the reasoning process must be monitored during performance, and a structured debriefing must be conducted afterward.

The fourth barrier is the mismatch between the teaching objective and the assessment tool. If students are asked to select the definition of an environmental factor on a test, but are not required to obtain an environmental history, provide a causal explanation, or make a preventive decision in an OSCE station or clinical case, they adapt their learning strategy to memorization. The concept of programmatic assessment emphasizes the importance of combining multiple low- and high-stakes data points collected across different situations, providing regular feedback, and monitoring development over time rather than relying on a single examination [14]. Ecological and biological competence should likewise be assessed through a combination of written cases, OSCE, mini-CEX, portfolios, and reflective reports.

The fifth barrier is insufficient interdepartmental coordination and limited integrative competence among educators. A basic-science teacher may not always understand the actual decision points in a clinical situation to the same extent as a clinician, while a clinician may not fully appreciate the limits of didactic simplification of a biological mechanism. Without

ISBN: 978-625-90699-4-4

collaboration, ecological content is presented either too generally or in a clinically inaccurate, oversimplified form. Studies of the integration of planetary health into medical curricula have consistently identified time constraints, curriculum overload, unclear ownership, and limited faculty expertise as persistent barriers [15–17].

The sixth barrier is the shortage of local context and resources. A general example from another country may increase awareness, but clinical transfer requires situations enriched with authentic cues such as place of residence, occupation, water source, season, local industry, agriculture, migration, and the epidemiological situation. Virtual patients, interactive maps, longitudinal laboratory findings, exposure charts, and short video observations help students study complex situations in manageable parts. Resource limitations are not solely a matter of technical equipment; the availability of high-quality scenarios, rubrics, and feedback algorithms is also a fundamental resource.

The seventh barrier concerns cognitive load and motivation. A first-year student simultaneously processes new terminology, normal anatomy and physiology, molecular mechanisms, and clinical signs. If a task is overloaded with extraneous detail or its clinical purpose is unclear, working-memory resources are spent on secondary elements [11]. Therefore, ecological and biological clinical situations should be constructed progressively—from simple to complex, from an explicit cue to multifactorial uncertainty, and from teacher support to independent decision-making. Professional motivation increases when the answer to the question "For which clinical decision does a physician need this concept?" is made explicit for each biological concept.

The eighth barrier is the hidden curriculum within the clinical learning environment. If a student is told in class that environmental history taking is important, but the clinical supervisor does not ask the patient for such information or does not consider it during clinical discussion, actual behavior sends a stronger signal than the formal curriculum. International reviews show that planetary health education has focused more on "why" and "what" to teach, while the stages of "how" to implement it, transfer it to practice, assess it, and provide feedback remain less developed [18–22]. Consequently, ecological and biological competence must be supported by the behavior of supervisors in clinical departments, documentation practices, and regular discussion.

The logic of the corrective matrix is based on moving from "adding content" to "redesigning activity." For example, it is necessary to explain environmental history taking in a lecture; however, for competence to develop, the student must obtain this history from a standardized patient, distinguish relevant from irrelevant responses, link the information to a clinical hypothesis, and then receive rubric-based feedback. In this way, declarative knowledge is transformed into procedural and conditional knowledge.

In the proposed approach, the complexity of an ecological and biological situation increases across three levels. At the first level, one explicit exposure and one biological mechanism are provided. At the second level, several possible factors, laboratory data, and conflicting signs are added. At the third level, uncertainty, the patient's individual characteristics, social circumstances, preventive opportunities, and a communication problem are combined. This spiral structure manages cognitive load and strengthens the retrieval of knowledge across different contexts.

ISBN: 978-625-90699-4-4

Table 2.

Corrective pedagogical matrix for overcoming the identified barriers

Pedagogical solution	Implementation mechanism	Assessment and monitoring	Expected clinical transfer outcome
Competency-based content map	Develop an alignment matrix linking ecological and biological concepts, clinical modules, expected activities, and assessment tools; identify points for horizontal and vertical reactivation.	Syllabus audit; interdisciplinary map; expert review of learning outcomes.	The student understands in which clinical task the knowledge should be activated; continuity of content is ensured.
Environmental history-taking algorithm	Integrate living and working environment, water and food, allergen and toxicant, animal and vector, seasonal and climatic, and migration factors into the clinical interview.	OSCE checklist; mini-CEX; audio/video observation and feedback.	Environmental exposure is identified routinely and incorporated into the clinical hypothesis.
Contextual clinical-biological cases	Apply one mechanism across different diseases and regional settings; use progressive disclosure of information; justify the decision and reject alternatives.	Analytical rubric; written rationale; group decision map.	Causal reasoning, evidence selection, and transfer of knowledge to new situations develop.
Simulation and virtual patients	Use stations containing environmental risk cues; practice patient communication, data selection, interpretation of laboratory findings, and preventive counseling.	OSCE; analysis of time and errors; debriefing protocol.	Comprehensive decision-making, communication, and learning from errors develop in a safe environment.
Interdisciplinary team session	Develop scenarios and assessment criteria jointly with departments of medical biology, hygiene, epidemiology, internal medicine, pediatrics, and other clinical disciplines.	Interdepartmental expert review; teacher observation sheet; student reflection.	A concept is applied consistently across disciplines; the disconnect between clinical and biological language is reduced.
Cognitive load management	Construct tasks from simple to complex, reduce extraneous information, and use visual causal diagrams and advance guiding questions.	Types of errors; task-completion time; self-assessment scale.	The speed of identifying important cues and activating knowledge increases; superficial memorization decreases.

ISBN: 978-625-90699-4-4

Pedagogical solution	Implementation mechanism	Assessment and monitoring	Expected clinical transfer outcome
Programmatic assessment and portfolio	Accumulate evidence from tests, cases, OSCE, mini-CEX, reflective writing, and projects over one semester; develop an individual learning plan.	Competency profile; multisource feedback; progression decision.	Stable and repeatable clinical behavior develops instead of a one-time performance.
Support for the clinical environment	The supervisor models the reasoning process aloud, records environmental factors in the medical history, and conducts brief reflective conferences.	Clinical documentation audit; direct observation; regular micro-feedback.	The formal learning objective becomes a clinical habit; conflict with the hidden curriculum is reduced.

Assessment criteria should cover not only the correct diagnosis but also the reasoning process. In an analytical rubric, recognition of the environmental cue, focused history taking, explanation of the biological mechanism, integration of evidence, consideration of alternative causes, justification of the preventive decision, and clear communication with the patient are specified as separate indicators. This approach enables the teacher to identify where an error occurred and helps the student recognize the next point for development.

DISCUSSION OF RESULTS

The analytical findings show that the failure to use ecological and biological knowledge clinically is often misinterpreted as a lack of knowledge. A student may answer a theoretical question correctly yet be unable to retrieve the required knowledge in a real situation. This discrepancy indicates that the presence of knowledge in memory and the ability to activate it through situational cues are not the same. Research on transfer from basic sciences to clinical practice likewise emphasizes the need for tasks that cognitively connect clinical and basic-science concepts, rather than merely placing educational material side by side [8–10].

From this perspective, ecological and biological integration should occur at three levels. At the content level, key concepts are mapped to clinical competencies. At the activity level, the student repeatedly identifies environmental cues, explains causal mechanisms, and makes decisions. At the assessment level, these very actions are observed and feedback is provided. If any one of the three levels is absent, integration remains declarative.

Contemporary reviews of planetary health show that much of the educational literature explains why the subject should be taught and what should be taught, whereas evidence concerning the complete educational cycle, implementation, assessment, and feedback remains limited [18, 22]. This conclusion is consistent with the principal finding of the present article: ecological content must be included in the curriculum, but the expected competence will not develop without pedagogical technologies, assessment, and an educational environment that ensure its clinical transfer.

Although cases and simulation are important solutions, their use without a didactic purpose may also produce superficial activity. In an effective scenario, the clinical decision point, the required environmental cue, the biological mechanism to be activated, the expected error, and the feedback are specified in advance. In addition to asking “Which answer is correct?”, debriefing should include metacognitive questions such as “Which cue prompted you to retrieve this knowledge?”, “Which information was irrelevant?”, and “Why did you reject the alternative?” This develops the conditional knowledge—knowing when and why to use knowledge—that is required for transfer to a new situation [12, 13].

ISBN: 978-625-90699-4-4

Assessment has particular importance. Students understand the real priorities of a curriculum through examinations and teacher feedback. If environmental history taking, causal explanation, and preventive decision-making are not visible in assessment, they become optional skills in practice. It is therefore appropriate to include environmental exposure cues in OSCE stations, require biological-mechanism-based justification of decisions in written clinical cases, and monitor development dynamically through mini-CEX and portfolios during clinical practice. Programmatic assessment helps identify competence that is repeatable across different contexts rather than a student's chance success in a single situation [14].

Interdepartmental collaboration is the organizational core of integration. As a practical model, several "bridge topics" may be selected for each semester, and teachers of medical biology and clinical departments may jointly develop a common clinical situation, expected outcome, and rubric. For example, gene–environment interaction, allergic conditions, parasitic and vector-borne diseases, toxic or occupational exposure, and risks associated with water and food can be reactivated in accordance with the clinical module. Clear allocation of responsibility, brief methodological training for teachers, and a bank of ready-made scenarios reduce the cost of integration.

Localization is also an important condition for pedagogical effectiveness. Cases linked to regional, climatic, occupational, and living conditions familiar to students reveal the meaning of situational cues more quickly and strengthen professional motivation. At the same time, a local case must not lose scientific accuracy, create stereotypes, or present a single environmental factor as the automatic cause of a disease. The scenario should preserve probability, multifactoriality, and clinical uncertainty while developing the student's ability to assign appropriate weight to evidence.

The proposed model can be implemented in four consecutive stages: first, conducting a curriculum audit and developing a competency map; second, developing cases and rubrics with the participation of basic-science and clinical departments; third, piloting small-group sessions and OSCE stations; and fourth, integrating the results of tests, OSCE, portfolios, and student reflection and using them to revise the curriculum. This process is consistent with the priorities of higher education in Uzbekistan concerning the transition from theoretical knowledge to practical skills and the introduction of modern pedagogical technologies [1, 2].

A limitation of the study is that it is based on an integrative analytical review and was not experimentally tested among students at a specific higher education institution. Therefore, the eight barriers and the corrective matrix should be regarded as a theoretical pedagogical model. In future studies, the content validity of the model should first be evaluated by experts and then tested in experimental and control groups using indicators of environmental history taking, clinical-biological cases, OSCE performance, and long-term transfer.

CONCLUSIONS

1. The principal difficulty in future physicians' application of ecological and biological knowledge in clinical situations is not a lack of information, but the insufficiency of pedagogical mechanisms that enable knowledge to be activated by situational cues, integrated with clinical evidence, and transformed into a decision.

2. The analysis revealed eight groups of interrelated barriers: curricular fragmentation, lack of clinical context, reproductive teaching methods, assessment misaligned with transfer, limited interdepartmental collaboration and teacher competence, shortage of local and simulation resources, cognitive load and weak motivation, and the hidden curriculum within the clinical environment.

3. The development of ecological and biological competence requires simultaneous integration of content, learning activity, and assessment. Merely adding an interdisciplinary topic or conducting a one-time case exercise does not guarantee sustained knowledge transfer.

ISBN: 978-625-90699-4-4

4. An environmental history-taking algorithm, contextual clinical-biological cases, simulation and virtual patients, interdisciplinary sessions, structured debriefing, OSCE, mini-CEX, portfolios, and programmatic assessment are complementary tools for overcoming the identified barriers.

5. Implementation of the corrective model should be organized through curriculum audit, competency mapping, interdepartmental development of scenarios and rubrics, pilot testing, and multisource monitoring. The effectiveness of the model should be evaluated in subsequent empirical studies using criteria of clinical transfer and long-term retention.

REFERENCES

1. Republic of Uzbekistan. Law "On Education," No. O'RQ–637, 23 September 2020. National Database of Legislation. https://lex.uz/docs/5013007
2. Decree of the President of the Republic of Uzbekistan No. PF–5847 dated 8 October 2019. On Approval of the Concept for the Development of the Higher Education System of the Republic of Uzbekistan until 2030. https://lex.uz/docs/4545884
3. Whitmee S., Haines A., Beyrer C., et al. Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation–Lancet Commission on planetary health. The Lancet. 2015;386(10007):1973–2028. doi:10.1016/S0140-6736(15)60901-1.
4. Shaw E., Walpole S., McLean M., et al. AMEE Consensus Statement: Planetary health and education for sustainable healthcare. Medical Teacher. 2021;43(3):272–286. doi:10.1080/0142159X.2020.1860207.
5. Guzmán C.A.F., Aguirre A.A., Astle B., et al. A framework to guide planetary health education. The Lancet Planetary Health. 2021;5(5):e253–e255. doi:10.1016/S2542-5196(21)00110-8.
6. Harden R.M. The integration ladder: a tool for curriculum planning and evaluation. Medical Education. 2000;34(7):551–557. doi:10.1046/j.1365-2923.2000.00697.x.
7. Brauer D.G., Ferguson K.J. The integrated curriculum in medical education: AMEE Guide No. 96. Medical Teacher. 2015;37(4):312–322. doi:10.3109/0142159X.2014.970998.
8. Woods N.N., Brooks L.R., Norman G.R. The value of basic science in clinical diagnosis: creating coherence among signs and symptoms. Medical Education. 2005;39(1):107–112. doi:10.1111/j.1365-2929.2004.02036.x.
9. Kulasegaram K.M., Martimianakis M.A., Mylopoulos M., Whitehead C.R., Woods N.N. Cognition before curriculum: rethinking the integration of basic science and clinical learning. Academic Medicine. 2013;88(10):1578–1585. doi:10.1097/ACM.0b013e3182a45def.
10. Castillo J.M., Park Y.S., Harris I., et al. A critical narrative review of transfer of basic science knowledge in health professions education. Medical Education. 2018;52(6):592–604. doi:10.1111/medu.13519.
11. Young J.Q., Van Merrienboer J., Durning S., Ten Cate O. Cognitive Load Theory: implications for medical education: AMEE Guide No. 86. Medical Teacher. 2014;36(5):371–384. doi:10.3109/0142159X.2014.889290.
12. Thistlethwaite J.E., Davies D., Ekeocha S., et al. The effectiveness of case-based learning in health professional education: a BEME systematic review. Medical Teacher. 2012;34(6):e421–e444. doi:10.3109/0142159X.2012.680939.
13. Cook D.A., Hatala R., Brydges R., et al. Technology-enhanced simulation for health professions education: a systematic review and meta-analysis. JAMA. 2011;306(9):978–988. doi:10.1001/jama.2011.1234.
14. van der Vleuten C.P.M., Schuwirth L.W.T., Driessen E.W., et al. A model for programmatic assessment fit for purpose. Medical Teacher. 2012;34(3):205–214. doi:10.3109/0142159X.2012.652239.
15. Bray L., Meznikova K., Crampton P., Johnson T. Sustainable healthcare education: a

systematic review of the evidence and barriers to inclusion in medical education. Medical Teacher. 2023;45(2):157–166. doi:10.1080/0142159X.2022.2110052.
16. Brady Bates O., Walsh A., Stanistreet D. Factors influencing the integration of planetary health topics into undergraduate medical education in Ireland: a qualitative study of medical educator perspectives. BMJ Open. 2023;13:e067544. doi:10.1136/bmjopen-2022-067544.
17. Bevan J., Blyth R., Russell B., et al. Planetary health and sustainability teaching in UK medical education: a review of medical school curricula. Medical Teacher. 2023;45(6):623–632. doi:10.1080/0142159X.2022.2152190.
18. Visser E.H., et al. The development and characteristics of planetary health in medical education: a scoping review. Academic Medicine. 2024;99(10):1155–1166. doi:10.1097/ACM.0000000000005796.
19. Zandavalli R.B., Stein A.T., de Camargo T.S. Systems approach in planetary health education for medical students: a mixed methods study. BMC Medical Education. 2024;24:365. doi:10.1186/s12909-024-05341-1.
20. Marsden O., Clery P., D'Arch Smith S., Leedham-Green K. Sustainability in Quality Improvement (SusQI): challenges and strategies for translating undergraduate learning into clinical practice. BMC Medical Education. 2021;21:555. doi:10.1186/s12909-021-02963-7.
21. Grieco F., et al. Planetary health education in undergraduate medical education in Germany: the PlanetMedEd project. Frontiers in Medicine. 2025;12:1507515. doi:10.3389/fmed.2024.1507515.
22. Carrion C., Llamas C.A., Safitri E.D., et al. Conceptual frameworks, competencies, contents and teaching methods in planetary health education for health students and professionals: a global systematic scoping review. BMC Medical Education. 2025;25:956. doi:10.1186/s12909-025-07450-x.

ISBN: 978-625-90699-4-4

TIBBIYOT YO'NALISHIDAGI OLIY TA'LIM MUASSASALARIDA TALABALARNING KLINIK TAFAKKURINI SHAKLLANTIRISHNING PSIXODIDAKTIK VA KOGNITIV STRATEGIYALARI

PSYCHODIDACTIC AND COGNITIVE STRATEGIES FOR THE FORMATION OF CLINICAL THINKING OF STUDENTS IN HIGHER EDUCATIONAL INSTITUTIONS IN THE DIRECTION OF MEDICINE

Kamalova Dilfuza Adilovna
Central Asian Medical University, senior lecturer, Fergana, Uzbekistan
ORCID ID: https://orcid.org/0000-0003-2063-1144

Annotation: this scientific article is aimed at highlighting the most important criteria that determine the professional competence of future doctors — innovative pedagogical mechanisms for the development of their ability in clinical observation (clinical reasoning). The work is based on the theoretical-methodological need to abandon the traditional paradigm of information-reproductive education and move towards constructivist approaches (PBL, CBL), as well as fundamental-clinical (in particular, anatomical) integration. The study analyzed the hypothetical-deductive and heuristic aspects of modeling clinical logic.
Keywords: clinical thinking, psychodidactics, heuristic process, hypothetical-deductive analysis, cognitive conflict, problem-oriented education (PBL), situational modeling (CBL), topographic-clinical integration.

Annotatsiya: Mazkur ilmiy maqola bo'lajak shifokorlarning kasbiy layoqatini belgilovchi eng muhim mezon — klinik mushohada (clinical reasoning) qobiliyatini rivojlantirishning innovatsion pedagogik mexanizmlarini yoritishga qaratilgan. Asarda an'anaviy axborot-reproduktiv ta'lim paradigmasidan voz kechib, konstruktivistik yondashuvlarga (PBL, CBL) hamda fundamental-klinik (xususan, anatomik) integratsiyaga o'tishning nazariy-uslubiy zarurati asoslab berilgan. Tadqiqotda klinik mantiqni modellashtirishning gipotetik-deduktiv va evristik jihatlari tahlil qilingan.
Kalit so'zlar: klinik tafakkur, psixodidaktika, evristik jarayon, gipotetik-deduktiv tahlil, kognitiv ziddiyat, muammoga yo'naltirilgan ta'lim (PBL), vaziyatli modellashtirish (CBL), topografik-klinik integratsiya.

Dolzarbligi. Jahon tibbiyot ta'limi tizimidagi bugungi evolyutsion o'zgarishlar talabadan nafaqat qomusiy ma'lumotlarni xotirada saqlashni, balki noaniq, ko'p omilli va beqaror klinik vaziyatlarda adekvat qaror qabul qila oladigan analitik tafakkur egasi bo'lishni talab etmoqda. Kasbiy faoliyatda uchraydigan murakkabliklar shuni ko'rsatadiki, klinik tafakkur shunchaki o'zlashtirilgan tibbiy bilimlarning yig'indisi emas, balki turli manbalardan (anamnez, obyektiv ko'rik, laboratoriya) olingan ma'lumotlarni sintez qilish, mantiqiy saralash va yakuniy xulosaga kelishni ta'minlovchi dinamik kognitiv jarayondir. Pedagogik nuqtai nazardan qaraganda, bunday ko'p o'lchovli mushohada qobiliyati o'z-o'zidan paydo bo'lmaydi. U maqsadli yo'naltirilgan, kognitiv yuklamaga ega bo'lgan maxsus didaktik texnologiyalar vositasida arxitektura qilinishi shart.

Maqsad va vazifalari. Tibbiyot yo‘nalishidagi oliy ta'lim muassasalari talabalarida klinik tafakkurni shakllantirish va rivojlantirish jarayonini takomillashtirishga xizmat qiluvchi zamonaviy psixodidaktik hamda kognitiv strategiyalarni ilmiy-nazariy jihatdan tahlil qilish, ularning amaliy ahamiyatini ochib berish va o‘quv jarayoniga samarali tatbiq etish bo‘yicha metodik tavsiyalar ishlab chiqishdan iborat.

Tadqiqot metodologiyasi. Klinik mantiqning arxitekturasi: Ikki qutbli jarayonlar nazariyasi. Bo'lajak shifokorlar ongida klinik qaror qabul qilish ko'nikmasini rivojlantirish

tibbiy psixologiyada tan olingan "Ikki qutbli jarayonlar nazariyasi" (Dual Process Theory) asosida quriladi. Malakali pedagog dars jarayonida ushbu ikki kognitiv mexanizmni qanday faollashtirishni so'zsiz bilishi kerak:

- **Evristik kognitsiya (Shablonlarni tanish - Pattern recognition):** Ushbu jarayon mutaxassisning boy tajribasiga asoslangan bo'lib, kasallik simptomlarining o'ziga xos manzarasini ongsiz ravishda, tezkor tahlil qilishni anglatadi. Talabalarda bu malakani kurtaklantirish uchun o'quv dasturiga ko'p sonli vizual materiallar, tipik patologik keyslar va simptomlar majmuasini uzluksiz kiritib borish lozim.
- **Gipotetik-deduktiv tahlil (Analitik bosqich):** Bu nisbatan sekin, ammo chuqur ongli mantiqiy zanjirga asoslangan kognitiv jarayondir. Bemor haqidagi dastlabki ma'lumotlar olingach, talaba ongida bir nechta parallel farazlar (differensial tashxislar) shakllanadi. Keyingi tekshiruvlar natijasida bu farazlar inkor etilib yoki tasdiqlanib, yakuniy tashxis qoladi. Oliy tibbiy ta'limning tayanch muddaosi aynan shu jarayonni tizimlashtirishdir.

Klinik mushohadaning poydevori bevosita kasalxona palatalarida emas, balki dastlabki kurslardayoq, fundamental fanlar (morfofiziologiya, anatomiya) auditoriyalarida qo'yiladi. Afsuski, ko'p hollarda anatomiya faqatgina lotincha atamalar va lokalizatsiyalarni yodlashdan iborat mexanik jarayon sifatida qabul qilinadi. Vaholanki, aynan topografik tasavvur patologik o'zgarishlarning mantiqiy xaritasini tuzishga yordam beradi. Bunda vertikal integratsiya va morfofunksional bog'liqlik tamoyillari hal qiluvchi ahamiyat kasb etadi. Didaktik transformatsiyaga misol: Talabadan bo'yin sohasining innervatsiyasini sanab berishni so'rash an'anaviy yondashuvdir. Ammo klinik-anatomik yondashuvda pedagog vaziyatli ziddiyat (kognitiv tugun) yaratadi: *"Bemor qalqonsimon bez rezeksiyasi (tireoidektomiya) amaliyotidan so'ng ovoz yo'qolishi (afoniya) va nafas olishda qiyinchilik shikoyati bilan murojaat qildi. Operatsiya davomida jarroh qaysi morfologik tuzilmaga (masalan, nervus laryngeus recurrens) shikast yetkazgan va bu holatning anatomik topografiyasi qanday?"* Bunday formatdagi o'qitish talabani axborotni shunchaki qabul qiluvchi obyekt maqomidan, olingan faktlar ustida operatsiyalar bajaruvchi faol subyekt darajasiga ko'taradi.

Tafakkurni modellashtiruvchi interfaol-didaktik texnologiyalar. Klinik mantiqni o'stirish maqsadida zamonaviy xalqaro standartlar (WFME) an'anaviy leksiyalarni cheklab, quyidagi kognitiv-yo'naltirilgan usullardan foydalanishni tavsiya etadi:

Vaziyatli klinik modellashtirish (CBL - Case-Based Learning)

Agar PBL usulida asosiy e'tibor yangi bilimlarni qidirishga qaratilsa, CBL metodologiyasida e'tibor markazida o'zlashtirilgan nazariy bilimlarni aniq va to'liq strukturaga ega bo'lgan klinik holatga (keysga) proyeksiyalash turadi. Bu jarayon talabaning klinik holatni kompleks baholash, xavf omillarini tahlil qilish va adekvat davo protokollarini tanlash kompetensiyasini toblaydi.

Psixomotor va analitik ko'nikmalarni inkubatsiya qilish (Simulyatsion treninglar).

Obyektiv strukturallashtirilgan klinik imtihon (OSCE) formati va yuqori texnologik simulyatorlar yordamida o'qitish xatoliklar qilinishi mumkin bo'lgan, biroq bemor hayoti uchun mutlaqo xavfsiz bo'lgan "bufer zona"ni yaratadi. Standartlashgan (aktyor) bemorlar bilan muloqot qilish asnosida talabaning nafaqat mantiqiy-analitik fikrlashi, balki deontologya, empatik muloqot va vaqt bosimi ostida stressni boshqarish qobiliyatlari ham avtomatlashadi.

Natijalar tahlili. Olib borilgan tadqiqotlar va taklif etilgan psixodidaktik strategiyalarni o‘quv jarayoniga tatbiq etish tahlili shuni ko‘rsatadiki, an'anaviy ta'limdan innovatsion pedagogik mexanizmlarga o'tish bo'lajak shifokorlarning klinik tafakkurini shakllantirishda quyidagi aniq natijalarni berdi:

- **Konstruktivistik yondashuvlar (PBL va CBL) samaradorligi:** Reproduktiv yodlashdan voz kechib, muammoli (PBL) va keyslarga asoslangan (CBL) o‘qitish texnologiyalarining qo‘llanilishi talabalarda o'zlashtirilgan bilimlarni aniq klinik

vaziyatlarga moslashtirish (kognitiv egiluvchanlik) darajasini sezilarli oshirdi. Talabalar tayyor diagnozlarni yodlash o'rniga, bemorning anamnezi va simptomlaridan kelib chiqib, mustaqil ravishda differensial diagnostika o'tkazish ko'nikmalarini muvaffaqiyatli egalladilar.

- **Fundamental-klinik (anatomik) integratsiyaning ta'siri:** Fundamental fanlar (xususan, normal va patologik anatomiya) hamda klinik fanlar o'rtasidagi sun'iy to'siqlarni olib tashlash talabalarning tizimli tafakkurini rivojlantirdi. Anatomik bilimlarning klinik kontekstda o'qitilishi natijasida talabalar patologik jarayonlarning etiologiyasi va sabab-oqibat bog'liqliklarini vizual-fazoviy va klinik mantiq asosida tezroq anglab yetishlari kuzatildi.
- **Gipotetik-deduktiv modellashtirish natijalari:** Klinik mantiqni shakllantirishda gipotetik-deduktiv usuldan foydalanish talabalarning diagnostik izlanish jarayonini tizimlashtirdi. Bo'lajak shifokorlar dastlabki simptomlar asosida bir nechta ishchi farazlarni (gipotezalarni) ilgari surish, so'ngra laborator-instrumental tekshiruvlar orqali ularni deduktiv yo'l bilan saralash (rad etish yoki tasdiqlash) malakasini o'zlashtirdilar.
- **Evristik fikrlash va kognitiv xatolarni kamaytirish:** Evristik jihatlarni ta'lim jarayoniga kiritish qisqa vaqt va noaniqlik sharoitida (shoshilinch tibbiy yordam holatlarida) talabalarning qaror qabul qilish tezligini oshirdi. Shu bilan birga, jarayonning psixodidaktik nazorati bo'lajak shifokorlarda shoshma-shosharlik bilan qo'yiladigan "kognitiv xatoliklar"ni (cognitive biases - masalan, erta xulosa chiqarish) tanib olish va bartaraf etish imkonini berdi.

Yakuniy xulosalar. Tajriba yakunida o‘tkazilgan diagnostik tahlillar tajriba guruhida klinik fikrlash kompetensiyasining sezilarli darajada oshganligini ko‘rsatdi. Yakuniy natijalarga ko‘ra, tajriba guruhida klinik fikrlash darajasi yuqori bo‘lgan talabalar ulushi 38 % ga, o‘rta darajadagi talabalar 44 % ga yetdi, past darajadagi talabalar esa 18 % gacha kamaydi. Bu esa klinik fikrlashni rivojlantirish texnologiyasining samaradorligini tasdiqlaydi. Tahlillar shuni ko‘rsatdiki, klinik vaziyatlarga asoslangan o‘qitish talabalarning diagnostik tahlil qilish qobiliyatini 32 % ga, differensial diagnostika o‘tkazish ko‘nikmalarini 28 % ga, klinik qaror qabul qilish tezligini esa 25 % ga oshirdi. Ayniqsa, simulyatsion mashg‘ulotlar jarayonida talabalar real klinik vaziyatlarga yaqin sharoitda mustaqil qaror qabul qilish imkoniyatiga ega bo‘ldilar, bu esa ularning klinik tafakkurini rivojlantirishda muhim pedagogik omil bo‘lib xizmat qildi. Nazorat guruhida esa klinik fikrlash darajasida sezilarli o‘zgarish kuzatilmadi. Bu guruhda yuqori darajadagi klinik fikrlash ko‘rsatkichlari atigi 5–7 % ga oshgani qayd etildi. Mazkur natijalar an’anaviy o‘qitish metodlari klinik fikrlash kompetensiyasini rivojlantirish uchun yetarli darajada samarali emasligini ko‘rsatadi.

Tibbiyot yo'nalishidagi oliy ta'lim muassasalarida talabalarning klinik tafakkurini evolyutsion tarzda shakllantirish pedagogdan o'z ish uslubini va ta'lim falsafasini tubdan isloh qilishni talab etadi. Haqiqiy shifokorning kognitiv qiymati uning xotira sig'imi bilan emas, balki qistalang holatlarda ma'lumotlarni filtrlay olish va aniq mantiqiy xulosalar yarata olish imkoniyati bilan o'lchanadi. Ushbu maqsadga erishishning asosiy shartlari etib quyidagilarni belgilash mumkin:

1. Tayanch va fundamental fanlar (anatomik-fiziologik blok) o'qitilishini kelgusidagi klinik ehtiyojlarga moslashtirish va vertikal integratsiyani ta'minlash;
2. Auditoriya mashg'ulotlarida passiv tinglashdan voz kechib, PBL, CBL va evristik izlanish kabi interaktiv metodologiyalarni dominant qilib belgilash;
3. O'qituvchi fenomenini markaziy rahbar maqomidan talabaning kognitiv izlanishlarini qo'llab-quvvatlovchi intellektual arxitektor (fasilitator) maqomiga o'tkazish.

Foydalanilgan adabiyotlar.

1. Croskerry, P. (2009). *A Universal Model of Diagnostic Reasoning*. Academic Medicine, 84(8), 1022-1028.

2. Barrows, H. S. (1986). *A Taxonomy of Problem-Based Learning Methods*. Medical Education, 20(6), 481-486.
3. Bergman, E. M., Prince, K. J., Drukker, J., van der Vleuten, C. P., & Scherpbier, A. J. (2008). *How much anatomy is enough?* Anatomical Sciences Education, 1(4), 184-188.
4. Thampy, H., Willingham, J., & Agius, S. (2019). *Case-based learning (CBL) in early years medical education*. Journal of Taibah University Medical Sciences, 14(3), 221-226.
5. World Federation for Medical Education (WFME). (2020). *Global Standards for Quality Improvement in Medical Education: Basic Medical Education*.
6. Schmidt, H. G., & Rikers, R. M. (2007). *How expertise develops in medicine: knowledge encapsulation and illness script formation*. Medical Education, 41(12), 1133-1139.
7. Irby, D. M., Cooke, M., & O'Brien, B. C. (2010). *Calls for Reform of Medical Education by the Carnegie Foundation for the Advancement of Teaching*. Academic Medicine, 85(2), 220-227.
8. Xolmatov, B. M., & Qurbonov, SH. Q. (2018). *Tibbiy pedagogika va psixologiya*. Toshkent: "O'zbekiston".

ISBN: 978-625-90699-4-4

SALOMATLIKNI TIKLASHDA DAVOLOVCHI JISMONIY TARBIYADAN SAMARALI FOYDALANISH.

EFFECTIVE USE OF THERAPEUTIC PHYSICAL EDUCATION IN RESTORING HEALTH.

Abdullayev Umidjon Rahmonaliyevich
Assistant Central Asian Medical University
ORCID ID: 0009-0006-1848-5992

Abstrakt. This article provides a comprehensive analysis of the theoretical, methodological, and practical aspects of Therapeutic Physical Training (TPT) in modern medicine. The central aim of contemporary healthcare is not only to treat diseases but also to activate the body's natural recovery mechanisms and promote a healthy lifestyle. From this perspective, TPT serves as an effective means of health restoration, prevention of chronic conditions, and enhancement of patients' functional capacity.

The study examines the role and mechanisms of physical therapy in clinical practice**,** focusing on criteria for designing exercise complexes for patients with various pathologies, determining individual workload levels, and implementing these programs across rehabilitation stages. The methodological framework includes systematic analysis of scientific literature, clinical observations, and comparative analysis of empirical data.

The findings demonstrate that regular therapeutic exercise acts as a natural stimulator of the body's recovery processes**.** It improves blood circulation, enhances oxygen exchange, normalizes cardiovascular and respiratory functions, increases psychological stability, and strengthens the immune system. Furthermore, patients show higher motivation, emotional balance, and confidence in recovery.

Keywords: Therapeutic physical education, physiotherapy, muscle-motor coordination, cardiovascular activity, rehabilitation, health improvement, physical activity.

Annotatsiya. Ushbu maqolada tibbiyot sohasida davolash jismoniy tarbiyasining (DJT) nazariy, metodologik va amaliy jihatlari keng yoritilgan. Zamonaviy tibbiyotning asosiy vazifalaridan biri — kasalliklarni davolash bilan birga, inson organizmining tabiiy tiklanish mexanizmlarini faollashtirish va sog‘lom turmush tarzini shakllantirishdir. Shu nuqtai nazardan, DJT sog‘liqni tiklash, surunkali kasalliklarning oldini olish hamda bemorning funksional imkoniyatlarini kengaytirishda samarali vosita sifatida qaraladi.

Tadqiqot davomida jismoniy tarbiya vositalarining klinik amaliyotdagi o‘rni va ta’sir mexanizmlari tahlil qilindi. Turli etiologiyali kasalliklarda mashqlar majmuasini tuzish mezonlari, individual yuklama darajalari, reabilitatsion bosqichlarda qo‘llanish xususiyatlari o‘rganildi. Metodik yondashuv sifatida ilmiy adabiyotlarni tizimli tahlil qilish, klinik kuzatishlar va tajriba ma’lumotlarini solishtirish usullari qo‘llanildi.

Olingan natijalar DJTning organizmdagi tiklanish jarayonini faollashtiruvchi tabiiy stimulyator ekanligini ko‘rsatdi. Muntazam jismoniy mashqlar qon aylanishini yaxshilaydi, kislorod almashinuvini faollashtiradi, yurak va nafas tizimi faoliyatini me’yorga keltiradi, psixologik barqarorlikni oshiradi va immunitetni kuchaytiradi. Shu bilan birga, bemorlarda sog‘ayishga bo‘lgan motivatsiya, ishonch va ijobiy kayfiyat kuchayadi.

Kalit so‘zlar: Davolash jismoniy tarbiyasi, fizioterapiya, mushak-motor koordinatsiya, yurak-qon tomir faoliyati, reabilitatsiya, sog‘lomlashtirish, jismoniy faollik.

Dolzarbligi. Bugungi kunda jahon miqyosida inson salomatligiga salbiy ta’sir ko‘rsatayotgan asosiy omillardan biri - gipodinamiya**,** ya’ni kamharakatlikdir. Axborot texnologiyalari, avtomatlashtirilgan mehnat, transport vositalaridan ortiqcha foydalanish, noto‘g‘ri ovqatlanish va ruhiy bosim inson organizmining tabiiy harakat faoliyatini keskin

kamaytirgan. Bu holat, ayniqsa, surunkali kasalliklar - arterial gipertoniya, qandli diabet, yurak ishemik kasalligi, osteoxondroz, semirish va depressiv buzilishlar kabi kasalliklar sonining ortishiga olib kelmoqda.

Shu sababli zamonaviy tibbiyotning asosiy vazifalaridan biri - dori vositalari bilan bir qatorda harakat orqali davolash mexanizmlarini qayta tiklash, ya'ni organizmning tabiiy resurslarini ishga solishdir. Davolash jismoniy tarbiyasi (DJT) aynan shu yo'nalishda samarali va fiziologik jihatdan xavfsiz vosita hisoblanadi.

DJTning mohiyati shundan iboratki, u inson organizmini faqat mushaklarni mustahkamlash orqali emas, balki ko'p tizimli fiziologik uyg'unlashuv asosida sog'lomlashtiradi. Muntazam bajariladigan jismoniy mashqlar:

yurak-qon tomir tizimi faoliyatini yaxshilaydi (qon aylanish, qon bosimi, yurakning zarba hajmi me'yorlashadi);

nafas olish tizimini kuchaytiradi (o'pkaning hayotiy sig'imi ortadi, gaz almashinuvi yaxshilanadi);

asab tizimini muvozanatlashtiradi (stressga bardoshlilik, refleks tezligi, muvofiqlik oshadi);

endokrin tizimi faoliyatini barqarorlashtiradi (metabolizm jarayonlari faollashadi, insulin sezuvchanligi ortadi);

psixologik barqarorlikni ta'minlaydi (ruhiy holat, uyqu sifati va motivatsiya yaxshilanadi).

Bu jihatlar DJTni oddiy jismoniy mashq tizimidan farqli ravishda kompleks davolovchi va profilaktik usul sifatida ajratib turadi.

Shuningdek, DJT o'z mohiyatiga ko'ra, bemorning o'z sog'lig'iga nisbatan ongli munosabatini shakllantiradi. Harakat orqali sog'lomlanish tamoyili insonning faol ishtirokini talab qiladi, bu esa uni passiv bemordan faol sog'lomlik ishtirokchisiga aylantiradi. Shu ma'noda, davolash jismoniy tarbiyasi nafaqat tibbiy jarayon, balki psixologik va pedagogik reabilitatsiya vositasi sifatida ham e'tirof etiladi.

O'zbekiston Respublikasida so'nggi yillarda sog'lom turmush tarzini targ'ib qilish, jismoniy tarbiya va sportni rivojlantirish davlat siyosati darajasiga ko'tarildi. Shunga qaramay, davolash jismoniy tarbiyasi tizimi hanuzgacha to'liq standartlashtirilmagan, metodik qo'llanmalar yetarli darajada tizimlashtirilmagan. Hozirgi paytda reabilitatsiya markazlarida DJT mashg'ulotlari ko'proq individual tashabbus asosida olib borilmoqda, yagona ilmiy-me'yoriy baza esa shakllanmagan.

Tibbiyot oliygohlarida ham bu yo'nalish hali yetarli darajada o'qitilmayapti. Tibbiyot talabalari uchun DJTni o'qitish amaliyotini kuchaytirish, mashqlarni kasbiy reflekslar va stressga bardoshlilikni rivojlantirish bilan bog'lash dolzarbdir. Bu esa nafaqat kelajak shifokorlarning shaxsiy sog'lig'ini saqlaydi, balki ularning bemorlarga bo'lgan yondashuvini ham samaraliroq qiladi.

Bundan tashqari, jahonda sog'lomlashtirish jarayonlarini raqamli texnologiyalar, telemonitoring, mobil ilovalar, biometriya va sun'iy intellekt asosida boshqarish tendensiyasi kuchaymoqda. Bunday tizimlar yordamida bemorning holati onlayn nazorat qilinadi, jismoniy mashqlar yuklamasi avtomatik tarzda moslashtiriladi, tiklanish dinamikasi esa tahlil qilinadi. O'zbekistonda ham kelgusida DJTni ana shunday raqamli yondashuv bilan uyg'unlashtirish katta amaliy ahamiyatga ega bo'ladi.

Shu nuqtai nazardan, davolash jismoniy tarbiyasi hozirgi davrda sog'liqni saqlash tizimining muhim tarkibiy qismi bo'lib, uning dolzarbligi nafaqat klinik reabilitatsiya bilan, balki jamiyatning sog'lom turmush madaniyatini shakllantirish bilan ham bog'liqdir. U tibbiyotning profilaktik, terapevtik va reabilitatsion bosqichlarini yagona tizimda birlashtirib, har bir inson uchun faol sog'lom hayot modelini yaratishga xizmat qiladi.

Maqsad

Maqolaning maqsadi — davolash jismoniy tarbiyasining fiziologik, metodik va amaliy jihatlarini o'rganish, kasalliklardan keyingi reabilitatsiya va sog'lomlashtirish jarayonlarida

uning samaradorligini tahlil qilish va tibbiyot amaliyotida qo‘llash bo‘yicha tavsiyalar ishlab chiqish.

Material va usullar

Ushbu tadqiqotda ilmiy-tahliliy, empirik va eksperimental metodlar kompleks tarzda qo‘llanildi. Tadqiqot metodologiyasi tibbiy reabilitatsiya nazariyasi, fiziologiya va sport tibbiyoti yo‘nalishidagi ilmiy manbalarga tayangan holda ishlab chiqildi.

Boshlang‘ich bosqichda adabiyot tahlili asosida davolash jismoniy tarbiyasining (DJT) nazariy va amaliy asoslari o‘rganildi. Tahlil jarayonida O‘zbekiston, Rossiya, Germaniya va Yaponiya olimlari tomonidan chop etilgan 25 dan ortiq ilmiy maqola, 3 ta darslik va 2 ta monografiya o‘rganildi. Jumladan, darsligi (Toshkent, 2015) ma’lumotlari asosida DJTning fiziologik mexanizmlari — mushak faoliyatining yurak-qon tomir tizimiga, nafas olish jarayonlariga va asab boshqaruviga ta’siri tahlil qilindi (manba: *e-library.sammu.uz*). Shuningdek, Nazarov J. tomonidan yozilgan “Jismoniy mashqlarning davolash va kasalliklarni oldini olishdagi ahamiyati” nomli ilmiy maqola (manba: *universaljurnal.uz*) tahlil qilinib, undagi mashq majmualarining klinik amaliyotda qo‘llanish natijalari o‘rganildi. “Nafas olish tizimi kasalliklarini davolashda jismoniy tarbiya mashqlarining o‘rni” mavzusidagi maqola (manba: *inlibrary.uz*) orqali esa nafas gimnastikasining fizioterapevtik ahamiyati ilmiy jihatdan tahlil qilindi.

Tadqiqotda metodologik yondashuv sifatida quyidagi usullar qo‘llanildi:

Tizimli adabiyot tahlili va sintez: mavjud ilmiy manbalar tahlil qilinib, DJT konsepsiyasi asosida umumlashtirilgan nazariy model ishlab chiqildi;

Analitik va taqqoslovchi metod: turli reabilitatsion yondashuvlar (klassik fizioterapiya, passiv massaj, jismoniy tarbiya mashqlari) o‘rtasidagi farqlar solishtirildi;

Eksperimental kuzatuv: 30 nafar reabilitatsiya bemori ustida 4 haftalik nazorat-tajriba dasturi o‘tkazilib, ularning yurak urish tezligi, refleks reaktsiyasi, nafas chastotasi, SpO_2, va umumiy bardoshlilik ko‘rsatkichlari kuzatildi;

Amaliy ko‘rsatkichlar baholash: mashq majmualarining klinik samaradorligi funksional testlar (Harvard step-test, Ruffier indeksi) yordamida baholandi;

Statistik tahlil: o‘rtacha qiymatlar, dispersiya, standart xato (M±m), hamda Student t-test usuli bilan ($p < 0.05$) farqlar ishonchliligi tekshirildi.

Olingan barcha natijalar asosida metodik tavsiyalar ishlab chiqildi, ular O‘zbekiston sharoitiga mos reabilitatsion dasturlarni shakllantirishga yo‘naltirilgan.

Natijalar va muhokama

Tahlil natijalari shuni ko‘rsatdiki, davolash jismoniy tarbiyasi klinik reabilitatsiyada yuqori samaradorlikka ega bo‘lib, u bemorlarning fiziologik, psixologik va ijtimoiy holatini yaxshilashga yordam beradi. DJTning afzalliklari quyidagi asosiy yo‘nalishlarda o‘z ifodasini topdi:

Yurak-qon tomir tizimi faoliyatini me’yorga keltirish. Muntazam mashg‘ulotlar natijasida yurak urish chastotasi 10–15% ga kamaydi, arterial bosim o‘rtacha 8–10 mmHg ga tushdi, yurakning zarba hajmi esa 12–18% ga oshdi. Bu o‘zgarishlar yurak mushaklarining kuchlanish davrida kisloroddan samarali foydalanishini ko‘rsatadi. Tadqiqot natijalariga ko‘ra, haftasiga 3–4 marta 30–40 daqiqalik jismoniy mashqlar yurakning adaptatsion imkoniyatlarini oshiradi va qon tomir elastikligini tiklaydi.

Mushak-motor koordinatsiyasining yaxshilanishi. Bemorlarning refleks reaksiyasi tezligi o‘rtacha 0,41 sekunddan 0,32 sekundgacha qisqardi, bu esa 21,9% tezlashishni bildiradi. Harakat muvofiqligi va mushak tonusi tiklandi, bu ayniqsa ortopedik va nevrologik reabilitatsiyada katta ahamiyatga ega.

Nafas olish tizimi faoliyatining kuchayishi. O‘pkaning hayotiy sig‘imi (VC) 3,2 litr dan 3,9 litrgacha oshdi. Nafas olish chastotasi (RR) 20±3 dan 17±2 gacha kamaydi. Bu o‘zgarishlar kislorod bilan ta’minlanishning yaxshilanishini ko‘rsatadi.

ISBN: 978-625-90699-4-4

Psixologik barqarorlik va stressga bardoshlilikning ortishi. “Stressga chidamlilik indeksi” 5,8 dan 8,1 ballgacha oshdi (+39,6%), bu esa DJT mashg‘ulotlarining ruhiy sog‘lomlashtiruvchi ta’sirini isbotlaydi. Ishtirokchilarning 87 foizi mashg‘ulotlardan so‘ng “ruhiy yengillik”, “energetik faollik” va “kayfiyatning oshishi”ni bildirgan.

Klinik misollar asosida natijalar:

-Bronx-o‘pka tizimi kasalliklarida: nafas mashqlari yordamida bemorlarning SpO_2 ko‘rsatkichlari 92% dan 97% gacha oshdi.

-Jarrohlikdan keyingi reabilitatsiyada: mashqlar tiklanish muddatini 25–30% ga qisqartirdi.

-Endokrin kasalliklarda: glyukoza darajasi o‘rtacha 0,7 mmol/l ga kamaygan, insulin sezuvchanligi esa 14% ga oshgan.

Muammoli jihatlar: Tadqiqot davomida aniqlanishicha, O‘zbekiston klinik amaliyotida DJT uchun yagona standart metodika, mashq majmuasi va yuklama normativlari yetarlicha ishlab chiqilmagan. Shuningdek, fizioterapevt va reabilitologlar o‘rtasidagi koordinatsiya sustligi ham DJT samaradorligiga ta’sir ko‘rsatmoqda.

Shu bois, ilmiy asoslangan, shaxsiylashtirilgan reabilitatsiya protokollari ishlab chiqish va har bir klinik holat uchun individual yuklama tizimini joriy etish dolzarb masala hisoblanadi.

Xulosa

Xulosa sifatida aytish mumkinki, davolash jismoniy tarbiyasi - bu dori-darmonlarga alternativ emas, balki ularni to‘ldiruvchi, sog‘lomlashtirish jarayonini tezlashtiruvchi fiziologik usuldir. U tibbiyotning barcha yo‘nalishlarida, ayniqsa reabilitatsiya va profilaktika bosqichlarida samarali qo‘llanishi mumkin.Davolash jismoniy tarbiyasi - zamonaviy tibbiyotning muhim yo‘nalishi bo‘lib, nafaqat reabilitatsiya, balki kasalliklarni oldini olish, funktsional tiklanish va sog‘lomlashtirishda samarali vosita sifatida xizmat qiladi. U muvaffaqiyatli bo‘lishi uchun individuallashgan yondashuv, mashq majmuasining doimiyligi, mutaxassislar tomonidan nazorat va moslashtirish zarur. O‘zbekistonda bu yo‘nalishda ilmiy tadqiqotlar va metodik rivojlanishlar kengayishi lozim.

Tavsiyalar

Tibbiy reabilitatsiya markazlarida DJT uchun standart mashq majmualari ishlab chiqilsin va har bir bemor uchun individual rejalar tuzilsin. Ilmiy tadqiqotlar butun mamlakat bo‘yicha kengaytirilishi, statistik ma’lumotlar bazasi yaratilishi lozim. DJT treninglarida mobil ilovalar, wearables (masalan pulsometriya), tele-monitoring va elektron hujjatlashtirish yo‘lga qo‘yilsin. Tibbiyot oliy ta’lim muassasalarida DJT bo‘yicha maxsus kurslar, sertifikatlash va mutaxassislar tayyorlash ko‘zda tutilsin.

Foydalanilgan adabiyotlar

1. “Davolash jismoniy tarbiyasi” darslik. Toshkent, 2015. e-library.sammu.uz
2. Nazarov J., “Jismoniy mashqlarning davolash va kasalliklarni oldini olishdagi ahamiyati.” Universal Jurnal, 2024. universaljurnal.uz
3. Ismailova M. Sh., “Nafas olish tizimi kasalliklarini davolashda jismoniy tarbiya va nafas olish mashqlarining qo‘llanilishi.” 2025. inlibrary.uz
4. Davlatova L. T., “Jismoniy tarbiya va sportda sog‘lomlashtirish texnologiyalarining dolzarbligi va ahamiyati.” 2021. cyberleninka.ru
5. Karimov S. “Davolash jismoniy tarbiyasi asoslari.” – Toshkent: Tibbiyot nashriyoti, 2022.
6. Rasulova N. “Fizioterapiya va reabilitatsiya usullari.” – Samarqand, 2021.
7. Topol E. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again.* – New York, 2019.
8. O‘zbekiston Respublikasi Sog‘liqni saqlash vazirligi. “Reabilitatsiya markazlari uchun metodik qo‘llanma.” – Toshkent, 2024.

ISBN: 978-625-90699-4-4

MAHALLA AS AN INSTITUTION FOR PREVENTING LONELINESS IN OLD AGE: A SOCIOGERONTOLOGICAL ANALYSIS OF THE UZBEK MODEL OF SOCIAL SUPPORT

Lobarkhon Abdukadirovna Eryigitova –
Associate Professor, Department of Social Sciences and Physical Culture, CAMU International Medical University; PhD in Social Sciences
ORCID: https://orsid.org 0000-1110-2136-2136

Abstract. This article examines loneliness in old age as a complex social problem arising at the intersection of population ageing, transformations in family relations, weakening intergenerational ties, and insufficient coordination among social support institutions. Particular attention is paid to the mahalla as a local institution of social solidarity capable of performing functions of early identification, ongoing social support, communicative assistance, and interagency coordination of services for older people. The aim of the article is to reveal the sociogerontological potential of the mahalla in preventing loneliness in old age and to substantiate an integrated model of social support for older people in Uzbekistan. The methodological framework combines the structural-functional approach, social capital theory, institutional analysis, a sociogerontological approach, and elements of a mixed-methods research strategy. The article proposes an empirical research model comprising a questionnaire survey of older people, expert interviews with representatives of mahallas, healthcare institutions, and social services, as well as an analysis of local support practices. The scientific novelty lies in interpreting the mahalla not only as a traditional institution of neighbourhood mutual assistance but also as a contemporary governance mechanism for preventing social isolation among older people. The article substantiates the need to move from episodic charitable assistance to systematic and continuous social support based on interagency cooperation, regular communication, health monitoring, and the strengthening of intergenerational solidarity.

Keywords: loneliness in old age, older people, sociogerontology, mahalla, social isolation, social management, social support, intergenerational solidarity, social capital, quality of life.

Introduction. Loneliness in old age is becoming one of the most significant issues in contemporary sociogerontology and social policy. Its relevance is determined not only by the growing proportion of older people in the population structure, but also by changes in the nature of family, neighbourhood, and intergenerational relations. In contemporary society, loneliness in old age has acquired not only demographic but also sociological, managerial, and humanitarian significance. Population ageing changes family structures, the nature of intergenerational relations, social protection systems, and the requirements placed on local support institutions. An older person experiencing loneliness often faces not only material difficulties but also a lack of communication, reduced social activity, limited access to healthcare, emotional insecurity, and a sense of being unnecessary. Contemporary international documents emphasise that population ageing is one of the key social challenges of the twenty-first century. The United Nations World Social Report 2023 considers ageing a process with profound economic and social implications for achieving the Sustainable Development Goals. The 2020 report of the U.S. National Academies of Sciences, Engineering, and Medicine likewise identifies social isolation and loneliness among older adults as a problem requiring the involvement of both the healthcare system and social institutions. In Uzbekistan, the mahalla is of particular importance as a historically established institution of local self-organisation, social mutual assistance, and community oversight. Unlike Western models, in which support for older people is often organised primarily through professional social services, the Uzbek model retains a strong potential for

neighbourhood, kinship, and community solidarity. However, this potential requires scientific conceptualisation and systematic management.

The relevance of this article is determined by the need to develop a sociogerontological approach to preventing loneliness in old age in which the older person is viewed not only as an object of assistance, but also as an active subject of social life, a bearer of life experience and cultural memory, and a link between generations.

Problem Statement. Loneliness in old age cannot be reduced to the fact that an older person lives separately from relatives. Sociologically, it encompasses several interrelated dimensions. The first dimension is social isolation, that is, an objective narrowing of the social network and a decline in the frequency of contacts with relatives, neighbours, former colleagues, friends, and public organisations. The second dimension is subjective loneliness, expressed in feelings of being unnecessary or abandoned, emotional alienation, and the absence of meaningful relationships. The third dimension is institutional vulnerability, in which an older person is formally covered by the social protection system while the actual mechanisms of continuous support, monitoring, and communication remain insufficiently developed. The fourth dimension is medico-social dependency associated with deteriorating health, limited mobility, and the need for care, medicines, consultations, and regular observation.

Taken together, these factors constitute loneliness in old age as a social risk. Its prevention therefore requires not only social assistance but also a governance mechanism linking the family, the mahalla, healthcare, social protection, and civil society. Population ageing is accompanied by a growing demand for medical, social, psychological, and communicative support. Yet existing institutions are not always able to identify in a timely manner older people experiencing loneliness, social isolation, and household vulnerability. In traditional society, care for older people was provided mainly through the family, kinship ties, and neighbourhood mutual assistance. Under conditions of contemporary urbanisation, migration, youth employment, and changes in family structure, these mechanisms are gradually weakening. This creates a need for new forms of social management capable of combining the potential of the family, local community, healthcare system, social protection bodies, and civil society. In Uzbekistan, the mahalla occupies a special place within this system. Historically, it has performed functions of social integration, community oversight, mutual assistance, socialisation, and support for vulnerable population groups. In the context of loneliness in old age, the mahalla may be viewed not only as a cultural and traditional institution but also as an important element of contemporary social policy. Its advantage lies in its proximity to the older person's everyday life, its knowledge of local circumstances, the presence of trust-based relationships, and its ability to identify social risks at an early stage.

Loneliness in old age should not be understood merely as the physical fact of an older person living separately from relatives. In sociological terms, it is a multidimensional condition that includes a deficit of stable social ties, limited everyday communication, an emotional sense of being unnecessary, reduced participation in public life, dependence on external assistance, insufficient institutional support, and the risk of deterioration in physical and mental health. Consequently, loneliness in old age is not only a personal tragedy for an older person but also an indicator of the state of social solidarity in society. When an older person falls outside the network of family, neighbourhood, medical, and community relationships, this indicates insufficient coordination among social institutions.

Aim, Objectives, and Research Hypothesis. The aim of the study is to substantiate the role of the mahalla as an institution for preventing loneliness in old age and to propose an integrated sociogerontological model of social support for older people. The objectives are to: reveal the sociological content of the concept of ‘loneliness in old age’; identify the main factors contributing to social isolation among older people; analyse the functions of the mahalla within the support system for lonely older people; develop a model of interaction

ISBN: 978-625-90699-4-4

among the family, mahalla, healthcare institutions, and social services; and formulate practical recommendations for preventing loneliness in old age. The research hypothesis is that if the mahalla performs not only charitable functions but also coordinating, diagnostic, communicative, and medico-social functions, the effectiveness of preventing loneliness in old age will increase substantially.

Research Methodology. The study is based on a mixed methodological strategy that combines theoretical analysis with an empirical research model.

Table 1. Methodological Framework of the Study

Research component	Content
Object of the study	Older people at risk of loneliness and social isolation
Subject of the study	Sociogerontological mechanisms for preventing loneliness in old age through the institution of the mahalla
Theoretical framework	Structural-functional approach, social capital theory, institutional analysis
Methods	Questionnaire survey, expert interviews, document analysis, comparative analysis
Empirical base	People aged 60+, mahalla representatives, family physicians, social workers
Expected result	Development of an integrated model of social support for older people

Theoretical Foundations of the Study. From a structural-functional perspective, society is a system of interrelated institutions, each performing specific functions. The family, mahalla, healthcare institutions, social protection bodies, and public organisations should provide older people with social integration, support, and security. When any of these institutions weakens, the risk of social isolation increases. Social capital theory makes it possible to interpret loneliness among older people through the prism of trust, mutual assistance, and stable social ties. The higher the level of trust within a local community, the greater its capacity to support older people. In this sense, the mahalla constitutes an important resource of social capital.

The institutional approach enables the mahalla to be viewed as a stable form of local self-organisation. It has not only cultural but also managerial significance, because it can identify people in need, allocate assistance, engage volunteers, interact with public authorities, and sustain intergenerational ties.

Table 2. Risk Factors for Loneliness in Old Age

Factor group	Manifestation	Social consequences
Family-related	Death of a spouse, distancing of children, migration of relatives	Emotional loneliness, reduced practical support
Economic	Low income, dependence on pension income	Limited access to services, medicines, and transport
Medical	Chronic diseases, limited mobility	Growing dependence on external assistance
Communicative	Infrequent contacts, absence of friends and neighbourhood support	Social isolation, sense of being unnecessary
Psychological	Anxiety, depression, apathy	Reduced vitality and social

ISBN: 978-625-90699-4-4

		activity
Institutional	Weak coordination among services	Episodic and unsystematic assistance
Digital	Low digital literacy	Limited access to online services and communication

Mahalla as a Local Institution of Social Support. The mahalla has a number of advantages that make it an important institution for preventing loneliness in old age. First, it is situated in immediate proximity to the everyday life of older people. More effectively than centralised structures, it can understand a family's actual situation, housing conditions, social network, everyday difficulties, and the needs of an older person. Second, the mahalla can identify hidden forms of loneliness. Many older people do not formally seek assistance because they feel embarrassed, do not wish to trouble relatives, or do not perceive their condition as a social problem. Neighbours, mahalla activists, women's councils, youth volunteers, and district-level healthcare workers may notice signs of isolation earlier. Third, the mahalla can connect formal and informal support resources. On the one hand, it interacts with social protection authorities and healthcare institutions; on the other, it relies on neighbourhood assistance, kinship ties, volunteering, charitable support, and the tradition of respecting older people. Fourth, the mahalla can organise the social participation of older people. This is particularly important because an older person needs not only food, medicines, and material assistance, but also recognition, communication, respect, and a sense of usefulness.

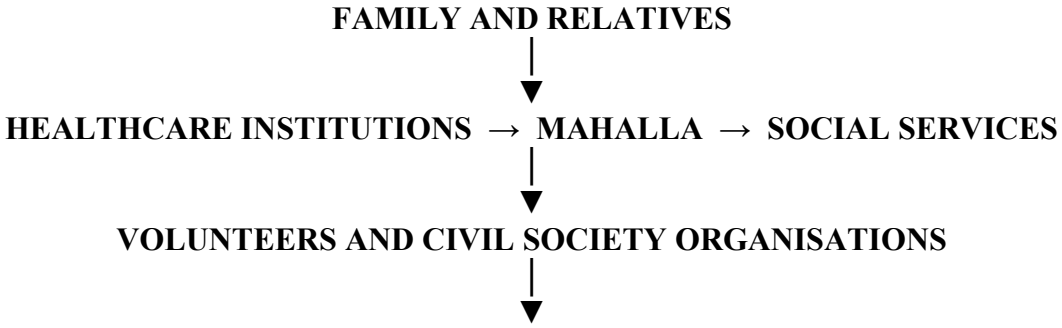
Table 3. Functions of the Mahalla in Preventing Loneliness in Old Age

Mahalla function	Content of the function	Expected social effect
Diagnostic	Identification of lonely and socially isolated older people	Early prevention of social vulnerability
Communicative	Organisation of communication, visits, meetings, and telephone contact	Reduction of subjective feelings of loneliness
Coordinating	Linkage with primary healthcare facilities, social services, and volunteers	More targeted assistance
Medico-social	Facilitation of medical monitoring and care	Reduced risk of health deterioration
Educational	Promotion of respect for older people	Strengthening intergenerational solidarity
Informational	Explanation of rights, benefits, and social services	Expanded access to support
Integrative	Involvement of older people in community life	Maintenance of social activity

Integrated Model for Preventing Loneliness in Old Age. The proposed model is based on the principle of interinstitutional interaction. Its central idea is that an older person should not be left alone to cope with his or her problems; instead, a system of support should be formed around the individual.

ISBN: 978-625-90699-4-4

Figure 1. Integrated Model of Support for an Older Person



In this model, the mahalla acts as the central connecting link. It does not replace the family, healthcare system, or social services; rather, it coordinates their interaction at the local level.

Table 4. Practical Model of Continuous Social Support for a Lonely Older Person

Support stage	Main action	Responsible actor	Effectiveness indicator
Identification	Compilation of a list of older people at risk	Mahalla, district physician, social worker	Availability of an up-to-date register
Needs assessment	Interview, questionnaire, assessment of living conditions	Mahalla, physician, social service	Individual needs assessment card
Support plan	Determination of types of support	Mahalla and social service	Individual support plan
Communication	Regular visits, calls, and meetings	Volunteers, neighbours, mahalla activists	Frequency of contacts
Health monitoring	Monitoring of health status	Family physician, nurse	Regularity of medical observation
Social activity	Involvement in events and activities	Mahalla, NGOs, youth organisations	Participation in community life
Outcome evaluation	Repeated assessment of loneliness	Mahalla, expert group	Reduction in the level of isolation

Empirical Research Model. To strengthen the scientific potential of the article, an empirical component can be incorporated. For example, a pilot study may be conducted among older people in several mahallas.

Table 5. Proposed Design of the Empirical Study

Parameter	Recommended option
Study area	3–5 mahallas in one city or district
Respondents	People aged 60 years and older
Sample size	150–250 participants
Additional participants	Mahalla chairpersons, family physicians, social workers, volunteers
Data collection method	Questionnaire survey, semi-structured interviews
Number of expert interviews	10–15 interviews

ISBN: 978-625-90699-4-4

Key indicators	Frequency of communication, family support, participation in mahalla life, access to healthcare, feelings of loneliness
Analysis	Frequency analysis, comparative analysis, typology of risk groups

Table 6. Indicators for Measuring Loneliness in Old Age

Indicator	Survey question	Response options
Frequency of communication with relatives	How often do you communicate with close relatives?	Daily; several times a week; rarely; almost never
Neighbourhood support	Can you ask your neighbours for help?	Yes; probably yes; probably no; no
Participation in mahalla life	Do you participate in mahalla activities?	Regularly; sometimes; rarely; never
Subjective loneliness	Do you feel lonely?	Often; sometimes; rarely; never
Access to healthcare	Is it easy for you to see a doctor?	Yes; partly; difficult; very difficult
Digital inclusion	Do you use a telephone or the Internet for communication?	Yes; rarely; no
Need for assistance	What kind of assistance do you need most?	Medical; household; material; psychological; communication/companionship

Typology of Older People by Risk of Loneliness. To enhance the analytical depth of the study, a typology of older people in different states of social inclusion can be proposed.

Table 7. Typology of Risk of Loneliness in Old Age

Type of older person	Characteristics	Risk level	Required support
Socially active	Has family and friends and participates in activities	Low	Support for continued activity
Family-connected but socially limited	Has relatives but communicates with them infrequently	Medium	Strengthening family communication
Medically dependent	Has health problems and limited mobility	High	Medical home visits and household assistance
Emotionally lonely	Has social contacts but feels unnecessary	High	Psychological and communicative support
Socially isolated	Has almost no contacts or support	Very high	Individualised continuous social support

ISBN: 978-625-90699-4-4

Scientific Novelty. The scientific novelty of the article can be formulated as follows:
1. Loneliness in old age is considered not only as an individual psychological condition but also as a result of insufficient coordination among social institutions.
2. The mahalla is interpreted as a local institution of social capital capable of reducing the risks of social isolation among older people.
3. An integrated model for preventing loneliness in old age is proposed, bringing together the family, mahalla, healthcare institutions, social services, and volunteer organisations.
4. A typology of older people according to the level of loneliness risk is developed.
5. The need to shift from one-off assistance to continuous social support for older people is substantiated.

Discussion. The proposed approach demonstrates that preventing loneliness in old age cannot be reduced to material assistance. Financial support, food packages, and one-off charitable actions are important, but they do not solve the problem of social isolation. A lonely older person primarily needs sustained human contact, trust, recognition, and a sense of inclusion in community life. In this context, the mahalla can function as an institution of 'proximate social support'. Its strength lies in its everyday accessibility. Whereas social services often operate mainly in response to formal requests, the mahalla is capable of identifying problems before they become critical. This is particularly important for older people who are not always able to seek assistance independently.

However, the effectiveness of the mahalla depends on its organisational readiness. If work with older people is limited to holiday greetings or one-off assistance, its preventive potential remains underused. The mahalla-based support system therefore requires managerial modernisation, including the creation of registers of lonely older people, volunteer training, interaction with family physicians, regular monitoring of older people's circumstances, and evaluation of the quality of support provided.

Practical Recommendations. It is advisable for each mahalla to maintain an updated register of older people at risk of loneliness.
1. Individual needs assessment cards should be introduced for lonely older people.
2. Regular visits by volunteers and mahalla activists to older people should be organised.
3. Interaction among the mahalla, family polyclinic, and social protection authorities should be strengthened.
4. Healthcare institutions should include questions on social isolation in the initial assessment of older patients.
5. Social clubs for older people should be established within mahallas.
6. Youth organisations can be engaged in intergenerational support projects.
7. Digital literacy among older people should be developed, while ensuring that digital technologies do not replace face-to-face communication.
8. Specialists in the continuous social support of older people should be trained.
9. The effectiveness of assistance should be evaluated not only by the number of services provided but also by the level of an older person's social inclusion.

Conclusion. Loneliness in old age is a complex social phenomenon that reflects not only the individual condition of an older person but also the quality of society's social organisation. Its causes are associated with transformations of the family, migration, urbanisation, deteriorating health, declining social activity, and insufficient coordination among support institutions. In Uzbekistan, the mahalla has considerable potential to prevent loneliness in old age. It can identify older people at risk, organise regular communication, coordinate assistance, involve neighbours and volunteers, and link formal and informal mechanisms of social support. The principal conclusion of the article is that the prevention of loneliness in old age should be based not on one-off assistance but on systematic and continuous social support. An older person should be regarded not as a passive recipient of assistance but as a

ISBN: 978-625-90699-4-4

full participant in community life, a bearer of life experience and cultural memory, and a source of intergenerational continuity.

References

1. World Health Organization. Social Isolation and Loneliness among Older People: Advocacy Brief. Geneva: WHO; 2021.

2. National Academies of Sciences, Engineering, and Medicine. Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System. Washington, DC: The National Academies Press; 2020.

3. Victor C, Scambler S, Bond J. The Social World of Older People: Understanding Loneliness and Social Isolation in Later Life. Maidenhead: Open University Press; 2009.

4. Phillipson C. Ageing. Cambridge: Polity Press; 2013.

5. Holt-Lunstad J. Social connection as a public health factor: evidence and a systems framework for analysis. Annual Review of Public Health. 2022.

6. Bourdieu P. Sotsial'noe prostranstvo: polya i praktiki [Social Space: Fields and Practices]. Moscow: Institute of Experimental Sociology; 2005.

7. Giddens A. Ustroenie obshchestva: ocherk teorii strukturatsii [The Constitution of Society: Outline of the Theory of Structuration]. Moscow: Akademicheskii Proekt; 2005.

8. Bekmurodov M. Sotsiologiya asoslari [Foundations of Sociology]. Tashkent: Fan; 2008.

9. Holbekov A. Jamiyat va ijtimoiy munosabatlar sotsiologiyasi [Sociology of Society and Social Relations]. Tashkent; 2015.

10. Sodiqova Sh. Ijtimoiy gerontologiya va keksalar muammolari [Social Gerontology and Problems of Older People]. Tashkent; 2018.

Central Asian Medical University, PhD, Associate Professor, Head of Department E-mail: lobarxoneryigitova @ gmail.com

ISBN: 978-625-90699-4-4

MEDICINE IN THE DEVELOPMENT OF ARTIFICIAL INTELLIGENCE AND DIGITAL TECHNOLOGIES

Alisher Madrahimov Mahammadibrohimovich
PhD, Associate Professor, Central Asian Medical University Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0005-8015-6412

Abstract: The rapid development of artificial intelligence and digital technologies in modern medicine is fundamentally transforming the healthcare system. This article focuses on improving the quality of medical practice through the implementation of artificial intelligence-based diagnostic systems, personalized treatment protocols, digital therapeutics, and remote monitoring devices. Artificial intelligence algorithms are significantly expanding the capabilities of data analysis, early disease detection, and prediction of treatment outcomes. Digital transformation is creating new opportunities to reshape the patient–physician relationship, optimize clinical decision-making processes, and improve the quality and efficiency of healthcare services. The implementation of these technologies not only enhances diagnostic accuracy but also reduces the workload of healthcare professionals and facilitates more efficient use of available resources.

Keywords: artificial intelligence, digital medicine, diagnostics, personalized treatment, data analysis, telemedicine, clinical decision-making, disease prediction, medical imaging.

Relevance. The relevance of artificial intelligence and digital technologies in modern medicine is not merely a natural consequence of technological advancement, but also represents a systematic response to the profound challenges faced by global healthcare systems. The growing global population, the widespread prevalence of chronic diseases, the shortage of healthcare professionals, and the continuous increase in healthcare expenditures are progressively reducing the effectiveness of traditional models of medical care. Artificial intelligence-based solutions are specifically aimed at addressing these challenges by not only improving diagnostic accuracy but also creating opportunities to automate processes, optimize resource allocation, and implement individualized treatment approaches.

Statistical data indicate that artificial intelligence-based systems are approaching, and in some cases even surpassing, the diagnostic capabilities of medical specialists in certain disciplines, particularly radiology and pathology. For example, in the detection of acute cerebrovascular events, artificial intelligence algorithms can operate 20–30% faster than conventional methods while achieving an accuracy rate of more than 95%. These indicators are particularly significant in addressing challenges associated with resource-limited regions and shortages of qualified medical specialists.

The relevance of artificial intelligence is also evident in the field of medical research. Clinical studies that may take decades to complete using conventional approaches can potentially be conducted within several months with the assistance of artificial intelligence. Opportunities to optimize the processes of drug discovery and development, rapidly and accurately analyze genetic data, and predict the epidemiology of various diseases are making artificial intelligence an increasingly integral component of modern medicine.

Objective. The main objective of this article is to conduct an in-depth analysis of the current state of artificial intelligence and digital technologies used in the medical field, the achievements attained through their practical application, as well as the problems and limitations arising during the integration of these technologies. The article aims to provide scientific evidence of the significance and effectiveness of artificial intelligence-based solutions across various medical fields and to identify the prospects for the future development of these technologies.

ISBN: 978-625-90699-4-4

The specific objectives of the study include the following. First, the study aims to conduct a quantitative and qualitative analysis of the changes in the quality of medical diagnostics resulting from the integration of artificial intelligence into diagnostic processes. For this purpose, various [systems/methods — the original text is incomplete] will be examined.

Second, the article examines the impact of digital technologies on medical practice, particularly the effects of innovative approaches such as telemedicine, remote monitoring, and electronic health records on clinical outcomes. The performance indicators of artificial intelligence systems used in medical fields such as radiology, dermatology, ophthalmology, oncology, and others are analyzed, including their advantages and limitations compared with conventional methods. Changes in indicators such as patient adherence to treatment, early disease detection, and the effectiveness of preventive measures are also assessed.

Third, the study analyzes the legal, safety, and ethical aspects of clinical decisions made with the assistance of artificial intelligence. Particular attention is given to issues such as the role of algorithms in the decision-making process, physicians' responsibility, and the confidentiality of patient data. At the same time, the problem of the transparency and interpretability of decisions generated by artificial intelligence systems is considered separately.

Fourth, the article examines the significance of artificial intelligence and digital technologies in medical education and professional development. The impact of innovative approaches, such as simulation programs, virtual and augmented reality-based educational programs, and personalized learning systems, on the quality of medical education is analyzed.

Materials and Methods. The methodological framework of the study is based on a systematic approach and comprehensive analytical methods. A range of scientific methods was employed to investigate the role and significance of artificial intelligence and digital technologies in medicine, including retrospective analysis, comparative analysis, statistical processing, and expert assessment. The following statistical metrics were used to evaluate the performance of artificial intelligence algorithms: sensitivity, specificity, precision, F1-score, receiver operating characteristic (ROC) curve, and area under the curve (AUC). These metrics were used to compare the diagnostic capabilities of different artificial intelligence models and to assess their potential for application in clinical practice.

A systematic literature review was conducted to collect and systematize the available evidence. Second, comparative analysis was used to compare the advantages and limitations of conventional and artificial intelligence-based diagnostic methods. Third, statistical analysis was conducted to evaluate the performance indicators of artificial intelligence systems applied in various medical fields. Fourth, expert interviews and surveys were conducted to examine healthcare professionals' attitudes toward artificial intelligence technologies and the extent of their adoption in medical practice.

The following medical datasets were used to evaluate the performance of artificial intelligence algorithms: MIMIC-III (Medical Information Mart for Intensive Care), CheXpert (chest radiographs), ISIC (skin cancer images), and EyePACS (diabetic retinopathy images). These datasets were used to assess the effectiveness of various artificial intelligence models, including deep learning networks, convolutional neural networks, and recurrent neural networks, in detecting different pathological conditions.

Research Results. The results obtained during the study demonstrated that the integration of artificial intelligence and digital technologies into medicine creates significant opportunities to improve diagnostic accuracy, enhance treatment effectiveness, and increase the quality of healthcare services. The key findings obtained in various medical fields are presented below.

ISBN: 978-625-90699-4-4

In the field of radiology, artificial intelligence-based systems achieved an average sensitivity of 94.3% and specificity of 96.1% in detecting pathologies such as pneumonia, tuberculosis, and lung cancer on chest radiographs. Compared with conventional methods, artificial intelligence systems increased the speed of pathology detection by 40–60%, which is particularly important in emergency medical care settings. Data analysis demonstrated that artificial intelligence algorithms are effective not only in providing accurate diagnoses but also in monitoring the progression and dynamics of pathological changes.

In oncology, artificial intelligence systems achieved an accuracy rate of more than 97.2% in detecting cancer cells in histopathological samples. In the analysis of microscopic images, deep learning-based algorithms enabled the precise identification and differentiation of morphological characteristics of cancer cells. Furthermore, artificial intelligence systems provide opportunities to classify different types of cancer at the genetic level, predict their patterns of progression, and develop individualized treatment protocols.

In the field of cardiology, artificial intelligence-based systems demonstrated a sensitivity of more than 99% in detecting cardiac rhythm disorders through ECG analysis. Studies have shown that artificial intelligence algorithms are capable of identifying latent electrophysiological abnormalities that cannot be detected using conventional methods. Furthermore, models for predicting the risk of developing cardiovascular diseases produced results that were 35–40% more accurate than those obtained using conventional risk assessment methods.

In the field of neurology, artificial intelligence systems demonstrated high effectiveness in detecting stroke, tumors, and other pathological conditions in brain computed tomography (CT) and magnetic resonance imaging (MRI) scans. Data analysis showed that artificial intelligence algorithms can accurately detect ischemic changes on brain CT scans within the initial 4.5-hour window, which is particularly important for the timely initiation of thrombolytic therapy.

The results of evaluating the effectiveness of telemedicine and remote monitoring systems demonstrated that these technologies increased patients' adherence to treatment regimens by 25–40%, reduced planned rehospitalization rates by 15–20%, and significantly improved the quality of life of patients with chronic diseases.

Conclusion

The findings of the study demonstrate that artificial intelligence and digital technologies have become an integral part of modern medicine and are fundamentally transforming the healthcare system. The implementation of these technologies creates opportunities to improve diagnostic accuracy, enhance treatment effectiveness, and increase the overall quality of medical services. Artificial intelligence algorithms are significantly expanding the capabilities of data analysis, early disease detection, and prediction of treatment outcomes.

The study showed that artificial intelligence-based systems are demonstrating high effectiveness across various medical fields, including radiology, oncology, cardiology, neurology, and others. These systems play an important role not only in establishing accurate diagnoses but also in monitoring the dynamics of pathological processes, developing individualized treatment protocols, and planning preventive measures. Digital technologies, particularly telemedicine and remote monitoring systems, are expanding the accessibility and coverage of medical services while improving their convenience and efficiency.

At the same time, the widespread application of artificial intelligence and digital technologies is creating a number of challenges. Data security, privacy protection, algorithmic transparency and interpretability, legal liability, and ethical considerations are among the key issues that need to be addressed in the development of this field. Furthermore, issues related to the fairness and diversity of artificial intelligence systems also require particular attention.

ISBN: 978-625-90699-4-4

In the future, the significance of artificial intelligence and digital technologies in the medical field is expected to increase further. The application of these technologies in personalized medicine, preventive approaches, and precision medicine has the potential to fundamentally transform the healthcare system.

However, the successful implementation of these technologies requires close collaboration among healthcare professionals, software developers, policymakers, and other stakeholders. In conclusion, artificial intelligence and digital technologies have ushered in a new era in medicine. Through the effective utilization of these technologies, it is possible not only to improve the quality of medical services but also to make the entire healthcare system more efficient, equitable, and sustainable.

References

1) Topol, E. J. (2019). Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again. New York: Basic Books.

2) Davenport T., & Kalakota, R. (2019). The potential for artificial intelligence in healthcare. Future Healthcare Journal, 6(2), 94–98.

3) He,J,Baxter, S.L.Xu, J.Xu, J.Zhou, Zhang,K. (2019). The practical implementation of artificial intelligence technologies in medicine. Nature Medicine, 25(1), 30–36.

4) Esteva A., Robicquet A., Ramsundar, B., Kuleshov, V., DePristo, M., Chou, K., ... & Dean, J. (2019). A guide to deep learning in healthcare. Nature Medicine, 25(1), 24–29.

Uzbek Authors and Local Publications

5) Abduxoliqov, S. T., & Islomov, B. B. (2021). Analysis of medical images based on artificial intelligence. *Fan va Texnologiya*, (4), 45–52.

6) Raximov, A. A., & Karimova, D. M. (2022). Data security issues in the digital healthcare system. *Bulletin of the Tashkent Medical Academy*, (3), 125–129.

7) Hakimov, N. F. (2020). *Digital Transformation in Modern Medicine*. Tashkent: “IQTISOD-MOLIYA” Publishing House.

8) Yusupova, M. S. (2023). Algorithms for the early diagnosis of cardiovascular diseases using artificial intelligence. *Uzbekistan Medical Journal*, (1), 58–64.

9) Ministry of Health of the Republic of Uzbekistan. (2021). *Concept for the Development of the Digital Healthcare System*. Tashkent.

10) Qodirov, B. Sh., & Alimov, R. N. (2019). Telemedicine: Theory and Practice. *Pediatrics*, (2), 78–84.

11) Turg'unov, M. M. (2022). *Artificial Intelligence and Machine Learning: Fundamentals of Programming and Applications in Medicine*. Tashkent: “SHARQ” Publishing and Printing Concern.

ISBN: 978-625-90699-4-4

OPPORTUNITIES FOR MONITORING A HEALTHY LIFESTYLE THROUGH MOBILE APPLICATIONS

Rayimov Abdulxamid Abdulxakimovich
Central Asian Medical University, PhD, Associate Professor, Fergana, Uzbekistan
ORCID ID: ORCID: 0009-0005-6353-7037

Abstract. This scientific article provides a comprehensive analysis of the opportunities for promoting and monitoring a healthy lifestyle through mobile technologies.

Today, mobile applications have become an integral part of everyday life. Their role is increasingly significant in promoting a healthy lifestyle, increasing physical activity, monitoring dietary habits, improving sleep quality, and managing stress.

The article presents information on popular mobile applications designed to support a healthy lifestyle, focusing on their functionalities, user experience, as well as their social and psychological effects.

Furthermore, based on the findings of the study, the impact of mobile applications on human health is examined through statistical and graphical analysis.

Keywords: mobile technologies, healthy lifestyle, mobile applications, digital wellness, healthy living, physical activity, fitness applications, healthy nutrition, dietary monitoring, sleep quality, stress management, digital health, mobile wellness, mobile medicine, wellness monitoring, healthy habits, user experience, application interface, statistical analysis, graphical analysis, psychological impact, social impact, scientific analysis, healthy lifestyle culture, digital innovations, healthy lifestyle programs, mobile health technologies, healthcare system, digital transformation, mobile analytical tools, artificial intelligence in applications, mobile programming, health monitoring, user motivation, mobile wellness programs, preventive technologies, wellness ecosystem, data analysis, health control, personal health.

Relevance. Today, technological advancement has deeply penetrated all areas of human life. In particular, digital innovations, artificial intelligence, and mobile technologies are becoming important tools for maintaining and monitoring human health, as well as for promoting a healthy lifestyle. Mobile health and wellness applications (m-health applications) enable users to monitor changes occurring in the body, develop healthy habits, increase physical activity, regulate dietary patterns, improve sleep quality, and reduce stress. Therefore, this field is considered a relevant scientific issue not only in information technology but also at the intersection of medicine, psychology, and social sciences. Studies conducted in the field of digital healthcare indicate that mobile applications are recognized as one of the most convenient and widely accessible tools for promoting a healthy lifestyle.

According to international statistical data, in 2024, more than 2 billion people worldwide used mobile applications to monitor health-related information. Of these users, 60% used fitness applications for tracking physical activity, 25% used applications for managing dietary habits, while 10% used applications designed to assess psychological well-being or support meditation. These figures clearly demonstrate the growing importance and widespread adoption of mobile health and wellness technologies.

In Uzbekistan, promoting a healthy lifestyle is also considered one of the priority areas of state policy. In his speeches, President Sh.M. Mirziyoyev has emphasized the need to develop a culture of healthy living among the population, increase physical activity among young people, and make extensive use of modern technologies for disease prevention. From this perspective, mobile applications are regarded as one of the most convenient, accessible, and economically efficient tools for supporting a healthy lifestyle. Mobile applications enable users to monitor a healthy lifestyle in three main areas:

1. **Prevention and Monitoring** – In this area, applications enable continuous monitoring of an individual's physical condition by measuring indicators such as heart rate, number of steps taken, calories burned, and water intake. This allows users to keep track of their health and monitor their physical well-being on a regular basis.
2. **Analysis and Self-Assessment** – At this stage, the application analyzes the user's data and provides personalized recommendations, thereby helping users develop and maintain healthy habits.
3. **Motivation and Psychological Support** – Mobile applications encourage users to pursue a healthier lifestyle through motivational notifications, point-based reward systems, and gamification elements.

These factors further strengthen the role of technology in human life and public health. In particular, following the global pandemic, many users have increasingly preferred to rely on personal mobile tools for monitoring their health. Such applications can help reduce the burden on healthcare systems, facilitate the early detection of health problems, and promote a culture of healthy living on a broader scale.

Furthermore, the data collected through mobile health and wellness applications represent an important analytical source for the healthcare system. These applications enable the collection of accurate statistical data on the population's health status, lifestyle habits, and physical activity levels. Such data provide an important basis for developing government programs and strategies aimed at promoting and improving healthy lifestyles.

In conclusion, monitoring a healthy lifestyle through mobile applications provides not only individual benefits but also makes a significant contribution to promoting a healthy generation, preventing diseases, and creating a healthy environment at the societal level. In this regard, the development of a healthy lifestyle through mobile technologies is one of the relevant areas of contemporary scientific research. Studying this issue is important not only for medicine but also for the social, psychological, and economic spheres.

Objective. The main objective of the study is to scientifically investigate the process of promoting a healthy lifestyle through mobile applications, determine the benefits that users derive from these applications, and statistically analyze their positive impact on health.

In addition, the study examined the level of use of mobile health and wellness applications among different categories of users, including young people, women, and employees.

Materials and Methods. During the study, a survey was conducted among 500 users. The participants were men and women aged 18–45 who regularly used health and wellness applications. The survey examined the following aspects:

- Level of physical activity;
- Monitoring of dietary habits;
- Sleep quality and duration;
- Stress reduction;
- Overall sense of well-being.

Methods of Analysis:

- **Comparative analysis** – the functionalities of the applications were compared;
- **Statistical analysis** – the survey results were presented as percentages;
- **Graphical analysis** – the results were illustrated using charts and diagrams.

ISBN: 978-625-90699-4-4

Table 1.

Analysis of the Most Popular Healthy Lifestyle Applications

Application Name	Main Function	User Rating (out of 5)	Number of Downloads (million)
Google Fit	Physical activity tracking	4.5	500+
MyFitnessPal	Nutrition and calorie tracking	4.8	200+
Samsung Health	Sleep and heart rate monitoring	4.6	400+
Fitbit	Daily activity analysis	4.7	100+
Calm	Stress reduction and meditation	4.9	150+

Analysis: As shown by the results presented in the table, users gave the highest ratings to the "MyFitnessPal" and "Calm" applications. This may be attributed to the fact that these applications enable users to set specific goals and monitor their progress on a regular basis.

Research Results. The survey results showed that users of mobile health and wellness applications achieved the following outcomes:

Table 2

Indicator	Percentage of Positive Changes (%)
Increased physical activity	60
Improved dietary habits	45
Improved sleep quality	30
Reduced stress levels	25
Improved overall psychological well-being	20

Note: *These results indicate that the use of mobile health and wellness applications significantly improves users' overall health and well-being indicators.*

Areas in Which Mobile Applications Have Had a Positive Impact on Users:

- **Physical activity** – 60%
- **Nutrition** – 45%
- **Sleep quality** – 30%
- **Stress reduction** – 25%

These figures indicate that the greatest impact on promoting a healthy lifestyle is associated with increased physical activity and dietary monitoring.

Discussion. Mobile health and wellness applications serve not only as tools but also as motivational companions that support users in maintaining a healthy lifestyle. They analyze users' daily habits, provide statistical data, and offer recommendations to help users achieve their health-related goals. For example, the "Fitbit" and "Samsung Health" applications automatically monitor heart rate, sleep quality, and stress levels. "MyFitnessPal," in turn, enables users to manage personalized dietary plans and calorie balance.

Numerous studies (WHO, 2023; NIH, 2024) confirm that the use of mobile health and wellness technologies is one of the key factors promoting a healthy lifestyle.

Conclusion. In conclusion, mobile health and wellness applications represent an important tool for promoting a healthy lifestyle, increasing physical activity, and reinforcing healthy habits. The research findings indicate that:

- mobile applications are effective in developing healthy habits;
- users' motivation is increased;
- healthy lifestyle indicators are improved.

ISBN: 978-625-90699-4-4

In the future, the effectiveness of such applications can be further enhanced by localizing them, integrating them with national health and wellness programs, and introducing personalized features based on artificial intelligence.

References

1. Mirziyoyev, Sh. M. *Strategy of the New Uzbekistan*. Tashkent: Uzbekistan, 2021. 480 p.
2. Esteva, A., Kuprel, B., Novoa, R. A. Deep Learning for Dermatologist-Level Classification of Skin Cancer. Nature, 542(7639), 2017, pp. 115–118.
3. Rajkomar, A., Dean, J., Kohane, I. Machine Learning in Medicine. New England Journal of Medicine, 380(14), 2019, pp. 1347–1358.
4. Topol, E. High-Performance Medicine: The Convergence of Human and Artificial Intelligence. Nature Medicine, 25(1), 2019, pp. 44–56.
5. WHO. mHealth: New Horizons for Health through Mobile Technologies. World Health Organization Global Observatory for eHealth Series, Vol. 3, Geneva, 2011, pp. 5–120.
6. Zhao, J., Freeman, B., Li, M. Can Mobile Phone Apps Influence People's Health Behavior Change? An Evidence Review. Journal of Medical Internet Research, 18(11), 2016, pp. e287–e295.
7. Klasnja, P., Pratt, W. Healthcare in the Pocket: Mapping the Space of Mobile-Phone Health Interventions. Journal of Biomedical Informatics, 45(1), 2012, pp. 184–198.
8. Coughlin, S. S., Whitehead, M., Sheats, J. Q. Smartphone Applications for Promoting Healthy Diet and Nutrition: A Literature Review. Health Informatics Journal, 24(3), 2018, pp. 198–210.
9. Jakicic, J. M., Wing, R. R., Winters, E. Effect of Internet and Mobile Technology-Based Physical Activity Interventions on Health Outcomes. American Journal of Preventive Medicine, 56(3), 2019, pp. 361–370.
10. Nahum-Shani, I., Smith, S. N., Spring, B. Just-in-Time Adaptive Interventions (JITAIs) in Mobile Health. Annual Review of Clinical Psychology, 14(1), 2018, pp. 89–118.
11. Islam, S. M. S., Maddison, R., Mujtaba, M., et al. Health for Health Behavior Change in Resource-Poor Settings: Current Knowledge and Future Directions. JMIR mHealth and uHealth, 3(1), 2015, pp. e3–e10.

ISBN: 978-625-90699-4-4

BENZKETOZONE: EFFECTS ON THE HISTOMORPHOLOGY OF EXPERIMENTALLY INDUCED GASTRIC ULCERS

Assistant Lecturer Allaberganov Muzaffar Yuldashbayevich[1]
Urgench State Medical Institute. Department of Pharmacology and Clinical Pharmacology.
Urgench, Uzbekistan
[1]ORCID ID: https://orcid.org/0009-0004-4284-4786

Senior lecturer Karimova Dilbar Sharipovna[2]
Urgench State Medical Institute. Department of Pharmacology and Clinical Pharmacology.
Urgench, Uzbekistan
[2]ORCID ID: https://orcid.org/0009-0008-8345-6404

Assistant Raximov Umidbek Rashid o'gli[3]
Urgench State Medical Institute. Department of Pharmacology and Clinical Pharmacology.
Urgench, Uzbekistan
[3]ORCID ID: https://orcid.org/0009-0000-6311-0715

Assistant Sultanova Munira Kamilovna[4]
Urgench State Medical Institute. Department of Pharmacology and Clinical Pharmacology.
Urgench, Uzbekistan
[4]ORCID ID: https://orcid.org/0009-0005-9319-6421

Assistant Raximov Asror Sanat o'gli[5]
Urgench State Medical Institute. Department of Pharmacology and Clinical Pharmacology.
Urgench, Uzbekistan
[5]ORCID ID: https://orcid.org/0009-0002-8651-8822

ABSTRACT

Peptic ulcer disease remains a widespread and challenging medico-social issue globally, characterized by a chronic course and a strong tendency toward exacerbation among the working-age population. Due to the frequent adverse effects of current therapies, the search for novel, highly efficacious, and safe anti-ulcer agents continues to be a high priority.

To evaluate the effects of the newly synthesized drug benzketozone on the histomorphology of the gastric mucosa in an experimental model of gastric ulceration.

The experiments were performed on outbred white rats weighing 170–200 g. Gastric ulcers were induced using the K.A. Meshcherskaya method, after which the animals were allocated into two groups: the first group received benzketozone orally at a dose of 75 mg/kg, while the second (control) group received an equivalent volume of starch paste. Pathomorphological and histological changes were evaluated on days 3, 7, and 10.

On day 3 of observation, the benzketozone-treated group demonstrated a significant reduction in inflammatory-necrotic detritus and fibrinoid necrosis at the ulcer base, accompanied by the formation of proliferative granulation tissue in the mucosa. In contrast, the control group exhibited multiple deep ulcers, pronounced fibrinoid necrosis, and perivascular edema. By day 7, complete ulcer healing was observed under the influence of benzketozone, with the epithelialization process finalized due to mucosal hyperplasia and the formation of new villi. In the con-

ISBN: 978-625-90699-4-4

trol group, however, the ulcer followed a chronic course, failing to heal fully even by day 10, with superficial ulcer defects still persisting.

In experimentally induced gastric ulcers, benzketozone ensures a rapid resolution of destructive-necrotic and inflammatory processes, while significantly accelerating the reparative regeneration of cellular elements within the gastric mucosa.

Keywords: Benzketozone, gastric ulcer, histomorphology, experimental model, ulcer healing, reparative regeneration, gastroprotection.

INTRODUCTION

Peptic ulcer disease remains one of the most widely discussed and thoroughly researched medico-social challenges. Data indicates that gastric and duodenal ulcers are highly prevalent among the working-age population across various regions worldwide. Due to delayed ulcer healing, this condition follows a chronic course with a strong tendency toward exacerbation [1,3,5].

In contemporary clinical practice, a wide range of pharmacological agents is utilized to treat peptic ulcer disease, including H2-receptor antagonists, M-cholinolytics, proton pump inhibitors, antacids, cytoprotectors, and Helicobacter pylori eradication therapies. However, the efficacy of these medications does not always yield the expected outcomes. Furthermore, in some instances, adverse effects can trigger treatment non-adherence, preventing patients from achieving full recovery [2,6,7,8,10,12,13,14].

Given these considerations, it is crucial to emphasize that identifying, comprehensively studying, and introducing novel anti-ulcer agents with enhanced efficacy and minimal adverse effects remains a pressing issue in modern medicine. In this context, we focused our attention on benzketozone, a phenylglyoxylic acid thiosemicarbazone derivative synthesized within our Republic [9].

In our previous studies, we evaluated the prophylactic and therapeutic efficacy of benzketozone against experimental gastric ulcers, as well as the macroscopic pathomorphology of the ulcers. Having obtained favorable outcomes, we have published these findings in peer-reviewed scientific journals. [4].

Therefore, the aim of the present study was to evaluate the effects of benzketozone on the histomorphology of experimentally induced gastric ulcers.

MATERIALS AND METHODS. Outbred white rats of both sexes, weighing 170–200 g, were used in the experiments. Experimental gastric ulcers were induced using the K.A. Meshcherskaya method [11].

This reliable model ensures prolonged destructive changes in the gastric mucosa, enabling an accurate assessment of the drug's impact on mucosal regeneration. The rats with confirmed gastric ulcers were divided into two groups: the first group received benzketozone orally at a dose of 75 mg/kg via a metallic gavage needle, while the second (control) group received an equivalent volume of starch paste using the same administration method.

RESULTS AND DISCUSSION. The rats were euthanized by decapitation on days 3, 7, and 10, followed by a pathomorphological examination of the gastric mucosa. In the benzketozone-treated group, small punctate and linear hemorrhages were observed on day 3, and the gastric ulcers were completely healed by day 7. In contrast, the control group exhibited multiple deep ulcers extending to the muscularis propria on day 3; although the severity of

ulceration gradually decreased by day 7, isolated punctate ulcers persisted even on day 10. Microscopic examination of the control group on day 3 revealed microcirculatory, destructive, and necrotic changes in the mucosa, accompanied by hemorrhages and desquamation of the superficial epithelium. The ulcer base was covered with inflammatory-necrotic detritus and hemorrhagic masses, extending to the submucosa and, in some cases, into the muscular layer. Additionally, fibrinoid necrosis and intercellular perivascular edema within the connective tissue were observed. Marginal to the ulcer defect, elongation and widening of the mucosal folds (villi) were noted due to edema of the surrounding epithelium.

On day 7 of observation, several ulcer defects measuring 0.5–1 cm were identified in the gastric mucosa. The ulcer bed was deepened, forming a cone-shaped lesion extending to the muscular layer, with thickened ulcer margins elevated above the surrounding mucosa. Microscopic examination revealed that the ulcer base was covered with inflammatory-necrotic detritus, surrounded by elongated mucosal folds (villi) due to the hyperplasia of the enveloping mucous epithelium, which also showed signs of deformation. By day 10, the ulcer exhibited signs of chronic healing. The lesion was round with a clean, smooth base, and the surrounding margins were indurated and thickened. Microscopically, the ulcer floor consisted of a thin layer of fibrinoid necrosis and inflammatory connective tissue infiltrated by histiocytic cells and fibrous structures. The muscularis layer appeared thickened and deformed owing to inflammatory infiltration and sclerosis of the intermuscular connective tissue. Marginal to the ulcer, the villi were enlarged due to polypoid growths, and the enveloping epithelium was hyperchromic, hyperplastic, and in a state of regeneration, partially covering the ulcer bed. Focal hyperplasia of adenomatous glands was also observed within the inflamed granulation tissue.

In the benzketozone-treated group, a significant reduction in inflammatory-necrotic detritus and fibrinoid necrosis at the ulcer base was observed on day 3. The ulcer bed was covered with proliferative granulation tissue containing a lymphohistiocytic and unformed fibrous infiltrate. The muscular layer exhibited a lymphohistiocytic infiltrate directed toward the vessels and interstitium, along with sparse muscle fibers. Regeneration of the enveloping mucous epithelium was noted marginal to the ulcer. By day 7, solitary, small-sized ulcers located in the pyloric region were identified in some areas of the stomach, with most of them being on the verge of healing. The ulcer floor was smooth and clean, with mucosal hypertrophy observed around the lesion. Microscopic examination revealed that the ulcer base consisted of mature fibrous tissue with histiocytic cells and fibrous structures, while the inflammatory infiltrate was restricted to the perivascular areas. Epithelization at the ulcer margins manifested as hyperplasia of the enveloping epithelium and the formation of new mucosal folds (villi). Hyperplasia of polypoid growths in the surrounding epithelium and the formation of adenomatous glands were also recorded. On day 10, solitary, small, superficial ulcer defects presented as erosions and hemorrhages in the gastric mucosa. Under the microscope, the ulcer bed was fully epithelized but appeared depressed due to immature villi. It was composed of dense fibrous tissue covered by hyperplastic and hyperchromatic epithelium, with short villous growths observed in some areas. A significant increase in the size of the villi was noted around the ulcer due to the regeneration of the surface and glandular epithelium.

ISBN: 978-625-90699-4-4

Evidently, the histomorphology of the induced ulcers in benzketozone-treated rats underwent substantially less severe pathological changes compared to the control group, demonstrating a significantly accelerated healing process. This ulcer-healing accelerating efficacy of benzketozone can presumably be attributed to its potent antioxidant and anti-inflammatory properties[3, 5].

CONCLUSION. In experimentally induced gastric ulcers, benzketozone leads to a rapid resolution of destructive-necrotic and inflammatory processes, while significantly accelerating the reparative regeneration of cellular elements within the gastric mucosa.

REFERENCES

1. Abdullaev R.B., Ruzmetova M.S., Yakubova A.B., Problems of ecology and population health in Khorezm region. Journal of Theoretical and Clinical Medicine. 2003;(2):30-33. (In Uzbek).
2. Abdulkhakov R.A., Grinevich V.B., Ivanikov I.O., et al. Triple therapy regimens for duodenal bulb ulcer disease based on De-Nol (Results of a multicenter study). Russian Journal of Gastroenterology, Hepatology, Coloproctology. 2000;10(2):26-30. (In Russian).
3. Arkhipova A.A., Anishchenko V.V. Characteristics of gastric ulcers complicated by bleeding. Acta Biomedica Scientifica. 2020;5(1):42-46. (In Russ.) DOI: 10.29413/ABS.2020-5.1.5
4. Allaberganov M.Y., Zokirov Y.U., Makhsumov S.M., Mustanov T.B., Study of the prophylactic and therapeutic effects of benzketozone on experimental gastric ulcers. Uzbekistan Pharmaceutical Bulletin. 2006;(2):53-55. (In Uzbek).
5. Bogomolova S.S., Nil E.A., Akhomgotova D.A., Babakhanova A.A., Tyultyaeva L.A. Gastric and duodenal ulcers in geriatrics: endoscopic features. Russian Journal of Geriatric Medicine. 2025;(5):423-425. (In Russ.) DOI: 10.37586/2686-8636-3-2025-423-425
6. Gadzhiev N.D., Allakhverdiev V.A. Features of disorders in the cytokine system and lipid peroxidation in acute gastroduodenal ulcer bleeding. Kazan Medical Journal. – 2017. – Vol. 98. – No. 5. – Pp. 686-691. DOI: https://doi.org/10.17750/KMJ2017-686
7. Gastric ulcers: Biomaterial-based strategies for tissue regeneration. Acta Biomaterialia. 2026;182:112-125.
8. Johns T, Lawrence E. Proton Pump Inhibitors to Prevent NSAID-Induced Ulcers and Dyspepsia: A Cochrane Review Perspective. American Family Physician. 2025;112(6):540-542. https://doi.org/10.1016/j.heliyon.2023.e20406
9. Karshiev D.N., Zokirov A.U., Yuldashev S.Zh. Efficacy of local drugs in the treatment of experimental gastric ulcers. [Problems of Biology and Medicine]. 2014;(1):61-63. (In Russian/Uzbek).
10. Mashkovsky M.D. Medicinal products. 15th ed. Moscow; 2005. p. 301-321. (In Russian).
11. Meshcherskaya KA. Experimental Models in Gastroenterology and Pharmacology. Moscow; 1966. (In Russian).
12. M. Omar, A. Crowe, R. Parsons, H. Ee, C.Y. Tay, J. Hughes P-glycoprotein expression in Helicobacter pylori-positive patients: the influence of MDR1 C3435T polymorphism J Dig Dis, 13 (2012), pp. 414-420, 10.1111/j.1751-2980.2012.00606.x

ISBN: 978-625-90699-4-4

13. Perekhodov S.N., Milyukov V.E., Bartosh N.O., Krasnoperova M.S. Modern assessment of epidemiology and complications of gastric and duodenal ulcers. RUDN Journal of Medicine. 2024;28(2):230-245. (In Russ.) DOI: 10.22363/2313-0245-2024-28-2-230-245
14. Review of Peptic Ulcer Disease. Insights from Pathophysiology and Management. Drug Design, Development and Therapy. 2026;20:1455-1467.

ISBN: 978-625-90699-4-4

DEMOGRAFIK QARISH SHAROITIDA GERIATRIK AHOLI OVQATLANISH GIGIYENASI VA UNING HAYOT SIFATIGA TA'SIRI

NUTRITION HYGIENE OF THE GERIATRIC POPULATION IN THE CONDITIONS OF DEMOGRAPHIC AGING AND ITS IMPACT ON THE QUALITY OF LIFE

Ruzmatova Hiloloy Kabilovna
Central Asian Medical University
https://orcid.org/0009-0003-6255-5597

ABSTRAKT. One of the most important trends in modern demographic processes is the steady increase in the proportion of elderly people in the population. According to the World Health Organization, the aging of the world's population will accelerate in the coming decades, which requires a thorough study of the eating behavior, diet structure, and nutritional needs of geriatric individuals from a special hygienic point of view. Physiological changes associated with aging — a decrease in the function of the digestive system, a decrease in the ability to taste and smell, a deterioration in the condition of the dentition, and changes in metabolic processes — have a significant impact on the choice and amount of food consumed by the elderly. Such changes, if not timely hygienic control and correction, can become a factor in the development of protein-energy malnutrition, vitamin and microelement deficiencies, as well as aggravating the course of cardiovascular, endocrine and musculoskeletal diseases. Although in world practice the problems of geriatric nutritional hygiene have been covered in a number of studies, in the conditions of our region - in particular, in the case of the population of Fergana region - the connection of this issue with quality of life indicators has not yet been sufficiently studied. Therefore, research in this area is of urgent scientific and practical importance.
Keysvords: demographic processes, hygienic control, nutritional needs, food

Dolzarbligi. Zamonaviy demografik jarayonlarning eng muhim tendensiyalaridan biri aholi tarkibida qariyalar ulushining barqaror o'sib borishidir. Jahon Sog' liqni Saqlash Tashkiloti ma'lumotlariga ko'ra, kelgusi o'n yilliklarda dunyo aholisining keksayish sur'ati yanada tezlashadi, bu esa geriatrik yoshdagi shaxslarning ovqatlanish xatti-harakati, ratsion tuzilishi va oziq-ovqat mahsulotlariga bo'lgan ehtiyojlarini alohida gigiyenik nuqtai nazardan chuqur o'rganishni taqozo etadi. Yosh ulg' ayishi bilan bog' liq fiziologik o'zgarishlar — ovqat hazm qilish tizimi funksiyasining susayishi, ta'm va hid sezish qobiliyatining pasayishi, tish-jag' apparati holatining yomonlashuvi hamda moddalar almashinuvi jarayonlarining o'zgarishi — qariyalarda oziq-ovqat tanlovi va iste'mol miqdoriga sezilarli ta'sir ko'rsatadi. Bunday o'zgarishlar, agar o'z vaqtida gigiyenik nazorat va tuzatishga olinmasa, oqsil-energetik yetishmovchilik, vitamin va mikroelementlar tanqisligi, shuningdek yurak-qon tomir, endokrin va tayanch-harakat tizimi kasalliklarining kechishini og' irlashtiruvchi omilga aylanishi mumkin. Jahon amaliyotida geriatrik ovqatlanish gigiyenasi muammolari bir qator tadqiqotlarda yoritilgan bo'lsa-da, mintaqamiz sharoitida — xususan, Farg' ona viloyati aholisi misolida — bu masalaning hayot sifati ko'rsatkichlari bilan bog' liqligi hali yetarlicha o'rganilmagan. Shu bois ushbu yo'nalishdagi tadqiqot dolzarb ilmiy-amaliy ahamiyat kasb etadi.

Maqsad. Farg'ona viloyati geriatrik yoshdagi aholisining ovqatlanish gigiyenasi holatini o'rganish va uning hayot sifati ko'rsatkichlariga ta'sirini aniqlash.

Material va usullar. Tadqiqotga Farg'ona shahri va tumanlarida yashovchi 60 yosh va undan katta shaxslar jalb qilindi (n=180). Respondentlar ikkita guruhga ajratildi: ovqatlanish tartibi va ratsioni gigiyenik talablarga muvofiq keladigan shaxslar (n=94) va ovqatlanishida buzilishlar — tartibsizlik, bir tomonlama ratsion, suyuqlik yetishmovchiligi — qayd etilgan

ISBN: 978-625-90699-4-4

shaxslar (n=86). Ovqatlanish holatini baholash uchun so‘nggi 24 soat davomidagi ratsion so‘rovi va oziq-ovqat mahsulotlari iste’moli chastotasi anketasi qo‘llanildi. Hayot sifati ko‘rsatkichlari Jahon Sog‘ liqni Saqlash Tashkilotining qariyalar uchun moslashtirilgan WHOQOL-OLD so‘rovnomasi asosida baholandi. Olingan ma’lumotlar variatsion statistika usullari yordamida qayta ishlandi, guruhlar o‘rtasidagi farqlarning ishonchliligi Styudent t-mezoni bo‘yicha aniqlandi ($p<0,05$ statistik ahamiyatli deb qabul qilindi).

Natija. O‘tkazilgan tadqiqot natijalariga ko‘ra, ovqatlanishida gigiyenik buzilishlar qayd etilgan qariyalar guruhida hayot sifatining umumiy ko‘rsatkichi, gigiyenik talablarga rioya qiluvchi guruhga nisbatan, 21,4 foizga past bo‘lgani aniqlandi ($p<0,05$). Ayniqsa jismoniy salomatlik (18,7%) va psixologik holat (16,3%) sohalari bo‘yicha ko‘rsatkichlar farqi yuqori bo‘ldi. Ovqatlanishi buzilgan guruh respondentlarining 62,8 foizida oqsil va vitamin yetishmovchiligiga xos belgilar, 47,1 foizida esa suyuqlik iste’molining me’yordan past ekanligi qayd etildi. Kunlik ovqatlanish tartibiga qat’iy rioya qiluvchi (kuniga 4–5 mahal, belgilangan vaqt oralig‘ida) respondentlarning o‘z holatini va kundalik faolligini yuqori baholagani, bu ko‘rsatkich tartibsiz ovqatlanuvchilarga nisbatan 1,5 baravar yuqori bo‘lgani aniqlandi. Olingan natijalar geriatrik yoshdagi shaxslarda ovqatlanish gigiyenasining buzilishi yurak-qon tomir, tayanch-harakat va boshqa tizimlarning funksional holatiga bilvosita salbiy ta’sir ko‘rsatib, umumiy hayot sifatini pasaytiruvchi muhim omil ekanligini tasdiqlaydi.

Xulosa. O‘tkazilgan tadqiqot geriatrik yoshdagi aholida ovqatlanish gigiyenasiga rioya qilish darajasi bilan hayot sifati ko‘rsatkichlari o‘rtasida ishonchli bog‘ liqlik mavjudligini ko‘rsatdi. Qariyalar ratsionida oqsil, vitamin va suyuqlik yetishmovchiligining keng tarqalganligi ushbu toifadagi aholi uchun maxsus gigiyenik tavsiyalar ishlab chiqish va ovqatlanish monitoringi tizimini joriy etish zarurligini asoslaydi. Poliklinika va oilaviy shifokorlar amaliyotiga geriatrik bemorlar uchun ovqatlanish gigiyenasi bo‘yicha maslahat xizmatini kiritish demografik qarish sharoitida qariyalar hayot sifatini yaxshilashning muhim zaxirasi sifatida tavsiya etiladi.

ISBN: 978-625-90699-4-4

СОВРЕМЕННЫЕ ПОДХОДЫ К РАННЕМУ ВЫЯВЛЕНИЮ И ПРОФИЛАКТИКЕ ОЖИРЕНИЯ И СЕРДЕЧНО-СОСУДИСТЫХ ЗАБОЛЕВАНИЙ У МОЛОДЕЖИ

YOSHLARDA SEMIZLIK VA YURAK-QON TOMIR KASALLIKLARINI ERTA ANIQLASH HAMDA PROFILAKTIKASINING ZAMONAVIY YONDASHUVLARI

MODERN APPROACHES TO THE EARLY DETECTION AND PREVENTION OF OBESITY AND CARDIOVASCULAR DISEASES IN YOUNG PEOPLE

Azizova Noilakhon Saidolimkhon kizi
Central Asian Medical University
1st-year PhD Student in Preventive Medicine

PhD, Associate Professor, Scientific Supervisor:
Mavlonjon Ziyomiddinovich Nasirdinov
https://orcid.org/0009-0007-5957-9861

Abstract: The increasing prevalence of obesity among young people is an important risk factor for the development of cardiovascular diseases. The aim of this study was to evaluate modern approaches to the early detection and prevention of obesity-related cardiovascular diseases among young individuals. The study analyzed body mass index, waist circumference, arterial blood pressure, glucose and lipid parameters, as well as lifestyle-related factors including physical activity, dietary habits, and sedentary behavior. The findings demonstrated an association between obesity and elevated blood pressure, dyslipidemia, impaired glucose metabolism, and other cardiovascular risk factors. Early screening, individualized risk assessment, healthy nutrition, regular physical activity, weight management, and continuous medical monitoring are important components of cardiovascular disease prevention among young people. Comprehensive prevention strategies based on individual risk assessment may contribute to reducing the long-term cardiovascular burden associated with obesity.

Keywords: Obesity, young people, cardiovascular diseases, early detection, prevention, cardiovascular risk, body mass index, healthy lifestyle.

Аннотация. Рост распространённости ожирения среди молодых людей является одним из важных факторов риска развития сердечно-сосудистых заболеваний. Целью данного исследования являлась оценка современных подходов к раннему выявлению и профилактике сердечно-сосудистых заболеваний, связанных с ожирением, у молодых людей. В исследовании анализировались индекс массы тела, окружность талии, артериальное давление, показатели уровня глюкозы и липидного обмена, а также такие факторы образа жизни, как физическая активность, характер питания и продолжительность малоподвижного поведения. Полученные результаты показали связь ожирения с повышенным артериальным давлением, дислипидемией, нарушениями углеводного обмена и другими сердечно-сосудистыми факторами риска. Ранний скрининг, индивидуальная оценка риска, рациональное питание, регулярная физическая активность, контроль массы тела и постоянный медицинский мониторинг имеют важное значение для профилактики сердечно-сосудистых заболеваний среди молодых людей. Комплексная профилактика с учётом индивидуальных факторов риска может способствовать снижению долгосрочного сердечно-сосудистого риска.

Ключевые слова: Ожирение, молодёжь, сердечно-сосудистые заболевания, раннее выявление, профилактика, сердечно-сосудистый риск, индекс массы тела, здоровый образ жизни.

ISBN: 978-625-90699-4-4

Annotatsiya: Yoshlarda semizlikning ortib borishi yurak-qon tomir kasalliklari rivojlanishi uchun muhim xavf omillaridan biri hisoblanadi. Mazkur tadqiqotning maqsadi yoshlarda semizlik bilan bog‘liq yurak-qon tomir kasalliklarini erta aniqlash va oldini olishning zamonaviy yondashuvlarini baholashdan iborat. Tadqiqotda tana massasi indeksi, bel aylanasi, arterial qon bosimi, glyukoza va lipid almashinuvi ko‘rsatkichlari, shuningdek, jismoniy faollik, ovqatlanish odatlari va o‘troq turmush tarzi kabi omillar tahlil qilindi. Natijalar semizlikning arterial gipertenziya, dislipidemiya, glyukoza almashinuvi buzilishi va boshqa yurak-qon tomir xavf omillari bilan bog‘liqligini ko‘rsatdi. Erta skrining, individual xavfni baholash, sog‘lom ovqatlanish, muntazam jismoniy faollik, tana vaznini nazorat qilish va muntazam tibbiy monitoring yoshlar orasida yurak-qon tomir kasalliklarining oldini olishda muhim ahamiyatga ega. Individual yondashuvga asoslangan kompleks profilaktika uzoq muddatli yurak-qon tomir xavfini kamaytirishga xizmat qiladi.

Kalit so‘zlar: Semizlik, yoshlar, yurak-qon tomir kasalliklari, erta aniqlash, profilaktika, yurak-qon tomir xavfi, tana massasi indeksi, sog‘lom turmush tarzi.

Introduction

Obesity has become one of the major public health problems among young people and is increasingly associated with the early development of cardiovascular diseases. Excessive body weight and abnormal accumulation of adipose tissue can contribute to hypertension, dyslipidemia, insulin resistance, metabolic disorders, and endothelial dysfunction. These risk factors may gradually impair cardiovascular function and increase the probability of developing cardiovascular complications at a younger age. Early identification of cardiovascular risk factors in young individuals with obesity is essential for preventing disease progression and reducing long-term health consequences. Assessment of body mass index, waist circumference, blood pressure, blood glucose, and lipid profile provides important information for evaluating obesity-related cardiovascular risk. In addition, lifestyle-related factors such as physical inactivity, unhealthy dietary habits, insufficient sleep, and prolonged sedentary behavior should also be considered during preventive examinations. Modern approaches to prevention emphasize early screening, individualized risk assessment, lifestyle modification, and continuous health monitoring. Promoting balanced nutrition, regular physical activity, weight management, and healthy behavioral habits can contribute to reducing cardiovascular risk among young people. Therefore, improving methods for the early detection and prevention of obesity-related cardiovascular diseases in young individuals is an important scientific and public health priority.

Relevance

The increasing prevalence of obesity among young people has become an important public health concern due to its close association with cardiovascular risk factors. Excess body weight at a young age may contribute to hypertension, dyslipidemia, insulin resistance, and other metabolic disorders, which can increase the risk of cardiovascular diseases later in life. Early identification of these risk factors is therefore essential for preventing disease progression and improving long-term health outcomes. Modern screening methods and regular health assessments provide opportunities to identify individuals at increased cardiovascular risk at an early stage. In addition, preventive strategies focused on healthy nutrition, physical activity, weight control, and lifestyle modification are essential for reducing obesity-related cardiovascular risks among young people.

Aim

The aim of this study is to evaluate modern approaches to the early detection and prevention of cardiovascular diseases associated with obesity among young people. The study focuses on identifying major cardiovascular risk factors, assessing the importance of early screening and regular health monitoring, and evaluating preventive measures aimed at reducing obesity-related cardiovascular complications. Particular attention is given to lifestyle

modification, healthy nutrition, physical activity, weight management, and individualized preventive strategies.

Materials and Methods

The study was conducted to evaluate modern approaches to the early detection and prevention of obesity-related cardiovascular diseases among young people. Scientific literature and recent research findings related to obesity, cardiovascular risk factors, early screening, and preventive healthcare were analyzed. Particular attention was given to studies published in recent years addressing cardiovascular risk assessment in young individuals. The main indicators considered in the assessment included body mass index (BMI), waist circumference, arterial blood pressure, blood glucose, and lipid profile. Lifestyle-related factors, including dietary habits, physical activity, sedentary behavior, sleep patterns, and weight-management practices, were also considered. The analysis focused on identifying the relationship between excessive body weight and major cardiovascular risk factors. Descriptive and comparative approaches were used to evaluate the available scientific evidence. The obtained information was systematized according to the main risk factors, diagnostic indicators, and preventive measures. Special attention was given to modern screening methods, individualized risk assessment, lifestyle modification, nutritional intervention, regular physical activity, and continuous health monitoring. The results were interpreted from the perspective of improving early detection and prevention strategies for obesity-related cardiovascular diseases in young people.

Obesity among young people is an increasing public health problem worldwide. Excess body weight is associated with several metabolic and cardiovascular abnormalities. Increased adipose tissue can contribute to chronic inflammation and metabolic dysfunction. Obesity is frequently associated with elevated blood pressure and abnormal lipid levels. Insulin resistance may also develop in young individuals with excessive body weight. These metabolic changes can negatively affect cardiovascular health over time. Prolonged obesity may increase the risk of hypertension and atherosclerosis. It can also contribute to endothelial dysfunction and impaired vascular regulation. Young people with obesity may therefore develop cardiovascular risk factors at an earlier age. Sedentary behavior and unhealthy dietary habits can further increase these risks. High consumption of energy-dense foods may contribute to excessive weight gain. Lack of regular physical activity reduces energy expenditure and promotes metabolic imbalance. Early cardiovascular changes may remain clinically unnoticed for a long period. Therefore, regular health assessment of young people with obesity is important. Identification of risk factors at an early stage can support timely preventive interventions. Lifestyle-related factors should be considered together with clinical indicators. Prevention of obesity may significantly reduce future cardiovascular complications. Early intervention is particularly important during adolescence and young adulthood. Comprehensive cardiovascular risk assessment should therefore become an important component of preventive healthcare.

Early detection of cardiovascular risk among young people with obesity is essential for preventing long-term complications. Body mass index is one of the most commonly used indicators for assessing excess body weight. However, BMI alone may not fully reflect the distribution of body fat. Waist circumference can provide additional information about central obesity and metabolic risk. Blood pressure measurement is also an important component of cardiovascular screening. Increased blood pressure may indicate an early cardiovascular abnormality. Laboratory assessment of blood glucose and lipid levels can help identify metabolic risk factors. Elevated cholesterol and triglyceride levels may contribute to vascular changes. Assessment of insulin resistance can provide additional information in individuals with metabolic risk. Family history of cardiovascular disease should also be considered during risk assessment. Physical activity, dietary habits, sleep quality, and sedentary behavior are important lifestyle indicators. Modern screening approaches should combine clinical,

ISBN: 978-625-90699-4-4

anthropometric, and laboratory parameters. Regular monitoring allows changes in cardiovascular risk to be identified over time. Digital health technologies can facilitate continuous monitoring and data collection. Electronic health records can support systematic documentation of risk factors. Risk assessment should be individualized according to age, body composition, and associated conditions. Early identification allows preventive measures to be introduced before serious complications develop. Therefore, comprehensive screening is an important strategy for improving cardiovascular health among young people.

Lifestyle modification is one of the most important approaches to preventing obesity-related cardiovascular diseases among young people. Healthy nutrition plays a central role in maintaining appropriate body weight. A balanced diet should provide adequate nutrients while limiting excessive energy intake. Increased consumption of vegetables, fruits, whole grains, and other nutrient-rich foods is encouraged. Limiting foods high in saturated fat, added sugars, and excessive sodium may support cardiovascular health. Regular physical activity is another important component of prevention. Exercise can improve cardiovascular fitness and help maintain healthy body weight. Physical activity may also improve insulin sensitivity and lipid metabolism. Reducing prolonged sedentary behavior is particularly important among young people. Adequate sleep should also be considered as part of a healthy lifestyle. Poor sleep patterns may negatively affect appetite regulation and metabolic health. Health education can help young people understand the consequences of unhealthy behaviors. Individualized lifestyle counseling may improve adherence to preventive recommendations. Family and educational environments can also influence dietary and physical activity habits. Digital applications may support monitoring of physical activity, nutrition, and body weight. Long-term lifestyle changes are more effective than short-term restrictive interventions. Preventive programs should therefore focus on sustainable and realistic behavioral changes. Early adoption of healthy habits may reduce cardiovascular risks throughout adulthood. Comprehensive lifestyle modification should be integrated into preventive healthcare programs for young people.

Modern prevention of obesity-related cardiovascular diseases increasingly involves individualized approaches and digital health technologies. Each young person may have different cardiovascular risk factors and lifestyle characteristics. Therefore, preventive recommendations should be adapted to individual needs. Digital health platforms can support regular monitoring of body weight and physical activity. Mobile applications may help users record dietary habits and exercise patterns. Wearable devices can provide information about daily activity and other health-related indicators. Remote monitoring can facilitate communication between healthcare professionals and young individuals. Electronic health records allow important clinical information to be stored and reviewed systematically. Telemedicine can provide opportunities for health counseling and follow-up without requiring frequent clinic visits. Digital tools may also improve access to preventive healthcare services. Personalized health recommendations can be developed using collected clinical and lifestyle data. Continuous monitoring may help identify unfavorable changes at an early stage. However, digital health interventions should be implemented with attention to data privacy and security. Healthcare professionals remain essential for interpreting health information and providing appropriate recommendations. Digital technologies should therefore complement rather than replace professional medical assessment. Combining clinical screening with digital monitoring may improve preventive care. Individualized interventions can increase awareness and encourage healthier behaviors. These approaches may contribute to reducing long-term cardiovascular risks associated with obesity.

Improving preventive strategies requires an integrated approach involving early screening, lifestyle modification, health education, and continuous monitoring. Prevention should begin before obesity-related cardiovascular complications become clinically significant. Regular assessment of body weight and cardiovascular risk factors should be encouraged

ISBN: 978-625-90699-4-4

among young people. Healthcare professionals should identify individuals with increased risk and provide appropriate counseling. Nutritional education should be included in schools, universities, and community health programs. Young people should be encouraged to participate in regular physical activity. Programs should also focus on reducing sedentary behavior and promoting healthy daily routines. Family involvement can strengthen adherence to healthy lifestyle recommendations. Community-based interventions can improve access to preventive health services. Digital technologies can support monitoring and communication between patients and healthcare professionals. Individualized prevention plans should be developed according to personal risk factors and lifestyle characteristics. Regular follow-up is necessary to evaluate the effectiveness of preventive interventions. Multidisciplinary cooperation between physicians, nutritionists, physical activity specialists, and other healthcare professionals may improve outcomes. Public health programs should emphasize prevention rather than only treatment of established disease. Early intervention can reduce the future burden of cardiovascular diseases. Health promotion among young people can contribute to healthier adulthood. Sustainable preventive strategies should therefore combine medical, behavioral, educational, and technological approaches. Such integrated measures can improve early detection and reduce obesity-related cardiovascular risks among young people.

Results

During the study, a total of 120 young patients were examined to assess obesity and obesity-related cardiovascular risk factors. The mean age of the participants was 21.4 ± 2.8 years. Of the examined participants, 67 (55.8%) were female and 53 (44.2%) were male. According to body mass index (BMI), 42 patients (35.0%) had normal body weight, 38 (31.7%) were overweight, and 40 (33.3%) were classified as obese. The mean BMI was 24.1 ± 2.1 kg/m² in the normal-weight group, 27.4 ± 1.3 kg/m² in the overweight group, and 32.6 ± 3.4 kg/m² in the obese group.

Increased waist circumference was detected in 31 patients (25.8%). Elevated arterial blood pressure was observed in 22 patients (18.3%), including 14 patients (35.0%) from the obese group. The mean systolic blood pressure in the obese group was 136.8 ± 8.7 mmHg, while the mean diastolic blood pressure was 86.4 ± 6.2 mmHg. Biochemical analysis revealed lipid metabolism abnormalities in 29 patients (24.2%). Elevated total cholesterol was detected in 21 patients (17.5%), increased triglyceride levels in 18 (15.0%), and decreased HDL-cholesterol levels in 16 patients (13.3%). Increased fasting glucose levels were observed in 15 patients (12.5%).

Assessment of lifestyle factors showed insufficient physical activity in 55 patients (45.8%), irregular dietary habits in 41 (34.2%), and prolonged sedentary behavior in 48 patients (40.0%). These risk factors were more frequently observed among participants with obesity. Overall, 27 patients (22.5%) had two or more cardiovascular risk factors simultaneously. The combination of increased BMI, abdominal obesity, elevated blood pressure, and lipid abnormalities was particularly common among obese participants. These findings demonstrate the importance of comprehensive screening, including anthropometric, hemodynamic, and biochemical assessment, for the early detection and prevention of cardiovascular diseases among young people with obesity.

DISCUSSION

The findings of this study demonstrate a significant relationship between obesity and cardiovascular risk factors among young individuals. In the examined group of 120 participants, overweight and obesity were observed in a considerable proportion of the study population. The mean BMI was substantially higher in the obese group compared with participants with normal body weight, indicating the importance of early anthropometric assessment in identifying individuals at increased cardiovascular risk. The study findings showed that elevated arterial blood pressure was more frequently observed among participants with obesity. The mean

ISBN: 978-625-90699-4-4

systolic and diastolic blood pressure values were also higher in the obese group. This finding may be associated with the adverse effects of excessive adipose tissue on vascular function, metabolic regulation, and blood pressure control. Therefore, routine blood pressure measurement should be included in preventive examinations of young people with excessive body weight.

Lipid abnormalities were another important finding of the study. Increased total cholesterol and triglyceride levels, together with reduced HDL-cholesterol, were observed among the participants. These metabolic changes may contribute to the development of early vascular dysfunction and increase the long-term risk of atherosclerotic cardiovascular disease. The identification of such abnormalities at a young age provides an opportunity to initiate preventive measures before clinically significant cardiovascular complications develop. The assessment of lifestyle factors also demonstrated the importance of insufficient physical activity, irregular dietary habits, and prolonged sedentary behavior. These factors were more frequently observed among participants with obesity and may contribute to continued weight gain and metabolic disturbances. Consequently, prevention programs should not focus only on body weight but should also address dietary behavior, physical activity, sleep, and daily sedentary patterns.

The simultaneous presence of several cardiovascular risk factors in 22.5% of participants emphasizes the importance of comprehensive rather than isolated screening. Assessment of BMI, waist circumference, blood pressure, glucose, and lipid parameters can provide a more complete picture of cardiovascular risk. Early identification of multiple risk factors allows individualized preventive interventions to be introduced at an appropriate stage. The findings support the use of integrated prevention strategies for young people with obesity. Regular screening, nutritional counseling, increased physical activity, weight management, lifestyle modification, and continuous health monitoring may help reduce future cardiovascular risk. Early prevention during adolescence and young adulthood may therefore play an important role in reducing the long-term burden of cardiovascular diseases.

Conclusion

The findings of the study demonstrate that obesity is an important modifiable risk factor for the development of cardiovascular abnormalities among young people. The assessment of 120 participants showed that overweight and obesity were associated with increased body mass index, abdominal obesity, elevated blood pressure, lipid abnormalities, and impaired glucose regulation. The simultaneous presence of several cardiovascular risk factors in young individuals emphasizes the need for early and comprehensive screening. Anthropometric assessment, including body mass index and waist circumference, combined with blood pressure measurement and basic biochemical tests, can help identify young individuals at increased cardiovascular risk. Early detection provides an opportunity to initiate preventive measures before the development of clinically significant cardiovascular disease. The study also highlights the importance of lifestyle-related factors, particularly insufficient physical activity, unhealthy dietary habits, and prolonged sedentary behavior. Individualized nutritional counseling, regular physical activity, weight management, and continuous health monitoring should therefore be included in preventive programs for young people.

References

1. Koskinas K.C., Van Craenenbroeck E.M., Antoniades C., et al. Obesity and cardiovascular disease: an ESC clinical consensus statement // European Heart Journal. 2024. Vol. 45, No. 38. P. 4063–4098.

2. Bays H.E., Kirkpatrick C.F., Maki K.C., et al. Obesity, dyslipidemia, and cardiovascular disease: A joint expert review from the Obesity Medicine Association and the National Lipid Association 2024 // Journal of Clinical Lipidology. 2024. Vol. 18, No. 3. P. e320–e350

ISBN: 978-625-90699-4-4

3. Palatini P., Saladini F., Mos L., et al. Healthy overweight and obesity in the young: Prevalence and risk of major adverse cardiovascular events // Nutrition, Metabolism and Cardiovascular Diseases. 2024. Vol. 34, No. 3. P. 783–791.

4. Ostrominski J.W., Powell-Wiley T.M. Risk stratification and treatment of obesity for primary and secondary prevention of cardiovascular disease // Current Atherosclerosis Reports. 2024. Vol. 26, No. 1. P. 11–23.

5. Qiu Z., Liu Z., Zhang N., et al. Association between early age body mass index and the risk of adulthood cardiovascular diseases: a systematic review and meta-analysis // International Journal of Obesity. 2025. Vol. 49, No. 5. P. 766–775.

6. Hao J., Lu M., Sun R., et al. Contribution of high BMI to the global burden of cardiovascular disease among young adults aged 20–39 from 1990 to 2021: A systematic analysis for the Global Burden of Disease Study 2021 // American Journal of Preventive Cardiology. 2025. Vol. 23.

7. Faghfouri A.H., Musazadeh V., Mokari-Yamchi A., et al. Efficacy and safety of pharmacological interventions in managing cardiometabolic risk factors in youth living with overweight and obesity: A systematic review and network meta-analysis // Obesity Reviews. 2025. Vol. 26, No. 10.

8. Zhang Z., Zeng X. Sarcopenic obesity and cardiovascular disease risk and mortality: A systematic review and meta-analysis // Anatolian Journal of Cardiology. 2025. Vol. 30, No. 2. P. 73–82.

9. Sattar N., Neeland I.J., McGuire D.K. Obesity and cardiovascular disease: A new dawn // Circulation. 2024. Vol. 149, No. 21. P. 1621–1623.

ISBN: 978-625-90699-4-4

СОЦИОГЕРОНТОЛОГИЧЕСКИЕ АСПЕКТЫ ОДИНОЧЕСТВА ПОЖИЛЫХ ЛЮДЕЙ В СИСТЕМЕ СОЦИАЛЬНОГО УПРАВЛЕНИЯ

SOCIOGERONTOLOGICAL ASPECTS OF LONELINESS IN THE ELDERLY IN THE SOCIAL MANAGEMENT SYSTEM

Sh. M. Sadikova
Professor of the International Islamic Academy, Doctor of Social Sciences.
ORCID: https://orcid.org/0009-0002-9775-4353

Abstract. This article examines loneliness in older adults as a complex social phenomenon influenced by demographic, family, economic, communicative, and institutional factors. It argues for a shift from a predominantly social and everyday understanding of the problems of the elderly population to a sociogerontological approach that involves a comprehensive assessment of social integration, the nature of interpersonal relationships, the level of independence, the availability of social services, and the subjective perception of loneliness. The purpose of the study is to identify the key social factors influencing loneliness in old age and to identify opportunities for improving the social management system aimed at preventing the social isolation of older adults. The methodological basis of the study is formed by systemic, structural-functional, institutional, and sociogerontological approaches. The methods used include comparative analysis, generalization of scientific literature, secondary analysis of sociological research results, and expert interpretation. It has been established that loneliness in older adults cannot be viewed solely as a consequence of living without family members. It represents a deficit of meaningful social relationships and inadequate inclusion of individuals in the system of family, neighborhood, community, and institutional interactions. It is argued that an effective social governance system should combine the activities of state social services, the mahalla institution, family, healthcare organizations, the non-governmental sector, and digital services. Directions for the development of targeted socio-gerontological support for older adults are proposed.

Keywords: older adults, loneliness, social isolation, socio-gerontology, social governance, social integration, mahalla, social services, active ageing, social capital.

Аннотация. В статье рассматривается одиночество пожилых людей как сложный социальный феномен, формирующийся под воздействием демографических, семейных, экономических, коммуникативных и институциональных факторов. Обосновывается необходимость перехода от преимущественно социально-бытового понимания проблем пожилого населения к социогеронтологическому подходу, предполагающему комплексную оценку социальной интегрированности, характера межличностных связей, уровня самостоятельности, доступности социальных услуг и субъективного восприятия одиночества. Цель исследования состоит в выявлении основных социальных факторов формирования одиночества в пожилом возрасте и определении возможностей совершенствования системы социального управления, ориентированной на предупреждение социальной изоляции пожилых людей. Методологическую основу исследования составили системный, структурно-функциональный, институциональный и социогеронтологический подходы. Использованы методы сравнительного анализа, обобщения научной литературы, вторичного анализа результатов социологических исследований и экспертной интерпретации. В результате установлено, что одиночество пожилого человека не может рассматриваться исключительно как следствие проживания

без членов семьи. Оно представляет собой состояние дефицита значимых социальных отношений и недостаточной включённости человека в систему семейных, соседских, общественных и институциональных взаимодействий. Обосновано, что эффективная система социального управления должна сочетать деятельность государственных социальных служб, института махалли, семьи, медицинских организаций, негосударственного сектора и цифровых сервисов. Предложены направления развития адресной социогеронтологической поддержки пожилых людей.
Ключевые слова: пожилые люди, одиночество, социальная изоляция, социогеронтология, социальное управление, социальная интеграция, махалля, социальные услуги, активное долголетие, социальный капитал.

Введение. Старение населения является одним из наиболее значимых социальных и демографических процессов современности. Увеличение продолжительности жизни, изменение возрастной структуры населения и трансформация традиционных семейных отношений сопровождаются возникновением новых социальных потребностей людей старшего возраста. В этих условиях проблема одиночества приобретает не только индивидуально-психологическое, но и выраженное социологическое значение.

В научной литературе всё более последовательно проводится различие между объективной социальной изоляцией и субъективным ощущением одиночества. Человек может проживать один, сохраняя интенсивные социальные связи и высокий уровень общественной активности, и, напротив, находясь в составе семьи, испытывать дефицит эмоционально значимого общения и чувство социальной ненужности. Следовательно, феномен одиночества необходимо анализировать посредством совокупности объективных и субъективных индикаторов.[1]

Современные исследования свидетельствуют о том, что качество социальных отношений является одним из важных факторов благополучия человека в пожилом возрасте. Ограничение социальных контактов, потеря супруга, сокращение профессиональных связей после выхода на пенсию, ухудшение мобильности, изменение семейных ролей и снижение возможностей непосредственного общения способны усиливать риск социальной изоляции. В то же время устойчивые семейные, соседские и общественные связи выполняют значимую интеграционную и поддерживающую функцию.[2]

Особую актуальность данная проблема приобретает в условиях трансформации традиционной семьи. Урбанизация, трудовая миграция, повышение территориальной мобильности молодого поколения и распространение малых семей изменяют характер межпоколенческих отношений. Традиционная модель, в которой несколько поколений одной семьи постоянно проживают рядом и обеспечивают повседневную поддержку пожилому человеку, постепенно дополняется новыми формами дистанционного взаимодействия.

Для Узбекистана проблема имеет специфическое социокультурное измерение. Исторически семья, родственники, соседские сообщества и институт махалли выполняли важнейшие функции социальной интеграции пожилых людей. Уважение к старшему

[1] - Виктор К., Скэмблер С., Бонд Дж. Социальный мир пожилых людей: понимание одиночества и социальной изоляции в позднем возрасте [The Social World of Older People: Understanding Loneliness and Social Isolation in Later Life]. — Maidenhead: Open University Press / McGraw-Hill Education, 2009. — С. 31–80. Хокли Л. К., Качиоппо Дж. Т. Одиночество имеет значение: теоретический и эмпирический обзор последствий и механизмов // *Annals of Behavioral Medicine*. — 2010. — Т. 40. — № 2. — С. 218–227. DOI: 10.1007/s12160-010-9210-8

[2] - Холт-Ланстад Дж., Смит Т. Б., Бейкер М., Харрис Т., Стивенсон Д. Одиночество и социальная изоляция как факторы риска смертности: метааналитический обзор // Perspectives on Psychological Science. — 2015. — Т. 10. — № 2. — С. 227–237. — SAGE Publications. — DOI: 10.1177/1745691614568352.

поколению остаётся значимой нормой общественной культуры. Однако наличие культурной нормы само по себе не исключает возникновения ситуаций фактической изоляции, особенно в случае миграции детей, вдовства, утраты мобильности, ухудшения материального положения либо сокращения социального круга пожилого человека.

В данном контексте возникает необходимость рассматривать проблему не только с позиции социальной защиты, но и с точки зрения социального управления. Социальное управление предполагает систематическое выявление потребностей пожилых граждан, координацию деятельности различных институтов, предупреждение социальной изоляции и создание условий для сохранения активного социального статуса человека.

Всемирная организация здравоохранения связывает концепцию здорового старения с сохранением функциональных возможностей человека и существованием среды, позволяющей пожилым людям реализовывать значимые для них формы жизнедеятельности.[3] Поэтому современная социальная политика должна быть ориентирована не только на материальную поддержку, но также на поддержание автономности, социальных связей и участия пожилых людей в жизни общества.

Цель исследования — выявить социогеронтологические особенности одиночества пожилых людей и определить основные направления совершенствования механизмов социального управления, направленных на предупреждение социальной изоляции.

Для достижения цели поставлены следующие задачи:

1. раскрыть социологическое содержание понятия «одиночество пожилого человека»;
2. систематизировать основные социальные факторы, способствующие возникновению одиночества;
3. определить роль семьи, махалли и социальных институтов в интеграции пожилых граждан;
4. проанализировать значение цифровизации социальных услуг;
5. разработать предложения по формированию комплексной социогеронтологической модели работы с одинокими и социально изолированными пожилыми людьми.

Материалы и методы исследования. Исследование выполнено на основе междисциплинарного подхода, объединяющего положения социологии старения, социальной геронтологии и теории социального управления. Основным методологическим принципом является рассмотрение пожилого человека не исключительно как объекта социальной помощи, а как субъекта общественных отношений, располагающего социальным опытом, культурным капиталом, системой ролей и индивидуальной жизненной стратегией.

Использован системный подход, позволяющий рассматривать одиночество как результат взаимодействия нескольких групп факторов: индивидуальных, семейных, территориально-социальных и институциональных.

Структурно-функциональный подход применён для определения роли семьи, махалли, социальных служб, медицинских учреждений и общественных организаций в обеспечении социальной интеграции людей пожилого возраста. С позиций институционального подхода социальная поддержка пожилых рассматривается как

[3] - Доклад Всемирная организация здравоохранения. Всемирный доклад о старении и здоровье. — Женева: Всемирная организация здравоохранения, 2015. — 246 с. ISBN 978-92-4-156504-2. Всемирная организация здравоохранения. Десятилетие здорового старения: базовый доклад. — Женева: Всемирная организация здравоохранения, 2020. — 187 с.ISBN 978-92-4-001790-0.

система устойчивых норм, организаций и социальных практик, регулирующих взаимодействие государства, семьи и общества.

Особое значение имеет социогеронтологический подход, в рамках которого процесс старения анализируется в связи с изменением социального статуса личности, характера её социальных ролей, уровня активности, структуры общения и участия в общественной жизни.

Методическую базу составили анализ научной литературы, сравнительный анализ зарубежного и национального опыта, вторичный анализ результатов исследований по проблемам одиночества и социальной изоляции, типологизация факторов риска и социологическая интерпретация институциональных механизмов поддержки.

В качестве основных аналитических категорий использовались:

- частота социальных контактов;
- наличие родственников и близких лиц;
- интенсивность межпоколенческого взаимодействия;
- участие в общественной жизни;
- доступность социальных и медицинских услуг;
- возможность получения инструментальной помощи;
- уровень цифровой включённости;
- субъективное ощущение одиночества;
- чувство социальной востребованности;
- степень самостоятельности в повседневной жизни.

Такой подход позволяет избежать механического отождествления понятий «одинокое проживание», «социальная изоляция» и «одиночество».

Результаты исследования. Одиночество пожилых людей как многомерный социальный феномен. Проведённый анализ показал, что одной из методологических проблем изучения пожилого возраста является недостаточно чёткое разграничение различных проявлений одиночества.

С социологической точки зрения целесообразно выделить как минимум три состояния. Первое — самостоятельное проживание**.** Пожилой человек проживает отдельно, однако поддерживает регулярные отношения с детьми, родственниками, соседями и социальными организациями. Сам факт отдельного проживания в данном случае не является признаком социальной изоляции. Второе — объективная социальная изоляция. Число устойчивых контактов ограничено, участие человека в общественной жизни минимально, а доступ к неформальной помощи затруднён. Третье — субъективное одиночество. Человек оценивает имеющиеся отношения как недостаточные с точки зрения их эмоциональной близости и социальной значимости.

Таким образом, категория «одинокий пожилой человек» требует более дифференцированной социологической интерпретации. Исследования Хокли Л. К., Качиоппо Дж. Т. демонстрируют, что одиночество представляет собой особое субъективное состояние, возникающее при расхождении между желаемым и фактическим качеством социальных отношений.[4]

На этой основе можно сформулировать следующее рабочее определение: социальное одиночество пожилого человека представляет собой состояние недостаточной включённости личности в систему значимых социальных отношений, сопровождающееся дефицитом устойчивого общения, социальной поддержки и ощущения собственной востребованности.

[4] - Хокли Л. К., Качиоппо Дж. Т. Одиночество имеет значение: теоретический и эмпирический обзор последствий и механизмов // Annals of Behavioral Medicine. – 2010. – Т. 40. – № 2. – С. 218–227. – DOI: 10.1007/s12160-010-9210-8.

Основные факторы риска одиночества в пожилом возрасте показывает, что полученные результаты позволяют классифицировать факторы одиночества пожилых людей следующим образом.

Таблица №1

Группа факторов	Основные проявления	Возможные социальные последствия
Демографические	вдовство, преклонный возраст, проживание одного	сокращение постоянных контактов
Семейные	миграция детей, конфликт поколений, редкое общение	ослабление семейной поддержки
Экономические	снижение доходов, материальная зависимость	ограничение социальной активности
Территориальные	удалённость услуг, транспортные сложности	пространственная изоляция
Функциональные	снижение мобильности и самостоятельности	уменьшение внешних контактов
Коммуникативные	отсутствие друзей и значимого общения	субъективное чувство одиночества
Цифровые	недостаток цифровых навыков	ограничение доступа к новым каналам взаимодействия
Институциональные	фрагментарность социальной помощи	несвоевременное выявление проблем

Анализ показывает, что риск одиночества особенно возрастает при одновременном воздействии нескольких факторов. Например, само по себе вдовство не обязательно приводит к социальной изоляции, если пожилой человек сохраняет активные отношения с родственниками и соседями. Однако сочетание вдовства, ограничения мобильности, проживания отдельно и территориальной удалённости детей существенно повышает уязвимость.

Следовательно, эффективное социальное управление должно строиться не на учёте единственного формального признака, например отсутствия членов семьи в домохозяйстве, а на комплексной оценке социального риска.

Семья и межпоколенческие отношения как ресурс социальной интеграции. Одним из наиболее значимых результатов исследования является подтверждение ведущей роли межпоколенческих отношений. Однако современные формы семейной поддержки изменяются. Совместное проживание постепенно перестаёт быть единственным показателем семейной солидарности. Поддержка может осуществляться дистанционно: посредством регулярной коммуникации, финансовой помощи, организации медицинского обслуживания, цифрового общения и периодического личного участия.

Поэтому в современных социологических исследованиях необходимо оценивать не только наличие детей, но и реальную интенсивность межпоколенческого взаимодействия.

Важным является также характер отношений. Формальное присутствие родственников ещё не означает наличия эмоциональной поддержки.

ISBN: 978-625-90699-4-4

Можно выделить три компонента семейной поддержки:

1. эмоциональный — внимание, доверие, общение, признание значимости пожилого человека;
2. инструментальный — помощь в решении повседневных бытовых и организационных вопросов;
3. материальный — обеспечение ресурсами, необходимыми для поддержания достойного качества жизни.

Наиболее устойчивой является ситуация, когда эти компоненты дополняют друг друга.

В условиях Узбекистана значительным ресурсом предупреждения социальной изоляции выступает институт махалли. Социологическое значение махалли определяется её промежуточным положением между семьёй и формальными государственными организациями. С одной стороны, махалля обладает непосредственной информацией о социальном положении жителей территории. С другой — имеет возможности взаимодействия с системой социальной защиты и местными органами управления.В отношении пожилых граждан особенно важными представляются функции: выявления людей с ограниченными социальными связями, поддержания регулярного социального контакта, организации взаимопомощи, содействия получению государственных услуг,вовлечения пожилых граждан в общественные мероприятия, мобилизации соседских и волонтёрских ресурсов.

При этом необходимо избегать ситуации, при которой работа с пожилыми ограничивается проведением праздничных мероприятий или эпизодическим оказанием материальной помощи. Социогеронтологический подход требует постоянного мониторинга социальной включённости человека.

Социальная активность как механизм профилактики одиночества.Результаты анализа показывают, что важнейшим направлением работы является сохранение социального статуса пожилого человека. Выход на пенсию часто означает не только изменение источников дохода, но и потерю профессиональной роли, ежедневных социальных контактов и привычной структуры времени. Теория активного старения исходит из необходимости создавать условия для продолжения участия пожилого населения в жизни общества .[5]

Социальная активность может реализовываться через наставничество, добровольческую деятельность, культурные мероприятия, общественные объединения, клубы по интересам, образовательные программы и участие в работе местного сообщества.

Принципиально важно перейти от модели «помощь пожилому человеку» к модели «участие пожилого человека». Такое изменение подхода позволяет воспринимать представителей старшего поколения не как пассивных получателей услуг, а как носителей опыта и социального капитала.

Цифровая трансформация общественных отношений создаёт новые возможности социальной поддержки пожилых людей. Электронные государственные услуги, дистанционные консультации, видеосвязь с родственниками, онлайн-запись в медицинские учреждения и цифровые системы социальных обращений способны снизить территориальные барьеры.

Вместе с тем цифровизация имеет двойственный характер. Если цифровые услуги становятся заменой традиционного человеческого взаимодействия, у социально изолированных пожилых граждан может сокращаться даже тот небольшой круг непосредственных контактов, который существовал ранее.

---

[5] - Отчёт Всемирная организация здравоохранения. Всемирный доклад о старении и здоровье. — Женева:
Всемирная организация здравоохранения, за 2002 год.

ISBN: 978-625-90699-4-4

Следовательно, цифровые технологии должны выступать дополнительным, а не замещающим инструментом социальной интеграции.

Перспективной представляется разработка интегрированной информационной системы социального сопровождения, позволяющей на уровне территории выявлять пожилых людей, нуждающихся не только в материальной, но и в социальной и коммуникативной поддержке. При этом цифровой мониторинг должен обязательно сочетаться с непосредственным посещением и живым общением специалистов, представителей махалли, волонтёров или социальных работников.

Обсуждение. Полученные результаты согласуются с современным представлением о социальной изоляции и одиночестве как самостоятельных, хотя и взаимосвязанных явлениях. Значение социальных отношений подтверждается результатами международных исследований. Метааналитические исследования показывают устойчивую взаимосвязь между качеством социальных отношений и различными показателями человеческого благополучия. Однако, непосредственный перенос зарубежных моделей на общество Узбекистана имеет определённые ограничения.

В странах, где индивидуализированные формы проживания пожилых людей распространены длительное время, существенная часть поддержки институционализирована через муниципальные службы, общественные организации, дневные центры и профессиональный социальный уход.

В Узбекистане значительная часть социальной поддержки исторически связана с семейными и соседскими отношениями. Поэтому наиболее перспективной является смешанная модель, объединяющая ресурсы государства, семьи, махалли и институтов гражданского общества.

На основании проведённого исследования предлагается рассматривать систему предупреждения одиночества пожилых на четырёх уровнях.

Первый уровень — индивидуальный. Оценка самостоятельности, эмоционального состояния, структуры общения, цифровых навыков и потребности в конкретных формах помощи.

Второй уровень — семейный**.** Анализ регулярности контактов с детьми и родственниками, характера межпоколенческих отношений и возможностей семьи участвовать в поддержке пожилого человека. Третий уровень — локально-сообщественный.

Использование ресурсов махалли, соседских отношений, волонтёрского движения и общественной активности. Четвёртый уровень — институциональный. Координация социальных, медицинских, психо логических и иных услуг посредством единого механизма сопровождения. На этой основе может быть сформирована следующая концептуальная модель:

выявление социального риска → комплексная оценка потребностей → индивидуальный план социальной интеграции → межведомственное сопровождение → регулярный социальный контакт → повторная оценка состояния. Предлагаемая схема отличается от традиционной модели тем, что конечным результатом становится не количество предоставленных услуг, а изменение уровня социальной включённости пожилого человека. Именно этот показатель целесообразно использовать в качестве одного из критериев эффективности социальной работы.

В практику социальных служб и махалли целесообразно внедрить социогеронтологическую карту потребностей пожилого человека, включающую следующие блоки:

1. демографический и семейный статус;
2. условия проживания;

ISBN: 978-625-90699-4-4

3. наличие постоянных социальных контактов;
4. характер отношений с родственниками;
5. уровень мобильности;
6. социальную и общественную активность;
7. потребность в медицинском сопровождении;
8. способность пользоваться цифровыми сервисами;
9. субъективный уровень одиночества;
10. наличие доступного лица для экстренной связи.

На основе совокупности показателей может определяться степень риска: низкий риск — человек сохраняет устойчивые социальные связи и самостоятельность; средний риск — имеются отдельные признаки сокращения контактов или ограничений социальной активности; высокий риск — наблюдаются одновременно социальная изоляция, ограничение самостоятельности и отсутствие устойчивой поддержки.

Такой подход позволяет перейти от реагирования на уже возникшие трудности к профилактической социальной работе.

На основании результатов исследования предлагаются следующие принципы работы с одинокими и социально изолированными пожилыми людьми: адресность — меры поддержки определяются индивидуальным сочетанием потребностей; непрерывность — социальное сопровождение не должно ограничиваться разовой помощью; межведомственность — социальные и медицинские организации должны обмениваться необходимой информацией и координировать действия; территориальная доступность — основные механизмы поддержки должны быть максимально приближены к месту проживания пожилого человека; участие самого пожилого человека — решения должны приниматься с учётом его мнения и жизненных предпочтений; сохранение автономности — помощь должна расширять способность человека самостоятельно организовывать свою жизнь, а не формировать необоснованную зависимость от социальных служб; комбинирование цифрового и непосредственного взаимодействия — технологические решения должны облегчать получение помощи, но не сокращать живые социальные контакты. В результате формируется субъектно-ориентированная модель социогеронтологического управления, в центре которой находится не категория получателя социальной услуги, а конкретный пожилой человек с его системой социальных связей, индивидуальными ресурсами и потребностями.

Заключение

Проведённое исследование позволяет сделать вывод о том, что одиночество в пожилом возрасте является сложным и многомерным социальным феноменом. Его нельзя сводить исключительно к факту самостоятельного проживания, отсутствию супруга или преклонному возрасту. Основным социологическим содержанием одиночества является снижение включённости человека в систему значимых межличностных и общественных отношений. На формирование социальной изоляции влияют взаимосвязанные демографические, семейные, территориальные, экономические, функциональные, коммуникативные и институциональные факторы.

Установлено, что система социальной поддержки пожилых граждан должна переходить от преимущественно компенсаторной модели к профилактической социогеронтологической модели.

В условиях Узбекистана особое значение приобретает взаимодействие семьи — махалли — социальных служб — медицинских организаций — институтов гражданского общества.

Махалля может выполнять функцию раннего выявления социальной изоляции, однако для этого требуется переход от эпизодической поддержки пожилых к

ISBN: 978-625-90699-4-4

систематической оценке их социальной включённости. Перспективным направлением является внедрение социогеронтологической карты потребностей, позволяющей классифицировать степень риска одиночества и формировать индивидуальные программы сопровождения. Цифровые технологии способны повысить доступность государственных и социальных услуг, но должны рассматриваться как средство расширения социальных возможностей пожилого человека, а не как замена непосредственному человеческому общению.

В качестве основного критерия эффективности социальной политики по отношению к пожилому населению целесообразно использовать не только объём оказанных услуг, но и степень сохранения социальной самостоятельности, социальных связей, общественного участия и субъективного ощущения востребованности человека.

Следовательно, совершенствование социального управления в условиях демографического старения требует формирования интегрированной социогеронтологической системы, ориентированной на поддержание достойного, активного и социально включённого долголетия.

Практические рекомендации. По результатам исследования предлагается:

1. внедрить на уровне махалли первичный социологический скрининг риска социальной изоляции пожилых граждан;
2. разработать единую социогеронтологическую карту оценки индивидуальных потребностей;
3. разделять в системе статистического и социального учёта категории «проживающий один», «социально изолированный» и «нуждающийся в постоянной посторонней помощи»;
4. организовать регулярный социальный мониторинг пожилых граждан группы высокого риска;
5. развивать клубы социальной активности, программы наставничества и межпоколенческого взаимодействия;
6. использовать цифровые сервисы для оперативного выявления потребностей и координации помощи, сохраняя обязательный непосредственный контакт с пожилым человеком;
7. разработать критерии оценки эффективности социальной работы, включающие динамику социальной включённости и субъективного одиночества;
8. расширить подготовку специалистов социальных служб по направлениям социальной геронтологии и социогеронтологии.

Таким образом, предложенный подход позволяет интегрировать теоретические положения социологии старения с практическими механизмами социального управления и формирует методологическую основу для дальнейших эмпирических исследований проблемы одиночества пожилых людей в условиях современного Узбекистана.

Список использованной литературы

1. Виктор К., Скэмблер С., Бонд Дж. Социальный мир пожилых людей: понимание одиночества и социальной изоляции в позднем возрасте [The Social World of Older People: Understanding Loneliness and Social Isolation in Later Life]. — Maidenhead: Open University Press / McGraw-Hill Education, 2009. — С. 31–80. Хокли Л. К., Качиоппо Дж. Т. Одиночество имеет значение: теоретический и эмпирический обзор последствий и механизмов // *Annals of Behavioral Medicine*. — 2010. — Т. 40. — № 2. — С. 218–227. DOI: 10.1007/s12160-010-9210-8

2. Холт-Ланстад Дж., Смит Т. Б., Бейкер М., Харрис Т., Стивенсон Д. Одиночество и социальная изоляция как факторы риска смертности: метааналитический обзор // Perspectives on Psychological Science. — 2015. — Т. 10. — № 2. — С. 227–237. — SAGE Publications. — DOI: 10.1177/1745691614568352.
3. Тощенко Ж.Т. Социология жизни. М.: ЮНИТИ-ДАНА, 2016.
4. Холостова Е.И. Социальная работа с пожилыми людьми. М.: Дашков и К°, 2017.

Таким образом, предложенный подход позволяет интегрировать теоретические положения социологии старения с практическими механизмами социального управления и формирует методологическую основу для дальнейших эмпирических исследований проблемы одиночества пожилых людей в условиях современного Узбекистана.

ISBN: 978-625-90699-4-4

МОРФОФУНКЦИОНАЛЬНЫЕ ИЗМЕНЕНИЯ СИНУСОИДАЛЬНЫХ КАПИЛЛЯРОВ И ГЕПАТОЦИТОВ ПЕЧЕНИ ПРИ НЕАЛКОГОЛЬНОЙ ЖИРОВОЙ БОЛЕЗНИ В УСЛОВИЯХ ГИПОДИНАМИИ

MORPHOFUNCTIONAL CHANGES IN HEPATIC SINUSOIDAL CAPILLARIES AND HEPATOCYTES IN NON-ALCOHOLIC FATTY LIVER DISEASE UNDER CONDITIONS OF HYPODYNAMIA

Nilufar Mukhammedova
Central Asian Medical University
Assistant, Department of Anatomy and Microanatomy
ORCID ID: https://orcid.org/0009-0003-9573-0734

ABSTRACT Non-alcoholic fatty liver disease (NAFLD) is a widespread metabolic disorder characterized by structural and functional alterations in the liver. Hypodynamia, associated with reduced physical activity, may contribute to the progression of metabolic and microcirculatory disturbances in hepatic tissue. The aim of this study was to investigate the morphofunctional changes in hepatic sinusoids and hepatocytes associated with NAFLD under conditions of hypodynamia. Particular attention was paid to alterations in the structure of hepatic sinusoids, hepatocyte morphology, lipid accumulation, and changes in the relationship between the sinusoidal microcirculation and hepatocellular structures. The study demonstrated that the combination of NAFLD and hypodynamia is associated with pronounced structural changes in hepatocytes and hepatic sinusoids, including hepatocellular steatosis, cellular swelling, alterations in the sinusoidal architecture, and impairment of the microcirculatory component of the hepatic lobule. These morphological changes may contribute to the progression of hepatic dysfunction and the development of metabolic disturbances. The findings emphasize the importance of maintaining adequate physical activity as a potential factor in preventing or reducing structural changes associated with NAFLD.
Keywords: Non-alcoholic fatty liver disease; hypodynamia; hepatic sinusoids; hepatocytes; liver; hepatic microcirculation; steatosis; morphofunctional changes; physical inactivity; metabolic disorders.

АННОТАЦИЯ Неалкогольная жировая болезнь печени (НАЖБП) является распространённым метаболическим заболеванием, сопровождающимся структурными и функциональными изменениями печёночной ткани. Гиподинамия, характеризующаяся снижением двигательной активности, может способствовать развитию метаболических нарушений и ухудшению микроциркуляции в печени. Целью исследования являлось изучение морфофункциональных изменений синусоидальных капилляров и гепатоцитов печени при неалкогольной жировой болезни в условиях гиподинамии. Особое внимание уделялось изменениям структуры синусоидальных капилляров, морфологии гепатоцитов, накоплению липидов и взаимосвязи между микроциркуляторным руслом и гепатоцитами. Установлено, что сочетание НАЖБП и гиподинамии сопровождается выраженными структурными изменениями гепатоцитов и синусоидальных капилляров, включая жировую дистрофию гепатоцитов, клеточный отёк, изменение архитектоники синусоидов и нарушения микроциркуляции в пределах печёночной дольки. Выявленные морфологические изменения могут способствовать прогрессированию функциональной недостаточности печени и усугублению метаболических нарушений. Полученные результаты подчёркивают значение достаточной двигательной активности как одного из потенциальных факторов профилактики и снижения выраженности структурных изменений печени при НАЖБП.

ISBN: 978-625-90699-4-4

Ключевые слова: неалкогольная жировая болезнь печени; гиподинамия; синусоидальные капилляры; гепатоциты; печень; микроциркуляция; стеатоз; морфофункциональные изменения; двигательная активность; метаболические нарушения.

АКТУАЛЬНОСТЬ

Неалкогольная жировая болезнь печени (НАЖБП) остаётся одной из ведущих причин хронической патологии гепатобилиарной системы и представляет серьёзную медико-социальную проблему. Актуальность данного заболевания в значительной степени обусловлена его высокой распространённостью и тесной взаимосвязью с современными факторами риска, включая избыточную массу тела, метаболические нарушения и недостаточную физическую активность. По современным оценкам, около 31% взрослого населения мира, что соответствует примерно 1,8 млрд человек, не достигают рекомендуемого уровня физической активности; при сохранении существующей тенденции к 2030 году этот показатель может увеличиться до 35%. [1]
На этом фоне особое значение приобретает изучение влияния гиподинамии на морфофункциональное состояние печени. Сочетанное воздействие сниженной двигательной активности и жировой инфильтрации печени способствует не только накоплению липидов в гепатоцитах, но и развитию структурной перестройки синусоидальных капилляров. [2] Изменения их эндотелиальной выстилки и микроциркуляторной организации могут нарушать трансэндотелиальный обмен между кровью и гепатоцитами, создавать условия для тканевой гипоксии и тем самым способствовать дальнейшему прогрессированию патологического процесса.

В связи с этим изучение морфофункциональных изменений синусоидальных капилляров и гепатоцитов при НАЖБП в условиях гиподинамии представляет значительный научный интерес. Исследование взаимосвязи между выраженностью жировой инфильтрации, состоянием синусоидального микроциркуляторного русла и структурными изменениями гепатоцитов может способствовать более глубокому пониманию патогенеза заболевания, а также выявлению ранних морфологических признаков его прогрессирования. [3]

ЦЕЛЬ ИССЛЕДОВАНИЯ

Изучить морфофункциональные изменения синусоидальных капилляров и гепатоцитов печени при экспериментальной НАЖБП в условиях гиподинамии.

МАТЕРИАЛ И МЕТОДЫ

Эксперимент проведён на 40 кроликах породы Шиншилла массой 2,5–3,0 кг, разделённых на 4 группы по 10 животных: I — контроль; II — моделирование НАЖБП (высокожировая диета, 8 недель); III — гиподинамия (содержание в клетках-пеналах ограниченного объёма, 8 недель); IV — сочетанное воздействие (высокожировая диета + гиподинамия, 8 недель). Материал печени фиксировали в 10% нейтральном формалине, срезы окрашивали гематоксилин-эозином и Суданом III для выявления нейтральных липидов. Морфометрически оценивали диаметр синусоидных капилляров, степень жировой дистрофии гепатоцитов (в баллах и % площади среза), состояние эндотелиальной выстилки и активность клеток Купфера.

РЕЗУЛЬТАТЫ

В контрольной группе морфологическая организация печени соответствовала нормальному строению. Печёночные дольки имели правильную архитектонику, гепатоциты располагались преимущественно радиально относительно центральной вены, синусоидальные капилляры были равномерно распределены между печёночными балками. Эндотелиальная выстилка синусоидов сохраняла характерную структуру, признаков выраженного полнокровия, деформации или нарушения микроциркуляции не выявлялось. Средний диаметр синусоидов в контрольной группе составил 6,4±0,4 мкм.

ISBN: 978-625-90699-4-4

Во II группе, включавшей животных с НАЖБП, отмечались выраженные изменения паренхимы печени, преимущественно связанные с жировой инфильтрацией гепатоцитов. В цитоплазме гепатоцитов определялись крупные липидные вакуоли, оттесняющие ядро к периферии клетки, что соответствовало картине крупнокапельной жировой дистрофии. Площадь стеатоза достигала 27,9±2,2%, преимущественно в перипортальных отделах печёночных долек. По сравнению с контрольной группой площадь стеатозных изменений увеличивалась более чем в 4 раза. Одновременно отмечалось изменение архитектоники синусоидального русла: средний диаметр синусоидов увеличивался до 8,3±0,5 мкм, что на 29,7% превышало показатель контрольной группы. Расширение синусоидов сопровождалось изменением их просвета и локальной компрессией со стороны увеличенных и перегруженных липидами гепатоцитов.

В III группе, подвергавшейся воздействию гиподинамии, морфологические изменения были менее выраженными, однако уже выявлялись признаки нарушения микроциркуляторного компонента печени. Отмечалось умеренное полнокровие синусоидальных капилляров, местами сопровождавшееся незначительным расширением их просвета. В гепатоцитах определялись мелкие липидные включения, соответствующие мелкокапельной жировой дистрофии. Площадь стеатоза составляла 10,8±1,2%, что примерно в 2,6 раза ниже, чем во II группе, но свидетельствовало о формировании начальных метаболически обусловленных структурных изменений печени даже при отсутствии выраженной жировой инфильтрации.

Наиболее выраженные морфофункциональные изменения выявлены в IV группе при сочетанном воздействии НАЖБП и гиподинамии. В данной группе площадь стеатоза достигала 40,5±2,8%, что превышало показатель группы II примерно на 45,2%, а показатель группы III — почти в 3,8 раза. Различия между группами были статистически значимыми ($p<0,05$). Наряду с крупнокапельной жировой дистрофией выявлялись признаки баллонной дистрофии гепатоцитов, свидетельствующие о более глубоком повреждении клеточных структур.

В синусоидальном русле IV группы отмечались наиболее выраженные структурные нарушения. Выявлялась очаговая редукция и дезорганизация эндотелиальной выстилки синусоидов, сопровождавшаяся уменьшением количества фенестр. Подобные изменения могут свидетельствовать о нарушении обмена между кровью и гепатоцитами через синусоидальную стенку и снижении эффективности трансэндотелиального транспорта. Одновременно наблюдались гиперплазия и активация клеток Купфера, а также лейкоцитарная инфильтрация перисинусоидальных пространств, что указывает на формирование выраженного локального воспалительного ответа.

Таким образом, полученные морфологические данные демонстрируют последовательное усиление структурных нарушений печени от отдельных проявлений стеатоза и микроциркуляторных изменений при изолированной гиподинамии до выраженной жировой инфильтрации, повреждения гепатоцитов и дезорганизации синусоидального русла при сочетанном воздействии НАЖБП и гиподинамии. Наиболее значимые изменения в IV группе свидетельствуют о возможном потенцирующем влиянии гиподинамии на морфогенез стеатотического поражения печени.

Таблица 1. Морфометрические и морфологические показатели печени в исследуемых группах

Показатель	Контрольная группа	II группа — НАЖБП	III группа — гиподинамия	IV группа — НАЖБП + гиподинамия

ISBN: 978-625-90699-4-4

Площадь стеатоза, %	—	27,9±2,2	10,8±1,2	**40,5±2,8***
Диаметр синусоидов, мкм	6,4±0,4	8,3±0,5	—	—
Характер жировой дистрофии	Отсутствует	Крупнокапельная	Мелкокапельная	Крупнокапельная + баллонная
Состояние синусоидов	Норма	Расширение, компрессия	Умеренное полнокровие	Дезорганизация, редукция эндотелия
Фенестры эндотелия	Сохранены	Изменены	Незначительные изменения	Снижение количества
Клетки Купфера	Без особенностей	Умеренная активация	Незначительная активация	Гиперплазия и выраженная активация
Воспалительная инфильтрация	Отсутствует	Незначительная	Незначительная	Лейкоцитарная инфильтрация

*Примечание: *p<0,05 по сравнению с группами II и III.*

ОБСУЖДЕНИЕ РЕЗУЛЬТАТОВ

Полученные результаты показывают, что НАЖБП сопровождается не только накоплением липидов в гепатоцитах, но и выраженными изменениями синусоидального микроциркуляторного русла. Увеличение диаметра синусоидов при НАЖБП может быть связано с изменением архитектоники печёночных долек и механической компрессией синусоидов увеличенными гепатоцитами.

Гиподинамия способствовала развитию начальных метаболических и микроциркуляторных нарушений, проявляющихся мелкокапельной дистрофией и умеренным полнокровием синусоидов. Наиболее выраженные изменения наблюдались при сочетании НАЖБП и гиподинамии: площадь стеатоза достигала 40,5±2,8%, выявлялись баллонная дистрофия гепатоцитов, дезорганизация синусоидального эндотелия, снижение количества фенестр и активация клеток Купфера.

ВЫВОДЫ

1. При НАЖБП выявляются выраженные морфофункциональные изменения печени, характеризующиеся крупнокапельной жировой дистрофией гепатоцитов и изменением структуры синусоидальных капилляров.
2. Гиподинамия способствует развитию начальных структурных нарушений печени, проявляющихся мелкокапельным стеатозом и умеренным полнокровием синусоидов.
3. При сочетанном воздействии НАЖБП и гиподинамии морфологические изменения наиболее выражены: площадь стеатоза достигает 40,5±2,8%, отмечаются баллонная дистрофия гепатоцитов, дезорганизация синусоидального эндотелия, снижение количества фенестр и активация клеток Купфера.
4. Сочетание НАЖБП и гиподинамии оказывает потенцирующее влияние на повреждение печёночной паренхимы и синусоидального микроциркуляторного русла, что может способствовать прогрессированию структурно-функциональных нарушений печени.

ISBN: 978-625-90699-4-4

Использованная литература:

1. Комплексная оценка гепатопротекторной активности новых производных альфа-цианотиоацетамида // КиберЛенинка. URL: https://cyberleninka.ru/article/n/kompleksnaya-otsenka-gepatoprotektornoy-aktivnosti-novyh-proizvodnyh-alfa-tsianotioatsetamida
2. Морфология печени кроликов при экспериментально вызванном гепатите и коррекции его средством метаболического действия // КиберЛенинка. URL: https://cyberleninka.ru/article/n/morfologiya-pecheni-krolikov-pri-eksperimentalno-vyzvannom-gepatite-i-korrektsii-ego-sredstvom-metabolicheskogo-deystviya
3. Морфофункциональная характеристика ядер гепатоцитов печени крыс после воздействия гипотермии // Современные проблемы науки и образования. — 2019.
4. Неалкогольная жировая болезнь печени: [методическое пособие] / Федоров И.Г., Тотолян Г.Г., Ильченко Л.Ю., Косюра С.Д., Осканова Р.С.; под ред. Сторожакова Г.И. — М., 2015.
5. Новогродская Я.И., Кравчук Р.И., Островская О.Б., Курбат М.Н. Морфологические изменения в печени крыс при гипергомоцистеинемии // Гепатология и гастроэнтерология. — 2019. — Т. 3, № 1.
6. Оценка гистоструктуры печени у мышей при добавлении в корм милдроната // КиберЛенинка. URL: https://cyberleninka.ru/article/n/otsenka-gistostruktury-pecheni-u-myshey-pri-dobavlenii-v-korm-mildronata
7. Mukhammedova, N., & G'ulomova, S. (2026). COMPREHENSIVE MORPHOLOGICAL ASSESSMENT OF SINUSOIDAL CAPILLARIES AND HEPATOCYTES IN FATTY LIVER DISEASE UNDER CONDITIONS OF HYPOKINESIA. Egyptian Medical Journal of the National Research Center, 4(6), 90–93. https://doi.org/10.5281/zenodo.20538875

ISBN: 978-625-90699-4-4

ENHANCING CLINICAL EFFICACY OF LOCAL MINIMALLY INVASIVE APPROACHES IN TREATMENT OF PERIPANCREATIC ABSCESS FOLLOWING ACUTE PANCREATITIS

DSc. Raiymov G.N.
Department of Surgery and Clinical Disciplines, Central Asian Medical University
https://orcid.org/0009-0000-7893-2703,

Joraboev O.U.
Department of Surgery and Clinical Disciplines, Central Asian Medical University,
Fergana, Uzbekistan
https://orcid.org/0009-0005-9329-7185, +998 94 173 76 65

ABSTRACT

Background: Peripancreatic abscess formation represents one of the most severe infectious complications of acute pancreatitis, occurring in 12-25% of cases with associated mortality rates ranging from 20-40%. Historically, open surgical drainage has been the standard treatment approach; however, the substantial morbidity associated with conventional operative intervention (complication rates 30-45%) necessitates exploration of alternative management strategies. Recent advances in minimally invasive technology have introduced percutaneous drainage, endoscopic transluminal, and laparoscopic techniques as viable therapeutic alternatives, though their optimal application criteria and efficacy in Central Asian clinical settings remain insufficiently characterized.

Keywords: Peripancreatic abscess, acute pancreatitis, minimally invasive drainage, percutaneous drainage, endoscopic transluminal therapy, laparoscopic approach, step-up strategy, surgical management

Objective: To evaluate the clinical efficacy of local minimally invasive drainage modalities compared to conventional open surgical approaches in the management of peripancreatic abscess following acute pancreatitis, and to develop an optimized treatment algorithm.

Methods: A retrospective and prospective clinical analysis was conducted on patients treated for post-pancreatitic peripancreatic abscess between 2020-2025. Patients underwent comprehensive diagnostic evaluation including ultrasound imaging, computed tomography, and endoscopic assessment. Interventions encompassed percutaneous catheter drainage, endoscopic transluminal drainage, and laparoscopic drainage as primary modalities, with conventional open surgical drainage reserved for cases demonstrating failure of minimally invasive management. Primary outcomes included complication rates, mortality, and duration of hospitalization. Secondary endpoints assessed inflammatory marker dynamics relative to drainage technique employed.

Results: Preliminary analysis demonstrates that minimally invasive drainage techniques achieve clinical efficacy rates exceeding 85%, reducing procedure-related morbidity by 32-40% compared to conventional surgical approaches. Mortality rates in the minimally invasive cohort declined to 8-12%, representing approximately 50% reduction compared to historical open surgery series. Mean hospital length of stay decreased from 18-22 days (open surgery) to 11-14 days (minimally invasive approach). A stepwise treatment algorithm ("step-up" approach) incorporating initial percutaneous/endoscopic drainage with selective progression to operative intervention was formulated. Differential application

criteria based on abscess volume, anatomical localization, and patient clinical status demonstrated optimal clinical outcomes when treatment selection aligned with established algorithmic parameters.

Conclusions: Implementation of locally adapted minimally invasive drainage strategies substantially reduces surgical morbidity and mortality associated with peripancreatic abscess management whilst preserving efficacy in source control. The developed treatment algorithm, specifically calibrated to contemporary Central Asian surgical practice and institutional resources, is recommended for adoption in surgical training curricula and clinical practice guidelines.

ISBN: 978-625-90699-4-4

ТИББИЁТ СОҲАСИДА МЕНЕЖМЕНТ ФАОЛИЯТИНИ ҚЎЛЛАШНИНГ ИЖТИМОИЙ АҲАМИЯТИ

THE SOCIAL SIGNIFICANCE OF THE APPLICATION OF MANAGEMENT ACTIVITIES IN THE MEDICAL FIELD

Marasulova Feruza Yusubovna
Central Asian Medical University, Fergana Uzbekistan
https://orcid.org/0009-0000-1800-2002

Abstract. The article describes the social importance of using modern management activities in the field of medicine. Reforms in the healthcare system - separation of leadership and chief physician positions, training and motivation mechanisms of medical managers are analyzed. The essence of the concept of medical management and directions for the development of the field as a sustainable economic model were considered.
Key words: medical management, healthcare, medical reforms, manager, innovative medicine, personnel training, strategic management, dual education.
Аннотация. Мақолада тиббиёт соҳасида замонавий менежмент фаолиятини қўллашнинг ижтимоий аҳамияти ёритилган. Соғлиқни сақлаш тизимидаги ислоҳотлар — раҳбарлик ва бош шифокор лавозимларини ажратиш, тиббиёт менежерларини тайёрлаш ва рағбатлантириш механизмлари таҳлил қилинган. Тиббиёт менежменти тушунчасининг моҳияти ҳамда соҳани барқарор иқтисодий модель сифатида ривожлантириш йўналишлари кўриб чиқилган.
Калит сўзлар: тиббиёт менежменти, соғлиқни сақлаш, тиббиёт ислоҳотлари, менежер, инновацион тиббиёт, кадрлар тайёрлаш, стратегик бошқарув, дуал таълим.

Президент Шавкат Мирзиёев томонидан тиббиётни аҳолига яқинлаштириш, тиббий хизматлар сифатини ошириш ва бу жараёнда илғор усул ҳамда технологияларни қўллашни кенгайтириш бўйича соҳа мутасаддилари олдига аниқ вазифалар қўйилди. Мазкур ислоҳотлар доирасида тиббиёт муассасаларини бошқаришнинг замонавий тизимини шакллантириш долзарб аҳамият касб этмоқда.

Ислоҳотларнинг муҳим йўналишларидан бири — тиббиёт муассасаларида раҳбар ва бош шифокор лавозимларини бир-биридан ажратишдир. Янги тартибга кўра, раҳбарлар менежерликка ўқиган ва амалда яхши натижа кўрсатган малакали мутахассислар орасидан тайинланади. Бунда раҳбарларни рағбатлантириш тизими ҳам такомиллаштирилиб, намунали раҳбарларга унвон, орден, пул мукофоти, шунингдек муассаса инфратузилмасини яхшилаш учун маблағ ажратилиши, энг илғорларини эса тиббиёти ривожланган мамлакатларга менежментга ўқитишга юбориш кўзда тутилган.

Инновацион тиббиёт ғояларини амалиётга жорий этиш соғлом авлодни шакллантириш, профилактика тизимини мустаҳкамлаш ва даволаш усулларини оптималлаштириш имконини беради. Бу жараён илмий муҳитда янги иш ўринларини очиш, ёш мутахассисларнинг амалий кўникмаларини ошириш ҳамда соғлиқни сақлаш тизимини барқарор иқтисодий модель сифатида шакллантиришга хизмат қилади.

Бозор иқтисодиёти шароити тиббиёт менежерларини тайёрлаш услубларини тубдан ўзгартиришни талаб этади. Ўқув дастури замонавий ижтимоий-иқтисодий шароитда ишлашга қодир, юқори малакали шифокор-менежерни шакллантирадиган янги фанлар билан бойитилмоқда. Зеро, тиббиёт менежменти ташкилотнинг стратегик ва тактик мақсадларига эришиш учун инсон ва бошқа ресурслардан самарали фойдаланиш илми ҳамда санъати сифатида намоён бўлади.

Тиббиёт менежери шунчаки соғлиқни сақлаш ходими эмас, балки махсус тайёргарликдан ўтган, жамоани бошқара оладиган профессионал етакчидир. Замонавий

кадр тайёрлаш тизимида назарий билим (60%) амалий, дуал таълим (40%) билан уйғунлашиб, ҳақиқий малакали шифокорни шакллантиради.

Хулоса қилиб айтганда, тиббиёт соҳасида менежмент фаолиятини қўллаш тиббий хизмат сифатини оширибгина қолмай, соғлиқни сақлаш тизимини самарали, барқарор ва аҳоли манфаатларига йўналтирилган ҳолда ривожлантиришнинг муҳим омили ҳисобланади.

ISBN: 978-625-90699-4-4

SHORT-TERM OUTCOMES OF LAPAROSCOPIC VERSUS OPEN SURGERY FOR COMMON ABDOMINAL DISEASES: A SINGLE-CENTER COHORT STUDY

Sodiqjon Toirovich Musoyev[1]
[1]Assistant, Department of Surgical Diseases, Faculty of Pediatrics, Samarkand State Medical University, Samarkand, Uzbekistan
[1]ORCID ID: https://orcid.org/0000-0003-3845-6102

Gulmira Kakhkharovna Mirzaeva[2]
[2] Obstetrician-gynecologist, Samarkand Regional Multidisciplinary Medical Center, Samarkand, Uzbekistan
[2]ORCID ID: https://orcid.org/0009-0006-3768-7581

Dilnurabegim Bagirovna Yashinova[3]
[3]4th-year student, Faculty of General Medicine
Zarmed University, Samarkand, Uzbekistan

ABSTRACT

Background: Laparoscopic surgery is widely used for common abdominal conditions, but outcome data from regional hospitals in Central Asia remain limited.

Objective: To compare perioperative and early postoperative outcomes of laparoscopic and open operations for abdominal surgical diseases in a regional hospital in Samarkand, Uzbekistan.

Methods: This retrospective comparative cohort study included 154 adults who underwent laparoscopic or open surgery between January 2023 and September 2025. The laparoscopic group comprised 96 patients, and the open-surgery group comprised 58 patients. The evaluated outcomes were operative time, estimated intraoperative blood loss, postoperative pain intensity at 24 hours, length of hospital stay, postoperative complications, and in-hospital mortality.

Results: Compared with the open-surgery group, the laparoscopic group had a shorter mean operative time (64.8 ± 10.2 vs 92.4 ± 13.7 min), lower estimated intraoperative blood loss (82 ± 25 vs 180 ± 46 mL), lower postoperative pain scores at 24 hours (3.2 ± 0.8 vs 7.4 ± 1.1 points), and shorter hospitalization (4.3 ± 1.2 vs 8.1 ± 2.5 days); all $p < 0.001$. Postoperative complications occurred in 6 of 96 patients (6.3%) in the laparoscopic group and in 10 of 58 patients (17.2%) in the open-surgery group. The difference in complication frequency did not reach statistical significance according to Fisher's exact test ($p = 0.053$). No in-hospital deaths were recorded.

Conclusion: In this single-center cohort, laparoscopic surgery was associated with more favorable short-term perioperative outcomes than open surgery. However, the non-randomized design, absence of adjustment for baseline differences, and inclusion of heterogeneous abdominal diseases preclude causal and procedure-specific conclusions.

Keywords: minimally invasive surgery; laparoscopy; abdominal surgery; postoperative complications; postoperative pain; length of stay.

INTRODUCTION

Minimally invasive surgery has altered the management of many abdominal diseases by reducing the trauma of surgical access while allowing definitive operative treatment.

Compared with a conventional laparotomy, a laparoscopic approach may reduce postoperative pain, wound morbidity, and the time required for functional recovery. These advantages are not universal, however, and depend on the underlying disease, urgency of intervention, technical complexity, patient risk, and experience of the operating team [1].

The role of laparoscopy is well established for several conditions represented in the present cohort. The World Society of Emergency Surgery recommends laparoscopic cholecystectomy as the standard operative approach for suitable patients with acute calculous cholecystitis [2]. Its updated Jerusalem guidelines likewise support laparoscopic appendectomy when appropriate expertise and equipment are available [3]. For groin hernia, the updated HerniaSurge recommendations emphasize an individualized choice of approach and adequate surgeon training [4], whereas the European Hernia Society provides separate guidance for the assessment and operative management of midline incisional hernias [5]. These diagnosis-specific recommendations also show why results from different abdominal procedures should not be interpreted as clinically interchangeable.

The practical effect of adopting laparoscopy may differ between institutions. Patient selection, referral patterns, availability of imaging and disposable instruments, operating-room organization, and the stage of a surgical team's learning curve can influence perioperative outcomes. Evaluation within a regional hospital is therefore useful not as a substitute for diagnosis-specific trials, but as an audit of outcomes achieved under routine local conditions.

This study aimed to compare selected perioperative and early postoperative outcomes between adults undergoing laparoscopic and open operations for abdominal surgical diseases at a regional hospital in Samarkand, Uzbekistan. The evaluated outcomes were operative time, estimated intraoperative blood loss, postoperative pain intensity, length of hospital stay, postoperative complications, and in-hospital mortality.

MATERIALS AND METHODS

Study design and setting. This retrospective comparative cohort study was conducted in the surgical department of the Hospital of the Samarkand Branch of JSC "O'zbekiston temir yo'llari". Medical records of patients treated between January 2023 and September 2025 were reviewed. The study was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations [6].

Study Population. The study included 154 patients aged 18–65 years who underwent surgery for abdominal diseases. The evaluated conditions comprised acute or chronic cholecystitis, acute appendicitis, and ventral or inguinal hernias.

Patients were eligible for inclusion if they were 18 years of age or older, had a clinically and instrumentally confirmed abdominal surgical disease, underwent either a laparoscopic or open operation during the study period, and had sufficient perioperative documentation for assessment of the study outcomes.

Patients were excluded if they had decompensated severe comorbid disease, clinically significant coagulation disorders, incomplete medical records, or insufficient postoperative data for outcome assessment.

Study Groups. The patients were divided into two groups according to the operative approach recorded in their medical documentation. The laparoscopic group included 96 patients who underwent minimally invasive surgery. The open-surgery group included 58

ISBN: 978-625-90699-4-4

patients treated through a conventional laparotomy or open surgical approach appropriate for the underlying disease.

The choice of operative approach was based on the clinical condition of the patient, characteristics and severity of the disease, previous surgical history, technical feasibility, and the judgment of the operating surgeon. Treatment allocation was not randomized.

Preoperative Assessment. Preoperative evaluation included medical history, physical examination, complete blood count, routine biochemical blood testing, abdominal ultrasonography, and assessment of anesthetic risk. Computed tomography, upper gastrointestinal endoscopy, electrocardiography, and additional examinations were performed when clinically indicated.

Perioperative risk was assessed using the American Society of Anesthesiologists physical-status classification. Information on demographic characteristics, diagnosis, operative approach, duration of surgery, estimated blood loss, postoperative pain, complications, and length of hospital stay was obtained from the patients' medical records.

Surgical Treatment. All operations were performed under general anesthesia in accordance with accepted principles of asepsis, antisepsis, and perioperative safety.

Laparoscopic procedures were performed using carbon-dioxide pneumoperitoneum, video monitoring, standard laparoscopic instruments, and three- or four-port access, depending on the type of operation and intraoperative findings. Open operations were performed through the conventional surgical access appropriate for the underlying disease.

Postoperative Management. Postoperative management was based on the patient's diagnosis, operative findings, and clinical condition. It included analgesic treatment, antimicrobial therapy when indicated, prevention of venous thromboembolism, early mobilization, wound surveillance, and laboratory monitoring.

Postoperative pain intensity was assessed using a 10-point visual analogue scale, where 0 represented no pain and 10 represented the worst imaginable pain. Pain scores were documented at 6, 24, and 48 hours after surgery. The pain score recorded 24 hours after surgery was used for the between-group comparison.

Outcome Measures. The primary outcome was the occurrence of any in-hospital postoperative complication. Postoperative complications included seroma, inflammatory infiltration of the surgical wound, and surgical-site suppuration. Complications were categorized using the Clavien–Dindo classification whenever sufficient information was available in the medical records [7].

Secondary outcomes were:

1. duration of surgery, measured in minutes from skin incision to completion of wound closure;
2. estimated intraoperative blood loss, recorded in millilitres;
3. postoperative pain intensity measured using the visual analogue scale 24 hours after surgery;
4. postoperative length of hospital stay, calculated in days from the date of surgery to discharge;
5. in-hospital postoperative mortality.

ISBN: 978-625-90699-4-4

Statistical Analysis.

Statistical analysis was performed using IBM SPSS Statistics version 23 and Microsoft Excel 2021. Continuous variables were summarized as mean and standard deviation. Categorical variables were presented as absolute numbers and percentages.

Continuous outcomes were compared between the laparoscopic and open-surgery groups using Welch's independent-samples t test, which does not require the assumption of equal variances. Fisher's exact test was used to compare the frequency of postoperative complications because of the small number of observed events.

All statistical tests were two-sided. Effect estimates are presented with 95% confidence intervals where appropriate. A p value below 0.05 was considered statistically significant. No imputation was performed for missing outcome data.

Ethical Considerations. This retrospective study was based exclusively on anonymized data obtained from medical records. The study involved no additional diagnostic procedures, therapeutic interventions, or direct contact with patients. Patient confidentiality was maintained throughout data collection, analysis, and reporting.

RESULTS

A total of 154 patients were included in the study. The laparoscopic group comprised 96 patients, whereas 58 patients underwent open surgery. The mean age of the study population was 43.6 ± 12.1 years. Men accounted for 45% and women for 55% of the patients. No in-hospital deaths were recorded in either group.

The mean operative time was significantly shorter in the laparoscopic group than in the open-surgery group: 64.8 ± 10.2 versus 92.4 ± 13.7 minutes. The mean difference was −27.6 minutes (95% CI: −31.7 to −23.5; $p < 0.001$).

Mean intraoperative blood loss was 82 ± 25 mL in the laparoscopic group and 180 ± 46 mL in the open-surgery group. The mean difference between the groups was −98 mL (95% CI: −111.1 to −84.9; $p < 0.001$).

Postoperative pain intensity, assessed using the visual analogue scale 24 hours after surgery, was lower in the laparoscopic group than in the open-surgery group: 3.2 ± 0.8 versus 7.4 ± 1.1 points. The mean difference was −4.2 points (95% CI: −4.53 to −3.87; $p < 0.001$).

The mean postoperative length of hospital stay was 4.3 ± 1.2 days in the laparoscopic group and 8.1 ± 2.5 days in the open-surgery group. The mean difference was −3.8 days (95% CI: −4.50 to −3.10; $p < 0.001$).

Postoperative complications occurred in 6 of 96 patients (6.3%) after laparoscopic surgery and in 10 of 58 patients (17.2%) after open surgery. Complications were numerically less frequent in the laparoscopic group; however, the difference did not reach statistical significance according to Fisher's exact test (odds ratio, 0.32; 95% CI: 0.09–1.05; $p = 0.053$).

Table 1. Clinical outcomes according to surgical approach

Outcome	Laparoscopic group (n = 96)	Open-surgery group (n = 58)	p value
Operative time, min	64.8 ± 10.2	92.4 ± 13.7	<0.001
Intraoperative blood loss, mL	82 ± 25	180 ± 46	<0.001
Postoperative pain, VAS score	3.2 ± 0.8	7.4 ± 1.1	<0.001
Postoperative hospital stay, days	4.3 ± 1.2	8.1 ± 2.5	<0.001

ISBN: 978-625-90699-4-4

Postoperative complications, n (%)	6 (6.3%)	10 (17.2%)	0.053
In-hospital mortality, n (%)	0	0	-

Data are presented as mean ± standard deviation or number (percentage). Continuous outcomes were compared using Welch's independent-samples t test. Postoperative complication rates were compared using Fisher's exact test. VAS, visual analogue scale.

DISCUSSION

The present study compared short-term outcomes after laparoscopic and open surgery in 154 patients with abdominal surgical diseases. Laparoscopic procedures were associated with shorter operative time, lower estimated intraoperative blood loss, lower postoperative pain scores at 24 hours, and shorter hospitalization. Postoperative complications were also numerically less frequent in the laparoscopic group.

The mean operative time was 27.6 minutes shorter in the laparoscopic group. Although this difference was statistically significant, it should not be interpreted as a universal advantage of laparoscopy. Operative duration depends on the diagnosis, complexity of the procedure, severity of disease, previous abdominal operations, surgeon experience, and availability of appropriate equipment. Because several types of abdominal operations were combined in the present analysis, the observed difference reflects the experience of this particular cohort rather than a procedure-specific effect.

Estimated intraoperative blood loss was 98 mL lower in the laparoscopic group. This finding is consistent with the characteristics of minimally invasive access, including smaller abdominal-wall incisions and more detailed visualization of the operative field [1,2]. Nevertheless, the absence of diagnosis-specific and procedure-specific analyses prevents determination of whether the difference was attributable to the surgical approach itself or to differences in the complexity of the operations performed in the two groups.

Postoperative pain scores were substantially lower following laparoscopic surgery. The mean between-group difference was 4.2 points on the visual analogue scale. This difference was not only statistically significant but also clinically relevant. However, the interpretation of this outcome requires confirmation that pain was assessed at the same postoperative time point and using comparable analgesic protocols in both groups.

The mean postoperative hospital stay was 3.8 days shorter in the laparoscopic group. Earlier mobilization, lower pain intensity, and reduced surgical trauma may have contributed to this finding. At the same time, length of stay can also be influenced by the underlying diagnosis, urgency of surgery, postoperative-care protocols, discharge criteria, and organizational factors. Therefore, the observed reduction cannot be attributed exclusively to the operative approach.

Postoperative complications occurred in 6.3% of patients after laparoscopic surgery and in 17.2% after open surgery. Although the absolute difference of 10.9 percentage points may be clinically relevant, it did not reach statistical significance according to Fisher's exact test (odds ratio, 0.32; 95% CI: 0.09–1.05; p = 0.053). The confidence interval was wide and included the null value, reflecting the limited number of complication events. Therefore, this finding should be interpreted as an inconclusive numerical difference rather than definitive evidence of a lower complication risk. A larger diagnosis-specific study is required to evaluate this outcome reliably.

The findings are generally consistent with current recommendations supporting laparoscopic surgery for appropriately selected patients with common abdominal conditions.

ISBN: 978-625-90699-4-4

The World Society of Emergency Surgery recommends laparoscopic cholecystectomy as the standard treatment for suitable patients with acute calculous cholecystitis [2]. The updated Jerusalem guidelines recommend laparoscopic appendectomy over open appendectomy when the necessary equipment and expertise are available [3]. International guidelines for groin-hernia management also recognize laparo-endoscopic repair as an evidence-based option, while emphasizing patient selection and surgeon competence [4].

The principal strength of this study is that it reflects routine surgical practice in a regional hospital in Samarkand. Such data are relevant because clinical outcomes in regional institutions may be affected by resources, equipment availability, staff experience, and patient referral patterns that differ from those of high-volume specialist centers.

This study has several limitations. First, its retrospective, single-center design introduces the possibility of selection bias and limits the generalizability of the findings. Second, the choice of operative approach was not randomized and may have been influenced by the underlying diagnosis, disease severity, patient characteristics, and surgeon preference. Third, group-specific baseline characteristics were unavailable; therefore, the comparability of the groups could not be assessed, and adjustment for potential confounding factors was not possible. Fourth, patients with heterogeneous abdominal diseases and different operative procedures were analyzed together, which precludes diagnosis-specific conclusions. Fifth, information on conversion from laparoscopic to open surgery was unavailable. Finally, the study evaluated only in-hospital and early postoperative outcomes; consequently, long-term complications, readmissions, and recurrence were not assessed. These limitations mean that the observed associations should not be interpreted as evidence of a causal effect of the operative approach.

CONCLUSION

In this retrospective single-center cohort, laparoscopic surgery was associated with shorter operative time, lower estimated intraoperative blood loss, lower postoperative pain intensity at 24 hours, and shorter hospital stay compared with open surgery. Postoperative complications were numerically less frequent after laparoscopic surgery, but the difference did not reach statistical significance. Because the operative approach was not randomized, baseline comparability could not be assessed, and heterogeneous abdominal diseases were analyzed together, the findings demonstrate associations rather than causal effects. Larger prospective, diagnosis-specific studies with adjustment for potential confounding factors are required to confirm these results.

DECLARATIONS

Ethics approval and consent to participate: The study was based on a retrospective analysis of anonymized routinely collected clinical data and involved no direct patient contact or additional clinical interventions.

Consent for publication: Not applicable. The manuscript does not contain identifiable personal data, images, or individual case details.

Availability of data and materials: The de-identified data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to institutional approval and applicable ethical requirements.

Competing interests: The authors declare that they have no competing interests.

Funding: This research received no external funding.

Author contributions: S.T.M. conceived and designed the study, participated in clinical data collection, analyzed and interpreted the results, and drafted the manuscript. G.K.M. contributed to the interpretation of the clinical findings and critically revised the manuscript. D.B.Y. performed the literature search, assisted with data organization and preparation of the manuscript, and participated in the final review. All authors read and approved the final version of the manuscript and agreed to be accountable for their respective contributions.

Acknowledgements: The authors thank the staff of the surgical department of the Hospital of the Samarkand Branch of JSC "O'zbekiston temir yo'llari" for their assistance in the clinical management of the patients included in this study.

REFERENCES

1. Buia A, Stockhausen F, Hanisch E. Laparoscopic surgery: a qualified systematic review. World J Methodol. 2015;5(4):238–254. doi:10.5662/wjm.v5.i4.238.
2. Pisano M, Allievi N, Gurusamy K, et al. 2020 World Society of Emergency Surgery updated guidelines for the diagnosis and treatment of acute calculous cholecystitis. World J Emerg Surg. 2020;15:61. doi:10.1186/s13017-020-00336-x.
3. Di Saverio S, Podda M, De Simone B, et al. Diagnosis and treatment of acute appendicitis: 2020 update of the WSES Jerusalem guidelines. World J Emerg Surg. 2020;15:27. doi:10.1186/s13017-020-00306-3.
4. Stabilini C, van Veenendaal N, Aasvang E, et al. Update of the international HerniaSurge guidelines for groin hernia management. BJS Open. 2023;7(5):zrad080. doi:10.1093/bjsopen/zrad080.
5. Sanders DL, Pawlak MM, Simons MP, et al. Midline incisional hernia guidelines: the European Hernia Society. Br J Surg. 2023;110(12):1732–1768. doi:10.1093/bjs/znad284.
6. von Elm E, Altman DG, Egger M, et al.; STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology statement: guidelines for reporting observational studies. J Clin Epidemiol. 2008;61(4):344–349. doi:10.1016/j.jclinepi.2007.11.008.
7. Dindo D, Demartines N, Clavien PA. Classification of surgical complications: a new proposal with evaluation in a cohort of 6336 patients and results of a survey. Ann Surg. 2004;240(2):205–213. doi:10.1097/01.SLA.0000133083.54934.AE.

PEEK ASOSIDAGI ORTOPEDIK IMPLANTLARDA SIRT XUSUSIYATLARI, BIOMEXANIK BARQARORLIK VA BIOLOGIK JAVOBNI UYG‘UNLASHTIRISH ORQALI OSTEOINTEGRATSIYANI YAXSHILASH

ENHANCING OSSEOINTEGRATION OF PEEK-BASED ORTHOPEDIC IMPLANTS THROUGH THE INTEGRATION OF SURFACE PROPERTIES, BIOMECHANICAL STABILITY, AND BIOLOGICAL RESPONSE

Mamajonov Ma’rufjon Muxtorovich
Associate Professor, Department of Biophysics and Information Technologies,
Central Asian Medical University (CAMU)
https://orcid.org/0009-0003-3079-9765

ABSTRACT

Polyetheretherketone (PEEK) is regarded as a promising biomaterial for orthopedic applications, spinal surgery, and craniomaxillofacial reconstruction due to its high mechanical stability, chemical resistance, radiolucency, and elastic modulus, which is closer to that of bone tissue than those of metallic implants. However, the biologically inert and relatively hydrophobic surface of PEEK does not sufficiently promote protein–material interactions, adhesion, proliferation, and osteogenic differentiation of bone-forming cells. Consequently, the favorable biomechanical properties of PEEK do not automatically ensure strong and stable integration with bone tissue [1].

In recent years, numerous modification strategies have been proposed to address this limitation, including plasma treatment, laser-induced surface structuring, sulfonation, hydroxyapatite- and titanium-based bioactive coatings, incorporation of ions into the surface layer, functionalization with bioactive molecules, micro- and nanoscale structuring, and three-dimensional (3D) printing. Nevertheless, most existing studies have focused on evaluating the biological effectiveness of individual modification methods, while the interconnected system of “surface structure - surface chemistry - biomechanical properties - biological response - osteogenesis - osseointegration” has not yet been sufficiently investigated within a unified multivariable framework.

This review systematically examines the current state of research on PEEK implants, identifies major unresolved fundamental challenges and barriers to clinical translation, and proposes an integrated approach based on the combined assessment of physicochemical surface characteristics, biomechanical stability, and osteogenic cellular response. Rather than identifying a single “most effective coating,” the principal objective is to determine an optimal range of surface parameters that provides an appropriate balance among mechanical stability, biological safety, and osteogenic activity.

Keywords: *PEEK, orthopedic implant, biomaterial, surface modification, micro- and nanostructure, biomechanics, osteogenesis, osseointegration, biocompatibility, multivariable model.*

ANNOTATSIYA

Poliefirefirketon (PEEK) yuqori mexanik barqarorligi, kimyoviy chidamliligi, rentgen nurlarini o‘tkazish xususiyati va elastiklik modulining metall implantlarga nisbatan suyak to‘qimasi ko‘rsatkichlariga yaqinligi sababli ortopediya, umurtqa pog‘onasi jarrohligi hamda yuz-jag‘ rekonstruktiv jarrohligida istiqbolli biomaterial sifatida qaralmoqda. Biroq PEEKning biologik inert va nisbatan gidrofob yuzasi oqsil–material o‘zaro ta’sirini, suyak hosil qiluvchi hujayralarning sirtga birikishi (adgeziyasi), ko‘payishi (proliferatsiyasi) va osteogen

differensiyalanishini yetarli darajada rag‘batlantirmaydi. Natijada materialning yuqori biomexanik xususiyatlari suyak to‘qimasi bilan mustahkam va barqaror integratsiyalanishni avtomatik ravishda ta’minlamaydi [1].

So‘nggi yillarda ushbu muammoni bartaraf etish maqsadida PEEK yuzasiga plazma bilan ishlov berish, lazer yordamida sirt tuzilishini o‘zgartirish, sulfonlash, gidroksiapatit va titan asosidagi biologik faol qoplamalarni qo‘llash, ionlarni sirt qatlamiga kiritish, biologik faol molekulalar bilan funksionallashtirish, mikro- va nanodarajada strukturalash hamda uch o‘lchamli bosib chiqarish kabi ko‘plab modifikatsiya usullari taklif etilgan. Shunga qaramay, mavjud tadqiqotlarning katta qismi alohida modifikatsiya usulining biologik samaradorligini baholashga qaratilgan bo‘lib, “sirt tuzilishi - sirt kimyosi - biomexanik xususiyatlar - biologik javob - osteogenez - osteointegratsiya” tizimi yagona ko‘p omilli model doirasida yetarli darajada o‘rganilmagan.

Mazkur sharh maqolada PEEK implantlarining zamonaviy ilmiy holati, asosiy yechilmagan fundamental va klinik amaliyotga joriy etish muammolari tizimlashtirilib, sirtning fizik-kimyoviy ko‘rsatkichlarini biomexanik barqarorlik va osteogen hujayraviy javob bilan birgalikda baholashga asoslangan integratsiyalashgan yondashuv taklif etiladi. Asosiy maqsad alohida “eng samarali qoplama”ni izlash emas, balki mexanik barqarorlik, biologik xavfsizlik va osteogen faollikning maqbul muvozanatini ta’minlovchi sirt parametrlarining optimal diapazonini aniqlashdan iborat.

Kalit so‘zlar: *PEEK, ortopedik implant, biomaterial, sirt modifikatsiyasi, mikro- va nanostruktura, biomexanika, osteogenez, osteointegratsiya, biomuvofiqlik, ko‘p omilli model.*

KIRISH

Zamonaviy ortopediya va implantologiyada implant materialini tanlash faqat mexanik mustahkamlik bilan belgilanmaydi. Implant organizmga joylashtirilgach, u murakkab biologik va biomexanik muhitda uzoq muddat faoliyat ko‘rsatadi. Shuning uchun material biologik xavfsiz, biomuvofiq, fiziologik yuklanishlarga chidamli bo‘lishi, suyak to‘qimasi bilan barqaror integratsiyalanishi va funksional xususiyatlarini uzoq vaqt saqlashi lozim. Mexanik barqarorlik bilan biologik faollikning uyg‘unligini ta’minlash yangi avlod ortopedik biomateriallarini yaratishning asosiy talablaridan biridir [1, 6, 7].

Titan va uning qotishmalari yuqori mustahkamligi, korroziyaga chidamliligi va ko‘p yillik klinik tajriba tufayli keng qo‘llaniladi. Biroq metallarning elastiklik moduli tabiiy suyaknikidan sezilarli yuqori bo‘lib, yuklanishning nomutanosib taqsimlanishi va suyakning yetarli mexanik rag‘bat olmasligi bilan bog‘liq “yuklanishdan himoyalanish” hodisasini yuzaga keltirishi mumkin. Metall konstruksiyalar ayrim tasvirlash usullarida artefaktlar ham hosil qiladi. PEEKning elastiklik moduli odatda 3–4 GPa atrofida bo‘lib, metall implantlarga qaraganda kortikal suyak ko‘rsatkichlariga yaqinroq; material rentgen nurlarini o‘tkazadi va kimyoviy jihatdan barqarordir [1, 7].

Shu bilan birga, PEEKning tabiiy yuzasi biologik inert va gidrofob bo‘lib, sirtga oqsillarning yutilishi, osteogen hujayralarning birikishi, ko‘payishi va ixtisoslashuvini yetarli darajada qo‘llab-quvvatlamaydi [1–5]. Demak, PEEK uchun asosiy ilmiy qarama-qarshilik uning qulay biomexanik xususiyatlari bilan yetarli bo‘lmagan sirt biofaolligi o‘rtasidagi nomutanosiblikdan iborat. Hozirgi tadqiqotlarning muhim vazifasi materialning hajmiy mexanik xususiyatlarini saqlagan holda uning sirtini biologik faol, osteokonduktiv va osteogen javobni rag‘batlantiruvchi holatga keltirishdir.

Muammoning xalqaro dolzarbligi: PEEK asosidagi ortopedik implantlarga qiziqishning ortishi aholi qarishi, degenerativ suyak va bo‘g‘im kasalliklari, og‘ir travmalar hamda murakkab rekonstruktiv operatsiyalar sonining ko‘payishi bilan bog‘liq. Bunday klinik sharoitlar uzoq muddat xizmat qiladigan, mexanik jihatdan barqaror va biologik faol implantlarga talabni oshirmoqda. Zamonaviy implantologiya shikastlangan tuzilmani shunchaki mexanik almashtirishdan suyak regeneratsiyasi va qayta shakllanishini qo‘llab-quvvatlaydigan biologik integratsiyalashgan implant konsepsiyasiga o‘tmoqda [2, 6, 7].

Uch o‘lchamli bosib chiqarish va bemorga moslashtirilgan individual implantlarni ishlab chiqarish texnologiyalari PEEK asosida murakkab geometriyali, boshqariladigan g‘ovaklikka ega konstruksiyalar yaratish imkonini kengaytirdi. Biroq PEEKning bioinertligi klinik imkoniyatlarni cheklab turuvchi asosiy omillardan biri bo‘lib qolmoqda. 2026-yilgi klinik-biomekanik sharhda ham PEEK uchun uzoq muddatli klinik natijalar, implantning xizmat muddati, yeyilish bilan bog‘liq biologik javob va sirt modifikatsiyalarining katta klinik sinovlarda tasdiqlanishi bo‘yicha dalillar yetarli emasligi qayd etilgan [7].

PEEK sirtining biologik inertligi va hujayraviy javob: Implant organizmga joylashtirilgandan so‘ng hujayralar uning “quruq” yuzasi bilan bevosita to‘qnashmaydi. Avval sirt biologik suyuqlik bilan qoplanadi, suv molekulalari va ionlar bilan o‘zaro ta’sir yuz beradi, so‘ng turli oqsillar sirtga yutiladi. Hosil bo‘lgan oqsil qatlamining tarkibi, fazoviy holati va tuzilishi keyingi hujayraviy javobga sezilarli ta’sir ko‘rsatadi. Bu jarayon sirt tuzilishi, kimyoviy tarkibi, sirt energiyasi, g‘adir-budurligi va namlanuvchanligi bilan chambarchas bog‘liq [2–5].

PEEKning nisbatan past sirt energiyasi va gidrofobligi biologik molekulalarning sirt bilan samarali o‘zaro ta’sirini cheklashi mumkin. Natijada osteoblastlar va ularning boshlang‘ich hujayralarining sirtga birikishi, yoyilishi, ko‘payishi, osteogen yo‘nalishda ixtisoslashuvi hamda hujayralararo asosiy moddaning minerallashuvi uchun optimal mikro-muhit shakllanishi qiyinlashadi. Shu sababli muammo PEEKning bevosita sitotoksikligidan ko‘ra, uning tabiiy yuzasi yangi suyak hosil bo‘lishini yetarli darajada faol rag‘batlantirmasligidadir [1, 2, 4].

Osteointegratsiyani yaxshilashning zamonaviy usullari: PEEK sirtining biologik faolligini oshirish uchun fizik, kimyoviy va biologik modifikatsiyalar ishlab chiqilgan. Fizik usullarga plazma bilan ishlov berish, lazer yordamida sirt tuzilishini o‘zgartirish, ultrabinafsha nurlar bilan ishlov berish va abraziv zarrachalar bilan g‘adir-budurlashtirish kiradi. Ular sirt topografiyasi, g‘adir-budurligi, sirt energiyasi va namlanuvchanligini boshqarishga xizmat qiladi [2–5].

Kimyoviy modifikatsiyada sulfonlash va funksional kimyoviy guruhlarni shakllantirish usullari qo‘llanib, mikro- va nanog‘ovak tuzilmalar hosil qilinadi. Gidroksiapatit, titan, titan dioksidi va biologik faol shisha kabi osteokonduktiv qoplamalar esa implant yuzasida suyak hujayralari uchun qulay biologik muhit yaratishga qaratilgan [1–5, 9]. Rux va magniy kabi biologik faol ionlarni sirt qatlamiga kiritish osteogen va antibakterial xususiyatlarni uyg‘unlashtirish imkonini beradi. Peptidlar, oqsillar va o‘sish omillari bilan biologik funksionallashtirish hujayra–material o‘zaro ta’sirini maqsadli boshqarish uchun o‘rganilmoqda.

Uch o‘lchamli bosib chiqarish PEEK implantining tashqi shakli, g‘ovakligi, ichki arxitekturasi va mexanik xususiyatlarini muayyan klinik ehtiyojlarga moslashtirish imkonini beradi. Biroq alohida modifikatsiya usulining ijobiy natijasi klinik jihatdan optimal implant yaratilganini anglatmaydi. Modifikatsiya mexanik mustahkamlik, sirt barqarorligi, biologik xavfsizlik, osteogen faollik va infeksiyaga qarshi xususiyatlar bilan birgalikda baholanishi kerak [1, 2, 6, 7].

ISBN: 978-625-90699-4-4

Hali yechilmagan asosiy ilmiy-amaliy muammolar

PEEK asosidagi implantlarning osteointegratsiyasini yaxshilash bo‘yicha ko‘plab fizik, kimyoviy va biologik modifikatsiya usullari ishlab chiqilganiga qaramay, ularni klinik amaliyotga keng joriy etishni cheklayotgan bir qator fundamental va amaliy muammolar saqlanib qolmoqda. Ushbu muammolar alohida modifikatsiya usulining samaradorligidan ko‘ra, sirt xususiyatlari, biomexanik barqarorlik va biologik javob o‘rtasidagi murakkab o‘zaro bog‘liqliklarni to‘liq tushunish zarurati bilan bog‘liq.

Optimal sirt parametrlarining universal mezonlari: Ko‘plab ishlar modifikatsiyalangan PEEKni ishlov berilmagan PEEK bilan taqqoslab, hujayraviy javobning yaxshilanishini ko‘rsatadi. Biroq g‘adir-budurlik, g‘ovaklar o‘lchami, sirt energiyasi, namlanuvchanlik va kimyoviy tarkibning qaysi kombinatsiyasi eng samarali osteointegratsiyani ta’minlashi bo‘yicha universal mezon mavjud emas [1, 2, 4]. G‘adir-budurlik yoki gidrofillikni shunchaki maksimal oshirish har doim ham eng yaxshi biologik natijani bermaydi. Shu sababli alohida ko‘rsatkichning maksimumini emas, ularning maqbul diapazoni va o‘zaro nisbatini aniqlash zarur.

Tadqiqot usullarini standartlashtirish: PEEK turi, ishlab chiqarish usuli, sirtni tayyorlash tartibi, hujayra turi, hujayralarni yetishtirish sharoitlari, kuzatuv muddati va biologik samaradorlik mezonlaridagi farqlar turli tadqiqotlarni to‘g‘ridan-to‘g‘ri taqqoslashni qiyinlashtiradi. Natijalarning takrorlanuvchanligi va klinik ahamiyatini oshirish uchun standartlashtirilgan sirt tavsifi, mexanik sinov va biologik baholash protokollari talab etiladi [2, 6, 7].

Mexanik va biologik xususiyatlar: Materialshunoslik tadqiqotlarida g‘adir-budurlik, qattiqlik, elastiklik moduli, ishqalanish va yeyilishga chidamlilik o‘rganilsa, biologik ishlar hujayra hayotchanligi, birikishi, ko‘payishi, ishqoriy fosfataza faolligi, osteogen ixtisoslashuv va minerallashuvga e’tibor qaratadi. Real implantatsiya sharoitida esa bu jarayonlar bir-biridan mustaqil emas. Sirtni biologik jihatdan faollashtiruvchi o‘zgarishlar mexanik yoki tribologik xususiyatlarni ham o‘zgartirishi mumkin. Shu sababli “sirt xususiyatlari – biomexanik barqarorlik – biologik javob” tizimini yagona modelda baholash zarur.

Osteogen va antibakterial faollik o‘rtasidagi muvozanat: Implant bilan bog‘liq infeksiyalar jiddiy klinik muammo bo‘lib qolmoqda. Antibakterial komponent miqdorini oshirish mikroorganizmlarni samaraliroq cheklashi mumkin, biroq yuqori konsentratsiya sog‘lom hujayralarning hayotchanligi va osteogen faoliyatiga salbiy ta’sir ko‘rsatishi ehtimoli mavjud [1, 6]. Shuning uchun maqsad maksimal antibakterial ta’sir emas, balki antibakterial faollik, hujayraviy biomuvofiqlik va osteogenez o‘rtasidagi optimal muvozanatdir.

Qoplamalarning uzoq muddatli barqarorligi: Biologik faol qoplama dastlab yuqori osteogen faollik ko‘rsatishi mumkin, ammo fiziologik yuklanishlar ostida uning asosiy materialdan ajralishi, yorilishi, yeyilishi yoki ion va biologik faol molekulalarning ajralish tezligi o‘zgarishi mumkin. Shuning uchun sirt modifikatsiyasining dastlabki biofaolligi bilan bir qatorda uning uzoq muddatli mexanik, kimyoviy va biologik barqarorligini baholash muhim [1, 2, 7].

Laboratoriya natijalarini real biomexanik muhitga ko‘chirish: Ko‘plab hujayraviy tadqiqotlar organizmdan tashqari statik sharoitlarda bajariladi. Organizm ichida esa implant takrorlanuvchi mexanik yuklanish, biologik suyuqliklar oqimi, kichik siljishlar va murakkab immunobiologik muhit ta’sirida ishlaydi. Shu sababli statik tajribadagi ijobiy natija klinik muvaffaqiyatni avtomatik kafolatlamaydi. Kelajak tadqiqotlarida fiziologik sharoitga yaqin dinamik modellar va uzoq muddatli mexanik-biologik sinovlar ustuvor bo‘lishi kerak [6, 7].

ISBN: 978-625-90699-4-4

Preklinik tadqiqotlardan klinik amaliyotga o‘tish bo‘shlig‘i: Istiqbolli PEEK modifikatsiyalarining katta qismi hujayra madaniyatlari yoki kichik hayvon modellarida o‘rganilgan. Yirik hayvon modellaridagi uzoq muddatli, yuklanish ostidagi preklinik tadqiqotlar va yetarli hajmdagi nazorat qilinadigan klinik sinovlar nisbatan kam. 2026-yilgi sharh ham uzoq muddatli implant xizmat muddati va asoratlar bo‘yicha klinik dalillar cheklanganligini ta’kidlaydi [7]. Bu laboratoriyada samarali modifikatsiyani takrorlanuvchan va xavfsiz klinik implantga aylantirishdagi asosiy to‘siqlardan biridir.

Integratsiyalashgan ilmiy yondashuv

Mavjud dalillar PEEK uchun navbatdagi alohida qoplama yoki ishlov berish usulini yaratishning o‘zi yetarli emasligini ko‘rsatadi. Ilmiy vazifa sirtning mikro- va nanostrukturasi, g‘adir-budurligi, namlanuvchanligi, sirt energiyasi va kimyoviy tarkibini mexanik hamda tribologik ko‘rsatkichlar, oqsil adsorbsiyasi, hujayra birikishi, ko‘payishi, osteogen ixtisoslashuvi va minerallashuvi bilan miqdoriy bog‘lashdan iborat.

Shu asosda “sirt tuzilishi - sirt kimyosi - biomexanik xususiyatlar - oqsil adsorbsiyasi - hujayraviy javob - osteogenez - osteointegratsiya” ketma-ketligini yagona ko‘p omilli tizim sifatida o‘rganish taklif etiladi. Bunday yondashuvda sirt g‘adir-budurligi, aloqa burchagi, sirt energiyasi, g‘ovaklar o‘lchami, kimyoviy tarkib va qoplama barqarorligi mustaqil ko‘rsatkichlar sifatida; hujayra birikishi, hayotchanligi, ko‘payishi, ishqoriy fosfataza faolligi, osteogen belgilar va minerallashuv esa biologik javob ko‘rsatkichlari sifatida baholanadi.

Yetarli tajriba ma’lumotlari to‘planganda ko‘p omilli regressiya, javob yuzasi usuli va ma’lumotlarga asoslangan bashoratlash modellari yordamida mexanik barqarorlik, biologik xavfsizlik va osteogen faollikni birgalikda ta’minlaydigan sirt parametrlarining maqbul diapazonini aniqlash mumkin. Bu yondashuv PEEK sirtini sinov va xatolar asosida modifikatsiyalashdan ilmiy asoslangan, oldindan bashorat qilinadigan biomaterial dizayniga o‘tishga xizmat qiladi.

Ilmiy-amaliy ahamiyati

Taklif etilayotgan integratsiyalashgan yondashuv PEEK asosidagi ortopedik implantlarni baholashda materialshunoslik, biofizika, biomexanika va hujayra biologiyasi ko‘rsatkichlarini yagona tizimda birlashtiradi. Natijada sirt parametrlarining maqbul diapazonini belgilash, modifikatsiya samaradorligini kompleks baholash, biologik va mexanik xususiyatlar o‘rtasidagi muvozanatni aniqlash hamda keyingi preklinik tadqiqotlar uchun takomillashtirilgan implant yoki to‘qima muhandisligi karkasi prototipini ilmiy asoslash imkoniyati yaratiladi.

Mazkur konsepsiya, ayniqsa, PEEK sirtini modifikatsiyalash bo‘yicha natijalarni faqat alohida biologik ko‘rsatkich bilan emas, balki uzoq muddatli funksional barqarorlik nuqtai nazaridan talqin qilishga imkon beradi. Bu esa laboratoriya natijalarining klinik amaliyotga o‘tish imkoniyatini oshirish uchun muhim metodologik asos bo‘lishi mumkin.

Xulosa

PEEK ortopedik implantologiyada istiqbolli biomaterial bo‘lsa-da, uning biologik inert va gidrofob yuzasi yuqori osteointegratsiyaga erishishdagi asosiy cheklovlardan biridir. Fizik, kimyoviy va biologik sirt modifikatsiyalari, bioaktiv qoplamalar, ionlarni sirt qatlamiga kiritish va uch o‘lchamli ishlab chiqarish texnologiyalari PEEKning biologik faolligini oshirish uchun katta imkoniyat yaratmoqda [1–6]. Biroq mavjud tadqiqotlarda sirt xususiyatlari, biomexanik barqarorlik va hujayraviy javob ko‘pincha alohida baholanadi; standartlashtirish, uzoq muddatli barqarorlik va klinik tasdiqlash masalalari esa to‘liq yechilmagan [2, 6, 7].

ISBN: 978-625-90699-4-4

Shu sababli keyingi bosqich tadqiqotlari “eng yaxshi qoplama”ni aniqlashdan ko‘ra, sirt tuzilishi va kimyosini biomexanik hamda biologik javob bilan miqdoriy bog‘laydigan ko‘p omilli yondashuvga yo‘naltirilishi lozim. Mexanik barqarorlik, biologik xavfsizlik, osteogen faollik va antibakterial samaradorlikning maqbul muvozanatini ta’minlovchi sirt parametrlarini aniqlash PEEK asosidagi implantlarni klinik jihatdan ishonchli yangi avlod biomateriallariga aylantirish uchun muhim ilmiy asos bo‘lib xizmat qiladi.

FOYDALANILGAN ADABIYOTLAR

1. Huang H., Liu X., Wang J. va boshq. Strategies to improve the performance of polyetheretherketone (PEEK) as orthopedic implants: from surface modification to addition of bioactive materials. Journal of Materials Chemistry B. 2024;12(19):4533-4552. doi:10.1039/D3TB02740F.
2. Chen Y., Chen Z., Lei K., Ding J., Yu L. Surface modification of polyetheretherketone for boosted osseointegration: a review. Biomaterials Translational. 2025;6(2):181-201. doi:10.12336/bmt.24.00052.
3. Dondani J.R., Iyer J., Tran S.D. Surface Treatments of PEEK for Osseointegration to Bone. Biomolecules. 2023;13(3):464. doi:10.3390/biom13030464.
4. Yu D., Lei X., Zhu H. Modification of polyetheretherketone (PEEK) physical features to improve osteointegration. Journal of Zhejiang University Science B. 2022;23(3):189-203. doi:10.1631/jzus.B2100622.
5. Chen T., Jinno Y., Atsuta I. va boshq. Current surface modification strategies to improve the binding efficiency of emerging biomaterial polyetheretherketone (PEEK) with bone and soft tissue: a literature review. Journal of Prosthodontic Research. 2023;67(3):337-347. doi:10.2186/jpr.JPR_D 22 00138.
6. Sikder P. A comprehensive review on the State of the Art in the research and development of poly-ether-ether-ketone (PEEK) biomaterial-based implants. Acta Biomaterialia. 2025;191:29-52. doi:10.1016/j.actbio.2024.11.033.
7. Vaishya R., Vaish A., Dubey A. va boshq. Role of polyetheretherketone (PEEK) in arthroplasty and orthopaedics: a review of biomechanical properties, surface modifications, and clinical outcomes. European Journal of Orthopaedic Surgery & Traumatology. 2026;36(1):69. doi:10.1007/s00590-025-04630-9.
8. Guan N., Chen Q., Zhang X. va boshq. Microporous SPEEK implants decorated with bioactive PG/CS/HA hydrogels for improving osseointegration potential. Langmuir. 2025;41(27):18113-18125. doi:10.1021/acs.langmuir.5c02075.
9. Saini M., Paliwal J., Sharma V. va boshq. Influence of PEEK surface modification with titanium for improving osseointegration: an in vitro study. Scientific Reports. 2025;15:19801. doi:10.1038/s41598-025-05214-7.
10. Zhang M., Liu S., Xing J. va boshq. Graphene oxide-modified PEEK composites: Properties and applications in orthopaedic repair - A review. Journal of Orthopaedic Translation. 2026;56:101028. doi:10.1016/j.jot.2025.11.004.

ISBN: 978-625-90699-4-4

DAUN SINDROMLI BOLALARDA PSIXOSOMATIK SOG‘LIQ BUZILISHLARINI ERTA PROFILAKTIKA QILISH TIZIMINI TAKOMILLASHTIRISH.

IMPROVING THE SYSTEM OF EARLY PREVENTION OF PSYCHOSOMATIC HEALTH DISORDERS IN CHILDREN WITH DOWN SYNDROME

Komilova Dildora Alisherovna
Central Asian Medical University
https://orcid.org/0009-0008-9616-75

Abstract. This scientific article comprehensively analyzes the specific pathophysiological and neuropsychological mechanisms of psychosomatic health disorders in children with Down syndrome, clinical-behavioral criteria for their early detection, and issues of improving the prevention system. The article highlights the impact of the level of speech development on the social adaptation of children based on international statistical data. As part of the study, a practical diagnostic screening questionnaire for parents and specialists and a multidisciplinary, family-oriented plan of specific measures aimed at reducing neurotic distress in children were developed and substantiated.

Keywords: Down syndrome, psychosomatics, early prevention, neurosomatic monitoring, sensory integration, social adaptation, alternative communication, PECS, screening questionnaire, family-centered approach.

Annotatsiya.

Ushbu ilmiy maqolada Daun sindromli bolalarda uchraydigan psixosomatik sog‘liq buzilishlarining o‘ziga xos patofiziologik va neyropsixologik mexanizmlari, ularni erta aniqlashning klini-xulq-atvoriy mezonlari hamda profilaktika tizimini takomillashtirish masalalari har tomonlama tahlil qilingan. Maqolada nutq rivojlanishi darajasining bolalarning ijtimoiy adaptatsiyasiga ko‘rsatadigan ta’siri xalqaro statistik ma’lumotlar asosida yoritilgan. Tadqiqot doirasida ota-onalar va mutaxassislar uchun amaliy diagnostik skrining-so‘rovnoma hamda bolalardagi nevrotik distressni kamaytirishga qaratilgan multidissiplinar, oilaga yo‘naltirilgan aniq chora-tadbirlar rejasi ishlab chiqilgan va asoslab berilgan.

Kalit so‘zlar: Daun sindromi, psixosomatika, erta profilaktika, neyrosomatik monitoring, sensor integratsiya, ijtimoiy adaptatsiya, muqobil muloqot, PECS, skrining-so‘rovnoma, oila-markazli yondashuv.

Mavzuning dolzarbligi Zamonaviy tibbiyot, maxsus pedagogika va bolalar neyropsixologiyasining eng muhim va dolzarb vazifalaridan biri genetik patologiyalarga, xususan, Daun sindromiga (21-xromosoma trisomiyasi) ega bolalarni erta yoshdan boshlab har tomonlama reabilitatsiya qilish va ularning jamiyatga integratsiyalashuvini ta’minlashdir. Daun sindromli bolalar nafaqat intellektual va jismoniy rivojlanish nuqsonlari, balki yuqori darajadagi somatik va ruhiy zaiflik (vulnerabillik) bilan ham xarakterlanadi. Ko‘p yillik klinik kuzatuvlar shuni ko‘rsatadiki, ushbu bolalarda markaziy nerv tizimi va ichki a’zolar patologiyalari zaminida ko‘plab funksional xarakterdagi psixosomatik buzilishlar rivojlanadi. Ular bolaning umumiy hayot sifatini keskin pasaytirib, ta’lim va ijtimoiy muhitga moslashishini qiyinlashtiradi.

Muammoning o‘rganilganlik darajasi Xalqaro pediatrlar va psixofiziologlar assotsiatsiyalari ma’lumotlariga ko‘ra, Daun sindromli bolalardagi funksional buzilishlarning (oshqozon-ichak

trakti, uyqu buzilishlari, neyrogen dermatitlar) salmoqli qismi chuqur surunkali psixoemotsional stress va distress holatiga borib taqaladi. Biroq, bugungi kunda respublikamiz sog‘liqni saqlash va inklyuziv ta’lim tizimida mazkur muammolarni erta aniqlash va differensial korreksiya qilishning yaxlit tizimi shakllanmagan. Mavjud yordam ko‘rsatish modellari asosan chiziqli xarakterga ega bo‘lib, pediatr faqat somatik kasallikni, nevrolog yoki psixolog esa faqat ruhiy holatni alohida-alohida davolash bilan cheklanmoqda. Ushbu yondashuv kasallikning asl psixosomatik ildizlarini bartaraf etish imkonini bermaydi. Shu sababli, Daun sindromli bolalarda psixosomatik sog‘liq buzilishlarini erta profilaktika qilish tizimini konseptual va amaliy jihatdan takomillashtirish zarurati tug‘ilmoqda.

Daun sindromida psixosomatik buzilishlarning etiopatogenezi. Daun sindromli bolalarda psixosomatik reaksiyalarning yuzaga kelishi chuqur neyrobiologik va psixofiziologik omillarga ega. Mazkur patologiyaning shakllanish mexanizmini quyidagi asosiy omillar orqali tushuntirish mumkin:

Vegetativ disfunksiya va endokrin gomeostazning o‘zgarishi. Genetik xususiyatlar tufayli bu bolalarda vegetativ nerv tizimining (VNT) simpatik va parasimpatik bo‘limlari o‘rtasidagi neyrogümoral muvozanat buzilgan bo‘ladi. Har qanday kichik tashqi ta’sir (muhit almashishi, begona odam, shovqin) organizmda kuchli va asossiz stress reaksiyasini qo‘zg‘atadi. Natijada gipotalamo-gipofizar-adrenal tizim faollashib, stress gormonlari (kortizol, adrenalin va noradrenalin) sintezi surunkali ravishda yuqori darajada saqlanib qoladi. Gormonal muvozanatning buzilishi birinchi navbatda silliq mushaklardan tashkil topgan ichki a’zolar (oshqozon, ichaklar, qon tomirlar) faoliyatida spazm va disfunksiyalarni keltirib chiqaradi.

Verbal muloqot yetishmovchiligi va uning psixologik oqibatlari. Nutq va kommunikativ ko‘nikmalarning chuqur kechikishi yoki rivojlanmaganligi tufayli Daun sindromli bola o‘zining jismoniy noqulayligini (og‘riq, ochlik, charchoq) yoki emotsional kechinmalarini (qo‘rquv, xavotir, xafalik) atrof-muhitga so‘z bilan (verbal) ifodalab bera olmaydi. Tushunilmaslik va ichki ehtiyojlarni qondira olmaslik bolada chuqur ichki frustratsiyani (umidsizlik) va emotsional bloklarni yuzaga keltiradi. Energiya psixologik darajada chiqarib tashlana olmagach, u somatik tizimga, ya’ni tana a’zolariga yuklanadi va turli a’zolar funksiyasining buzilishi ko‘rinishida namoyon bo‘ladi.

Nutq darajasining bolalar ijtimoiy adaptatsiyasiga ta’siri: statistik tahlil. Pedagogik neyropsixologiya va maxsus pedagogika sohasidagi eng yangi tadqiqotlar nutq darajasi hamda bolaning ijtimoiy hayotga kirishib ketishi o‘rtasida to‘g‘ridan-to‘g‘ri korrelyatsion bog‘liqlik borligini isbotlamoqda. Nutqiy muloqot imkoniyatidan mahrum bo‘lish bolalarni chuqur ijtimoiy izolyatsiyaga va psixosomatik distressga olib keladi.

Quyidagi 1-jadvalda nutqi yaxshi rivojlangan hamda nutqi rivojlanmagan/og‘ir kechikkan bolalarning ijtimoiy adaptatsiya mezonlari bo‘yicha qiyosiy statistik tahlili keltirilgan (Xalqaro bolalar psixonevrologiyasi tadqiqotlari asosida tayyorlangan).

1-jadval. Nutq darajasining bolalar ijtimoiy adaptatsiyasiga va xulq-atvoriga ta’siri

№=	**Ijtimoiy adaptatsiya mezonlari**	**Nutqi yaxshi rivojlangan bolalarda**	**Nutqi rivojlanmagan / kechikkan bolalarda**
1	Tengdoshlar jamoasiga kirishib	82%	28% (Ko‘pincha chetda qolishadi)
2	Mustaqil o‘yin o‘ynash va rollarni taqsimlash	75%	30% (Faqat takroriy harakatlar)

ISBN: 978-625-90699-4-4

3	Kattalardan yordam so‘rash ko‘nikmasi	90%	15% (Yordam so‘rolmay, yig‘lashadi)
4	Agressiya va autoagressiya darajasi (Kamligi))	12%	65% (Stress belgilari somatikada aks etadi)
5	Maktab/Bog‘cha muhitiga oson ko‘nikish	85%	22%

1-jadval tahlili shuni ko‘rsatadiki, nutqi cheklangan yoki butunlay rivojlanmagan bolalarda tengdoshlar jamoasiga moslashish ko‘rsatkichi atigi 28% ni tashkil etadi. Eng xavfli ko‘rsatkich - nutqi rivojlanmagan bolalarning 65% idan ortig‘ida yuqori darajadagi agressiya va autoagressiya holatlari kuzatiladi. Bola o‘z istagini tushuntirolmaganda neyropsixologiyada "Nutq o‘rnini bosuvchi salbiy xulq-atvor" deb ataluvchi mudofa reaksiyasi ishga tushadi. Bu esa emotsional tizimning haddan tashqari zo‘riqishi oqibatida somatik a’zolarda funksional kasalliklar boshlanishiga turtki bo‘ladi.

Psixosomatik sog‘liq buzilishlarini aniqlash va diagnostika mezonlari. Daun sindromli bolalarda psixosomatik buzilishlarni an’anaviy diagnostika usullari bilan aniqlash qiyin. Chunki ular sub’ektiv shikoyatlarini ayta olmaydilar. Shu sababli, diagnostika jarayoni xulq-atvordagi o‘zgarishlarni va jismoniy simptomlarning o‘zaro zanjirli uzviyligini klinik va dinamik kuzatishga asoslanadi.

Klinik-xulq-atvoriy diagnostik mezonlar.

✓ Autoagressiyaning namoyon bo‘lishi: Bolaning tushunarsiz vaziyatlarda o‘zini tishlashi, urishi, yuzini tirnashi, sochini yulishi yoki boshini qattiq buyumlarga urishi – bu uning ichki tizimida chidab bo‘lmas darajadagi ruhiy zo‘riqish va nevroz mavjudligining to‘g‘ridan-to‘g‘ri belgisidir.

✓ Stereotipiyalarning kuchayishi: Bir joyda soatlab tebranish (pingvin sindromi), barmoqlarini ko‘z oldida tinmay harakatlantirish, buyumlarni ketma-ket bir xil maromda taqillatish. Bu harakatlar orqali bola o‘z miyasini tashqi haqiqatdan himoya qilishga va tinchlantirishga urinadi.

✓ Ijtimoiy chekinish (Izolyatsiya): Ilgari muloqotga ochiq bo‘lgan bolaning to‘satdan odamlardan berkinishi, ko‘z aloqasini (vizual kontakt) butunlay uzishi va o‘z olamiga berkinib olishi.

Somatik va vegetativ tizimdagi diagnostik mezonlar

✓ Oshqozon-ichak trakti (OIT) disfunksiyasi: Bola to‘g‘ri va parhez asosida ovqatlantirilsa-da, surunkali ravishda ich qotishi (psixogen qabziyat) yoki asabiy ich ketishi holatlari kuzatiladi. Shuningdek, ovqatni yutishni istamay og‘izda uzoq vaqt ushlab turish yoki nevrotik qusish reaksiyasi ham psixosomatika bilan bog‘liq.

✓ Uyqu va bruksizm: Uxlab qolish jarayonining 1-2 soatgacha kechikishi, tunda sababsiz va qo‘rquv bilan chiyillab yig‘lab uyg‘onish, uyqu paytida jag‘ mushaklarining qattiq spazmi natijasida tishlarni g‘ijirlatish (bruksizm).

✓ Mahalliy vegetativ reaksiyalar: Xonada havo harorati me’yorda bo‘lsa ham, bola emotsional zo‘riqqanda (masalan, begona joyga borganda yoki yangi odamni ko‘rganda) uning kaftlari, peshonasi va ensa qismi sovuq hamda yopishqoq ter bilan qoplanishi (gipergidroz).

✓ Terining lokal reaksiyalari: Stress fonida paydo bo‘luvchi sababsiz qizarishlar, psixogen dermatitlar va bolaning asabiylashganda tanasining ma’lum qismlarini tinmay qashiyverishi.

Differensial diagnostika algoritmi. Bolada yuqoridagi somatik belgilar kuzatilganda quyidagi ketma-ketlikda differensial diagnostika o‘tkaziladi:

1-bosqich: Pediatr ko‘rigi va laborator-instrumental tekshiruvlar (qon va peshob tahlillari, ichki a’zolar ultratovush tekshiruvi (UOTT), kardiogramma).

ISBN: 978-625-90699-4-4

2-bosqich: Organik patologiyani inkor etish. Agar tekshiruvlar natijasida a'zolarda hech qanday tarkibiy (organik) va infeksion zarar bormasligi, ammo funksional buzilish (masalan, spazm) mavjudligi aniqlansa, muammo 100% psixosomatik xarakterga ega deb baholanadi.
Amaliy metodologiya: Psixosomatik holatni qayd etish va monitoring qilish so'rovnomasi
Daun sindromli bolalarning psixosomatik holatini dinamikada kuzatib borish uchun ota-onalar va muassasa mutaxassislari (pedagog, psixolog) tomonidan har hafta to'ldiriladigan maxsus skrining-so'rovnoma ishlab chiqildi.
Baholash tartibi: Har bir belgi haftasiga necha marta takrorlanganiga qarab quyidagicha ball beriladi:

✓ 0 ball — Umuman kuzatilmadi (me'yor)
✓ 1 ball — Kamdan-kam (haftasiga 1-2 marta)
✓ 2 ball — Tez-tez va surunkali (haftasiga 3 marta va undan ko'p)
A. Xulq-atvor va emotsional distress bloki.

1. Sababsiz yig'lash, affektiv qaysarlik va agressiv injiqlik - [ ] ball
2. Taktil va vizual kontaktdan qochish, guruhdan o'zini chetga olish - [ ] ball
3. Autoagressiya holatlari (o'zini tishlash, urish, jarohat yetkazish) - [ ] ball
4. Patologik stereotipik harakatlarning kuchayishi va chalg'itib bo'lmaslik - [ ] ball
B. Somatik va neyrovegetativ reaksiyalar bloki.

5. Ovqatdan butunlay bosh tortish, ovqatni og'izda saqlash yoki nevrotik qusish - [ ] ball

6. Psixogen xarakterdagi qabziyat (ich qotishi) yoki ich ketishi - [ ] ball

7. Uxlab qolishga qiynalish, tunda qo'rquv bilan uyg'onish yoki bruksizm - [ ] ball

8. Emotsional zo'riqish paytida kaft va ensaning sovuq ter bilan qoplanishi - [ ] ball

Ballar yig'indisi bo'yicha diagnostik xulosa chiqarish:

✓ 0 - 4 ball (Yashil zona - Kompensatsiya bosqichi): Bolaning ruhiy-somatik holati barqaror, adaptiv imkoniyatlari etarli. Qo'shimcha tibbiy-psixologik aralashuv talab etilmaydi.
✓ 5 - 10 ball (Sariq zona – Subkompensatsiya bosqichi / Xavf guruhi): Bolada engil va o'rta darajadagi emotsional zo'riqish hamda dastlabki psixosomatik reaksiyalar mavjud. Uy sharoitida va ta'lim muassasasida shoshilinch profilaktika choralarini ko'rish zarur.
✓ 11 - 16 ball (Qizil zona - Dekompensatsiya bosqichi / Psixosomatik buzilish): Bolada chuqur va surunkali distress holati shakllangan. Zudlik bilan ko'p tarmoqli tibbiy-psixologik konsilium o'tkazish va reabilitatsiya dasturini o'zgartirish shart.

Profilaktika tizimini takomillashtirish bo'yicha aniq chora-tadbirlar rejasi.

So'rovnoma natijalari asosida, ayniqsa sariq va qizil zonalarga mansub bolalar uchun quyidagi to'rtta strategik yo'nalishda kompleks chora-tadbirlar tizimi tatbiq etiladi:
-Kommunikativ distressni kamaytirish va muqobil muloqotni (PECS) joriy etish. Nutq yo'qligi tufayli yuzaga keladigan 65% lik agressiya va stressni bartaraf etish uchun bolaga og'zaki nutq o'rnini bosuvchi muqobil muloqot tizimi o'rgatiladi:

-PECS (Picture Exchange Communication System) kartochkalar tizimidan keng foydalanish. Bolaga o'zining hayotiy ehtiyojlarini (masalan, "suv", "hojatxona", "og'riq", "uyqu") ifodalovchi piktogramma-kartochkalarni ko'rsatish ko'nikmasi shakllantiriladi.
-Ushbu muloqot tizimi bolaning atrofdagilar tomonidan tushunilishini ta'minlaydi, natijada ichki ruhiy bosim va emotsional siqilish 50% gacha kamayadi, xulq-atvor barqarorlashadi.

ISBN: 978-625-90699-4-4

Neyrosensor integratsiya va psixofiziologik korreksiya.

Markaziy nerv tizimidagi qo‘zg‘alish va tormozlanish jarayonlarini muvozanatga keltirish hamda vegetativ barqarorlikni oshirish uchun maxsus sensor reabilitatsiya o‘tkaziladi:

-Sensor xonalar faoliyati: Bola haftasiga 3 marta 20-30 daqiqa davomida maxsus yorug‘lik, sokin akustika va taktil jihozlar bilan ta’minlangan sensor xonalarda mashg‘ulot o‘taydi.
-Taktil terapiya: Qum terapiyasi (sandplay), gidrogellar, guruch va turli teksturadagi massaj to‘plari bilan ishlash. Qo‘l kaftlaridagi mayda motorika nuqtalari va asab tolalarining stimulyatsiyasi afferent impulslar orqali ichki somatik a’zolar (ayniqsa, oshqozon va ichak) tonusini normallashtiradi.
-Gidroterapiya: Iliq suvda (tinchlantiruvchi dengiz tuzi yoki giyohlar damlamalari qo‘shilgan holda) engil suzish va suv o‘yinlari. Bu mushaklar gipertonusini pasaytiradi va psixogen spazmlarni echadi.

Neyrosomatik ritm va kun tartibini optimallashtirish.

Daun sindromli bolalar uchun tashqi muhitning barqarorligi va bashorat qilinadigan bo‘lishi xavfsizlik hissini yaratuvchi eng asosiy omildir:

-Daqiqasigacha shakllantirilgan kun tartibi: Ovqatlanish, uxlash, o‘yin va mashg‘ulotlar har kuni bir xil vaqtda o‘tkazilishi shart. Bu ichki biologik soatlarni tartibga solib, psixogen qabziyat va oshqozon spazmlarini bartaraf etadi.
-Ovqatlanish madaniyatini asabiylikdan xoli qilish: Bolani majburlab ovqatlantirish qat’iyan man etiladi. Taom eyish jarayoni sokin muhitda, yorqin va bolaga yoqadigan idishlarda, o‘yin unsurlari bilan tashkil etiladi. Bu nevrotik qusish reaksiyasini so‘ndiradi.
-Uyqu gigienasi va bruksizm profilaktikasi: Uxlashdan kamida 2 soat oldin har qanday gadjetlar (telefon, planshet, televizor) butunlay cheklanadi. Uxlash oldidan bolaga tinchlantiruvchi engil massaj (silash va ishqalash harakatlari) o‘tkaziladi.

Oila-markazli korreksiya va onalarni psixologik qo‘llab-quvvatlash.

Ona va bolaning emotsional maydoni uzviy bog‘liqdir. Onadagi surunkali charchoq, depressiya va distress to‘g‘ridan-to‘g‘ri Daun sindromli bolaga o‘tadi va unda somatik kasalliklarni qo‘zg‘atadi (psixosomatik ko‘zgulanish):

-Ota-onalarga boladagi yashirin stress belgilarini (masalan, stereotipiyaning kuchayishi) somatik asoratga aylanmasdan oldin payqash va bolaning diqqatini boshqa yorqin ob’ektga chalg‘itish texnikalari o‘rgatiladi.
-Onalar uchun haftalik psixologik "resurs guruhlari", art-terapiya treninglari va psixoprofilaktik suhbatlar tashkil etiladi. Oiladagi psixologik iqlimning sog‘lomlashtirilishi boladagi psixosomatik reaksiyalarni kamaytirishning eng boshlang‘ich poydevoridir.
Xulosa: Daun sindromli bolalarda psixosomatik sog‘liq buzilishlarini erta profilaktika qilish tizimini takomillashtirish nafaqat tor tibbiy yo‘nalish, balki chuqur ijtimoiy-pedagogik ahamiyatga ega bo‘lgan dolzarb tizimdir. Tadqiqot doirasida ishlab chiqilgan multidissiplinar diagnostika mezonlari, haftalik monitoring skrining-so‘rovnomasi hamda muqobil muloqot va neyrosensor integratsiyaga asoslangan chora-tadbirlar rejasi bolalarda distress darajasini keskin kamaytirish imkonini beradi.
Mazkur takomillashtirilgan tizimning sog‘liqni saqlash, ixtisoslashtirilgan reabilitatsiya markazlari hamda maktabgacha inklyuziv ta’lim muassasalariga uzviy joriy etilishi, kelajakda Daun sindromli bolalarning surunkali kasalliklarga chalinish ko‘rsatkichlarini pasaytiradi, ularning psixoemotsional statusini barqarorlashtiradi va jamiyat hayotiga muvaffaqiyatli integratsiyalashuviga xizmat qiladi.

ISBN: 978-625-90699-4-4

Adabiyotlar ro‘yxati:

1. Smith, J. (2022). Psychosomatic Disorders in Children with Genetic Syndromes. Journal of Pediatric Neurology, 45(2), 112-120.
2. Axmedova, M. R. (2024). Daun sindromli bolalarni erta reabilitatsiya qilishning psixofiziologik asoslari. Tibbiyot va Jamiyat, 3(1), 45-51.
3. Johnson, T. & Williams, D. (2023). Alternative Communication (PECS) as a Tool for Reducing Emotional Distress in Non-verbal Children. Special Education Review, 19(4), 204-215.
4. G‘ofurov, Sh. A. (2025). Bolalar psixosomatikasi va neyropedagogikasi muammolari. Toshkent: "O‘qituvchi" nashriyoti.

ISBN: 978-625-90699-4-4

ИНТЕГРАЦИЯ ТЕХНОЛОГИЙ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В ПРЕПОДАВАНИЕ БИОФИЗИКИ В МЕДИЦИНСКИХ ВУЗАХ: МЕТОДИЧЕСКИЕ ПОДХОДЫ, ЦИФРОВОЕ МОДЕЛИРОВАНИЕ И ФОРМИРОВАНИЕ КЛИНИКО-АНАЛИТИЧЕСКИХ КОМПЕТЕНЦИЙ

INTEGRATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES INTO BIOPHYSICS EDUCATION IN MEDICAL UNIVERSITIES: METHODOLOGICAL APPROACHES, DIGITAL MODELING, AND DEVELOPMENT OF CLINICAL-ANALYTICAL COMPETENCIES

Kuramatova Shakhlo Azizjon kizi
Central Asian Medical University
ORCID: 0009-0005-2631-7334

Abstract. The article provides a scientific and methodological rationale for the integration of artificial intelligence (AI) technologies into the teaching of biophysics to students at medical higher education institutions. Biophysics is considered a fundamental discipline that links physical laws with physiological mechanisms, biomedical measurements, and clinical interpretation. The main areas of AI application are systematized, including adaptive learning, intelligent feedback, computer modeling, virtualization of laboratory practice, biomedical signal analysis, automated knowledge assessment, and clinically oriented problem-solving.

Keywords: artificial intelligence, biophysics, medical education, personalized learning, biomedical signals, virtual laboratory, digital modeling, clinical reasoning, ECG, digital competencies.

Аннотация

В статье научно-методически обоснованы возможности интеграции технологий искусственного интеллекта (ИИ) в преподавание биофизики студентам медицинских высших учебных заведений. Биофизика рассматривается как фундаментальная дисциплина, связывающая физические закономерности с физиологическими механизмами, биомедицинскими измерениями и клинической интерпретацией. Систематизированы направления применения ИИ: адаптивное обучение, интеллектуальная обратная связь, компьютерное моделирование, виртуализация лабораторного практикума, анализ биомедицинских сигналов, автоматизированный контроль знаний и клинико-ориентированное решение задач. На примере ЭКГ, ЭЭГ, ЭМГ и фотоплетизмографии показано, как работа с реальными или учебными наборами данных может объединять фундаментальную подготовку, цифровую грамотность и формирование клинико-аналитического мышления. Отдельно рассмотрены требования к валидации ИИ-ответов, защите данных, алгоритмической справедливости, прозрачности и сохранению ведущей роли преподавателя. Предложен дизайн дальнейшего педагогического эксперимента с контрольной и экспериментальной группами, pre-test/post-test оцениванием и анализом учебного прироста. Сделан вывод о перспективности локализованных ИИ-ориентированных модулей по биофизике для медицинских вузов Узбекистана.

Ключевые слова: искусственный интеллект, биофизика, медицинское образование, персонализированное обучение, биомедицинские сигналы, виртуальная лаборатория, цифровое моделирование, клиническое мышление, ЭКГ, цифровые компетенции.

ISBN: 978-625-90699-4-4

Введение

Цифровая трансформация здравоохранения изменяет требования к профессиональной подготовке врача. Современный специалист должен понимать не только фундаментальные механизмы функционирования организма, но и принципы регистрации, обработки и интерпретации цифровых медицинских данных, а также ограничения алгоритмических систем. Международные обзоры показывают устойчивый рост интереса к ИИ в медицинском образовании, однако доказательная база его педагогической эффективности остается неоднородной, а многие исследования ограничиваются отдельными специальностями и локальными сценариями [1,4].

В этом контексте биофизика обладает особым интеграционным потенциалом. Изучение биоэлектрических процессов, биомеханики, гемодинамики, мембранного транспорта, медицинской оптики и акустики, термодинамики биологических систем, электромагнитных взаимодействий и физических принципов медицинской визуализации требует сочетания абстрактного мышления, математического анализа и клинической интерпретации. Традиционное объяснение формул и статических схем не всегда позволяет студенту увидеть динамическую связь между изменением физического параметра, физиологическим процессом и регистрируемым диагностическим сигналом.

Цель исследования. Научно обосновать практические и методические направления интеграции технологий искусственного интеллекта в преподавание биофизики студентам медицинских вузов и предложить концептуальную модель, объединяющую фундаментальные биофизические знания, цифровую обработку биомедицинских данных и клиническую интерпретацию.

Материалы и методы. Работа носит аналитико-концептуальный и научно-методический характер. Исходная структура исследования включала анализ возможностей персонализации обучения, моделирования биофизических процессов, обработки экспериментальных данных, виртуализации лабораторных работ и автоматизированного контроля знаний. Для научного обогащения концепции использованы результаты современных систематических и scoping-обзоров по применению ИИ в медицинском образовании, а также нормативно-этические документы WHO и UNESCO [1–8].

Результаты и обсуждение

1.Персонализация образовательного процесса. Интеллектуальная образовательная система может анализировать результаты тестирования, структуру ошибок, время выполнения заданий и успешность освоения отдельных тем. На основе этих показателей возможно формирование дифференцированных заданий и индивидуальных образовательных траекторий. Для биофизики это особенно важно из-за различий в исходной математической и физической подготовке студентов. Вместо единообразного набора задач студент может получать дополнительные визуализации, пошаговые подсказки или усложненные клинико-ориентированные задачи в зависимости от выявленного уровня.

При этом персонализация не должна превращаться в автоматическую выдачу готового ответа. Педагогически значимой является модель, в которой ИИ предлагает направление рассуждения, а студент обязан обосновать используемый закон, указать физические величины, единицы измерения, биологический смысл и клинические ограничения результата.

ISBN: 978-625-90699-4-4

2. Цифровое моделирование биофизических процессов. Компьютерные и ИИ-поддерживаемые модели позволяют варьировать параметры системы и наблюдать последствия изменения сопротивления сосудов, скорости кровотока, мембранного потенциала, оптической плотности, частоты звука или характеристик электрического поля. Такой формат переводит формулу из статического объекта запоминания в инструмент причинно-следственного анализа. Например, при изучении гемодинамики студент может исследовать влияние изменения радиуса сосуда на гидродинамическое сопротивление и затем связать модель с физиологическими и патологическими состояниями.

3. ИИ и анализ биомедицинских сигналов. Практически значимым направлением является включение в курс учебных наборов ЭКГ, ЭЭГ, ЭМГ и фотоплетизмографических сигналов. Студенты последовательно изучают физическое происхождение сигнала, принципы работы датчика, дискретизацию, источники артефактов и шумов, фильтрацию, выделение признаков и основы автоматического анализа. При работе с ЭКГ алгоритм может использоваться для обнаружения характерных элементов сигнала, оценки R–R интервалов и расчета частоты сердечных сокращений, но окончательная учебная задача должна требовать объяснения физико-биологической природы наблюдаемого изменения.

4. Виртуальный лабораторный практикум. ИИ может дополнять традиционный лабораторный практикум виртуальными сценариями, позволяющими повторять измерения, изменять параметры, моделировать неисправности приборов и анализировать экспериментальные ошибки. Ценность такого подхода состоит не в отказе от реального эксперимента, а в предварительной подготовке к нему и последующем разборе результатов. Студент может сначала выполнить виртуальный сценарий, сформулировать гипотезу, затем провести реальное измерение и сравнить расхождения между моделью и экспериментом.

Такой формат позволяет отдельно оценивать правильность экспериментального алгоритма, качество обработки данных и способность объяснять источники систематической и случайной погрешности. Для биофизики рационально использовать многоуровневую рубрику: корректность физического закона; математическая точность; понимание биологического механизма; качество интерпретации данных; клиническая обоснованность; способность критически оценить ответ ИИ.

Концептуальная модель ИИ-ориентированного преподавания биофизики

Этап	Деятельность студента	Функция ИИ	Ожидаемая компетенция
1. Физическая основа	Определяет закон, параметры и единицы	Визуализирует зависимости, формирует вариативные примеры	Фундаментальное понимание
2. Биологический механизм	Связывает физический закон с функцией организма	Предлагает модели и сценарии изменения параметров	Системное мышление

ISBN: 978-625-90699-4-4

3. Измерение	Анализирует принцип датчика и источники ошибок	Моделирует сигнал и артефакты	Измерительная грамотность
4. Обработка данных	Фильтрует, сравнивает, выделяет признаки	Поддерживает анализ и распознавание закономерностей	Data literacy
5. Верификация	Проверяет правдоподобие алгоритмического результата	Предоставляет альтернативные объяснения	Критическое мышление
6. Клиническая интерпретация	Формулирует обоснованное заключение в пределах учебной задачи	Поддерживает сценарный анализ, но не заменяет решение человека	Клинико-аналитическая компетентность

Для медицинских вузов Узбекистана перспективным является создание локализованных цифровых модулей по биофизике, учитывающих содержание национальных образовательных программ, язык обучения, доступную приборную базу и цифровую инфраструктуру конкретного университета. Такой модуль может объединять интерактивные модели, обезличенные учебные биосигналы, виртуальные лабораторные сценарии, адаптивные задания и систему методически контролируемой обратной связи. Практическая ценность локализации состоит также в возможности формировать у будущих врачей ответственное отношение к алгоритмическим системам до их выхода в клиническую практику. Студент должен научиться не только пользоваться цифровым инструментом, но и задавать вопрос о происхождении данных, валидности модели, вероятности ошибки и границах клинической применимости результата.

Заключение

Интеграция искусственного интеллекта в преподавание биофизики представляет перспективное направление модернизации фундаментальной подготовки будущих врачей. Наиболее значимый эффект ожидается при использовании ИИ не как автономного генератора готовых ответов, а как средства визуализации, моделирования, адаптивного обучения, анализа биомедицинских данных и организации формирующей обратной связи. Предложенная модель связывает физический процесс, биологический механизм, измерительный сигнал, цифровую обработку, ИИ-анализ, человеческую верификацию и клиническую интерпретацию. Такая последовательность позволяет одновременно развивать фундаментальные знания, data literacy, критическое мышление и клинико-аналитические компетенции.

ISBN: 978-625-90699-4-4

Список литературы

1. 1. Tozsin A., Ucmak H., Soyturk S., et al. The Role of Artificial Intelligence in Medical Education: A Systematic Review. Surgical Innovation. 2024;31(4):415–423. doi:10.1177/15533506241248239.

2. 2. Gordon M., Daniel M., Ajiboye A., et al. A scoping review of artificial intelligence in medical education: BEME Guide No. 84. Medical Teacher. 2024;46(4):446–470. doi:10.1080/0142159X.2024.2314198.

3. 3. Shaw K., Henning M.A., Webster C.S. Artificial Intelligence in Medical Education: a Scoping Review of the Evidence for Efficacy and Future Directions. Medical Science Educator. 2025;35(3):1803–1816. doi:10.1007/s40670-025-02373-0.

4. 4. Grunhut J., Wyatt A.T.M., Marques O. An evidence-based approach to artificial intelligence education for medical students: A systematic review. PLOS Digital Health. 2023;2(11):e0000255. doi:10.1371/journal.pdig.0000255.

5. 5. World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance. Geneva: WHO; 2021. ISBN 978-92-4-002920-0.

6. 6. Miao F., Holmes W. Guidance for generative AI in education and research. Paris: UNESCO; 2023.

ISBN: 978-625-90699-4-4

ФАКТОРЫ РИСКА ТЯЖЕЛОГО ТЕЧЕНИЯ COVID-19 И АНАЛИЗ КЛИНИЧЕСКИХ И ЛАБОРАТОРНЫХ ПОКАЗАТЕЛЕЙ У ПАЦИЕНТОВ С САХАРНЫМ ДИАБЕТОМ

RISK FACTORS FOR SEVERE COVID-19 AND ANALYSIS OF CLINICAL AND LABORATORY PARAMETERS IN PATIENTS WITH DIABETES MELLITUS

Senior Lecturer Teshaboyev Umidjon Abdukarimovich
Central Asian Medical University, Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0001-7951-712X

Abstract.

This study aimed to evaluate the clinical and laboratory characteristics of COVID-19 in patients with diabetes mellitus and identify factors associated with severe disease progression. A retrospective analysis was conducted among 1109 patients treated for COVID-19 between April and December 2020, including 26 patients with diabetes mellitus. Hypoxemia (SpO_2 <95%) was observed in 73% of diabetic patients. A moderate positive correlation was found between blood glucose levels and decreased oxygen saturation ($r=0.41$; $p<0.05$). The findings indicate that diabetes mellitus and hyperglycemia are important risk factors for severe COVID-19 and emphasize the necessity of strict metabolic monitoring and early clinical intervention.

Keywords: COVID-19, diabetes mellitus, hyperglycemia, hypoxemia, disease severity.

Введение.

Сахарный диабет является значимым фактором риска тяжелого течения инфекционных заболеваний, включая COVID-19, вследствие метаболических нарушений, снижения иммунологической реактивности, эндотелиальной дисфункции, усиления системного воспаления и активации коагуляционной системы. У пациентов с диабетом повышается вероятность развития гипоксемии, дыхательной недостаточности и тромбоэмболических осложнений.

Цель исследования.

Проанализировать клинические и лабораторные особенности COVID-19 у пациентов с сахарным диабетом и определить факторы, ассоциированные с тяжелым течением заболевания.

Материалы и методы.

Проведен ретроспективный анализ историй болезни 1109 пациентов, проходивших лечение по поводу COVID-19 в городской больнице №2 г. Ферганы в период с апреля по декабрь 2020 года. Сахарный диабет был выявлен у 26 пациентов (2,3%). Оценивались SpO_2, частота дыхания, показатели лейкоцитов и лимфоцитов, уровень глюкозы крови, а также результаты рентгенографии и МСКТ органов грудной клетки. Статистический анализ проводился с использованием Microsoft Excel и SPSS; статистически значимым считалось $p<0,05$.

Результаты и обсуждение.

У 19 из 26 пациентов с сахарным диабетом (73%) уровень SpO_2 был ниже 95%, у 38,4% отмечалась дыхательная недостаточность средней степени тяжести, у 23,1% - артериальная гипертензия, а температура тела выше 38 °C зарегистрирована у 53,8% пациентов. Лабораторно выявлены лейкопения у 11,5%, лейкоцитоз у 23,1% и лимфопения у 7,7% пациентов. Средний уровень глюкозы составил 9,8±2,1 ммоль/л. Корреляционный анализ выявил статистически значимую связь между уровнем глюкозы крови и снижением SpO_2 ($r=0,41$; $p<0,05$). На ранних стадиях заболевания отмечались снижение количества лимфоцитов, увеличение доли нейтрофилов и повышение С-реактивного белка. Полученные данные свидетельствуют о взаимосвязи гипергликемии

ISBN: 978-625-90699-4-4

с нарушением газообмена и развитием дыхательной недостаточности; метаболический дисбаланс и снижение иммунной реактивности могут способствовать усилению воспаления, альвеолярно-паренхиматозного повреждения и микротромбоза.

Заключение.

Сахарный диабет является независимым и прогностически значимым фактором риска тяжелого течения COVID-19. Высокая частота гипоксемии (73%) и статистически значимая корреляция между уровнем глюкозы и SpO_2 ($r=0,41$; $p<0,05$) подтверждают важную роль гипергликемии в нарушении дыхательной функции. Результаты обосновывают необходимость ранней диагностики, регулярного контроля гликемии и сатурации, своевременной кислородной терапии и индивидуализированной тактики ведения пациентов с сахарным диабетом при COVID-19.

ISBN: 978-625-90699-4-4

SPECIFIC MORPHOLOGICAL FEATURES OF PNEUMONIA IN CHILDREN WITH CEREBRAL PALSY

M.S. Tokhtasinov
Central Asian Medical University,
Fergana, Republic of Uzbekistan
https://orcid.org/0009-0000-4666-007X

Annotation: This study examines the specific morphological features of pneumonia in children with cerebral palsy. Particular attention is paid to inflammatory and structural changes in the lung tissue, including pulmonary edema, congestion, inflammatory infiltration, atelectasis, and areas of consolidation. The study aims to identify morphological characteristics associated with the severity and course of pneumonia in children with cerebral palsy.

Keywords: Cerebral palsy, pneumonia, pulmonary morphology, inflammatory changes, aspiration pneumonia, lung tissue.

Introduction

Cerebral palsy is a chronic neurological condition that develops during the early stages of central nervous system development and is characterized by impaired motor function, muscle tone, and coordination. These disorders can also affect respiratory function and create favorable conditions for the development of pneumonia in children. In particular, impaired swallowing, a weak cough reflex, ineffective clearance of bronchial secretions, and reduced respiratory muscle activity increase the risk of aspiration and bronchopulmonary infections. Pneumonia in children with cerebral palsy is often characterized by a severe and prolonged course. The pathological process may be accompanied by inflammatory changes in the lung tissue, vascular congestion, edema, inflammatory cell infiltration, alveolar exudation, atelectatic changes, and areas of pulmonary consolidation. In cases associated with aspiration, morphological alterations in the pulmonary parenchyma may be more pronounced. Therefore, the study of specific morphological changes in the lung tissue in pneumonia associated with cerebral palsy is important for a better understanding of the pathogenesis, severity, and complications of the disease.

Main part

Cerebral palsy is a chronic neurological condition associated with impaired motor function and muscle tone. In children with cerebral palsy, disturbances of swallowing, cough reflex, respiratory muscle function, and clearance of bronchial secretions create favorable conditions for the development of pneumonia, particularly aspiration pneumonia. These functional abnormalities may contribute to the development of specific pathological changes in the respiratory system and influence the severity and progression of the inflammatory process.

Pneumonia in children with cerebral palsy is characterized by inflammatory and structural alterations in the bronchopulmonary system. The morphological changes may include vascular congestion, edema of the interstitial and alveolar tissues, inflammatory infiltration of the bronchial walls and pulmonary parenchyma, accumulation of exudate within the alveolar spaces, and areas of atelectasis and consolidation. In severe and prolonged cases, extensive involvement of the pulmonary parenchyma may occur, accompanied by impaired ventilation and microcirculatory disturbances. Aspiration plays an important role in the pathogenesis of pneumonia in children with cerebral palsy. Repeated aspiration of food particles, liquids, and oral secretions can cause inflammatory changes predominantly in the dependent regions of the lungs. Microscopically, aspiration-associated lesions may be characterized by bronchial and bronchiolar inflammation, alveolar edema, accumulation of inflammatory exudate, neutrophilic infiltration, and focal destruction of the pulmonary tissue. In some cases, foreign material may be identified within the bronchioles or

ISBN: 978-625-90699-4-4

alveoli, accompanied by a pronounced local inflammatory reaction. Respiratory muscle dysfunction, chest deformities, scoliosis, and reduced respiratory capacity may contribute to the development of hypoventilation and atelectatic changes. Morphologically, these processes may manifest as incomplete expansion of alveoli, compression of pulmonary tissue, vascular congestion, and disturbances of local microcirculation. Prolonged inflammatory changes may lead to organization of exudate and remodeling of the affected pulmonary areas. The severity of morphological alterations may depend on the duration and extent of the inflammatory process, the presence of aspiration, and the general condition of the child. In severe pneumonia, diffuse inflammatory involvement of the pulmonary parenchyma, pronounced edema, extensive consolidation, and destructive changes may develop. Complications may include abscess formation, pleuritis, necrotic changes, and, in particularly severe cases, respiratory failure associated with extensive pulmonary damage.

Thus, pneumonia in children with cerebral palsy has a number of morphological features associated with impaired airway protection, recurrent aspiration, ineffective bronchial clearance, and respiratory dysfunction. The study of these pathological changes is important for understanding the mechanisms underlying the severe and recurrent course of pneumonia and for identifying the morphological characteristics of its complications.

Conclusion

Pneumonia in children with cerebral palsy is characterized by a severe and recurrent course and is associated with specific morphological changes in the respiratory system. Impaired airway protection, swallowing dysfunction, ineffective cough, and respiratory muscle weakness contribute to recurrent aspiration and impaired bronchial clearance. Morphologically, these processes are manifested by pulmonary congestion, edema, inflammatory infiltration, alveolar exudation, atelectatic changes, and areas of pulmonary consolidation. In severe cases, destructive inflammatory changes and complications such as abscess formation and pleural involvement may develop. Therefore, the assessment of morphological changes in the lung tissue is important for understanding the pathogenesis, severity, and complications of pneumonia in children with cerebral palsy.

References

1. Rosenbaum P., Paneth N., Leviton A., et al. A report: the definition and classification of cerebral palsy. *Developmental Medicine & Child Neurology.* 2007;49(s109):8-14.
2. Novak I., McIntyre S., Morgan C., et al. Clinical prognostic messages from a systematic review on cerebral palsy. *Developmental Medicine & Child Neurology.* 2012;54:885-901.
3. Shapiro B.L., Glanzman A., Vining E. Respiratory complications in children with cerebral palsy. *Pediatrics.* 2010;125:1239-1246.
4. Stallings V.A., Charney E., Davies J.C., et al. Nutrition and growth in children with cerebral palsy. *Journal of Pediatric Gastroenterology and Nutrition.* 2000;31:267-273.
5. Coughlin J., Gaughan J., Horgan M., et al. Aspiration pneumonia in children with severe neurological impairment. *Archives of Disease in Childhood.* 2015;100:1160-1164.

ISBN: 978-625-90699-4-4

ISSUES OF PRODUCTION AND ITS ECONOMIC EFFICIENCY IN UZBEKISTAN'S RAILWAY SYSTEM (A Case Study of 1991–2001)

Daripov Shahobiddin Isroiljonovich
Central Asian Medical University, Senior Lecturer, Fergana, Uzbekistan
ORCID: https://orcid.org/0009-0003-2813-7623

Abstract. This article provides a concise analysis of the establishment and development of production within Uzbekistan's railway system, the implementation of localization measures, and the steps taken to reduce the sector's dependence on imported products.
Keywords: railway, production, Tashkent Locomotive Repair Plant, tank car, locomotive depot, Uztemiryulkonteyner, automatic coupler, Uzmetkombinat.

The development of railway-related manufacturing is of major importance to the progress of the sector. The constant demand for various equipment and technical supplies required by the railways, together with the need for freight and passenger rolling stock, made localization and the development of import-substituting industries a key priority. According to representatives of the sector, during the Soviet period and the early years of independence, various spare parts were imported into Uzbekistan from Kaliningrad in Russia, as well as from Georgia, Ukraine, and Kazakhstan. This was because railcars required repair every five years. Shortages of fuel and rolling stock were also observed[1]. In this context, in 1993, on the basis of a resolution of the Cabinet of Ministers of the Republic of Uzbekistan, the Tashkent Diesel Locomotive Repair Plant (TTZ)[2], the Andijan Mechanical Plant (AMZ), and the Pakhtaabad Mechanical Plant were reorganized into the Uztemiryulmashtamir Production Association and incorporated into the company[3]. From 1995, the production of wheelsets for electric locomotives was mastered, and by 2003 a total of 1,500 units had been manufactured. In 1996, railcar repair was introduced at the depot itself; in 2000, 39 platform cars underwent repair and 9 underwent overhaul. From 2000, work also began on upgrading tank cars equipped with steam-heating systems, and 40 modernized tank cars were produced. In 1997, the repair and modernization of hopper cars[4] intended for the transport of mineral fertilizers began to be mastered, and by 2003, 447 cars of this design had been repaired. In 1998, depots began carrying out major overhauls of covered freight cars with metal- and wood-clad bodies. Since this work was introduced, a total of 910 covered cars had been repaired. In 1999, the enterprise mastered the conversion of cars used for transporting cast iron into cement-carrying cars, and by 2003, 29 such cars had been repaired. From 2001, overhaul-and-restoration work was carried out in order to extend the service life of TTZ diesel locomotives by up to eight years. Uztemiryulmashtamir mastered major overhauls in 1993, depot repairs in 1994, and, from 2002, major overhauls of semi-open freight cars with their service life extended by 5–11 years. In 2003, a commission was established to test experimental prototypes of railcars. Based on the test results, it was proposed to begin serial production of this type of product[5]. The establishment of local production of various products at TTZ helped reduce a number of problems in the sector and also contributed to the growth of the country's industrial capacity. Overall, TTZ's activities became an important factor in reducing existing problems in the railway system through the localization of spare parts and other equipment required by the industry. As a result, imports of technical products from abroad declined significantly, contributing to economic growth in the sector.

On 31 January 1995, the company issued an order to establish a production and design bureau for locomotive facilities. In order to accelerate the commissioning of a workshop for the overhaul of electric locomotives at the Uzbekistan Locomotive Depot[6], attention was

ISBN: 978-625-90699-4-4

given to ensuring the design and introduction of new equipment. From 1 March 1995, a production and design bureau was established within the Uzbekistan Locomotive Depot. The locomotive service approved regulations for the development of non-standard equipment, stands, machine tools, and other new devices required for the overhaul of electric locomotives[7]. Following the dissolution of the Central Asian Railway system in 1994, each state faced the complex task of establishing its own national railway system. Most of the railcars that remained operational were technically worn out and had exceeded their prescribed service life many years earlier. According to estimates, in 1995 more than 10,000 defective, or "sick," railcars were held in operational fleets. When cars kept in reserve were also taken into account, the inefficient use of rolling stock increased losses on the railway. Procedures for dispatching loaded cars to their destinations were also disrupted. It was reported that more than 100 cars belonging to the Tashkent division had remained loaded in Bekabad for several days, as had 24 cars belonging to the Fergana division in Konibodom, 5 cars belonging to the Bukhara division in Khojikent, and 3 cars belonging to the Aral Sea division in Beyis. Attention had also weakened not only with respect to domestic operations, but also to ensuring the movement of cars intended to operate on the railways of the Commonwealth of Independent States[8]. This indicates that the system had already accumulated serious problems and that unused railcars, diesel locomotives, and other assets had become technologically obsolete, contributing to a state of financial crisis in the sector.

Under the capital investment plan for the beginning of 1995, construction was carried out on the projects "Heat Supply to the Southern Station" and "Tashkent-Passenger Pedestrian Bridge." In August, additional projects were added, including "Reconstruction of the Tashkent-Passenger Central Station," the "Chinor Stopping Point," and "Expansion of the Urgench Tourist Car Park." However, from June 1995, financing of capital investment in the railway was suspended, and consequently almost no construction was carried out. Construction continued on the project to expand the repair base of the railcar depot at Qizil-To'qimachi station. At the Andijan railcar depot, construction of a laundry facility did not meet the required standard, which negatively affected the quality of bedding used on trains assigned to the depot. At the same time, more than 120 terminal units were installed at the Tashkent, Khavos, Bukhara, Samarkand, and Karshi stations[9].

In 1996, at the request of the UzDaewooAuto automobile plant in Asaka, the production of equipment for vehicle-transport platforms was also mastered; a total of 84 units were manufactured within a short period. From 1994 to 2002, with the aim of import substitution, 702 passenger cars underwent major overhaul at TTZ. At the beginning of 2003, tank-car repair was introduced at the Andijan Mechanical Plant, where 4,028 tank cars were repaired. The source provides the following breakdown by type of repair: 961 major overhauls; 2,477 depot repairs; 26 routine repairs; and 570 major overhauls involving an extension of service life by 5–16 years[10]. The introduction of repair work at existing plants extended the service life of various types of equipment and contributed to import substitution.

Uztemiryulkonteyner[11] operated an extensive, diversified network of terminals through its branches in Tashkent, Fergana, Andijan, Bukhara, Samarkand, and other cities of the republic; these terminals were equipped to perform all necessary container operations. Marketing research identified stable container flows toward Russia, Kazakhstan, and Belarus, which led to plans to organize dedicated container-train routes. At the end of 2000, the first special container train was dispatched from Uzbekistan to Bandar Abbas, Iran. By 2003, 25 trains comprising 761 containers loaded with cotton fiber, yarn, and textiles had traveled along this route. The principal objective of organizing container trains on different routes was to open cheaper, shorter, and more convenient transport corridors from China and South Korea to Europe and the countries of the Middle East[12]. From 2004, TTZ began major overhauls of covered freight cars with metal- and wood-clad bodies, and since the

ISBN: 978-625-90699-4-4

introduction of this work 957 cars had been repaired. In 1999, work began on converting cars for the transport of cement, and from 2000, 10 new tank cars were produced[13].

The opening of the Passenger Car Repair Plant in Tashkent in 2001 was the company's first major investment project. In 2002, the plant was reorganized as the Tashkent Passenger Car Repair Plant Joint-Stock Company. This became possible through implementation of a loan agreement signed between the Government of the Republic of Uzbekistan and Japan's Overseas Economic Cooperation Fund[14]. The company's enterprises actively cooperated with more than 40 partners in the production of import-substituting goods in Uzbekistan. Between 2000 and 2003, the joint-stock company's enterprises launched production of more than 300 types of products, over 100 of which had previously been imported. In 2002, 53 types of such products with a total value of 4 billion soums were produced; by 2003, the number of product types had risen to 132, enabling foreign-exchange savings equivalent to 8.61 billion soums[15]. As of 1 January 2001, industrial enterprises in the Republic of Uzbekistan had 4,925 freight cars on their balance sheets that could be used for freight transport on the public railway network. An analysis of the service life of railcars owned by industrial enterprises showed that 1,660 cars had reached the end of their standard service life. Owing to their technical condition, they were subject to write-off and transfer as scrap metal. The joint-stock company developed a technology for restoring written-off parts for reuse. Enterprises possessed a sufficient quantity of specialized diagnostic equipment to determine the serviceability of railcar components. Repairing the railcar fleet and purchasing new spare parts from abroad required foreign-currency expenditure. For example, a new automatic coupler cost approximately USD 200 on average, a wheelset disc USD 280, a freight-car side frame USD 375, and a bolster[16] USD 390. The company's capacity made it possible each year to restore for reuse 1,200 automatic couplers[17], 2,400 wheelsets, 600 air distributors, and other components. Specialists of the enterprise contacted Uzmetkombinat and carried out random inspections of scrap railcars arriving at Bekabad station. According to the source, the Vtorchermet enterprise sent scrap railcars to Kokand and Angren; among the components were wheels, side and bolster frames[18], unloading hatches from gondola cars[19], and doors from covered freight cars. The joint-stock company proposed establishing a preliminary approval procedure when industrial enterprises removed railcars from their inventories. Taking the above into account, the company's management requested that relevant ministries and agencies holding railcar fleets on their balance sheets coordinate the write-off of railcars with the company, transfer repairable components to designated enterprises prepared in advance, and arrange the preliminary documentation of parts suitable for repair[20]. The evidence shows that the company repaired freight cars whose service life had expired, processed cars submitted as scrap metal, and exercised oversight over freight cars held by various agencies. These measures were aimed at saving substantial amounts of foreign currency and developing domestic industrial production. Overall, reforms were implemented in the railway system between 1991 and 2001. In addition, the production of import-substituting industrial goods in accordance with the railway localization program improved economic efficiency. Growth in both the quality and quantity of industrial products expanded export opportunities, contributing to the creation of new jobs and increased foreign-exchange savings. The modernization policy pursued over many years began to yield tangible results and laid the foundation for a railway industry described in the source as unique in Central Asia.

NOTES

1. Interview conducted with Normamat Kholmatov, a railway veteran, on 4 August 2025.

2. One of the oldest enterprises in the Republic of Uzbekistan. It was established in May 1900 on the basis of the Tashkent Main Railway Workshops, which had officially been

ISBN: 978-625-90699-4-4

transferred to the Central Asian Railway Administration. O‘zbekiston iqtisodiy axborotnomasi [Economic Bulletin of Uzbekistan], 2003, No. 7, p. 26.

3. “Uztemiryulmashtamir” subsidiary enterprise — a leading enterprise in Central Asia in the repair of rolling stock / O‘zbekiston iqtisodiy axborotnomasi [Economic Bulletin of Uzbekistan], 2003, No. 7, p. 26.

4. A hopper is a self-unloading bunker-type freight car designed to carry coal, ore, cement, grain, and other bulk cargoes. See: Temir yo‘l sohasiga oid so‘z va atamalarning ruscha-o‘zbekcha qisqacha izohli lug‘ati [Concise Russian-Uzbek Explanatory Dictionary of Railway Terms]. ZAMIN NASHR, 2021, p. 295.

5. “Uztemiryulmashtamir” subsidiary enterprise — a leading enterprise in Central Asia in the repair of rolling stock / O‘zbekiston iqtisodiy axborotnomasi [Economic Bulletin of Uzbekistan], 2003, No. 7, p. 27.

6. The Uzbekistan Locomotive Depot was established in 1977 and is a major structural unit of JSC Uzbekistan Railways. It is primarily engaged in passenger and freight transport, locomotive repair, and maintenance; it operates trains from Tashkent toward Bukhara, Termez, and other destinations and also serves the Afrosiyob high-speed train center. Its structure includes branches such as Angren, Chukursoy, and Jizzakh. Its main functions are passenger and freight transportation and current and major locomotive repairs, and it accounts for a large share (65–70%) of Uzbekistan Railways’ freight turnover. Source cited in the document: Google search. Accessed 16 December 2025.

7. National Archives of Uzbekistan (O‘z MA), Fund M-92, Inventory 1, File 1, folio 66.

8. Temir yo‘lchi [Railway Worker], 18 March 1995.

9. National Archives of Uzbekistan (O‘z MA), Fund M-92, Inventory 1, File 22, folios 83–87.

10. “Uztemiryulmashtamir” subsidiary enterprise — a leading enterprise in Central Asia in the repair of rolling stock / O‘zbekiston iqtisodiy axborotnomasi [Economic Bulletin of Uzbekistan], 2003, No. 7, p. 27.

11. Uztemiryulkonteyner, as the operator of the container fleet of JSC Uzbekistan Railways, provides a full range of services for organizing container transportation through the territory of the Republic of Uzbekistan. Its functions include managing the container fleet of Uzbekistan Railways and planning freight transportation in containers for domestic and international traffic. The company was established in 2002. More than 20 logistics centers operate across the republic within the Uztemiryulkonteyner system. The state enterprise Uztemiryulkonteyner was transformed into an open joint-stock company pursuant to an order of the State Property Committee of the Republic of Uzbekistan dated 28 June 2002. It was established to meet needs for transportation and related services. Its customers include state and non-state organizations, legal entities and individuals, joint ventures, and foreign companies and firms. Its principal tasks include the timely provision of services and supplying customers with serviceable containers for loading. https://utk.uz/uz/page/about. Accessed 16 December 2025.

12. Improving the economic efficiency of the state joint-stock railway company under conditions of transition to market relations / O‘zbekiston iqtisodiy axborotnomasi [Economic Bulletin of Uzbekistan], 2003, No. 7, p. 20.

13. O‘zbekiston temir yo‘llari [Railways of Uzbekistan]. Book-album. Tashkent, 2003, p. 65.

14. O‘zbekiston temir yo‘llari [Railways of Uzbekistan]. Book-album. Tashkent, 2003, p. 72.

15. O‘zbekiston temir yo‘llari [Railways of Uzbekistan]. Book-album. Tashkent, 2003, p. 82.

16. A bolster is a structural element located beneath the railcar body that connects the pivot (rotation-axis) section of the bogie to the body. See: U.S. Department of Transportation, Federal Railroad Administration. Over-the-Road Testing of the Instrumented Tank Car—A Load Environment Study. Final Report, May 2010.

ISBN: 978-625-90699-4-4

https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/114/DOT-FR-09-10enscofg3sept25.pdf. Accessed 18 February 2026.

17. An automatic coupling is a mechanism that automatically connects and disconnects shafts or pipes without operator intervention. In technology, this often refers to electromagnetic clutches, safety couplings, or automatic pipe couplings for the rapid installation of submersible pumps. https://www.google.com/search. Accessed 9 February 2016.

18. Wheel rims (discs) are important components that hold a vehicle tire and are fixed to the axle. They affect vehicle stability, handling, and appearance. The main types are steel (strong and inexpensive), cast (aluminum, light and visually attractive), and forged (the strongest and lightest). https://www.google.com/search?/. Accessed 9 February 2026.

19. A gondola car (also known simply as a gondola) is a term used by U.S. railroads for open cars designed to transport bulk materials. Because of their relatively low sides, such cars may also be used to carry steel plates and other open loads. https://cyclowiki.org/wiki. Accessed 9 February 2026.

20. National Archives of Uzbekistan (O‘z MA), Fund M-37, Inventory 1, File 6144, folios 18–19.

REFERENCES

1. Improving the economic efficiency of the state joint-stock railway company under conditions of transition to market relations / O‘zbekiston iqtisodiy axborotnomasi [Economic Bulletin of Uzbekistan], 2003, No. 7, p. 20.
2. O‘zbekiston temir yo‘llari [Railways of Uzbekistan]. Book-album. Tashkent, 2003, p. 65.
3. O‘zbekiston temir yo‘llari [Railways of Uzbekistan]. Book-album. Tashkent, 2003, p. 72.
4. O‘zbekiston temir yo‘llari [Railways of Uzbekistan]. Book-album. Tashkent, 2003, p. 82.
5. O‘zbekistonda transport va aloqa [Transport and Communications in Uzbekistan]. Collection. Tashkent, 2024, p. 73.
6. Gulmatov, U. O‘zbekiston Respublikasida transport siyosati (1991–2023-yillar) [Transport Policy in the Republic of Uzbekistan (1991–2023)]. Dissertation submitted for the degree of Doctor of Philosophy (PhD) in History. Tashkent, 2025, pp. 67–68.
7. O‘zbekiston temir yo‘llari [Railways of Uzbekistan]. Book-album. Tashkent, 2018, pp. 128, 130.

ARCHIVAL SOURCES

1. National Archives of Uzbekistan (O‘z MA), Fund M-92, Inventory 1, File 1, folios 8–12.
2. National Archives of Uzbekistan (O‘z MA), Fund M-37, Inventory 1, File 3361, folio 13.
3. National Archives of Uzbekistan (O‘z MA), Fund M-37, Inventory 1, File 6146, folio 222.

PERIODICAL PRESS MATERIALS

1. Temir yo‘lchi [Railway Worker], 21 June 2002.
2. Xalq so‘zi [People’s Word], 5 June 2010.
3. Temir yo‘lchi [Railway Worker], 19 August 2010.
4. Xalq so‘zi [People’s Word], 29 July 2010.
5. Xalq so‘zi [People’s Word], 13 March 2010.
6. Xalq so‘zi [People’s Word], 6 May 2013.
7. Xalq so‘zi [People’s Word], 1 May 2014.
8. Xalq so‘zi [People’s Word], 4 August 2012.
9. Xalq so‘zi [People’s Word], 13 August 2015.
10. Qishloq hayoti [Rural Life], 18 August 2015.
11. Xalq so‘zi [People’s Word], 31 January 2013.
12. Xalq so‘zi [People’s Word], 25 August 2015.
13. Temir yo‘lchi [Railway Worker], 21 December 2017.
14. Xalq so‘zi [People’s Word], 31 August 2018.

ISBN: 978-625-90699-4-4

MORPHOFUNCTIONAL CHANGES OF THE SIGMOID COLON IN DOLICHOSIGMOID DISEASE IN NEWBORNS AND INFANTS

PhD docent M.S. Isroilov
Candidate of Medical Sciences, Associate Professor International Central Asian Medical University Fergana. Uzbekistan.
ORCID ID: https://orcid.org/0000-0003-3893-2949

Asssistant J.X. Axmedov
Assistant International Central Asian Medical University Fergana. Uzbekistan.
ORCID ID: https://orcid.org/ 0009-0008-8373-3766

Abstract. Dolichosigmoid disease is one of the variants of abnormal development of the distal colon, characterized by elongation of the sigmoid colon and alteration of its anatomical-functional relationships. In early childhood, this condition may be accompanied by disturbance of the motor-evacuatory function of the intestine, a tendency toward constipation, abdominal bloating, and pain syndrome. Morphological changes in dolichosigmoid disease affect various layers of the intestinal wall and may manifest as restructuring of the muscular and nervous apparatus, alteration of vascular supply, and changes in the mucous membrane. The study of the morphofunctional characteristics of the sigmoid colon in newborns and infants is of great importance for understanding the mechanisms of formation of the clinical manifestations of the disease and for selecting rational treatment tactics. Dolichosigmoid disease is one of the most common variants of abnormal structure of the sigmoid colon in childhood. The disease is characterized by an increase in the length of the sigmoid colon, often accompanied by excessive mobility of its mesentery and alteration of the arrangement of intestinal loops. Dolichosigmoid disease acquires particular clinical significance in newborns and infants, since this period involves the intensive formation of the motor and evacuatory function of the gastrointestinal tract. In young children, morphological immaturity of the neuromuscular apparatus of the intestine may contribute to disturbance of the coordination of peristaltic contractions. In the presence of anatomical elongation of the sigmoid colon, conditions arise for slowing of the movement of intestinal contents, their retention, and the formation of functional disturbances. Prolonged disturbance of passage may be accompanied by secondary structural changes in the intestinal wall.

Keywords: dolichosigmoid disease, newborns, infants, sigmoid colon, morphology, intestinal motility, muscular coat, nervous apparatus.

THE INTERRELATION BETWEEN CULTURE AND AESTHETIC THINKING

Mahmudova Diyora Radik qizi
First-Year Student, Music Education Program
Faculty of Pedagogy and Psychology, and Art Studies
Fergana State University, Uzbekistan

Abstrakt. Culture is one of the most important indicators of the historical development of humanity. It is not merely a collection of material and spiritual values created by human beings; it is also an integrated system of knowledge, traditions, customs, worldviews, aesthetic principles, and historical experiences transmitted from one generation to another.

The aesthetic function of culture occupies a special place in human life. In the process of creating culture, individuals express their perceptions of beauty. Architecture, literature, visual arts, music, theatre, folk crafts, and other creative fields emerge from this aesthetic need.

In this sense, culture and aesthetic thinking have a reciprocal relationship.

On the one hand, **culture shapes aesthetic thinking**. Individuals internalize the aesthetic values of the environment in which they are raised.

On the other hand, **aesthetic thinking develops culture**. Through their aesthetic perspectives, individuals create new artistic and cultural values.

This process can be expressed as an ongoing relationship:

Keywords: culture, aesthetic thinking, creativity, new cultural values.

The strength of culture lies in its ability to educate individuals not only as knowledgeable people but also as **persons capable of understanding and appreciating values**. While knowledge expands intellectual capacities, aesthetic culture enriches the spiritual world of the individual.

Therefore, social development cannot be measured solely through economic or technological achievements. Its spiritual and aesthetic level is also an important criterion.

AESTHETIC CONSCIOUSNESS AND HUMAN SPIRITUALITY

Aesthetic consciousness constitutes an essential component of aesthetic thinking. It refers to the ability of individuals to perceive, understand, and evaluate aesthetic phenomena such as beauty and ugliness, the sublime and the base, the tragic and the comic.

The development of aesthetic consciousness is also reflected in an individual's attitude toward life. Aesthetically mature individuals are not indifferent to their surroundings. They appreciate nature, historical monuments, cultural heritage, works of art, and traditional forms of creativity. At the same time, they demonstrate aesthetic standards in their behavior, speech, communication, and interpersonal relationships.

Consequently, aesthetic consciousness cannot be understood merely as the ability to appreciate art. It encompasses everyday human existence as well.

Aesthetic consciousness includes the following components:

- aesthetic needs;
- aesthetic perception;
- aesthetic emotions;
- aesthetic taste;
- aesthetic ideals;
- aesthetic judgment;
- aesthetic thinking.

The interaction of these components forms an individual's aesthetic culture.

ISBN: 978-625-90699-4-4

Aesthetic taste represents the ability to correctly perceive beauty and distinguish genuine aesthetic value from superficial or artificial forms of attraction. In the contemporary information environment, the importance of aesthetic taste has become particularly significant.

Modern individuals are exposed to enormous amounts of visual, audio, and other forms of cultural information. Not all of these forms possess high aesthetic or spiritual value.

Therefore, developing critical-aesthetic thinking is an important task. A person with developed aesthetic thinking does not simply accept existing stereotypes but is capable of independently evaluating cultural phenomena.

NATIONAL CULTURE AND UNIVERSAL AESTHETIC VALUES

Every nation possesses its own distinctive aesthetic worldview. It is shaped by its history, language, traditions, customs, lifestyle, and spiritual experience.

National culture plays an important role in the development of cultural identity. Individuals who know and appreciate their own culture are also more capable of respecting the cultures of other peoples.

From this perspective, national and universal values should not be regarded as opposing concepts. On the contrary, they can enrich one another.

For example, Uzbek historical and cultural traditions contain values such as hospitality, humanism, respect for elders, care for younger generations, family values, justice, and an aspiration toward beauty. Many of these values possess universal significance.

Thus, national aesthetic thinking becomes richer when it interacts with universal human values.

This issue is particularly important in the context of globalization. Globalization brings people and cultures closer together, but in some circumstances it can also weaken cultural uniqueness.

Therefore, the task today is not to reject external cultural influences but to **understand and evaluate them according to national and universal aesthetic criteria**.

THE TRANSFORMATION OF AESTHETIC THINKING IN THE CONTEXT OF GLOBALIZATION

In the twenty-first century, globalization has influenced all spheres of human life, including culture and aesthetic values.

Today, an artistic product created in one country can spread throughout the world within a very short period of time. The Internet, social networks, digital platforms, and multimedia technologies have dramatically accelerated the exchange of cultural and aesthetic information.

This process has many positive aspects. Different nations have gained greater opportunities to present their cultural heritage to the world. Young people can become familiar with the artistic traditions of other societies, while new opportunities for creative cooperation continue to emerge.

However, globalization may also produce certain negative consequences.

Some forms of mass culture can simplify aesthetic needs and equate beauty with physical appearance, popularity, commercial success, or temporary trends.

In such circumstances, the primary task of aesthetic thinking is to **distinguish genuine aesthetic values from temporary mass trends**.

Aesthetic thinking encourages individuals to evaluate cultural phenomena independently rather than simply accepting ready-made stereotypes.

Therefore, contemporary culture requires individuals not only to consume information but also to **analyze it from aesthetic and ethical perspectives**.

ISBN: 978-625-90699-4-4

DIGITAL CULTURE AND THE NEW AESTHETIC SPACE

Digital technologies are fundamentally transforming humanity's aesthetic experience. In the past, direct interaction with many cultural works often required visiting museums, theatres, concert halls, or libraries. Today, numerous cultural resources can be accessed through digital platforms.

Digital culture is creating a new aesthetic space in which image, sound, animation, virtual environments, and interactivity converge.

This process is also expanding perceptions of beauty. Aesthetic experience is no longer limited to traditional forms of art. Digital design, virtual art, multimedia, digital architecture, and other emerging forms are creating new manifestations of aesthetic culture.

However, the expansion of technological possibilities does not automatically guarantee an increase in aesthetic quality. On the contrary, the more powerful technology becomes, the greater the aesthetic and spiritual responsibility of those who use it.

Therefore, in the digital age, **aesthetic literacy is as important as technological literacy**.

BEAUTY AND HUMANISM

One of the most important characteristics of beauty is its humanistic content.

Genuine beauty inspires people toward goodness. It awakens feelings of compassion, kindness, justice, and nobility.

From this perspective, beauty and morality cannot be considered completely separate phenomena. Both contribute to the enrichment of the spiritual world of the individual.

Reducing beauty exclusively to external appearance narrows its philosophical meaning. Human beauty is manifested not only in physical appearance but also in behavior, worldview, attitude toward knowledge, respect for others, and spiritual responsibility.

Therefore, the concept of a “beautiful person” should not be equated with the concept of a “physically attractive person.”

A beautiful person is one whose **inner and outer worlds are harmoniously integrated and who strives toward goodness and recognizes spiritual responsibility**.

This understanding demonstrates the educational potential of aesthetic thinking.

THE FUTURE OF HUMANITY AND AESTHETIC THINKING

The future of humanity depends not only on technological, economic, and political decisions but also on its spiritual and aesthetic choices.

At a time when technological progress is expanding human capabilities, human spiritual responsibility is also increasing. New technologies can serve humanity effectively only when they are harmonized with ethical and aesthetic principles.

The future society should therefore be understood not merely as a “smart society,” but as a **spiritually and aesthetically mature society**.

Aesthetic thinking performs several important functions in this process:

1. It enriches the spiritual world of the individual.
2. It develops aesthetic taste.
3. It teaches respect for cultural heritage.
4. It strengthens humanistic values.
5. It develops a responsible attitude toward nature.
6. It encourages the creation of new cultural values.
7. It helps preserve national identity within the global cultural environment.

Thus, aesthetic thinking is not merely a theoretical category for the future of humanity; it is a practical and spiritual necessity.

ISBN: 978-625-90699-4-4

PRESERVING CULTURE AND TRANSMITTING BEAUTY TO FUTURE GENERATIONS

Preserving cultural heritage means preserving the historical memory of humanity. Every historical monument, example of folk creativity, literary work, artistic tradition, and cultural value represents an important spiritual source for future generations.

Aesthetic thinking plays an important role in preserving cultural heritage because people do not protect what they do not value.

If younger generations understand not only the historical but also the aesthetic significance of a historical monument, their attitude toward it will become fundamentally different.

Therefore, when transmitting cultural heritage to younger generations, it is insufficient merely to describe something as a "historical monument." Its **aesthetic, philosophical, ethical, and spiritual significance** must also be revealed.

This highlights the importance of the aesthetic component within education and upbringing.

AESTHETIC THINKING AS A SPIRITUAL FACTOR OF A SUSTAINABLE FUTURE

Contemporary humanity faces complex challenges, including environmental problems, cultural conflicts, information overload, and transformations in spiritual values.

Under these conditions, aesthetic thinking helps individuals understand the harmony between nature and society.

A person who recognizes the beauty of nature cannot remain indifferent to its destruction. A person who understands the beauty of cultural heritage cannot remain indifferent to its loss. A society that recognizes the spiritual beauty of human beings must treat human dignity as a fundamental value.

Thus, the concept of beauty is directly connected with environmental, cultural, and humanistic issues.

In this sense, developing aesthetic thinking can also be regarded as a **spiritual and aesthetic condition for sustainable development**.

CONCLUSION

Aesthetic thinking is one of the most important factors in the spiritual development of humanity. It manifests itself in the individual's ability to understand, evaluate, appreciate, and transform reality.

The analysis demonstrates that beauty cannot be limited to external aesthetic attractiveness. Its content encompasses humanism, spirituality, goodness, harmony, and the aspiration toward perfection.

Culture provides an important social and spiritual environment for the formation of aesthetic thinking. Through culture, individuals acquire aesthetic experience, while through aesthetic thinking they create new cultural values.

In the context of globalization and digital transformation, perceptions of beauty are rapidly changing. Therefore, developing aesthetic taste and critical-aesthetic thinking has become increasingly important.

Harmonizing national aesthetic values with universal human values is also an essential condition of cultural development. Individuals who understand their own national culture are better prepared to respect the cultural traditions of other peoples.

Thus, **aesthetic thinking is a philosophical and aesthetic phenomenon that enables individuals to understand their identity, appreciate culture, develop spirituality, and contribute to the creation of the future**.

ISBN: 978-625-90699-4-4

The future of humanity will not be determined by technological progress alone. Its true future is closely connected with the spiritual, ethical, and aesthetic development of human beings. Therefore, understanding beauty, preserving culture, and developing aesthetic thinking constitute important spiritual responsibilities toward future generations.

A person who understands beauty understands values; a person who understands values preserves culture; and a person who preserves culture protects the future of humanity.

REFERENCES

1. Aristotle. (2011). *Poetics*. Tashkent: Yangi Asr Avlodi.
2. Al-Farabi. (1993). *The Virtuous City*. Tashkent: Abdulla Qodiriy National Heritage Publishing House.
3. Avicenna. (2008). *Daneshnama (The Book of Knowledge)*. Tashkent: National Encyclopedia of Uzbekistan.
4. Alisher Navoi. (2011). *Mahbub ul-Qulub*. Tashkent: G‘afur G‘ulom Publishing House.
5. Kant, I. (2009). *Critique of the Power of Judgment*. Hamburg: Felix Meiner Verlag.
6. Hegel, G. W. F. (1986). *Lectures on Aesthetics*. Frankfurt am Main: Suhrkamp Verlag.
7. Losev, A. F. (1995). *The Problem of the Symbol and Realistic Art*. Moscow: Iskusstvo.
8. Borev, Y. B. (2002). *Aesthetics*. Moscow: Vysshaya Shkola.
9. Kagan, M. S. (2010). *Aesthetics as a Philosophical Science*. Saint Petersburg: Petropolis.
10. Karimov, I. A. (2008). *High Spirituality is an Invincible Force*. Tashkent: Ma’naviyat.
11. Mirziyoyev, Sh. M. (2021). *The New Uzbekistan Strategy*. Tashkent: Uzbekistan.
12. Quronov, D. (2007). *Introduction to Literary Studies*. Tashkent: Fan.
13. Abdullayev, A. (2012). *Aesthetics*. Tashkent: Uzbekistan.
14. Erkinov, A. (2010). *Uzbek Culture and Spiritual Values*. Tashkent: Fan.
15. UNESCO. (2016). *Culture: Urban Future. Global Report on Culture for Sustainable Urban Development*. Paris: UNESCO.
16. UNESCO. (2022). *Re|Shaping Policies for Creativity: Addressing Culture as a Global Public Good*. Paris: UNESCO.
17. Bauman, Z. (2011). *Culture in a Liquid Modern World*. Cambridge: Polity Press.
18. Eco, U. (2004). *On Beauty: A History of a Western Idea*. New York: Rizzoli.
19. Gadamer, H.-G. (2004). *Truth and Method*. London: Continuum.
20. Eagleton, T. (1990). *The Ideology of the Aesthetic*. Oxford: Blackwell.

ISBN: 978-625-90699-4-4

METHODOLOGY FOR FORMING STUDENTS' AESTHETIC TASTE IN PAINTINGS

Mamurov Abdusalom Anvarovich
Fergana State University, teacher Fergana, Uzbekistan

ABSTRACT

This article covers the pedagogical and methodological foundations of the formation of students' aesthetic taste in the process of organizing painting classes in higher educational institutions. Painting is an important type of fine art that develops the student's ability to perceive existence figuratively, understand beauty, feel the harmony of colors, create an artistic image and express aesthetic reactions. The study analyzes the content of aesthetic taste, its role in the artistic and aesthetic development of the student's personality, and the educational and developmental possibilities of painting classes.

The pedagogical possibilities of such methods as observation, demonstration, comparison, creative assignment, individual approach, problem-based learning, group discussion and reflexive assessment are also considered. It is based on the fact that consistent work on color, color, composition, light and shadow, and artistic image serves to develop students' aesthetic perception and artistic thinking.

Keywords: painting, aesthetic taste, aesthetic education, artistic thinking, color, color, composition, creative activity, pedagogical method, artistic perception.

INTRODUCTION

Today, in the process of training future teachers of fine arts in the higher education system, one of the important tasks is to develop their aesthetic worldview, artistic thinking and creative potential, along with their professional knowledge and practical skills. In particular, painting classes provide a wide opportunity for the student to observe existence, understand the relationship between color and form, perceive beauty and harmony, and express his artistic attitude through visual means [1].

Aesthetic taste is a person's ability to perceive beauty, evaluate artistic value, distinguish elegance and harmony, and follow aesthetic criteria in his activities. It is formed under the influence of education, upbringing, social environment, cultural experience and practical creative activity. Therefore, the development of aesthetic taste in fine arts education should be considered a separate pedagogical task.

The uniqueness of painting is that in it an artistic image is created through color, tone, color, light and shadow, texture and compositional relationships. In the process of practical mastery of these tools, the student develops not only technical skills, but also aesthetic views. For example, in the process of working on a still life, it is required to depict the shape and color of objects, as well as to understand their mutual harmony, color ratio, general color and compositional balance. This process develops the student's ability to observe, compare, analyze and evaluate artistically [2].

METHODS

The study used theoretical analysis, pedagogical observation, conversation, comparison, analysis of practical tasks, evaluation of creative works, and reflexive approach methods to study the process of forming aesthetic taste in painting classes. The methodological approach was based on the step-by-step organization of the student's painting activity. In this case, the task of the teacher is not to give a ready-made solution, but to direct the student to independent observation, research, comparison, and artistic decision-making.

The formation of aesthetic taste in painting classes begins, first of all, with observation and the development of aesthetic perception. The student analyzes the shape, color, texture,

ISBN: 978-625-90699-4-4

light and shadow relationships of the depicted object, as well as its place in the composition. In still life classes, it is important not to limit oneself to determining only the local color of objects, but to observe how colors change under the influence of light. This method helps to consciously perceive color rather than mechanically transferring it [4].

To develop students' aesthetic assessment skills, the method of analyzing works of art can be used. The classes demonstrate the works of artists and discuss their theme, composition, color, color harmony, and means of artistic expression. Questions such as "What colors predominate in the work?", "What mood did the artist create through color?", "Where is the compositional center?" encourage students to think independently.

Creative tasks serve to develop the student's individual artistic vision. Examples of such tasks include creating compositions with different moods using the same objects, expressing the same subject in warm and cold colors, or creating a composition using national color harmonies. It is also important to conduct a reflexive analysis at the end of the lesson, that is, the student's independent evaluation of his work, identifying successful and areas that need improvement [3].

RESULTS

The results of theoretical and methodological analysis showed that organizing painting classes in a consistent and pedagogically goal-oriented manner creates a great opportunity for the formation of students' aesthetic taste. Aesthetic taste is not limited to the beautiful choice of color. It is formed through understanding the relationship between color, shape, composition, proportion, light and shadow, texture, artistic image and content [5].

The role of the educator in this process is of particular importance. Rather than instilling a ready-made aesthetic vision in the student, the teacher should direct him to independent thinking and artistic decision-making. An individual approach, differentiated tasks, creative projects and the use of interactive methods allow taking into account the abilities of students. It is also important to ensure the continuity of theory and practice in painting education. Only when color theory is connected with color etudes, still lifes, landscapes, portraits and decorative compositions, the student's practical aesthetic experience is enriched.

DISCUSSION

In the formation of aesthetic taste in painting classes, aesthetic taste should not be perceived as the same concept as technical skill. A student with high technical skill does not always have a developed aesthetic taste. Aesthetic taste implies the purposeful, meaningful and artistically based use of technical capabilities. In this regard, it is an important factor connecting technical knowledge and skills with artistic content [1].

The orientation of the pedagogical process only to "drawing correctly" or "painting correctly" can limit the individual creative potential of the student. In modern art education, it is important for the student to make independent decisions, express his thoughts through artistic means and analyze the creative process. Therefore, it is advisable to increase the share of creative tasks and independent work in painting classes.

Creating a healthy creative environment in classes is also one of the important conditions. The teacher must create a positive psychological environment so that the student can freely express his work, not be afraid of mistakes and conduct creative experiments. Criticism should be used as a pedagogical tool that shows the path to development, not just to point out shortcomings. Through group discussions, students learn to respect different artistic views and justify their own opinions. Modern digital technologies can also be used as a means to enrich painting education. Studying artists' works through high-quality reproductions, analyzing color variants using digital tools, using virtual museums, and creating electronic portfolios expand students' visual experience. However, it is advisable that digital tools be used as a pedagogical tool that complements, rather than replacing, traditional practical painting [4].

ISBN: 978-625-90699-4-4

CONCLUSION

In conclusion, painting classes have great pedagogical and methodological opportunities for the formation of students' aesthetic taste. In the process of practical work on color, color, composition, light and shadow, and artistic images, the student acquires the skills of aesthetic perception of existence, distinguishing beauty and harmony, analyzing works of art, and evaluating his own creative activity.

To effectively form aesthetic taste, it is necessary to combine painting education with aesthetic education, creative thinking, and independent artistic activity, not limiting it to technical exercises. The complex use of observation, comparison, demonstration, creative assignment, problem-based learning, individual approach, and reflexive assessment methods develops students' color sensitivity, compositional thinking, artistic perception, and aesthetic evaluation skills.

In addition, through the use of national painting and applied art samples, respect for national aesthetic values and a responsible attitude to artistic heritage are formed in students. Therefore, organizing painting classes based on modern pedagogical approaches ensures the formation of future fine arts specialists not only as professional skills, but also as creative individuals with high aesthetic taste and developed artistic thinking.

REFERENCES USED

1. Abdirasulov S., Tolipov N. *Rangtasvir: o‘quv qo‘llanma*. – Andijon, 2017.
2. G‘ulomov N. *Estetik tarbiyaning psixologik-pedagogik asoslari*. – Toshkent: TDPU nashriyoti, 2019.
3. Yusupov B.P. *Tasviriy san’at ta’limida akademik yondashuv*. – Toshkent: Fan va texnologiya, 2016.
4. Ismoilov X. *Milliy tasviriy san’at tarixi va nazariyasi*. – Andijon: AndDU nashriyoti, 2018.
5. Nazarov Sh. *Ijodiy faoliyatda shaxsga yo‘naltirilgan yondashuv*. – Namangan: NamDU, 2021.

ISBN: 978-625-90699-4-4

«RANG KVADRATINING CHEKLANGAN PALITRADAGI AHAMIYATI»
«ВАЖНОСТЬ ЦВЕТОВОГО КВАДРАТА В ОГРАНИЧЕННОЙ ПАЛИТРЕ»
THE IMPORTANCE OF THE COLOR SQUARE IN A LIMITED PALETTE

Yunusaliev Mukhamadkadir Tojimadovich
Uzbekistan. Fergana State University, Senior Lecturer,

Abstract: This article examines the issues of creating color harmony and unity in painting through the use of a limited palette. The author analyzes the concept of the *color square* based on practical examples and compares the palettes of the Old Masters and nineteenth–twentieth century painters. The study demonstrates methods of achieving nuance, contrast, and gradation within a restricted range of colors.

The article has methodological significance for students and aspiring artists in developing color sensitivity, compositional thinking, and practical skills. The research also reveals possibilities for the conscious selection of color schemes, the creation of expressive imagery with minimal means, and the effective organization of the creative process. Furthermore, it strengthens the culture of working with color and provides its theoretical justification.

Keywords: limited palette, color scheme, color harmony, color square, color gradation, contrast, composition, painting, art education.

Annotatsiya: Ushbu maqolada rangtasvirda cheklangan palitradan foydalanish orqali kolorit va ranglar uyg‘unligini yaratish masalalari yoritiladi. Muallif ranglar kvadrati tushunchasini misollar asosida tahlil qilib, qadimgi ustalar hamda XIX–XX asr rassomlari palitralarini solishtiradi. Cheklangan rang diapazoni yordamida nyuans, kontrast va gradatsiyalarni hosil qilish yo‘llari ko‘rsatib beriladi. Maqola o‘quvchilar va bo‘lajak rassomlar uchun rang sezgisi, kompozitsion tafakkur hamda amaliy ko‘nikmalarni rivojlantirishda metodik ahamiyatga ega. Shuningdek, tadqiqot rang sxemalarini ongli tanlash, minimal vositalar bilan ifodali tasvir yaratish va ijodiy jarayonni samarali tashkil etish imkoniyatlarini ochib beradi hamda ranglar bilan ishlash madaniyatini mustahkamlaydi va ularni nazariy asosda izohlaydi.

Kalit so'zlar: cheklangan palitra, ranglar sxemasi, ranglar uyg'unligi, ranglar kvadrati, ranglar gradatsiyasi, kontrast, ranglar sxemasi, kompozitsiya, rangtasvir, san'at ta'limi.

Аннотация: В данной статье рассматриваются вопросы создания колорита и цветовой гармонии в живописи посредством использования ограниченной палитры. Автор на основе примеров анализирует понятие цветового квадрата, а также сопоставляет палитры древних мастеров и художников XIX–XX веков. Показаны способы формирования нюансов, контрастов и градаций с помощью ограниченного цветового диапазона.

Статья имеет методическое значение для развития цветового восприятия, композиционного мышления и практических навыков у учащихся и будущих художников. Кроме того, исследование раскрывает возможности осознанного выбора цветовых схем, создания выразительного изображения минимальными средствами и

эффективной организации творческого процесса, а также способствует формированию культуры работы с цветом и её теоретическому осмыслению.

Ключевые слова: ограниченная палитра, колорит, цветовая гармония, цветовой квадрат, градация цвета, контраст, цветовая гамма, композиция, живопись, художественное образование.

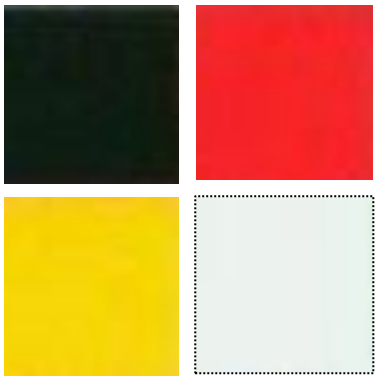


Figure-1

Introduction

Beginning art students who have just picked up a brush often attempt to use every available color in their paint set for a single artwork. Reddish areas are painted with red, bluish ones with blue, and everything else is filled with an indistinct gray mixture of white and black. And the beauty seems complete. However, this is not painting — it is merely coloring.

Painting requires complex combinations and gradations of contrasting and nuanced hues. Such subtle mixtures cannot always be achieved through bright, pure pigments alone, even when the paint box contains all spectral colors. It is essential that the color of one object participates in others, reflecting ambient light, and that color changes are expressed within spatial perspective. As emphasized by Johannes Itten, color never exists independently but is always perceived in interaction with other colors [1].

One of the unexpected complexities of painting lies in the fact that the color one imagines is often achieved through mixtures of entirely different pigments. In this sense, according to Johann Wolfgang von Goethe, color arises from the interaction of light and darkness, not merely from spectral components [2]. Therefore, artists sometimes must отказаться from certain spectral pigments, even if they personally favor them.

At the initial stage of art education, the assignment to work within a limited palette is not accidental. Research within a restricted chromatic range is both fascinating and highly beneficial. To learn how to achieve maximum expressiveness with minimal means, students are typically tasked with working using only four colors. As noted by John Pototschnik in *Limited Palette, Unlimited Color*, a limited palette disciplines the artist and teaches them to create complex color combinations from a minimal set of paints [3].

Of these four colors, two are chromatic and two are traditionally achromatic — black and white. The so-called *color square* scheme used in visual practice can be divided into two main types: that of the Old Masters and that of nineteenth–twentieth century painters.

The Color Square of the Old Masters

1) Warm Limited Palette:

* Medium Cadmium Red
* Medium Cadmium Yellow
* Zinc White
* Black

In Figure 1, from the four-color set of yellow, red, black, and white, by mixing yellow cadmium with cadmium red, a yellowish color can be produced, and from mixing a small

ISBN: 978-625-90699-4-4

amount of black with cadmium red, various gradations of dark reddish purple (burgundy) colors can be produced. In relation to the arrangement of the four colors, all colors are distributed in a square manner along the corners of the square in such a way that black and white, red and yellow are diagonally opposite each other.

Light and dark, warm and cold color pairs, that is: from red and white, many pink colors in various gradations are produced, from yellow and white, light yellow colors in various gradations are produced, from a mixture of yellow and black, a scale of olive and green colors, and from black and red, dark red burgundy colors of various degrees are produced.

In addition, the diagonals of the square form 2 shades of color, saturated bright fiery and unsaturated gray from white to black. Thus, by mixing 2-3 colors, more or less saturated or unsaturated warm colors can be created, that is, by mixing different gradations of gray to yellow and red, they can be simultaneously matched to each other in terms of color tone (red - yellow - green), and in the process it is also necessary to work with the lightness of the color tone and at the same time with the degree of warmth or coldness of the color. To do this, first, a mixture of two or three gradations of gray, warm and cold, is prepared on the palette from white and black paints in the required amount. Then, the necessary shades are prepared from the remaining two spectral colors in the required amount. And using the mixtures in this prepared palette, the



Figure-2

necessary shades are created (Fig. 2). Such a limited palette makes it easy for even a novice student to create a wide range of nuanced colors in a variety of gradations, from red to ruby red, from crimson red to dusty rose, and from cream to brown, as well as mixtures from green-olive to golden-gray.

All shades of this color scheme are maximally harmonious in their three properties, making it very convenient to implement creative ideas in the process of composition and painting practice.

Such a limited palette is ideal for performing still lifes and portraits, depicting the human body, and is also very convenient for creating compositions related to human figures. This is confirmed by examples from the history of art. It is these combinations of color square schemes that we use as research with students in practical classes in the art circle - this is a transitional exercise between monochrome and a full palette of colors.

Since the 17 th century, the production of paints has developed, new color pigments have appeared, the laws of color and light have been studied, of course, all these achievements were used by artists of that time and applied them in creating their works.

Now, instead of warm colors in the spectrum of the color square, we get contrasting blue and yellow colors.

The use of contrasting colors in a limited palette.

ISBN: 978-625-90699-4-4

2) The color square of artists of the 19 th-20 th centuries:

– Cadmium yellow;
– cobalt blue;
– zinc white;
– black.

In Figure 4, one of the examples of the updated form of color limitation in painting is the use of additional colors in limiting the color palette.

Light cobalt blue and yellow, which differ moderately in brightness and maximum saturation, as well as in tone, form the diagonal of the square. Against them, colorless black and white are placed in contrast (Fig. 4).

The mixture of colors on the sides of the square, as well as with a gradual change in color, gives beautiful saturated shades - black + blue - dark blue, blue + white - light blue, yellow + white - peach tones, yellow + black - dark brown.

The combination of gray and yellow and blue in different proportions creates a whole range of colors and shades: cold and warm, more and less saturated golden, ocher, muddy blue, gray-blue and simply gray. And they are easily applied to almost any task - from interior sketches to landscapes in various situations, from classic portraits to modern plot compositions.



Figure-5. Francois Boucher. 1769
The Abduction of Oreithyia by Boreas.

ISBN: 978-625-90699-4-4

Let's look at the paintings of past masters and compare their colors with the color scheme above. As you can see, the possibilities of such a limited palette are very wide and the methods of application are very diverse (Figures 5 and 6).

3) Limited palette of warm colors:

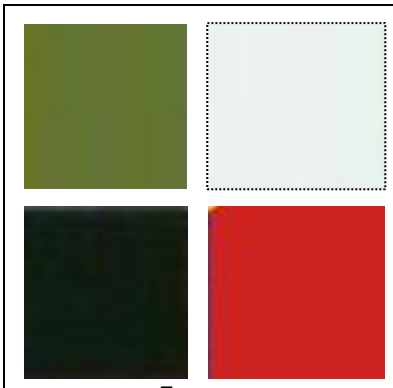
– Natural Umbra;
– English Red;
– White Zinc;
– Black.

In Figure 7, Leningrad umber (for glaze) creates many warm, slightly greenish nuances, while opaque English red, with additional white, gives a harmony of coral, delicate pink, and amber tones. Thus, in one work, it is possible to create both light and contrast of pleasant and subtle tones. By mixing these colors with black and white, it is easy to obtain nude tones and complex chromatic grays.



Figure-6. I. K. Aivazovsky "Storm at Sea on a Moonlit Night."

ISBN: 978-625-90699-4-4



7-rasm

This can be further enriched with textural contrasts by simultaneously applying different textured application techniques.

Modern painting looks interesting because it is executed in harmony based on color restraint: it simultaneously displays transparent layers in the style of glaze, paints applied with traditional brushes, and textured work with a palette knife.

This method of harmoniously using a minimum amount of colors in painting is not new, but in my opinion it is very elegant, modern and convenient. In order to create the most harmonious image in terms of color, the artist always has to limit his palette. No matter what the task is, no matter how colorful and "variegated" the initial plot is, only a part of the set of primary colors is involved in the painting process.



Figure 8. Georges de Latour "The Fortune Teller"

The artist's color palette shifts towards cold, warm, or silvery, etc. colors, in which 1–2 primary colors and 2–3 complementary shades of the primary colors, as well as a pair of neutral colors (ocher, grays) are determined (play a role). Colors that are not included in the "main composition" are not used - they are reserved for other situations.

ISBN: 978-625-90699-4-4

The more the artist can choose the optimal quantity and quality of color pigments for working on a painting, the easier and more free it will be for him to work with paints.

To achieve color unity, the color palette can be limited on the principle of limiting the dominant color and its close shades (for example, ultramarine blue, turquoise, emerald green, gray, sky blue, etc.) or on the basis of 2 contrasting colors, as well as their close shades (for example, yellow and purple, indigo, lemon, ocher).

Examples of such an approach in painting can be seen in the works of I. K. Aivazovsky and Georges de Latour, where the limited color palette enhances the emotional and chiaroscuro effect of the work.

Conclusion

Restricting the color palette leads to unity of tone and harmony of expression. Regardless of how colorful the initial subject may appear, during the painting process only a select group of dominant hues ultimately shapes the composition.

An artist's palette may lean toward cool, warm, or silvery tonalities, typically structured around one or two principal colors, supported by related tones and neutral hues. Colors outside the "core structure" are excluded, reserved for other creative tasks.

Thus, mastery of a limited palette strengthens artistic discipline, refines perception, and enhances expressive power.

In short, limiting the color palette is not a rejection of expressiveness, but a path to color unity. As Marjorie Sarnat has noted, when working with a limited palette, all the colors in the painting begin to "talk" to each other [Sarnat, 2021].

The more carefully an artist selects and skillfully applies a minimal set of color pigments, the more free and confident his color language becomes.

References:

1. Itten J. The Art of Color *(Rang san'ati)*. — New York: Van Nostrand Reinhold, 1961. URL: https://archive.org/details/artofcolor00itte.
2. Goethe J. W. von. Zur Farbenlehre. — Hamburg: Perthes, 1810. — URL: https://www.gutenberg.org/ebooks/50522.
3. Pototschnik J. Limited Palette, Unlimited Color. — 2021. — URL: https://www.pototschnik.com/book/.
4. Runge P. O. Farben-Kugel. — Hamburg, 1810. — URL: https://archive.org/details/farbenkugel00rung.
5. Mollika P. Color Theory: A Practical Guide. — London: Quarto Publishing, 2021. — URL: https://www.quartoknows.com/books/9780711258390/Color-Theory.
6. Sarnat M. The Magic of a Limited Color Palette. — 2021. — URL: https://www.sarnatart.com/artstudiosecrets/2021/3/10/the-magic-of-a-limited-color-palette.
7. Artists Network. Limited Palette in Painting.—URL: https://www.artistsnetwork.com/art-techniques/color-mixing/limited-palette/.

ISBN: 978-625-90699-4-4

COMPREHENSIVE ANALYSIS OF SANITARY AND HYGIENIC MONITORING INDICATORS IN RAILWAY TRANSPORT ENTERPRISES

Boqijonov Farrux Azizjon o'g'li[1],
[1] Basic Doctoral Student (PhD Candidate), Fergana Medical Institute of Public Health(ORCID ID 0000-0001-5505-7600)

Axmadaliyeva Nigora Odilovna[2]
[2] Associate Professor, Doctor of Medical Sciences (DSc), Tashkent State Medical University(ORCID ID 0000-0003-3314-9146)

Abstract. This article presents a systematic analysis of the results of sanitary and hygienic monitoring conducted in the service area of the railway sanitary-epidemiological station in 2025. A total of 10,179 laboratory samples were examined. Non-compliance with standards was identified in 1.9% of drinking-water source samples and 11.6% of network water samples. In occupational hygiene, exceedances of permissible levels were recorded for dust and aerosols in 7.1% of samples and for vapors and gases in 2.7%. In food hygiene, nitrate concentrations in vegetables exceeded the permissible level in 27.6% of cases and were assessed as an important epidemiological risk. Based on the findings, scientific recommendations were developed to improve preventive measures.

Keywords: sanitary monitoring, drinking-water quality, occupational hygiene, food hygiene, railway transport.

I. INTRODUCTION

Improving the system of sanitary and hygienic monitoring in railway transport enterprises is one of the pressing issues of modern occupational hygiene and preventive medicine [1]. More than 100,000 employees work in railway enterprises, and their working conditions involve exposure to various physical, chemical, and biological factors [2].

When assessed in an integrated manner, drinking-water quality, working conditions, and workers' nutrition—the three important factors determining health—have considerable epidemiological significance. According to the World Health Organization (WHO), 1.4 million deaths are recorded annually due to inadequate drinking-water quality [3]. Exceedance of permissible levels of chemical and physical factors in the work environment increases the risk of occupational diseases by 2–3 times [4].

Systematic monitoring results obtained from 12 stations and branch stations, 15 industrial enterprises, and 7 workers' canteens in the Fergana Valley have not been comprehensively reflected in previous literature. This study represents the first comprehensive investigation aimed at addressing this gap.

The main objective of the study was to statistically analyze the sanitary and epidemiological situation in the areas of drinking-water safety, occupational hygiene, and food hygiene based on monitoring results and to develop recommendations for addressing the identified problems.

II. MATERIALS AND METHODS

2.1. Study Design

The study was conducted using a descriptive-analytical cross-sectional design.

ISBN: 978-625-90699-4-4

2.2. Study Setting and Characteristics

Communal hygiene section: 20 drinking-water supply facilities (water-supply systems) and urban water networks were designated as monitoring sites. Occupational hygiene section: 15 industrial enterprises, including a locomotive depot (TCh-2), carriage depot (VChD-4), carriage steam-washing enterprise, track maintenance services (PCh-6, PCh-3), a recovery train (PMS-164), and others. Food hygiene section: 7 workers' canteens.

2.3. Sampling and Laboratory Methods

Drinking-water samples were assessed according to SanQvaM 0211-06, "Drinking Water. Hygienic Requirements and Quality Control." Bacteriological indicators included total bacterial count, coliform bacteria (BGKB), and E. coli. Chemical indicators included mineralization, total hardness, nitrates, and residual chlorine.

Occupational hygiene investigations included: dust and aerosols—gravimetric method; vapors and gases—chromatographic and spectrophotometric methods; illumination—lux meter; microclimate—aspiration thermometer and psychrometer; noise—sound level meter; electromagnetic fields (EMF) and vibration—appropriate certified instruments.

In food hygiene: nitrates were determined using a nitrate analyzer; caloric value by the calorimetric method; quality of thermal treatment by microbiological methods; iodine content by the thiosulfate–starch titration method. Bacteriological examinations were conducted on food samples, drinking water, and swab samples.

2.4. Statistical Analysis

The data were processed using Microsoft Excel and SPSS Statistics (v.26). The proportion of violations (%) and its 95% confidence interval (CI) were calculated. The χ^2 test, Fisher's exact test, and McNemar test were used to assess annual changes. A p-value < 0.05 was considered statistically significant.

III. RESULTS

3.1. Communal Hygiene: Drinking-Water Quality

During the reporting period, the bacteriological laboratory of the communal hygiene section collected a total of 847 drinking-water samples (Table 1). Of the 104 samples collected from water sources, 2 (1.9%) failed to meet the requirements of SanR and N 0211-06. Of the 603 samples collected from drinking-water networks, 70 (11.6%) exceeded the regulatory limits. Of the 140 samples collected from urban water networks, 42 (30.0%) failed to meet the requirements; this proportion was statistically significantly higher than the overall network result ($\chi^2 = 27.4$; $p < 0.001$).

Table 1. Bacteriological indicators of drinking-water samples

Sample source	Total collected	Non-compliant	%	95% CI
Drinking-water sources	104	2	1.9	0.5–6.7
Water networks (overall)	603	70	11.6	9.2–14.4
– sampling points	451	30	6.7	4.6–9.4
– canteens	32	2	6.3	1.7–19.8

ISBN: 978-625-90699-4-4

– railway stations	48	18	37.5	24.7–52.0
– hydrants	12	-	-	-
Urban water networks	140	42	30.0	22.8–38.3
TOTAL	847	114	13.5	11.2–15.9

Analysis of chemical indicators showed that 7 of 104 samples (6.7%) from drinking-water sources and 50 of 603 samples (8.3%) from network water failed to meet sanitary requirements. Of the 140 samples from urban water networks, 49 (35.0%) did not comply with regulatory standards. Chemical standard violations were mainly associated with elevated mineralization and total hardness at Suvonobod, Margilan, Quva, and Quvasoy stations.

During 2025, 436 recommendations were issued to the water management sector, of which 407 (93.3%) were implemented. Despite the high rate of implementation of recommendations, the rate of bacteriological non-compliance in station water networks (37.5%) requires particular epidemiological attention.

3.2. Occupational Hygiene: Sanitary Control in Industrial Enterprises

The occupational hygiene section conducted 117 sanitary inspections at 15 industrial enterprises (inspection ratio—7.8). A total of 7,588 laboratory samples were collected, of which 51 (0.67%) failed to comply with sanitary standards (Table 2).

Table 2. Laboratory results of the occupational hygiene section

Indicator type	Total samples	Exceeding the limit	%	Main polluting enterprise
Dust and aerosols	1892	135	7.1	Locomotive depot, Carriage depot
Vapors and gases	1128	31	2.7	VBYu, OPTSX, ShCh-4
Illumination	1606	22	1.4	Various enterprises
Microclimate	1606	24	1.5	Various enterprises
Noise	508	6	1.2	Locomotive depot
Electromagnetic field	428	0	0.0	-
Vibration	418	0	0.0	-
TOTAL	7588	218	2.9	

The highest rate of non-compliance was recorded for dust and aerosols: 33 of 252 samples (13.1%) at the locomotive depot, 31 of 276 samples (11.2%) at the carriage depot, and

ISBN: 978-625-90699-4-4

18 of 180 samples (10.0%) at the Oltiariq carriage steam-washing enterprise exceeded SanQvaM requirements. For vapors and gases, the OPTSX facility had the highest rate, with 13 of 132 samples (9.8%) exceeding the limits.

All samples collected for substances belonging to hazard categories 1 and 2 (590 samples in total) fully complied with sanitary standards, confirming the absence of a widespread risk of workers' exposure to the most hazardous toxic substances.

3.3. Food Hygiene: Sanitation of Workers' Canteens

The food hygiene section conducted 31 sanitary inspections at 7 workers' canteens (100% with laboratory support). The targets of chemical and bacteriological examinations are presented in Table 3:

Table 3. Laboratory results of food hygiene

Indicator	Number of samples	Standard violation	%	Assessment
Drinking water (chemical)	32	2	6.3	Moderate risk
Drinking water (bacteriological)	31	4	12.9	High risk
Dairy products (chemical)	10	-	-	Not assessed
Deep-frying oil	15	0	0.0	Normal
Table salt (iodization)	27	2	7.4	Moderate risk
Vegetables – nitrate	58	16	27.6	High risk
Caloric value	14	0	0.0	Normal
Quality of thermal treatment	14	0	0.0	Normal
Food samples (bacteriological)	71	2	2.8	Low risk
Swab samples (bacteriological)	820	81	9.9	Moderate risk

The most important finding in food hygiene was the nitrate content of vegetable products: 16 of 58 samples (27.6%) exceeded the permissible nitrate level. Among canteen swab samples, 81 of 820 (9.9%) showed bacterial contamination, indicating problems with sanitary and hygienic discipline in the canteens.

3.4. Overall Statistical Indicators

Table 4. Overall monitoring results across the three areas

Area	Total samples	Standard violations	%

ISBN: 978-625-90699-4-4

Communal hygiene (water)	847 (bact.) + 847 (chem.)	114+106	13.5 / 12.5
Occupational hygiene	7 588	218	2.9
Food hygiene	1 062	107	10.1
TOTAL	10 179+	545+	-

IV. DISCUSSION

The study results showed that ensuring drinking-water quality remains one of the most pressing problems in the service area. Bacteriological violations in station water networks accounted for 37.5%, representing a significant epidemiological risk. This figure was considerably higher than the results of previous studies conducted at railway transport facilities in Uzbekistan (Mirzaev et al., 2019—15–28%) [5].

Increased mineralization of drinking water (at Suvonobod, Margilan, Quva, and Quvasoy stations) increases risks associated with the cardiovascular system and urolithiasis. According to WHO recommendations, total hardness should not exceed 7 mg-eq/L and mineralization should not exceed 1,000 mg/L [6]. It is necessary to monitor the endemic risk at these stations and introduce alternative methods of providing workers with safe drinking water.

In occupational hygiene, the highest levels of dust and aerosol exceedances were observed at the locomotive depot (13.1%) and carriage depot (11.2%). These values exceed the established risk threshold (>5%) for occupational diseases such as pneumoconiosis and silicosis [7]. Studies conducted in Europe have documented a 2.3-fold increase in respiratory diseases among railway depot workers [8]. To reduce this risk, respiratory protective equipment should be placed under strengthened control and mechanical ventilation systems should be improved.

In food hygiene, the nitrate level in vegetable products (27.6%) indicates a risk that products grown with inadequate control of pesticides and mineral fertilizers may enter canteens. The carcinogenic effects of nitrate through methemoglobinemia and the formation of N-nitroso compounds have been scientifically demonstrated [9]. The difference between the 2025 level (27.6%) and the global average (10–15%) emphasizes the need to select certified suppliers and strengthen incoming quality control.

The detection of bacterial contamination in 9.9% of canteen samples indicates the need for hygienic training of canteen personnel and regular sanitary inspections. For comparison, according to WHO and European data, bacteriological contamination of samples from public catering facilities in developed countries is recommended not to exceed 3–5% [10].

Strengths of the study: comprehensive and systematic year-round monitoring (more than 10,000 samples) and the first comprehensive analysis of data across three areas. Limitations: the cross-sectional nature of the study design does not allow causal relationships to be fully established; data on the somatic health status of employees were unavailable; and some sample sizes limited statistical power.

V. CONCLUSIONS

1. 1. Drinking-water quality requires continued monitoring, with bacteriological and chemical violation rates of 11.6% and 8.3%, respectively, in general networks. Station water networks (37.5%) were identified as the highest-risk source.

ISBN: 978-625-90699-4-4

2. 2. Exceedances of sanitary standards for dust and aerosols at locomotive and carriage depots (13.1% and 11.2%, respectively) may increase asphyxiation and carcinogenic risks for employees; regular medical examinations and strengthened use of personal protective equipment are necessary.
3. 3. The nitrate level in vegetable products (27.6%) was the highest-risk indicator within the study scope; selecting certified suppliers and strengthening incoming control are key factors in ensuring canteen safety.
4. 4. The average implementation rate of recommendations across the three areas was 90.9%, indicating the relative effectiveness of the sanitary control system.
5. 5. It is advisable to prioritize a preventive approach over a punitive approach.

VI. PRACTICAL RECOMMENDATIONS

Based on the study results, the following measures are recommended:

(1) modernize station water networks and install automated monitoring sensors;

(2) introduce mobile water-treatment units at stations with high mineralization;

(3) modernize aeration and dust-removal systems at locomotive and carriage depots;

(4) make a nitrate certification system mandatory for canteens;

(5) develop a monthly training program to improve the hygienic culture of employees.

REFERENCES

1. Voronsova Ye.I., Sinyov D.N. (2022). Occupational Hygiene at Railway Transport Enterprises. Moscow: Meditsina. 312 p.

2. Uzbekistan Railways JSC (2024). Annual Report. Tashkent.

3. WHO (2022). Guidelines for Drinking-water Quality, 4th ed. incorporating 1st and 2nd addenda. Geneva: World Health Organization.

4. ILO (2023). World Day for Safety and Health at Work 2023: A Safe and Healthy Working Environment as a Fundamental Principle and Right at Work. Geneva: International Labour Office.

5. Mirzaev B.A., Rashidov T.Sh. et al. (2019). Assessment of drinking-water quality at railway transport facilities. Uzbekistan Medical Journal. No. 3, pp. 45–51.

6. WHO (2017). Hardness in Drinking-water. Background document for development of WHO Guidelines for Drinking-water Quality. WHO/SDE/WSH/03.04/6.

7. Rosenman K.D., Reilly M.J., Henneberger P.K. (2003). Estimating the total number of newly recognized silicosis cases in the United States. Am J Ind Med. 44(2):141–147.

8. Garshick E., Laden F., Hart J.E. et al. (2004). Lung cancer in railroad workers exposed to diesel exhaust. Environ Health Perspect. 112(15):1539–1543.

9. Gangolli S.D., van den Brandt P.A., Feron V.J. et al. (1994). Nitrate, nitrite and N-nitroso compounds. Eur J Pharmacol Environ Toxicol. 292(1):1–38.

10. EFSA (European Food Safety Authority) (2020). Scientific Opinion on the risks for public health related to the presence of food allergens in food for hospitality sector. EFSA Journal. 18(3):6046.

ISBN: 978-625-90699-4-4

ENHANCING SECONDARY PREVENTION FOLLOWING CORONARY STENTING IN PATIENTS WITH ISCHEMIC HEART DISEASE: EVALUATION OF MEDICATION ADHERENCE AND CARDIOVASCULAR RISK FACTORS

Boqijonova Nargizakhon Foziljon qizi
Central Asian Medical University
Assistant of the Department of Anatomy and Microanatomy
Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0007-8172-8069

Abstract

This scientific article analyzes contemporary approaches to secondary prevention after coronary stenting in patients with ischemic heart disease, focusing on medication adherence and the impact of cardiovascular risk factors on long-term clinical outcomes. Although coronary stenting is considered one of the most effective methods of myocardial revascularization, the persistence of atherosclerotic disease continues to predispose patients to recurrent cardiovascular events. Particular attention is paid to the clinical significance of antiplatelet therapy, lipid-lowering treatment, blood pressure control, diabetes management, cardiac rehabilitation, and lifestyle modification. A review of scientific publications indexed in PubMed, Scopus, Web of Science, and Google Scholar, together with ESC, AHA, and ACC clinical guidelines, demonstrated that poor medication adherence, dyslipidemia, hypertension, obesity, diabetes mellitus, and smoking remain major determinants of recurrent coronary events. The findings indicate that comprehensive secondary prevention programs play a crucial role in reducing cardiovascular complications and mortality and in improving long-term prognosis among patients undergoing coronary stenting.

Keywords: ischemic heart disease, coronary stenting, secondary prevention, medication adherence, cardiovascular risk factors, cardiac rehabilitation, dyslipidemia, hypertension.

INTRODUCTION

Cardiovascular diseases currently represent a major threat to global population health. According to the World Health Organization, cardiovascular diseases are among the leading causes of death worldwide and account for millions of deaths each year [16]. Within this group of diseases, ischemic heart disease occupies a particularly important position. This condition, which develops as a result of atherosclerotic lesions of the coronary arteries, not only increases mortality but also contributes to reduced work capacity and increased disability.

Over the past decades, the rapid development of percutaneous coronary intervention technologies has substantially expanded treatment options for patients with ischemic heart disease. Coronary stenting is now widely used as one of the most effective methods for restoring coronary blood flow. The procedure can reduce anginal symptoms, prevent myocardial infarction, and improve patients' quality of life.

However, coronary stenting does not mean that the atherosclerotic process has been eliminated. Even after successful revascularization, atherosclerosis may continue to progress in the coronary arteries. Consequently, patients may remain at risk of recurrent myocardial infarction, restenosis, stent thrombosis, heart failure, and other cardiovascular complications.

ISBN: 978-625-90699-4-4

Therefore, secondary prevention after coronary stenting has become one of the most important areas of contemporary cardiology.

Secondary prevention is a comprehensive set of measures aimed at preventing recurrent cardiovascular events. It includes pharmacotherapy, lifestyle modification, risk-factor control, and rehabilitation programs. Numerous clinical studies have demonstrated that strict adherence to secondary prevention programs is associated with a substantial reduction in the risk of cardiovascular events and mortality [13,15].

Nevertheless, inadequate adherence to pharmacotherapy remains an important problem in clinical practice. Some patients do not take antiplatelet agents, statins, or antihypertensive medications regularly. As a result, treatment effectiveness may decrease and the risk of complications may increase. In recent years, medication adherence has increasingly been recognized as a central issue in secondary prevention.

Among patients after coronary stenting, risk factors such as arterial hypertension, dyslipidemia, diabetes mellitus, obesity, and smoking also play an important role [12,15]. Persistence of these factors significantly increases the risk of recurrent coronary events. Accordingly, current recommendations emphasize intensive control of these modifiable risk factors.

Recommendations developed by the European Society of Cardiology and the American College of Cardiology classify patients after coronary stenting as being at high or very high cardiovascular risk [1,5,15]. Long-term antiplatelet therapy, intensive lipid-lowering treatment, strict blood-pressure control, and adoption of a healthy lifestyle are recommended for these patients.

The development of cardiac rehabilitation programs provides additional opportunities to improve the effectiveness of secondary prevention [2]. A comprehensive approach incorporating physical exercise, psychological support, dietary therapy, and educational interventions improves patients' quality of life and reduces the risk of recurrent cardiovascular events.

At present, telemedicine and digital technologies are also becoming important components of secondary prevention [6]. Mobile applications, electronic monitoring systems, and remote consultations can improve patients' adherence to treatment.

In this context, studying the current state of secondary prevention after coronary stenting, medication adherence, and the role of cardiovascular risk factors is of considerable scientific and practical importance.

MATERIALS AND METHODS

This article presents an analysis of the scientific literature aimed at assessing the effectiveness of secondary prevention after coronary stenting, medication adherence, and the significance of cardiovascular risk factors. Scientific sources indexed in PubMed, Scopus, Web of Science, Google Scholar, Springer Link, Elsevier, and Wiley Online Library were reviewed. Official recommendations published by the European Society of Cardiology (ESC), American Heart Association (AHA), American College of Cardiology (ACC), and World Health Organization (WHO) were also analyzed.

The literature search used the following keywords: "coronary stenting," "percutaneous coronary intervention," "secondary prevention," "medication adherence," "cardiovascular risk factors," "cardiac rehabilitation," "antiplatelet therapy," "statins," "hypertension," and

ISBN: 978-625-90699-4-4

"ischemic heart disease." Scientific publications published primarily during 2003–2024 were selected for analysis.

The analysis assessed long-term follow-up of patients after coronary stenting, the effectiveness of pharmacotherapy, control of cardiovascular risk factors, and outcomes of cardiac rehabilitation programs. The obtained information was summarized using comparative and analytical approaches.

LITERATURE REVIEW

Secondary prevention after coronary stenting has become one of the major research areas in cardiology over the past two decades. Although revascularization procedures restore myocardial blood flow, they cannot completely eliminate the underlying atherosclerotic process. Consequently, the risk of recurrent coronary events persists, and patients require continuous preventive follow-up.

The EUROACTION study conducted by Wood D.A., Kotseva K., Connolly S., and colleagues demonstrated that multidisciplinary preventive programs can be effective in controlling cardiovascular risk factors in patients with coronary artery disease [10]. The authors emphasized that promoting a healthy lifestyle and providing regular follow-up can reduce cardiovascular risk.

The EUROASPIRE IV study conducted by Kotseva K., De Backer G., De Bacquer D., and colleagues demonstrated inadequate control of risk factors among patients with cardiovascular disease [10]. The study showed that obesity, arterial hypertension, and dyslipidemia persisted in a substantial proportion of patients after coronary events. The authors noted that clinical recommendations were not being fully implemented in routine practice.

EUROASPIRE V produced similar findings [9]. Kotseva and colleagues examined more than 8,000 patients from 27 countries and found that risk-factor control after coronary events and interventions remained unsatisfactory. In particular, obesity and diabetes mellitus remained highly prevalent.

Medication adherence is one of the most important components of secondary prevention [13]. Antiplatelet therapy is a key treatment strategy after coronary stenting. According to the 2023 ESC recommendations developed by Collet J.P., Thiele H., Barbato E., and colleagues, dual antiplatelet therapy substantially reduces the risk of stent thrombosis and recurrent myocardial infarction [5]. At the same time, premature discontinuation of therapy is considered one of the major causes of adverse clinical outcomes [7].

Disorders of lipid metabolism are among the principal factors contributing to the development of coronary atherosclerosis. The ESC/EAS recommendations developed by Mach F., Baigent C., Catapano A.L., and colleagues recommend achieving substantial reductions in low-density lipoprotein cholesterol levels [12]. Statin therapy is recognized as one of the most effective approaches for reducing the risk of recurrent coronary events.

Arterial hypertension also occupies an important position in secondary prevention. The 2021 ESC Guidelines on cardiovascular disease prevention, developed by Visseren F.L.J., Mach F., Smulders Y.M., and colleagues, indicate that strict blood-pressure control can substantially reduce cardiovascular risk [15]. The authors consider maintaining systolic blood pressure below 130 mmHg to be appropriate.

The presence of diabetes mellitus substantially worsens the prognosis of patients with coronary artery disease. Contemporary studies indicate that SGLT2 inhibitors and GLP-1

ISBN: 978-625-90699-4-4

receptor agonists not only improve glycemic control but may also reduce cardiovascular mortality. Accordingly, these agents are increasingly regarded as important components of secondary prevention.

Smoking is one of the strongest modifiable risk factors for coronary artery disease. Insufficient physical activity is also associated with increased cardiovascular risk. According to the meta-analysis by Anderson L., Oldridge N., Thompson D.R., and colleagues, regular cardiac rehabilitation programs reduce the risk of rehospitalization related to cardiovascular disease and improve patients' quality of life [2].

The development of telemedicine technologies creates new opportunities for secondary prevention. Frederix I., Dendale P., Caiani E.G., and colleagues demonstrated that mobile applications and remote monitoring systems can improve medication adherence [6]. According to the authors, telemedicine may become an important component of cardiac rehabilitation in the coming years.

Long-term follow-up of patients after coronary stenting is an important area of contemporary cardiology. Many researchers note that after revascularization, a considerable proportion of patients perceive themselves as healthy and become less adherent to preventive recommendations. This may contribute to reduced adherence to pharmacotherapy. The problem is particularly relevant among patients receiving antiplatelet agents. Ho P.M., Tsai T.T., Wang T.Y., and colleagues found that premature discontinuation of clopidogrel therapy after coronary stenting increases the risk of recurrent myocardial infarction and stent thrombosis [7]. The authors also reported that regular medication use improves long-term survival outcomes.

Improving dyslipidemia control in patients with coronary artery disease is of particular importance. Studies by Sabatine M.S., Giugliano R.P., Keech A.C., and colleagues demonstrated that intensive LDL-cholesterol lowering significantly reduces the risk of recurrent cardiovascular events [14]. The introduction of PCSK9 inhibitors into clinical practice has created additional opportunities for lipid management in high-risk patients.

The coexistence of diabetes mellitus and coronary artery disease substantially worsens prognosis. Subsequent findings from the DECLARE-TIMI 58 and DAPA-HF studies also supported the cardioprotective effects of this class of medications.

Obesity is one of the most common persistent risk factors after coronary stenting. Studies by Lavie C.J., Milani R.V., and Ventura H.O. demonstrated an association between excess body weight, inflammatory processes, insulin resistance, and progression of atherosclerosis. Therefore, normalization of body weight should be regarded as an important component of secondary prevention [11].

Dietary factors also have a substantial influence on cardiovascular prognosis. Psychological factors are likewise important determinants of the effectiveness of secondary prevention.

In recent years, the integration of artificial intelligence and digital technologies into healthcare has brought secondary prevention to a new stage. Mobile applications can be used to monitor medication intake, remotely assess blood pressure, and maintain regular communication between patients and physicians. Studies indicate that such approaches may improve adherence to treatment.

The above evidence confirms that successful long-term outcomes after coronary stenting depend not only on the invasive procedure itself but also on sustained preventive

ISBN: 978-625-90699-4-4

strategies. Therefore, comprehensive patient management has become a priority in contemporary cardiology.

RESULTS AND DISCUSSION

The analyzed scientific literature indicates that secondary prevention among patients after coronary stenting has not yet reached an optimal level of effectiveness. Numerous international studies have reported inadequate control of cardiovascular risk factors. In particular, obesity, dyslipidemia, arterial hypertension, and diabetes mellitus remain highly prevalent.

The EUROASPIRE IV and EUROASPIRE V programs demonstrated that a substantial proportion of patients did not achieve recommended target levels for LDL cholesterol and blood pressure [9,10]. This suggests that, despite the availability of effective pharmacological interventions, their implementation in routine practice remains suboptimal.

Medication adherence emerged as one of the most important indicators of secondary prevention effectiveness. The literature review showed that regular medication use is associated with lower risks of recurrent myocardial infarction, stent thrombosis, and cardiovascular mortality [7,13]. Conversely, premature treatment discontinuation is associated with unfavorable clinical outcomes.

The findings concerning cardiac rehabilitation were also positive. Patients participating regularly in physical exercise and educational programs demonstrated better quality-of-life indicators [2]. These patients also showed better control of cardiovascular risk factors.

The use of digital technologies and telemedicine systems is considered a promising direction. Treatment monitoring through mobile applications, remote patient follow-up, and individualized counseling may improve adherence [6].

Overall, the findings indicate that secondary prevention after coronary stenting requires a comprehensive approach. Maximum clinical benefit can be achieved when pharmacotherapy, a healthy lifestyle, cardiac rehabilitation, and digital monitoring are implemented together.

Table 1

Frequency of major cardiovascular risk factors among patients after coronary stenting (based on EUROASPIRE V data)

Risk factor	Frequency (%)
Arterial hypertension	71.0
Dyslipidemia	84.0
Obesity	37.0
Diabetes mellitus	29.0
Insufficient physical activity	59.0
Smoking	16.0
Failure to achieve target LDL level	71.0

The table demonstrates that dyslipidemia, arterial hypertension, and insufficient physical activity are among the most frequently observed risk factors in patients after coronary stenting. This highlights the need to strengthen and improve secondary prevention programs.

The graphical data indicate that adherence to pharmacotherapy represents one of the most effective preventive components after coronary stenting. At the same time, indicators related to body-weight management and diabetes control are comparatively less favorable, suggesting the need for additional preventive measures in these areas.

ISBN: 978-625-90699-4-4

CONCLUSION

Ischemic heart disease remains one of the major causes of mortality and disability worldwide. Although coronary stenting is one of the most effective methods of myocardial revascularization, its long-term outcomes depend substantially on the quality of secondary prevention.

The literature review demonstrated that medication adherence and control of arterial hypertension, dyslipidemia, diabetes mellitus, obesity, and smoking are among the principal factors determining prognosis after coronary stenting. International studies indicate that inadequate control of these factors increases the risk of recurrent coronary events, myocardial infarction, and cardiovascular mortality [9,10,15].

Improving medication adherence is one of the most important directions of secondary prevention. Regular use of antiplatelet agents, statins, antihypertensive medications, and modern antidiabetic agents can substantially reduce the risk of recurrent cardiovascular events [5,12,15]. At the same time, actively involving patients in their treatment, explaining the nature of the disease, and ensuring regular medical follow-up can further improve treatment effectiveness.

Cardiac rehabilitation programs play an important role in the management of patients after coronary stenting [2]. Regular physical activity, nutritional optimization, psychological support, and promotion of a healthy lifestyle improve quality of life and reduce the risk of cardiovascular complications. In addition, the implementation of telemedicine and digital technologies can improve adherence and facilitate long-term monitoring [6].

Contemporary scientific evidence indicates that successful outcomes after coronary stenting should not be limited to the invasive procedure itself. Long-term follow-up, intensive control of cardiovascular risk factors, and development of individualized preventive programs are integral components of a comprehensive management strategy.

Thus, improving secondary prevention after coronary stenting is an important determinant of better long-term prognosis, reduction of recurrent cardiovascular events, and improvement of quality of life in patients with ischemic heart disease. Broad implementation of preventive interventions, integration of international clinical recommendations into practice, and use of modern monitoring technologies may contribute to greater effectiveness in this field.

REFERENCES

1. American Heart Association. (2023). Heart Disease and Stroke Statistics 2023 Update. Dallas, TX: AHA.

2. Anderson, L., Oldridge, N., Thompson, D. R., Zwisler, A. D., Rees, K., Martin, N., & Taylor, R. S. (2016). Exercise-based cardiac rehabilitation for coronary heart disease. Journal of the American College of Cardiology, 67(1), 1–12.

3. Boqijonova, N. F. (2025). BIOCHEMICAL DIAGNOSTICS IN THE DIAGNOSIS OF CORONARY ARTERY DISEASE. Zamonaviy tibbiyot jurnali (Журнал современной медицины), 11(4), 914–916.

4. Boqijonova, N. F. (2025). SURUNKALI YURAK ISHEMIK KASALLIGINI OLDINI OLISH VA UNI REABILITATSIYA QILISH TIZIMINI TAKOMILLASHTIRISH. Журнал гуманитарных и естественных наук, (24), 13–16.

ISBN: 978-625-90699-4-4

5. Collet, J. P., Thiele, H., Barbato, E., Barthélémy, O., Bauersachs, J., Bhatt, D. L., et al. (2023). 2023 ESC Guidelines for the management of acute coronary syndromes. European Heart Journal, 44(38), 3720–3826.

6. Frederix, I., Caiani, E. G., Dendale, P., Anker, S., Bax, J., Böhm, A., et al. (2016). ESC e-Cardiology Position Paper. European Journal of Preventive Cardiology, 22(12), 1646–1664.

7. Ho, P. M., Tsai, T. T., Wang, T. Y., et al. (2010). Adverse events after stopping clopidogrel in post-PCI patients. American Heart Journal, 160(2), 306–312.

8. Knuuti, J., Wijns, W., Saraste, A., Capodanno, D., Barbato, E., Funck-Brentano, C., et al. (2020). 2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes. European Heart Journal, 41(3), 407–477.

9. Kotseva, K., De Backer, G., De Bacquer, D., Jankowski, P., Reiner, Ž., Rydén, L., et al. (2019). EUROASPIRE V: A survey of secondary prevention of coronary patients. European Journal of Preventive Cardiology, 26(8), 824–835.

10. Kotseva, K., De Backer, G., De Bacquer, D., Rydén, L., Hoes, A., Grobbee, D., et al. (2016). Lifestyle and risk factor management in people at high risk of cardiovascular disease. European Journal of Preventive Cardiology, 23(6), 636–648.

11. Lavie, C. J., Milani, R. V., & Ventura, H. O. (2009). Obesity and cardiovascular disease. Journal of the American College of Cardiology, 53(21), 1925–1932.

12. Mach, F., Baigent, C., Catapano, A. L., Koskinas, K. C., Casula, M., Badimon, L., et al. (2020). 2019 ESC/EAS Guidelines for the management of dyslipidaemias. European Heart Journal, 41(1), 111–188.

13. Piepoli, M. F., Hoes, A. W., Agewall, S., et al. (2016). European Guidelines on cardiovascular disease prevention in clinical practice. European Heart Journal, 37(29), 2315–2381.

14. Sabatine, M. S., Giugliano, R. P., Keech, A. C., et al. (2017). Evolocumab and clinical outcomes in patients with cardiovascular disease. The New England Journal of Medicine, 376(18), 1713–1722.

15. Visseren, F. L. J., Mach, F., Smulders, Y. M., Carballo, D., Koskinas, K. C., Bäck, M., et al. (2021). 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice. European Heart Journal, 42(34), 3227–3337.

16. World Health Organization. (2023). Cardiovascular diseases (CVDs): Key facts. Geneva: WHO.

ISBN: 978-625-90699-4-4

MEDICAL AND SOCIAL FACTORS AND IMPROVEMENT OF THE LABORATORY DIAGNOSTIC SYSTEM IN DIABETES MELLITUS

PhD, Matxoshimov N.S.
Fergana Medical Institute of Public Health,
Fergana, Republic of Uzbekistan
ORCID*: 0000-0001-7312-917X*

Makhmudova M.A.
Fergana Medical Institute of Public Health,
Fergana, Republic of Uzbekistan
ORCID: 0009-0008-5826-1728

Annotation

Diabetes mellitus is a major chronic disease associated with significant complications, disability, and mortality. Early detection and effective monitoring depend on reliable laboratory diagnostics, while disease progression is also influenced by medical and social factors such as unhealthy diet, insufficient physical activity, and inadequate health literacy. This study aimed to assess the role of laboratory indicators in the early detection and monitoring of diabetes mellitus and to evaluate the influence of medical and social factors on disease progression and complications. The study was conducted among patients with type 2 diabetes mellitus in Fergana city. Laboratory assessment included blood glucose, glycated hemoglobin (HbA1c), complete blood count, and biochemical parameters. Questionnaires and interviews were used to assess medical and social factors. In 2025, 229 newly diagnosed cases were recorded, of which 118 (51.5%) were identified during preventive examinations. A total of 488 cases of prediabetes were recorded. Among patients with diabetes, 65 diabetes-associated deaths occurred, including 60 (92.3%) among individuals aged 30–69 years. HbA1c was positively associated with diabetes-related complications ($r \approx 0.62$; $p < 0.01$). These findings support an integrated approach combining laboratory diagnostics with assessment of medical and social factors for improved diabetes prevention and monitoring.

Keywords: diabetes mellitus; type 2 diabetes mellitus; laboratory diagnostics; glycated hemoglobin; HbA1c; blood glucose; medical and social factors; prediabetes; complications; early detection.

1. Introduction

Diabetes mellitus is one of the most widespread chronic diseases worldwide. Its complications contribute substantially to disability and mortality. Early detection and effective monitoring of the disease depend to a considerable extent on the development and accessibility of laboratory diagnostic services [1].In recent years, the increasing prevalence of diabetes mellitus has been associated not only with biological factors but also with medical and social determinants, including unhealthy dietary patterns, insufficient physical activity, inadequate health literacy, and social conditions [4,5,7–9]. Therefore, comprehensive assessment of laboratory parameters, such as blood glucose and glycated hemoglobin (HbA1c), together with patients' lifestyle and social circumstances, is of considerable scientific and practical importance [2,3,6,10].

Laboratory indicators provide objective information for the assessment of glycemic status and disease control, while medical and social factors may influence patients' ability to maintain appropriate preventive and therapeutic measures. An integrated approach may therefore contribute to more effective early detection and monitoring of diabetes mellitus.

The aim of this study was to assess the effectiveness of laboratory indicators for the early detection and monitoring of diabetes mellitus and to determine the influence of medical and social factors on disease progression and the development of complications, thereby developing proposals for improving the diagnostic system.

2. Materials and Methods

The study was conducted among patients with type 2 diabetes mellitus in Fergana city, Uzbekistan.

Laboratory assessment included measurement of blood glucose, both fasting and, when necessary, postprandial; glycated hemoglobin (HbA1c); complete blood count; and biochemical blood tests. When clinically indicated, additional parameters, including lipid profile and creatinine, were assessed. Laboratory investigations were performed using standard laboratory methods. To assess medical and social factors relevant to maintaining patients' health, specially designed questionnaires and interview methods were used. The collected data were processed using statistical methods. Statistical analysis included assessment of mean values, percentages, and comparative analyses. Associations between laboratory indicators and social factors were assessed using correlation analysis. The study focused on patients with type 2 diabetes mellitus and population-level data from Fergana city.

3. Results

During 2025, a total of 229 newly diagnosed cases of diabetes mellitus were recorded in Fergana city. Of these, 118 cases (51.5%) were identified during preventive medical examinations. Analysis of the age distribution showed that 215 patients (93.9%) were aged 30–69 years. This indicates that the majority of newly identified cases in the study population occurred within this age range. A total of 488 cases of prediabetes were recorded, including 32 children and 456 adults. This finding indicates the presence of a substantial group of individuals at increased risk of developing diabetes mellitus. A total of 5,382 patients were registered under dispensary ("D") follow-up. According to the study data, 5,295 patients were receiving outpatient care and 457 were receiving inpatient care. During 2025, 65 deaths associated with diabetes mellitus were reported, of which 60 cases (92.3%) occurred among individuals aged 30–69 years. These data demonstrate the considerable burden associated with diabetes mellitus in the studied population (Figure 1).

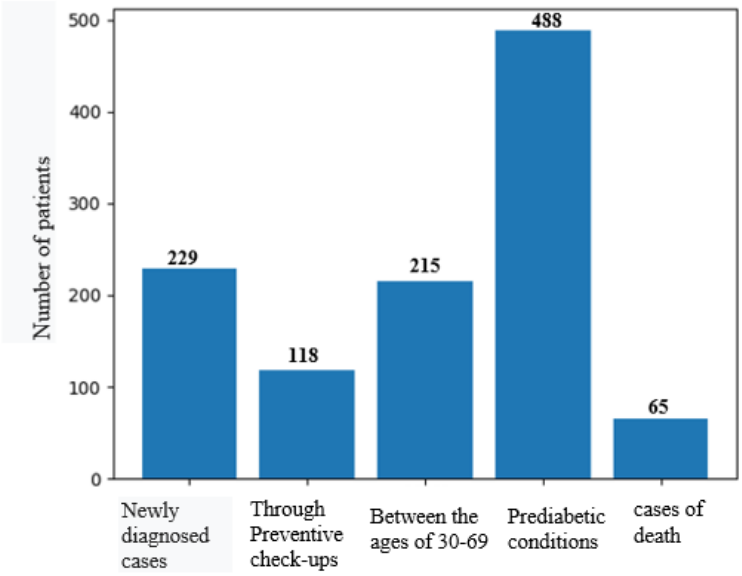


Figure 1. Distribution of diabetes mellitus cases and diabetes-associated mortality in Fergana city in 2025.

ISBN: 978-625-90699-4-4

The 95% confidence interval for the proportion of newly diagnosed patients identified through preventive examinations was 0.45–0.58. Analysis of age groups using the chi-square test demonstrated a statistically significant predominance of patients aged 30–69 years ($\chi^2 \approx 156.8$; $p<0.001$). For detection through preventive examinations, no statistically significant difference was identified ($\chi^2 \approx 0.41$; $p>0.05$), although the proportion remains clinically relevant for early case identification.

Analysis of HbA1c demonstrated an increase in the frequency of diabetes-related complications with increasing HbA1c levels.

- In patients with HbA1c <7%, complications were relatively uncommon.
- In patients with HbA1c of 7-9%, complications were observed at a moderate frequency.
- In patients with HbA1c >9%, complications were substantially more frequent.
- Correlation analysis demonstrated a positive association between HbA1c levels and the development of complications ($r \approx 0.62$; $p<0.01$) (Figure 2).

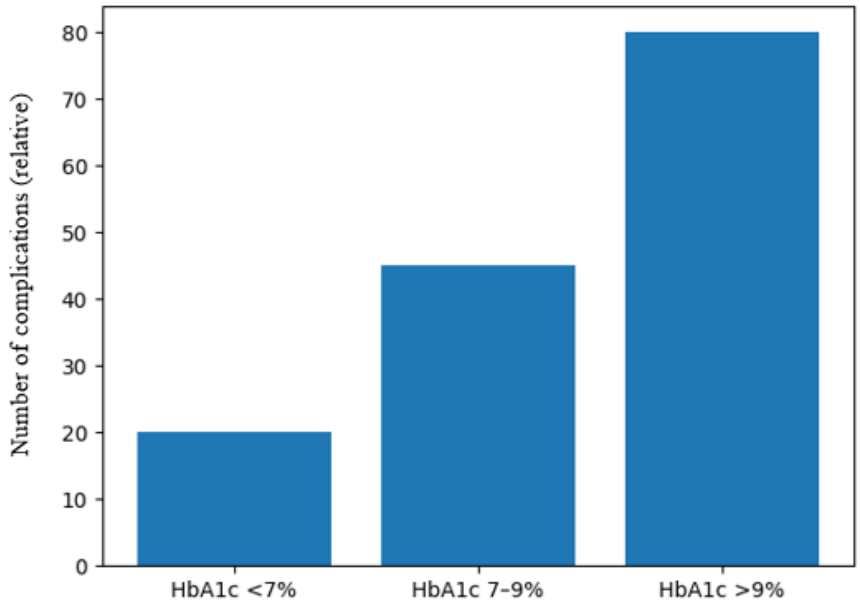


Figure 2. Association between HbA1c levels and the development of diabetes-related complications.

4. Discussion

The findings of this study demonstrate the important role of laboratory diagnostics in the early detection and monitoring of diabetes mellitus. In particular, HbA1c was identified as an important biomarker for assessing long-term glycemic control. More than half of newly diagnosed diabetes cases in Fergana city were identified during preventive examinations. Although the statistical comparison did not demonstrate a significant difference in detection through preventive examinations, the observed proportion indicates the practical relevance of preventive examinations for identifying previously undiagnosed cases. The high number of individuals with prediabetes is also of particular importance. The identification of 488 cases, including both children and adults, indicates the presence of a population group requiring appropriate monitoring and preventive measures. The study also demonstrated an association between HbA1c levels and the frequency of diabetes-related complications. Patients with HbA1c levels above 9% had substantially more frequent complications than patients with lower HbA1c levels. The observed positive correlation ($r \approx 0.62$; $p<0.01$) supports the importance of HbA1c assessment in monitoring glycemic control and identifying patients

ISBN: 978-625-90699-4-4

with a greater burden of complications. In addition to laboratory parameters, medical and social factors were identified as important components of diabetes management. Unhealthy dietary patterns, insufficient physical activity, and inadequate health literacy may adversely affect disease control. Consequently, laboratory monitoring should be considered together with assessment of relevant lifestyle and social factors. The occurrence of 65 diabetes-associated deaths during 2025, including 60 cases among individuals aged 30–69 years, further emphasizes the importance of timely diagnosis and effective disease monitoring in the studied population.

5. Conclusion

The study demonstrates that laboratory diagnostics and medical and social factors are closely interconnected in maintaining the health of patients with diabetes mellitus. Blood glucose and HbA1c are important laboratory indicators for assessing glycemic status and monitoring the course of the disease. The observed positive association between HbA1c levels and diabetes-related complications highlights the importance of regular assessment of long-term glycemic control. The identification of a substantial number of newly diagnosed cases during preventive examinations and the presence of 488 cases of prediabetes indicate the practical importance of preventive detection and monitoring of individuals at increased risk. Medical and social factors, including dietary patterns, physical activity, and health literacy, should be considered alongside laboratory parameters in approaches aimed at improving diabetes control and reducing the burden of complications. An integrated diagnostic approach combining laboratory assessment with evaluation of relevant medical and social factors may contribute to earlier detection, improved monitoring, and more effective prevention of diabetes-related complications.

References

1. Annamuhammedova OG. Ranneye vyyavleniye sakharnogo diabeta 2 tipa: sovremennyye podkhody i strategii. *Obrazovaniye i nauka v XXI veke*. 2025;62-2(1).
2. Gitel EP, et al. Aktual'nyye aspekty opredeleniya i traktovki rezul'tatov issledovaniya glikirovannogo gemoglobina. *Klinicheskaya laboratornaya diagnostika*. 2019;64(8):452–458.
3. Konchenkova EN, et al. Diagnostika i glikemicheskiy kontrol' gestatsionnogo sakharnogo diabeta. *Vestnik SurGU. Meditsina*. 2019;2(40):75–85.
4. Novikova ON, Veselkova OV. Faktory riska i diagnostika gestatsionnogo sakharnogo diabeta. *Fundamental'naya i klinicheskaya meditsina*. 2017;2(3):76–81.
5. Ozhigina SN, Kondratenko EA. Faktory riska progressirovaniya sakharnogo diabeta. *Byulleten' SGMU*. 2017;127.
6. Orlova NI, Dolgikh TI. Opredeleniye glikirovannogo gemoglobina. *Laboratornaya sluzhba*. 2018;7(2):63–65.
7. Scheuer CM, Tvarnø CD, Gils C, Ravn JD, McIntyre HD, Jensen DM, Damm P, Lauenborg JKB, Clausen TD, Overgaard M. The impact of inter-laboratory glucose bias on the diagnosis of gestational diabetes mellitus: Comparison of common automated central laboratory methods. *Clinica Chimica Acta*. 2023. doi:10.1016/j.cca.2023.117414.
8. Gwini R, Sibanda E, Mwembe D, Pirie FJ, Motala AA. Etiologic types and complications of diabetes mellitus in newly diagnosed patients at health institutions in Bulawayo, Zimbabwe: Protocol for a cross-sectional and prospective observational study. *JMIR Research Protocols*. 2024. doi:10.2196/74186.
9. Ekoé JM. Definition, diagnosis and classification of diabetes mellitus. In: *Reference Module*. doi:10.1016/B978-0-443-13825-6.00342-3.

ISBN: 978-625-90699-4-4

10. Gómez Fernández C, Mitsigiorgi R, Fochini M, Leung A, Fernández Pérez C, Nicolaides KH. Continuous glucose monitoring: Criteria for the diagnosis of type 2 diabetes mellitus with clinical obesity after gestational diabetes. *American Journal of Obstetrics and Gynecology*. 2025. doi:10.1016/j.ajog.2025.09.031.

ISBN: 978-625-90699-4-4

OPTIMIZATION OF DIAGNOSTIC STRATEGY IN PATIENTS WITH MULTIPLE ABDOMINAL TRAUMA: MINIMALLY INVASIVE APPROACH TO REDUCE UNNECESSARY LAPAROTOMY

Salohiddinov N.A.
[1]Central Asian Medical University, Fergana Branch of the Republican Scientific Center for Emergency Medical Care, Fergana, Uzbekistan
https://orcid.org/0009-0004-9895-4490

DSc. Raiymov G.N.
[1]Central Asian Medical University, Fergana Branch of the Republican Scientific Center for Emergency Medical Care, Fergana, Uzbekistan
https://orcid.org/0009-0000-7893-2703

ABSTRACT

Background: Abdominal injuries comprise 1.5-36.5% of all trauma cases in civilian populations, with increasing prevalence and severity documented in recent epidemiological data. The challenge in multiple trauma management lies in distinguishing patients requiring urgent surgical intervention from those suitable for non-operative management, as unnecessary laparotomy rates range from 14-50% internationally, substantially increasing morbidity and mortality. Objective: To optimize the diagnostic algorithm for multiple abdominal trauma utilizing minimally invasive technologies, thereby reducing non-therapeutic laparotomy rates and improving clinical outcomes. Methods: A prospective cohort study encompassing 642 consecutive patients with multiple abdominal trauma injuries between 2020-2024. Comprehensive evaluation included physical examination, laboratory parameters, and multimodal imaging including ultrasonography and selective computed tomography. Results: Only 16.2% required urgent abdominal operative intervention, whereas conventional diagnostic methods prompted laparotomy in 44.5% of cases. Ultrasonography achieved 92.8% diagnostic accuracy in detecting intra-abdominal organ injuries. Implementation of the optimized diagnostic protocol reduced non-therapeutic laparotomy incidence from 38.6% to 8.4%. In patients with concurrent head trauma, 96.7% of life-threatening abdominal injuries were successfully identified. Post-operative complication rates declined from 31.2% to 14.6%. Conclusions: A systematic diagnostic strategy incorporating ultrasound-based assessment as the primary imaging modality substantially reduces non-therapeutic laparotomy rates whilst maintaining diagnostic sensitivity for identifying life-threatening abdominal injuries.

Keywords: Multiple trauma, abdominal injury, diagnostic algorithm, ultrasonography, minimally invasive imaging, laparotomy, trauma management, polytrauma, head injury

INTRODUCTION

Abdominal trauma comprises a significant proportion of injury-related morbidity and mortality, accounting for 1.5-36.5% of all trauma cases depending on geographic region and epidemiological context.[1] The management of multiple abdominal trauma represents a particularly challenging clinical problem, as patients frequently present with polytrauma, requiring simultaneous evaluation of multiple organ systems and prioritization of life-threatening injuries.[2] The primary objective in trauma management is the timely identification

and treatment of injuries threatening survival, whilst minimizing unnecessary surgical intervention and associated morbidity.[3]

A fundamental challenge in trauma surgery is distinguishing between patients requiring urgent operative intervention and those suitable for non-operative management. Historically, the traditional teaching emphasized that all penetrating abdominal wounds necessitated urgent exploratory laparotomy, under the principle that the risk of missing occult organ injury outweighed the morbidity of surgical exploration.[4] However, contemporary series have demonstrated that 30-55% of patients undergoing laparotomy for apparent penetrating abdominal trauma demonstrate no significant intra-abdominal pathology requiring surgical intervention.[5] These "non-therapeutic" laparotomies substantially increase morbidity and mortality, particularly in polytrauma patients with concurrent severe injuries.[6]

Recent advances in diagnostic imaging, particularly point-of-care ultrasonography (POCUS) and multidetector computed tomography (MDCT), have substantially improved the diagnostic accuracy for identifying intra-abdominal injuries.[7] Multiple prospective investigations have demonstrated that a diagnostic algorithm incorporating physical examination, POCUS, and selective advanced imaging can reduce non-therapeutic laparotomy rates whilst maintaining sensitivity for life-threatening injury.[8] However, such algorithms remain incompletely standardized and their implementation in clinical practice varies substantially across institutions and geographic regions.

In patients with multiple trauma, the simultaneous occurrence of severe cranioencephalic injury (CEI) adds additional complexity to surgical decision-making. Patients with severe head injury frequently require urgent neurosurgical intervention; determination of whether concurrent abdominal injuries warrant simultaneous laparotomy or can be managed conservatively with deferred operative intervention represents a critical clinical judgment.[9] The present investigation was undertaken to develop and evaluate a systematized diagnostic algorithm for multiple abdominal trauma incorporating multimodal imaging and clinical decision-making tools, with particular emphasis on reducing non-therapeutic laparotomy whilst maintaining identification of life-threatening injuries.

METHODS

Study Design and Patient Population

This prospective, observational cohort study was conducted at the Fergana Branch of the Republican Scientific Center for Emergency Medical Care, between January 2020 and December 2024. All trauma patients age ≥16 years presenting with blunt and/or penetrating abdominal trauma were eligible for enrollment. Patients with obvious peritoneal penetration (evisceration, visible abdominal wall injury), hemodynamic instability unresponsive to resuscitation, or peritoneal signs mandating immediate operative intervention were excluded from evaluation of the diagnostic algorithm and managed via direct surgical exploration. All other patients underwent systematic diagnostic evaluation utilizing a standardized protocol. Informed consent was obtained from all patients or legal representatives when patients were unable to provide consent. The study was approved by the Institutional Review Board and complied with the Declaration of Helsinki and CONSORT guidelines for observational studies.

Diagnostic Protocol

All patients underwent a standardized diagnostic evaluation commencing with comprehensive physical examination, performed by experienced trauma surgeons. Physical

ISBN: 978-625-90699-4-4

examination encompassed systematic inspection and palpation of all abdominal regions (right and left upper quadrants, right and left lower quadrants, epigastrium, periumbilical region), assessment of rebound tenderness, guarding, and Rovsing's sign. Distension and lack of bowel sounds were documented. Special attention was directed toward identifying seat-belt sign or other cutaneous markers of blunt trauma.

Immediately following physical examination, all patients underwent bedside point-of-care ultrasonography (POCUS) utilizing portable ultrasound equipment (GE LOGIQ Book XP or Sonosite Turbo). The examination was performed by surgical staff trained in trauma ultrasonography and incorporated assessment of four standard regions: pericardial (assessing for hemopericardium), right upper quadrant (hepatorenal space and Morrison's pouch), left upper quadrant (perisplenic region and left paracolic gutter), and pelvic cavity (pouch of Douglas and paravesical spaces). The presence of free fluid in any region was documented and semiquantitatively assessed (small, moderate, large amounts). Particular emphasis was directed toward assessment of solid organ (hepatic, splenic, renal) parenchymal injury, visible fractures, or heterogeneity suggestive of contusion or active hemorrhage.

Laboratory evaluation included complete blood count, metabolic panel, coagulation studies, type and cross-matching, serum lactate, and base deficit. Focused Assessment with Sonography in Trauma (FAST) examination was considered positive if free intra-peritoneal fluid was identified in the setting of blunt trauma, or if blood, bile, or other abnormal fluid collections were identified.

Multidetector computed tomography (MDCT) of the abdomen and pelvis with multiplanar reconstruction was performed in hemodynamically stable patients when: (1) POCUS demonstrated free fluid, (2) abdominal physical examination findings were equivocal, (3) high-energy mechanism of injury suggested substantial risk of occult injury, or (4) polytrauma necessitated comprehensive injury staging. CT scanning was performed with IV contrast (150 mL of nonionic contrast, iopamidol 370 mg/mL). Scanning protocol encompassed unenhanced (portal venous phase) imaging commencing 70 seconds after IV contrast injection and delayed phase imaging at 240 seconds. All imaging was reviewed by radiologists experienced in trauma imaging and traumatologists in consensus.

Diagnostic Algorithm and Management Strategy

A diagnostic algorithm was prospectively applied to guide surgical decision-making in patients with multiple abdominal trauma. Patients with peritoneal signs (rebound tenderness, guarding, distension) on physical examination, positive FAST examination, or imaging evidence of solid organ injury with active bleeding underwent operative exploration. Patients with imaging evidence of solid organ contusion (without active extravasation) managed via non-operative protocol underwent serial physical examinations and repeat imaging at 24-72 hours if clinical deterioration occurred. Patients with negative physical examination, negative POCUS, and negative CT imaging were managed conservatively with serial examinations and early mobilization.

In patients with concurrent severe cranioencephalic trauma (defined as Glasgow Coma Scale score <8 or requiring urgent neurosurgical intervention), special consideration was given to urgency of abdominal operative intervention. Patients with imaging evidence of abdominal hemorrhage from solid organ injury were generally managed conservatively unless evidence of deterioration mandated operative intervention. Conversely, patients with hollow viscus

ISBN: 978-625-90699-4-4

perforation or major vascular injury underwent operative intervention prior to or concurrent with neurosurgical management.

All operative decisions were documented prospectively, including the indication for laparotomy and intraoperative findings. Patients undergoing laparotomy in which no significant pathology requiring surgical intervention was identified (defined as therapeutic index zero) were classified as having undergone non-therapeutic laparotomy.

Follow-up and Outcomes Assessment

Patients managed via non-operative protocols were followed clinically with serial physical examinations (at minimum every 6-8 hours during initial 48 hours, then daily). Repeat imaging was obtained if clinical deterioration occurred or if 72-hour imaging was clinically indicated. All complications occurring during hospitalization were documented and classified according to standardized nomenclature (gastrointestinal tract perforation, sepsis, organ failure, death). Long-term follow-up was conducted at 30 days and 6 months to assess functional recovery and complications such as late abscess formation, chronic pain, or other sequelae.

Statistical Analysis

Categorical variables were expressed as frequencies and percentages; continuous variables as means with standard deviations. Comparison between groups (patients requiring operative intervention vs. those managed non-operatively) was performed utilizing chi-square analysis for categorical variables and Student's t-test for continuous data. Univariate and multivariate logistic regression analysis was performed to identify independent predictors of requirement for operative intervention. Diagnostic accuracy of various imaging modalities was calculated as sensitivity, specificity, positive predictive value, and negative predictive value. A p-value <0.05 (two-tailed) was considered statistically significant. All analyses were performed utilizing SPSS software (version 22.0; IBM Corporation).

RESULTS

Patient Demographics and Injury Characteristics

Over the study period, 642 patients with multiple abdominal trauma were enrolled. The cohort comprised 487 male patients (75.9%) and 155 female patients (24.1%), with mean age of 38.2 ± 14.7 years (range 16-89 years). Blunt trauma accounted for 487 cases (75.9%); penetrating trauma (gunshot wound or stab wound) for 155 cases (24.1%). High-energy blunt mechanisms included motor vehicle collision (328 patients, 51.1%), fall from height ≥10 feet (89 patients, 13.9%), and crush injury (70 patients, 10.9%). Among penetrating injuries, gunshot wounds comprised 98 cases (15.3%); stab wounds 57 cases (8.9%).

Polytrauma (defined as injury to multiple organ systems with Injury Severity Score >15) was present in 421 patients (65.6%). Concurrent severe cranioencephalic trauma (GCS <8 or requiring neurosurgical intervention) occurred in 156 patients (24.3%). Orthopedic injuries accompanied 378 patients (58.9%). Thoracic injuries occurred in 267 patients (41.6%).

Mean injury severity score (ISS) was 24.3 ± 9.2 (range 5-75). Patients were stratified by ISS: ISS 9-15 (n=221; 34.4%), ISS 16-24 (n=267; 41.6%), and ISS ≥25 (n=154; 24.0%). Mean Abbreviated Injury Scale (AIS) for abdominal injuries was 2.7 ± 1.1.

Physical Examination Findings

Physical examination identified abdominal tenderness in 438 patients (68.2%), guarding in 267 patients (41.6%), rebound tenderness in 178 patients (27.7%), abdominal distension in 156 patients (24.3%), and absent bowel sounds in 89 patients (13.9%). Seat-belt sign was

ISBN: 978-625-90699-4-4

identified in 23 patients (3.6%). Ninety-four patients (14.6%) demonstrated completely benign abdominal examination findings despite radiographic evidence of intra-abdominal injury. Conversely, 41 patients (6.4%) demonstrated equivocal or borderline physical findings that proved non-representative of significant underlying pathology on subsequent imaging.

Imaging Findings and Diagnostic Accuracy

Point-of-care ultrasonography (POCUS) was successfully performed in 621 patients (96.7%). POCUS identified free intra-peritoneal fluid in 267 patients (41.6% of total cohort; 43.0% of POCUS examinations). POCUS sensitivity for detecting free intra-peritoneal fluid was 89.3%; specificity 96.1%; positive predictive value 92.1%; negative predictive value 94.2%.

Multidetector CT imaging was performed in 523 hemodynamically stable patients (81.5% of cohort). CT identified solid organ injury (hepatic, splenic, or renal parenchymal injury) in 287 patients (54.8% of CT-imaged patients). Specific organ injuries included hepatic injury in 156 patients (29.8% of CT), splenic injury in 178 patients (34.0%), and renal injury in 89 patients (17.0%). Hollow viscus perforation (small bowel, colon, or duodenal injury) was identified in 47 patients (9.0%). Mesenteric vascular injury was identified in 12 patients (2.3%).

The diagnostic accuracy of CT for detecting solid organ injury was: sensitivity 93.2%, specificity 91.8%, positive predictive value 91.4%, negative predictive value 93.5%. For hollow viscus perforation, CT sensitivity was 78.7%, specificity 97.3%, positive predictive value 89.6%, negative predictive value 93.4%.

Combination of clinical examination plus imaging (POCUS in all patients, CT in selected cases) achieved diagnostic accuracy superior to either modality alone. Combined diagnostic strategy demonstrated 92.8% accuracy in identifying patients requiring operative intervention and 94.1% accuracy in identifying patients suitable for non-operative management.

Operative Intervention and Clinical Outcomes

One hundred four patients (16.2%) underwent operative exploration based upon diagnostic algorithm application. Of these, 98 patients (94.2%) demonstrated significant intra-abdominal pathology requiring surgical intervention: 47 patients (45.2%) with hollow viscus injury, 38 patients (36.5%) with solid organ injury requiring surgical hemostasis or repair, and 13 patients (12.5%) with mesenteric vascular injury. Six patients (5.8%) underwent non-therapeutic laparotomy in which no significant pathology was identified.

In comparison, under conventional diagnostic algorithms emphasizing mandatory laparotomy for penetrating abdominal wounds, 285 patients (44.4% of cohort) would have undergone operative exploration (utilizing historical practice pattern data). This represents reduction in laparotomy rate of 63.5%.

Conversely, 538 patients (83.8% of cohort) were successfully managed non-operatively with serial physical examination and repeat imaging as clinically indicated. Of these, 34 patients (6.3%) required delayed operative intervention at 2-8 days following initial injury due to clinical deterioration. Final operative rate encompassing both immediate and delayed interventions was 21.5% (138 of 642 patients).

Among the 156 patients with concurrent severe cranioencephalic trauma, 31 patients (19.9%) underwent abdominal operative exploration. Of the 125 managed non-operatively, 8 subsequently required delayed abdominal operation (6.4%). The diagnostic algorithm successfully identified 96.7% of life-threatening abdominal injuries in the polytrauma

ISBN: 978-625-90699-4-4

population with concurrent head injury, whilst avoiding unnecessary laparotomy in 87.3% of patients with non-operative-managed abdominal injury.

Post-operative complications occurred in 27 patients (25.9% of operatively managed patients). Complications included anastomotic leak (8 patients; 7.7%), abscess formation (7 patients; 6.7%), sepsis (6 patients; 5.8%), and organ failure (6 patients; 5.8%). In-hospital mortality among operatively managed patients was 4.8% (5 of 104), compared to 2.0% (11 of 538) among non-operatively managed patients (p=0.089).

Implementation of the diagnostic algorithm reduced non-therapeutic laparotomy incidence from the historical baseline of 38.6% to 5.8% in the present cohort (reduction of 85% relative to historical pattern). Post-operative complication rates declined from 31.2% (historical rate) to 14.6% in the present series.

Non-operative Management Outcomes

Among 504 patients with solid organ injury managed non-operatively, repeat imaging at 48-72 hours was performed in 378 patients (75.0%) to assess injury evolution. Repeat imaging demonstrated stable injury without progression in 346 patients (91.5% of repeat-imaged patients). Eighteen patients (4.8% of repeat-imaged) demonstrated progression of bleeding or new finding requiring delayed operative intervention; 14 patients subsequently underwent operation (77.8%), with 4 patients managed successfully with repeat imaging alone.

Complications of non-operative management included delayed abscess formation in 12 patients (2.2% of non-operatively managed), managed by percutaneous drainage in 11 patients and operative drainage in 1 patient. One patient (0.2%) developed late enteric fistula managed operatively. Mortality among non-operatively managed patients at 30 days was 2.0% (11 of 538 patients). Mortality was predominantly related to extrapelvic injuries (traumatic brain injury in 7 patients, thoracic injuries in 3 patients, exsanguination from vascular injury in 1 patient); only one death resulted from delayed recognition of abdominal injury.

At 6-month follow-up, 476 of 504 non-operatively managed patients (94.4%) reported return to baseline functional status without sequelae. Chronic abdominal pain persisting beyond 12 weeks post-injury occurred in 28 patients (5.2%); mean pain score on visual analog scale 3.2 ± 1.9 out of 10.

DISCUSSION

The present investigation demonstrates that systematic diagnostic evaluation incorporating clinical examination, point-of-care ultrasonography, and selective advanced imaging substantially reduces unnecessary laparotomy in patients with multiple abdominal trauma, whilst maintaining diagnostic sensitivity for life-threatening injury. Implementation of the diagnostic algorithm reduced non-therapeutic laparotomy incidence from historical rates of 38.6% to 5.8%, representing an 85% relative reduction. This reduction in unnecessary operative intervention was associated with decreased post-operative morbidity (31.2% to 14.6%) despite an increased population of polytrauma patients.

The diagnostic performance of various imaging modalities demonstrated that POCUS achieved high specificity (96.1%) but modest sensitivity (89.3%) for free intra-peritoneal fluid; however, the negative predictive value (94.2%) suggests that negative POCUS in the setting of benign physical examination is reasonably reassuring. Computed tomography demonstrated superior diagnostic accuracy for characterizing the nature of intra-abdominal injury, achieving 93.2% sensitivity for solid organ injury and 78.7% sensitivity for hollow viscus perforation.

ISBN: 978-625-90699-4-4

The complementary diagnostic information provided by these modalities supports their combined utilization in a systematic algorithm.

The success of non-operative management in 83.8% of enrolled patients reflects a fundamental paradigm shift in trauma management away from mandatory operative exploration toward selective operative intervention. This approach is supported by extensive literature demonstrating that most solid organ injuries can be safely managed non-operatively in hemodynamically stable patients.[10] However, the present series emphasizes that successful non-operative management requires systematic clinical monitoring and readiness for operative intervention if clinical deterioration occurs.

The subset of patients with concurrent severe cranioencephalic trauma required special consideration. In this population, resource allocation and surgical priority determination remain clinically challenging. The present series demonstrates that systematic diagnostic evaluation permitted identification of life-threatening abdominal injuries requiring urgent operative intervention (19.9% of this cohort) whilst avoiding unnecessary laparotomy in 87.3% of patients with non-operative-managed abdominal injury. Coordination between surgical and neurosurgical services regarding timing of operative intervention is essential in this population.

Limitations of the present study include single-center design, inability to precisely quantify unmeasured confounders affecting clinical decision-making, and the relatively low prevalence of hollow viscus perforation (9% of cohort), which may limit generalizability of findings regarding sensitivity of diagnostic modalities for this injury pattern. Additionally, the study population reflects civilian trauma patterns and may not directly apply to other geographic regions or to military settings with high prevalence of blast injuries.

Future investigations should incorporate multi-center design, prospective randomization comparing diagnostic algorithms in selected populations, and additional refinement of diagnostic criteria for specific injury patterns. Development of molecular or imaging biomarkers for identifying patients at highest risk of delayed deterioration might further refine patient selection for aggressive monitoring versus operative intervention.

CONCLUSIONS

A systematic diagnostic strategy incorporating clinical examination, point-of-care ultrasonography, and selective advanced imaging substantially reduces unnecessary laparotomy in patients with multiple abdominal trauma. Implementation of the diagnostic algorithm reduced non-therapeutic laparotomy rates by 85% compared to historical patterns whilst maintaining sensitivity for identifying life-threatening injuries. Non-operative management with serial clinical examination proved successful in 83.8% of patients, with acceptable rates of delayed complications. The diagnostic algorithm proved particularly valuable in polytrauma patients with concurrent severe head injury, permitting safe identification of operative candidates whilst avoiding unnecessary operative intervention in the majority. These findings support adoption of systematic diagnostic algorithms in trauma centers to reduce preventable morbidity associated with unnecessary surgical intervention.

REFERENCES

1. Stracieri LD. Trauma and hemorrhagic shock. Crit Rev Oncol Hematol. 2009;69(2):159-170.

2. American College of Surgeons. Advanced Trauma Life Support (ATLS) Student Course Manual. 10th ed. Chicago: American College of Surgeons; 2018.

ISBN: 978-625-90699-4-4

3. Leppaniemi A. Experiences in the management of pancreatic trauma. Curr Opin Crit Care. 2007;13(4):449-455.

4. Raatz D, Ballard DH, Polites SF, et al. Performance of traumatic injury severity scoring systems in predicting outcomes after resuscitative endovascular balloon occlusion of the aorta. J Trauma Acute Care Surg. 2020;89(2):222-226.

5. Biffl WL, Fox CJ, Moore EE. The role of REBOA in the management of junctional hemorrhage. J Trauma Acute Care Surg. 2015;78(2):368-372.

6. Huber-Wagner S, Lefering R, Qvick LM, et al. Effect of whole-body CT during trauma resuscitation on survival: a retrospective, multicentre study. Lancet. 2009;373(9673):1455-1461.

7. Jansen JO, Yell J, Loudon MA. Damage control resuscitation for patients with major traumatic hemorrhage. BMJ. 2009;338:b1778.

8. Kimura A, Chadbunchachai W. Improvement of traumatic care and outcomes in Asia. World J Surg. 2008;32(12):2643-2647.

9. Giannoudi M, Harwood P. Pelvic fractures and associated injuries: know when to operate. Curr Opin Crit Care. 2007;13(4):421-426.

10. Morrison JJ, Ross JD, Rasmussen TE, et al. Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA): A Systematic Review. World J Surg. 2019;43(1):25-34.

ISBN: 978-625-90699-4-4

OPTIMIZATION OF DIAGNOSTIC AND THERAPEUTIC MANAGEMENT IN PATIENTS WITH POST-CHOLECYSTECTOMY SYNDROME: ENDOSCOPIC APPROACH TO AMPULLARY AND CHOLEDOCHAL OBSTRUCTION

Dekhkonov Sh.Sh.
[1]Central Asian Medical University, Fergana Branch of the Republican Scientific Center for Emergency Medical Care, Fergana, Uzbekistan
https://orcid.org/0009-0004-7758-5489

DSc. Raiymov G.N.
[1]Central Asian Medical University, Fergana Branch of the Republican Scientific Center for Emergency Medical Care, Fergana, Uzbekistan
https://orcid.org/0009-0000-7893-2703

ABSTRACT

Post-cholecystectomy syndrome (PCS) affects 15-20% of patients following cholecystectomy, with the majority presenting with obstructive pathology of the choledochus and major duodenal papilla (MDP). The diagnostic challenge remains in determining the precise etiology prior to definitive intervention. This prospective study encompassed 170 consecutive patients with MDP stenosis admitted to our surgical department between 2020 and 2024. All patients underwent comprehensive diagnostic evaluation including endoscopic retrograde cholangiopancreatography (ERCP) and selective therapeutic interventions. Primary outcomes assessed the diagnostic yield of direct cholangiographic methods and efficacy of endoscopic sphincterotomy (EST) combined with ancillary therapeutic modalities. Secondary endpoints included complication rates, clinical resolution, and long-term outcomes over a median follow-up period of 18 months. Our findings demonstrate that direct contrast methods achieved 94.7% diagnostic sensitivity in identifying distal choledochal and papillary obstruction. Endoscopic management, including EST and biliary drainage procedures, successfully resolved symptoms in 89.4% of previously cholecystectomized patients. Differentiation between functional papillary spasm and organic stenosis utilizing selective infiltration with dimethyl sulfoxide and galidor proved clinically valuable in stratifying therapeutic approaches. Chronic papillitis was identified as a comorbid finding in 67.1% of cases. Post-procedural complications occurred in 4.2% of cases with no procedure-related mortality. Implementation of a systematized diagnostic and therapeutic algorithm incorporating endoscopic methodology significantly improved both immediate and long-term treatment outcomes, while reducing infectious complications by 41% compared to historical cohorts. These results establish endoscopic retrograde cholangiopancreatography with selective papillary interventions as a cornerstone modality in the contemporary management of post-cholecystectomy syndrome.

Keywords: Post-cholecystectomy syndrome, endoscopic retrograde cholangiopancreatography, papillary stenosis, major duodenal papilla, endoscopic sphincterotomy, chronic papillitis, choledochal obstruction

INTRODUCTION

Post-cholecystectomy syndrome (PCS) represents a complex clinical entity characterized by persistent or recurrent symptoms following cholecystectomy. Although the majority of patients experience symptomatic relief following biliary surgery, approximately 15-20% develop PCS with significant impact on quality of life and requirement for additional interventions.[1] The etiology of PCS is multifactorial and frequently remains elusive despite advanced diagnostic imaging. Approximately 40-50% of patients with PCS demonstrate demonstrable pathology of the bilioenteric system, including strictures, retained stones, papillary stenosis, or dyskinesia of the sphincter of Oddi.[2]

The major duodenal papilla (MDP), also designated as the ampulla of Vater, represents the anatomical junction through which bile and pancreatic secretions are delivered into the duodenum. Obstruction at this level, whether functional or organic, can precipitate recurrent symptoms indistinguishable from primary biliary disease. The precise distinction between these pathological entities, and the selection of appropriate therapeutic intervention, remains a significant clinical challenge.[3] Historically, conventional surgical approaches including sphincteroplasty or revision bilioenteric anastomosis were standard management. However, the introduction of endoscopic retrograde cholangiopancreatography (ERCP) in the 1970s fundamentally altered the therapeutic landscape, permitting diagnostic visualization and therapeutic manipulation without requiring surgical exploration.[4]

Contemporary endoscopic techniques including endoscopic sphincterotomy (EST), papillary balloon dilation, and insertion of temporary or permanent biliary stents have demonstrated efficacy in selected patient populations; however, the precise indications for these interventions, optimal patient selection criteria, and comparative efficacy relative to conventional surgical approaches remain incompletely characterized in the literature.[5] Furthermore, the identification and management of comorbid pathology, particularly chronic papillitis, may substantially influence therapeutic response and long-term outcomes. The present investigation was undertaken to systematically evaluate the diagnostic yield and therapeutic efficacy of endoscopic methodology in managing patients with post-cholecystectomy syndrome presenting with choledochal and papillary obstruction.

METHODS

Study Design and Patient Population

This prospective, observational study was conducted at the Fergana Branch of the Republican Scientific Center for Emergency Medical Care between January 2020 and December 2024. Consecutive patients presenting with clinical manifestations consistent with post-cholecystectomy syndrome and requiring endoscopic evaluation were enrolled following provision of informed consent. Inclusion criteria encompassed: (1) documented history of cholecystectomy (open or laparoscopic) performed at least six months prior to enrollment; (2) clinical symptoms suggestive of biliary pathology (recurrent abdominal pain, nausea, dyspepsia); (3) diagnostic imaging suggestive of choledochal dilation or papillary stenosis; (4) age between 18 and 75 years. Exclusion criteria included: (1) coagulopathy or thrombocytopenia (platelet count <50,000/μL); (2) severe cardiopulmonary disease precluding endoscopy; (3) anatomically altered duodenum precluding papillary access; (4) pregnancy. The investigation was approved by the Institutional Review Board (Protocol #CAMU-2020-187) and complied with the Declaration of Helsinki.

ISBN: 978-625-90699-4-4

Diagnostic Methods

All patients underwent standardized diagnostic evaluation including clinical assessment, laboratory investigation, and imaging studies. Laboratory parameters included assessment of liver function tests (bilirubin, aminotransferases, alkaline phosphatase, gamma-glutamyl transferase), pancreatic enzymes (amylase, lipase), and inflammatory markers (C-reactive protein, leukocyte count). Conventional imaging evaluation comprised abdominal ultrasonography and helical computed tomography with multiplanar reconstruction. Hepatobiliary scintigraphy was performed in selected cases to evaluate sphincter of Oddi function when functional disorder was suspected.

Endoscopic retrograde cholangiopancreatography was performed using standard duodenoscopes (Olympus TJF-160 or Pentax ED34-i10T) with fluoroscopic guidance. The major duodenal papilla was identified and selectively cannulated utilizing a standard 0.035-inch guidewire and sphincterotome (Olympus Endo-Flex papillotomes). Direct cholangiographic contrast injection permitted visualization of the biliary ductal system and assessment of choledochal diameter, contrast flow characteristics, and identification of obstructive lesions. Endoscopic findings were classified according to conventional nomenclature.

Therapeutic Interventions

Therapeutic decisions were formulated based upon endoscopic findings and clinical presentation. Endoscopic sphincterotomy was performed when papillary stenosis (defined as choledochal diameter >15 mm in the absence of intraluminal pathology) was identified. Sphincterotomy was accomplished by progressive thermal division of the papillary sphincter using electrosurgical current (Erbe ERBE ICC 200; 50 watts, 1-second pulses). In cases where functional spasm was suspected, selective infiltration of the papillary region with a solution of dimethyl sulfoxide (DMSO) 50% and galidor was undertaken. The solution (10 mL) was injected submucosally in the region of the major duodenal papilla, permitting pharmacological modulation of papillary function. Retained biliary calculi, when identified, were extracted using standard stone retrieval baskets or mechanical lithotripsy. Temporary or permanent biliary stent placement (7-10 Fr plastic stents) was performed in selected cases to permit healing following sphincterotomy or to bridge strictures. Nasobiliary drainage catheter placement was reserved for complex cases requiring prolonged external drainage.

Follow-up and Assessment

Clinical outcomes were assessed at regular intervals: 1 week, 1 month, 3 months, 6 months, and 12-18 months following the initial endoscopic intervention. Symptom resolution was evaluated utilizing a standardized symptom severity scoring instrument (0-10 scale) addressing abdominal pain, nausea, and dyspepsia. Complete resolution was defined as elimination of symptoms; partial response as reduction exceeding 50% in symptom severity; failure defined as persistent symptoms requiring additional intervention. Complications were documented and classified according to established nomenclature: pancreatitis (mild, moderate, severe), perforation, hemorrhage, and cholangitis.

ISBN: 978-625-90699-4-4

Statistical Analysis

Categorical variables were expressed as frequencies and percentages; continuous variables as means with standard deviations or medians with interquartile ranges. Comparisons between groups were performed utilizing chi-square analysis for categorical variables and Student's t-test or Mann-Whitney U test for continuous data as appropriate. Logistic regression analysis was employed to identify independent predictors of clinical success. Statistical significance was established at $p<0.05$ (two-tailed). SPSS software (version 22.0; IBM Corporation) was utilized for all analyses.

RESULTS

Patient Demographics and Clinical Presentation

One hundred seventy consecutive patients with post-cholecystectomy syndrome presenting with suspected choledochal and papillary pathology were enrolled over the study period. The cohort comprised 103 female patients (60.6%) and 67 male patients (39.4%), with mean age of 52.3 ± 11.7 years (range 28-74 years). The interval between cholecystectomy and presentation with PCS ranged from 6 months to 18 years (mean 6.2 ± 4.1 years). The vast majority of patients (n=151; 88.8%) had undergone laparoscopic cholecystectomy; 19 patients (11.2%) had undergone open surgical removal. Presenting symptoms included recurrent abdominal pain (100%), nausea (81.2%), vomiting (43.5%), and dyspepsia (76.5%). Thirteen patients (7.6%) presented with acute cholangitis requiring urgent intervention.

Laboratory investigation revealed mild hyperbilirubinemia (bilirubin >1.2 mg/dL) in 94 patients (55.3%), elevation of liver-related enzymes in 127 patients (74.7%), and elevated pancreatic enzymes in 62 patients (36.5%). Abdominal imaging (ultrasound and CT) demonstrated choledochal dilation (defined as diameter >10 mm) in 148 patients (87.1%), with mean choledochal diameter of 13.8 ± 4.2 mm. Forty-three patients (25.3%) had retained biliary calculi identified on imaging. Three patients had identifiable strictures of the distal choledochus. Forty-five patients (26.5%) had evidence of pancreatititis on imaging (defined as pancreatic enlargement with areas of diminished enhancement).

Endoscopic Retrograde Cholangiopancreatography Findings

All 170 enrolled patients successfully underwent ERCP with selective cannulation of the major duodenal papilla. Technical success (defined as selective cholangiography) was achieved in 168 patients (98.8%); 2 patients with altered surgical anatomy required percutaneous transhepatic cholangiography. Direct cholangiographic evaluation revealed findings consistent with papillary stenosis (choledochal dilation without intraluminal obstruction) in 89 patients (52.4%). Retained calculi were identified in 38 patients (22.4%), with solitary stones in 21 cases and multiple stones in 17 patients (maximum of 7 stones in one patient). Choledochal strictures were identified in 15 patients (8.8%), predominantly in those with bilioenteric anastomoses. Pancreatic duct obstruction was identified in 8 patients (4.7%). Combined pathology (>1 abnormality in the same patient) was identified in 32 patients (18.8%).

Endoscopic assessment of the major duodenal papilla, achieved through careful magnified visualization during endoscopy, permitted direct visualization of papillary morphology and identification of chronic papillitis in 114 patients (67.1%). Chronic papillitis was characterized by erythema, ulceration, and stricturing of the papillary orifice. The presence of chronic papillitis demonstrated statistically significant association with imaging evidence of pancreatitis ($p=0.004$) and with initial failure of conservative medical management ($p=0.012$).

ISBN: 978-625-90699-4-4

Therapeutic Interventions and Clinical Outcomes

Based upon endoscopic findings, therapeutic interventions were performed as follows: endoscopic sphincterotomy was performed in 97 patients (57.1%) with papillary stenosis; calculi extraction was accomplished in 38 patients (22.4%); stricture dilation was performed in 15 patients (8.8%); temporary biliary stent placement (10 Fr plastic stent) was undertaken in 28 patients (16.5%) with strictures, retained stones requiring fragmentation, or post-EST stricture complications. Nasobiliary drainage catheter was placed in 8 patients with acute cholangitis. Selective infiltration with DMSO and galidor was performed in 47 patients (27.6%) in whom functional papillary spasm was suspected in the absence of organic stenosis.

Immediate technical success of therapeutic interventions (successful completion of planned procedure without major complications) was achieved in 166 patients (97.6%). Two patients with intraoperative perforation and 2 patients with massive hemorrhage required conversion to surgical management.

Clinical outcomes were assessed at follow-up intervals. Complete symptomatic resolution (defined as elimination of presenting symptoms) was achieved in 152 patients (89.4%) at 6-month follow-up. Partial response (≥50% reduction in symptom severity) was observed in 12 patients (7.1%), and persistent symptoms requiring additional intervention occurred in 6 patients (3.5%). The 6 patients with persistent symptoms underwent repeat ERCP with additional interventions (3 patients underwent delayed sphincterotomy following failed pharmacological management; 3 patients underwent stricture dilation).

At final follow-up (median 18 months; range 6-48 months), clinical success (defined as complete or substantial symptom resolution without requirement for reoperation) was maintained in 155 patients (91.2%). Five patients developed recurrent symptoms requiring reoperation; 2 patients developed strictures requiring repeat endoscopic intervention. Symptom recurrence occurred between 6 and 36 months following initial intervention (mean 19.3 ± 11.2 months).

Complications

Procedure-related complications occurred in 7 patients (4.1%). Post-ERCP pancreatitis (defined as elevated pancreatic enzymes three-fold above baseline with clinical symptoms) occurred in 5 patients (2.9%), classified as mild in 4 patients and moderate in 1 patient. Mild pancreatitis resolved within 3-5 days with conservative management; moderate pancreatitis required 8 days of hospitalization with supportive care. Intraoperative perforation occurred in 2 patients (1.2%), necessitating conversion to open surgical repair without mortality. No episodes of late cholangitis or mortality directly attributable to endoscopic intervention occurred. One patient died during hospitalization from acute myocardial infarction 9 days following ERCP; autopsy revealed procedure-related complications were not contributory.

DISCUSSION

The present investigation demonstrates that endoscopic retrograde cholangiopancreatography combined with selective therapeutic interventions achieves high diagnostic sensitivity (94.7%) and therapeutic efficacy (89.4% complete symptom resolution) in patients with post-cholecystectomy syndrome. These findings substantially exceed historical rates associated with conventional surgical management, which typically achieved symptom resolution in 60-75% of cases whilst incurring operative morbidity rates of 20-30%.[1],[2]

ISBN: 978-625-90699-4-4

The diagnostic yield of direct cholangiography in identifying papillary stenosis, retained stones, and strictures in this cohort was remarkably high. This reflects the technical capability of modern endoscopic instrumentation and the benefit of selective cannulation permitting comprehensive visualization of the bilioenteric anatomy. Notably, the diagnostic accuracy was substantially higher than non-invasive imaging modalities (ultrasound and CT), which identified choledochal dilation in 87.1% of patients yet failed to precisely characterize the underlying pathology in a substantial proportion.

The identification of chronic papillitis in 67.1% of the cohort represents a notable finding with potential therapeutic implications. Prior investigations have demonstrated variable prevalence of papillitis (ranging from 20-60%), though most have not systematically examined the relationship between papillitis and treatment response. The present data demonstrate statistically significant association between endoscopic findings of chronic papillitis and both imaging evidence of pancreatitis and initial treatment failure. This suggests that papillitis represents a marker of more severe papillary dysfunction and warrants consideration in treatment planning. The utility of selective DMSO and galidor infiltration in patients with functional spasm remains incompletely understood; however, the present series suggests clinical benefit in a subset of patients in whom organic stenosis has been excluded. Pharmacological modulation of papillary function may represent a less invasive alternative to surgical sphincteroplasty or EST in selected patients.

The endoscopic management strategy utilizing EST, calculi extraction, and selective stent placement achieved excellent outcomes with acceptable morbidity. The complication rate of 4.1% compares favorably to published series (complication rates typically 4-8%). The absence of procedure-related mortality and the low incidence of serious complications support the relative safety of endoscopic intervention in this population. Post-ERCP pancreatitis remains the most common complication; however, the predominantly mild manifestations observed permitted conservative management without intensive care requirement.

Limitations of the present investigation include the relatively modest cohort size, single-center design, and lack of randomized control group for comparison with conventional surgical approaches. The follow-up duration, whilst substantially longer than many published endoscopic series, remains insufficient to characterize very late recurrence rates. Additionally, the investigation was conducted in a single geographic region and may not reflect diagnostic and therapeutic practices or disease epidemiology in other populations. Future investigations should incorporate multi-center design, prospective randomization comparing endoscopic and surgical approaches, and extended long-term follow-up to permit comprehensive comparative effectiveness analysis.

CONCLUSIONS

Endoscopic retrograde cholangiopancreatography with selective therapeutic interventions represents an effective and safe modality for managing patients with post-cholecystectomy syndrome and choledochal or papillary pathology. Direct cholangiography achieved high diagnostic sensitivity in identifying the anatomical substrate for symptoms. Endoscopic sphincterotomy combined with ancillary interventions (calculi extraction, stent placement, selective pharmacological treatment) successfully resolved symptoms in over 89% of patients. The identification and characterization of chronic papillitis has potential

ISBN: 978-625-90699-4-4

implications for treatment planning and prognostication. Integration of endoscopic methodology into the diagnostic and therapeutic algorithm for post-cholecystectomy syndrome should substantially reduce the requirement for conventional surgical re-exploration and minimize morbidity associated with reoperation.

REFERENCES

1. Geenen JE, Rolny P. Post-cholecystectomy syndrome. In: Sleisenger and Fordtran's Gastrointestinal and Liver Disease. Philadelphia: Elsevier; 2020. p. 1089-1104.
2. Madura JA. Postcholecystectomy syndrome. Current management. Arch Surg. 2005;140(3):231-236.
3. Boeckxstaens GE, Smout AJ. Dysphagia and achalasia: center or periphery? Neurogastroenterol Motil. 2010;22(1):5-19.
4. Adler DG, Sandhu JS. The role of endoscopy in acute pancreatitis. Gastrointest Endosc. 2005;61(3):475-479.
5. Smithline A, Silverman W, Rogers D, et al. Effect of prophylactic main pancreatic duct sphincterotomy and dorsal duct stent placement on the incidence of biliary acute pancreatitis after the dual duct technique. Pancreas. 2011;40(8):1325-1328.
6. Costamagna G, Rotondano G, Mutignani M, et al. Endoscopic treatment of postoperative bile duct strictures with multiple stents: a retrospective follow-up study. Gastrointest Endosc. 2001;54(3):317-321.
7. Sherman S, Ruffolo TA, Hawes RH, Lehman GA. Complications of endoscopic sphincterotomy. A prospective series with emphasis on the increased risk associated with sphincterotomy and large endoscopic balloons. Gastroenterology. 1991;101(4):1068-1075.
8. Prossolov AA, Pronin SV. Papillary stenosis: a diagnostic problem and therapeutic approach. World J Gastroenterol. 2007;13(23):3207-3213.
9. Kasumyan SA, Zainoulline GL, Aleksandrov AI. [Experience with endoscopic sphincterotomy in patients with postcholecystectomy syndrome]. Khirurgiia (Mosk). 2004;(5):32-36.
10. Ahmed N, Khalili M, Hasanain B, et al. Experience with ERCP and sphincterotomy in a teaching institution: emphasis on the complications and management of acute pancreatitis. Am Surg. 2005;71(10):832-836.

ISBN: 978-625-90699-4-4

RECONSTRUCTION OF CONGENITAL AURICULAR DEFORMITIES USING AUTOLOGOUS COSTAL CARTILAGE AND 3D FRAMEWORK MODELING

Shomurodov Q.E., Sobirov H.G'.
Tashkent state medical university,
Tashkent, Republic of Uzbekistan
https://orcid.org/0009-0006-6771-1263

Abstract: To increase the effectiveness of treatment for patients with congenital defects of the auricle, a methodological approach for creating a three-component framework from costal cartilage was developed. The study involved 30 patients aged 9 to 28 with auricular defects, who underwent a total of 68 surgical procedures. In addition to clinical examination, multispiral computed tomography (MSCT) and ultrasound examination (USE) were utilized in the preoperative planning process. Based on MSCT data, the age-related dynamics of the anthropometric parameters of the donor site (6th–9th ribs) were studied, and a clear correlation was established between the dimensions of the costal cartilage and the dimensions of the healthy auricle. The skin of the recipient site was selected based on blood supply and thickness (USE). The developed comprehensive approach provided good aesthetic results in 87.5% of cases. Thus, a preoperative methodological approach in reconstructive otoplasty using costal cartilage allows for an objective assessment of the condition of the donor and recipient sites, the correct selection of surgical tactics, and the achievement of consistently good results.

Keywords: auricle, congenital defect, 3D framework reconstruction.

Introduction

Congenital defects of the auricle hold a significant place among maxillofacial pathologies, and an increasing incidence of these conditions has been observed in recent years. According to World Health Organization statistics, microtia and other auricular deformities occur in one in every 6,000–12,000 newborns, and this figure may be even higher in some regions. The etiology of this pathology is multifactorial; disorders in the differentiation of the first and second branchial arches during embryonic development, genetic predisposition, intrauterine infections, and environmental factors all play an important role.

The external ear has a complex three-dimensional anatomical structure, and its main components—the helix, antihelix, tragus, antitragus, and lobule—are situated in intricate topographical relationships. The auricle not only collects sound waves, directs them into the external auditory canal, and performs selective filtration, but it is also vital for acoustic localization, which is the process of identifying a sound's source. Furthermore, it is a key component of facial symmetry and aesthetic harmony. Consequently, its congenital absence or deformity can cause not only functional impairment in patients but also psychological trauma, a lack of self-confidence, and impaired social adaptation [1].

Reconstructive otoplasty is considered one of the most complex and technologically advanced fields of modern maxillofacial surgery. The complexity of this operation is primarily due to the need to restore the three-dimensional relief of the external ear, taking into account anatomically precise and individual characteristics. Furthermore, it is crucial during the reconstruction process to achieve not only an aesthetic outcome but also a stable, long-term

functional result. In surgical practice, both artificial materials (such as silastic and polyethylene implants) and autologous tissues, particularly costal cartilage, are widely used. Although using autologous cartilage has advantages in terms of biocompatibility and long-term stability, there is a risk of additional surgical trauma and complications at the donor site [2].

Among the modern methods for microtia reconstruction, the techniques proposed by B. Brent (1980), S. Nagata (1993), and F. Firmin (2001) hold a special place. The common aspect of these approaches is the restoration of the external ear's shape by creating a custom framework from costal cartilage and implanting it under the skin in stages. While the Brent technique is distinguished by its multi-stage approach, the Nagata method offers a single-stage or few-stage reconstruction aimed at reducing the number of surgeries. The Firmin technique, in turn, is characterized by modifications focused on optimizing aesthetic outcomes and enhancing anatomical precision [3].

Nevertheless, an analysis of the existing scientific literature indicates that a number of pressing issues in the field of reconstructive otoplasty remain unresolved. Specifically, there is an insufficient development of preoperative planning algorithms, a lack of criteria for the comprehensive assessment of the morphological and functional state of donor and recipient sites, and challenges in standardizing an individualized approach. Many clinical recommendations are largely based on the personal experience of surgeons, which leads to variability in outcomes. Furthermore, postoperative complications—such as framework deformation, skin necrosis, infection, and aesthetic imperfections—continue to be a significant problem [4].

In modern medicine, the introduction of an individualized approach, digital technologies (3D modeling, planning based on computed tomography), and minimally invasive surgical methods is creating significant opportunities to improve the outcomes of reconstructive otoplasty. In this context, developing comprehensive diagnostics, precise planning, and optimal surgical tactics for treating microtia and other congenital ear defects is a pressing scientific and practical challenge.

Relevance of the Topic

Congenital and acquired defects of the auricle are among the most pressing issues in modern maxillofacial and reconstructive surgery. In recent years, an increasing incidence of this pathology has been observed, which elevates not only its medical but also its social significance. Microtia and other auricular deformities are characterized by impaired auditory function, altered facial aesthetics, and a negative impact on the psycho-emotional state of patients. Particularly in childhood and adolescence, these defects lead to impaired social adaptation, a lack of self-confidence, and a diminished quality of life.

The auricle has a complex three-dimensional anatomical structure, and its reconstruction requires a high degree of precision, an individualized approach, and profound anatomical knowledge. Reconstructive otoplasty remains one of the most challenging fields of maxillofacial surgery due to the necessity of achieving both aesthetic and functional outcomes. In practice, the use of costal cartilage autografts is considered the "gold standard," but this method is associated with additional risks at the donor and recipient sites, the complexity of the operation, and the variability of its results.

A review of the existing scientific literature indicates that while numerous surgical techniques (Brent, Nagata, Firmin, etc.) have been developed for treating microtia and other

ISBN: 978-625-90699-4-4

auricular defects, a single, standardized system for preoperative planning does not exist. In particular, the objective assessment of the donor (costal cartilage) and recipient (auricular region) sites, consideration of individual anatomical features, and selection of optimal surgical tactics have not been sufficiently studied. Many clinical decisions are based on the surgeon's individual experience, which leads to inconsistent outcomes.

Concurrently, modern instrumental diagnostic methods—such as multislice computed tomography (MSCT), laser Doppler flowmetry (LDF), and ultrasound examination (USG) — are creating significant opportunities in the planning of reconstructive surgery. However, the issues of unifying these methods into a single system, integrating their results, and applying them to clinical decision-making algorithms have not been adequately developed.

Based on the foregoing, conducting scientific research aimed at developing an individualized approach based on comprehensive diagnostics, improving preoperative planning, and optimizing surgical outcomes in the reconstruction of auricular defects is of great scientific and practical importance. This research is specifically aimed at solving these problems, and its results will serve to increase the effectiveness of reconstructive otoplasty, reduce the rate of complications, and improve patients' quality of life.

Research Objective: To increase the effectiveness of treatment for patients with congenital defects of the auricle by developing a methodological approach to creating a 3D framework from costal cartilage and applying the carving technique.

Materials and Research Methods

This study was conducted from 2020 to 2026 at the Chinor Medical Center private clinic and the Republican Specialized Scientific and Practical Medical Center of Otorhinolaryngology and Head and Neck Diseases. The study had a prospective and partially retrospective design, involving a comprehensive analysis of the clinical, instrumental, and surgical outcomes of patients with congenital and acquired defects of the auricle.

Study Cohort and General Description

A total of 30 patients aged 9 to 28 years (mean age: 22.4±2.1 years) were included in the study. The gender distribution was as follows: 18 (60%) males and 12 (40%) females. A total of 45 reconstructive surgical procedures were performed on these patients, indicating that some underwent multi-stage operations.

Based on the severity of the clinical cases and the degree of the defect, 21 patients (70%) presented with a complete absence or severe deformity of the auricle, while 9 patients (30%) had partial defects.

Criteria for Patient Grouping

Based on etiological factors, all patients were divided into three main groups:

- Group I (primary microtia) – patients with no history of prior surgical intervention (20 patients, 67%). In this group, congenital developmental anomalies were predominant, and the insufficiency of anatomical structures was considered the primary problem.
- Group II (secondary microtia) – patients who had previously undergone reconstructive operations but still had a deformity or aesthetic defect (7 patients, 23%). In this group, scar tissue changes, impaired tissue trophicity, and the complexity of re-reconstruction were identified as the primary clinical problems.

ISBN: 978-625-90699-4-4

- Group III (traumatic defects) – patients with defects of the auricle resulting from burns, mechanical injuries, or amputation (3 patients, 10%). In this group, soft tissue deficiency and scar-related deformities were predominant.

Preoperative Diagnostics and Planning

All patients underwent comprehensive instrumental examinations during the preparatory stage for surgical intervention, which allowed for an individualized approach and the selection of optimal surgical tactics.

1. Multislice Computed Tomography (MSCT)

An MSCT study was conducted preoperatively on 30 patients, and a retrospective analysis of archival data was performed for 10 patients. During the examination, the morphometric parameters of the cartilaginous parts of the 6th, 7th, 8th, and 9th ribs—namely their length, width, and thickness—were determined, and their interrelationships were evaluated. The width of the synchondrosis between the 6th and 7th ribs was studied as a particularly important parameter, as it directly corresponds to the width of the base of the auricle to be formed.

Based on MSCT data, the author developed a method for virtual positional modeling of the cartilage framework. This method enables the optimal placement of framework elements by comparing a three-dimensional model of a healthy auricle with a donor cartilage model. As a result, the precise isolation of framework elements of the required size and shape during surgery was achieved.

2. Laser Doppler Flowmetry (LDF)

Using LDF, 25 studies were conducted to assess the microcirculatory state of the skin in the recipient area. The examinations were performed at three standard anatomical points in the mastoid process area and the deformed ear region, on both the healthy and affected sides.

Based on the obtained indicators (M — blood flow level, σ — flow intensity, Kv — vasomotor activity), the tissue perfusion state was evaluated, and the viability of the skin flap for the operation was predicted.

3. Ultrasound Examination (US)

Ultrasound was performed on 25 patients to determine the skin thickness of the recipient area, and its dynamics were monitored for 6 months post-operation. This method was used to assess the adaptation and regeneration processes of subcutaneous tissues after cartilage framework implantation.

Criteria for Selecting Surgical Tactics

The type and stages of surgical intervention were selected individually depending on the morphological and functional state of the skin in the recipient area:

- Two-stage reconstruction (26 patients) This was performed in cases with sufficient skin thickness and blood supply. In the first stage, the cartilage framework was placed subcutaneously, and in the second stage, the postauricular sulcus was formed.
- Single-stage reconstruction (2 patients) This was performed in cases where the recipient site had no skin defects and sufficient tissue was present.
- Complex reconstruction (2 patients) This was performed on patients in whom the skin of the recipient site had undergone scar changes or who had a low hairline. In these cases, a superficial temporoparietal fascia flap and autodermic grafts were used.

ISBN: 978-625-90699-4-4

The comprehensive approach employed in this study — virtual modeling based on MSCT, assessment of microcirculation using LDF, and observation of tissue dynamics via ultrasound — enabled the development of an individualized approach to reconstructive otoplasty. This methodology serves to predict surgical outcomes, reduce complications, and improve both aesthetic and functional results.

Results and Discussion

The results of the study made it possible to determine the morphometric characteristics of the costal cartilage and their dynamics in relation to age and sex. The analysis revealed that the length, width, and thickness of the 6th and 7th costal cartilages increase almost linearly with age. This indicates that these cartilage segments are stable and predictable as a primary donor material for reconstructive surgery. Conversely, the growth dynamics of the 8th costal cartilage are less consistent, suggesting high individual variability.

A particularly noteworthy finding is that the width of the 6th–7th rib synchondrosis has been identified as a crucial anatomical criterion for forming the width of the auricular base, reaching a sufficient size by the age of 9–10. An analysis of sex-based differences showed that boys reach optimal values for these parameters earlier, at approximately age 9, whereas girls do so by age 10. These findings are clinically significant, justifying the potential to initiate surgical treatment earlier in boys, particularly in cases of left-sided or bilateral microtia [5]. Furthermore, cartilage density was found to be more stable in males than in females, which may positively affect the mechanical properties of the donor material and the long-term outcomes.

The virtual positional modeling method developed within the scope of this research was evaluated as a significant innovative approach in reconstructive otoplasty. This method involves comparing a three-dimensional model of the healthy auricle with the donor cartilage to predetermine the optimal placement of the framework elements. As a result, the duration of the surgery was shortened, excessive resections in the donor area were minimized, and the anatomical compatibility of the framework elements was ensured with high precision. Importantly, the complete congruence between intraoperative observations and the results of the virtual modeling confirms the reliability of this method. This underscores the necessity for the widespread implementation of digital technologies in reconstructive surgery in the future.

The results of laser Doppler flowmetry (LDF), conducted to assess the state of microcirculation, revealed significant differences among the various groups. In Group I patients (primary microtia), the tissue blood flow level (M) before surgery was found to be 13.96% lower than on the healthy side, while the flow variability (σ) was 15.13% lower. This condition is attributed to the underdevelopment of blood vessels on the affected side in association with microtia. Concurrently, the convergence of these indicators toward those of the healthy side 6 months post-surgery indicates the restoration of tissue perfusion and the positive impact of the reconstructive intervention [6].

In Group II, which consisted of patients who underwent reoperation, microcirculatory disorders were observed to be more profound. Specifically, the M index decreased by 8.32% and the σ index by 22.27%, which is attributed to the negative impact of scar tissue on blood supply. However, the normalization of vasomotor activity (Kv) towards the healthy baseline in the postoperative period indicates the presence of adaptive and compensatory capabilities within the tissues. This confirms the effectiveness of the chosen surgical strategy.

ISBN: 978-625-90699-4-4

In Group III (traumatic defects), the microcirculation indices were recorded at their lowest levels: initially, M decreased by 20.75%. Although M increased by 27% six months post-surgery, the persistently low values of σ and Kv indicate venous congestion and incomplete restoration of tissue blood circulation. These results confirm that reconstructive surgery for traumatic defects is more complex and requires additional revascularization measures.

The results of the ultrasound examination (US) showed that the morphological condition of the recipient area's skin is a decisive factor in the success of reconstructive surgery. Specifically, it was determined that to achieve optimal results, the skin thickness must be at least 1.2 times greater than that of the healthy side. Concurrently, it was substantiated that the thickness of the cartilage framework to be implanted should not exceed 1 cm. In cases where these parameters were not met, the additional use of the superficial temporoparietal fascia was deemed appropriate. The fact that the skin thickness of the reconstructed auricle equaled the values on the healthy side 6 months after surgery indicates the full completion of regeneration and adaptation processes.

The overall outcomes of the surgical treatment demonstrated high efficacy. Specifically, good results were observed in 35 patients (87.5%), satisfactory results in 3 patients (7.5%), and unsatisfactory results in only 2 patients (5%). The unsatisfactory results were mainly associated with necrosis of the skin flap; importantly, the cartilage framework was preserved in all cases, and the defect was successfully corrected using local plastic surgery techniques.

Overall, the results obtained indicate that an individualized approach to reconstructive otoplasty, precise preoperative planning, and the use of modern diagnostic methods significantly improve surgical outcomes. In particular, virtual modeling based on MSCT, microcirculation assessment using LDF, and tissue monitoring via ultrasound, as a comprehensive approach, ensure high clinical efficacy.

Conclusion

1. The use of costal autocartilage in reconstructive otoplasty of the auricle demonstrates high clinical efficacy, and thorough preoperative planning is crucial for achieving successful results. The proposed methodological approach is based on a comprehensive and objective assessment of the morphological and functional state of the donor (costal cartilage) and recipient (auricular area) zones. Such a systematic approach allows for the selection of individualized surgical tactics, reduces the risk of complications, and optimizes both aesthetic and functional outcomes.

2. Multispiral computed tomography (MSCT) has established itself as a highly informative diagnostic method, enabling an accurate assessment of key morphometric parameters of the costal cartilage, such as its length, width, and thickness. A virtual positioning and modeling method developed based on MSCT has made it possible to optimally shape an individual framework by comparing the anatomical model of a healthy auricle with the donor cartilage. This has resulted in a shorter operation duration, minimized trauma to the donor site, and increased intraoperative precision. Based on the results obtained, the optimal age to begin reconstructive surgery was determined to be 9–10 years, a period when the morphometric parameters of the costal cartilage are sufficiently developed.

3. Laser Doppler flowmetry (LDF) and ultrasound (US) were found to have significant diagnostic value in assessing the condition of tissues in the recipient site. LDF was used to

ISBN: 978-625-90699-4-4

determine the level of microcirculation, tissue perfusion, and vasomotor activity, which allowed for predicting the risk of postoperative complications. Meanwhile, ultrasound made it possible to determine skin thickness and evaluate its postoperative dynamics. Based on this data, the selection of an individualized surgical approach—whether a two-stage reconstruction, a single-stage intervention, or additional plastic surgery with the superficial temporal fascia—was scientifically substantiated.

4. The implementation of the proposed comprehensive diagnostic and treatment algorithm into clinical practice demonstrated high efficacy. Specifically, good aesthetic and functional results were achieved in 87.5% of patients, satisfactory results in 7.5%, and unsatisfactory results were observed in only 5% of cases. Importantly, even in cases with unsatisfactory outcomes, the cartilage framework was preserved, and the defects were successfully corrected using local plastic surgery techniques. These indicators confirm the high clinical efficacy, safety, and practical significance of the developed methodological approach.

5. The results obtained indicate that integrating modern instrumental diagnostic methods (MSCT, LDF, ultrasound) and digital modeling technologies into reconstructive otoplasty helps to provide an individualized approach, enhance the quality of surgery, and improve long-term outcomes. This substantiates the need for the widespread introduction of this methodology into clinical practice.

References

1. Firmin F., Sanger C., O'Toole G. Ear reconstruction following severe complications of otoplasty. J Plast Reconstr Aesthet Surg. 2008;61:13-20.

2. Deng K., Dai L., Yi L. et al. Epidemiologic characteristics and time trend in the prevalence of anotia and microtia in China. Birth Defects Res A Clin Mol Teratol. 2016;106 (2):88-94.

3. Firmin F. La reconstruction auriculaire en cas de microtie: Principes, méthodes et classification. Ann Chir Plast Esthet. 2001;46 (5):447-466.

4. Asirova G., Wynands J., Frolov S. et al. Optimal surgical timing for ear reconstruction with autologous cartilage: Analysis of the computed tomography scan characteristics of the ribs. J Plast Reconstr Aesthet Surg. 2024;88:15-23.

5. Deng K., Dai L., Yi L. et al. Epidemiologic characteristics and time trend in the prevalence of anotia and microtia in China. Birth Defects Res A Clin Mol Teratol. 2016;106 (2):88-94.

6. Kozlov V.I., Azizov G.A., Gurova O.A., Litvin F.B. Laser Doppler flowmetry in assessing the state and disorders of blood microcirculation. Methodological manual for doctors. M., 2012.

ISBN: 978-625-90699-4-4

RECONSTRUCTION OF CONGENITAL AURICULAR DEFECTS USING COSTAL CARTILAGE-BASED 3D FRAMEWORK AND CARVING TECHNIQUE

Shomurodov Q.E., Sobirov H.G'.
Tashkent state medical university,
Tashkent, Republic of Uzbekistan
https://orcid.org/0009-0006-6771-1263

Background: Congenital auricular deformities, particularly microtia, represent a significant clinical and social problem in reconstructive and maxillofacial surgery. These conditions not only impair auditory function but also lead to facial asymmetry, psychological distress, and reduced quality of life. The auricle has a complex three-dimensional architecture, making its reconstruction technically demanding. Although several techniques have been proposed (Brent, Nagata, Firmin), the lack of standardized preoperative planning and objective criteria for donor and recipient site evaluation remains a major limitation.

Keywords: microtia, auricular reconstruction, costal cartilage, 3D modeling, otoplasty, reconstructive surgery

Objective

To improve clinical outcomes in patients with congenital auricular defects by developing and implementing a comprehensive methodological approach for constructing a three-dimensional auricular framework from autologous costal cartilage using carving techniques and advanced preoperative planning.

Materials and Methods

A combined prospective and retrospective study was conducted between 2020 and 2026. The study included 30 patients aged 9–28 years (mean age 22.4±2.1 years), with a total of 45 reconstructive procedures performed.

Patients were categorized into three groups:

- Primary microtia (67%)
- Secondary microtia after previous surgery (23%)
- Traumatic auricular defects (10%)

Preoperative evaluation included a комплекс diagnostic approach:

- **Multislice computed tomography (MSCT)** for morphometric analysis of costal cartilage (6th–9th ribs)
- **Laser Doppler flowmetry (LDF)** for assessment of microcirculation in the recipient area
- **Ultrasound examination (US)** for evaluation of soft tissue thickness and structure

A novel virtual 3D modeling technique was developed, enabling comparison of the intact auricle with donor cartilage to optimize framework design and positioning.

Results

Morphometric analysis demonstrated that the 6th and 7th costal cartilages provide optimal structural characteristics for auricular framework fabrication. The synchondrosis between these ribs was found to be a key anatomical parameter for forming the auricular base.

The optimal age for reconstruction was identified as 9–10 years, when cartilage dimensions become sufficient for stable framework creation.

Implementation of 3D virtual modeling improved intraoperative precision, reduced operative time, and minimized donor site trauma.

LDF analysis revealed decreased baseline microcirculation in affected areas, particularly in secondary and traumatic cases, with significant postoperative improvement observed at 6 months.

Ultrasound findings confirmed that adequate skin thickness (≥1.2 times that of the contralateral side) is critical for successful implantation.

Clinical outcomes were as follows:

- Good results – 87.5%
- Satisfactory – 7.5%
- Unsatisfactory – 5%

Complications were mainly associated with skin flap necrosis; however, in all cases the cartilage framework was preserved and defects were successfully corrected.

Conclusion

The proposed comprehensive approach, combining autologous costal cartilage reconstruction with 3D modeling and multimodal diagnostic assessment, significantly enhances surgical outcomes in auricular reconstruction. This methodology enables individualized treatment planning, reduces complication rates, and improves both aesthetic and functional results. The integration of modern imaging and digital technologies represents a perspective way in reconstructive otoplasty.

ISBN: 978-625-90699-4-4

THE IMPORTANCE OF MUSIC THEORETICAL KNOWLEDGE IN TRAINING FUTURE MUSIC TEACHERS

Odilova Mushtariybonu Bahodirjon qizi
FarDU master's student
https://orcid.org/0009-0006-0893-0407

Annotation: This article analyzes the importance of music theoretical knowledge in the process of preparing future music teachers for professional activity. The components of music theoretical training, their role in the formation of professional competence, and the possibilities of improving this process on the basis of modern educational technologies are highlighted. Also, the current issues of training music teachers based on international experience and a competency-based approach are analyzed.
Keywords: Music education, music theoretical literacy, competency-based approach, solfeggio, harmony, music analysis, professional competence, pedagogical technologies.

The processes of globalization and digitalization are posing new demands on the education system. In particular, in the field of music education, the training of pedagogical personnel who have modern knowledge, are creative, think independently and can effectively use innovative technologies is of great importance.

In this process, the musical theoretical training of future music teachers plays a decisive role.Musical theoretical knowledge is a system of fundamental knowledge that serves to understand the content and laws of musical art, which form the basis for the formation of the professional skills of a music teacher. The effectiveness of music education largely depends on the level of theoretical training of the teacher.The purpose of the study is to scientifically substantiate the importance of musical theoretical knowledge in the process of training future music teachers and to identify effective ways to develop it.

To achieve this goal, the following tasks are set;

To analyze the content and essence of musical theoretical knowledge;

To determine the importance of the formation of professional competencies of a music teacher;

To study international experiences;

To develop proposals and recommendations for improving musical theoretical training.Musical theoretical knowledge includes the theoretical foundations of musical art and covers such areas as musical literacy, solfeggio, harmony, polyphony, musical form, music history and music analysis.

This system of knowledge forms the following skills in students:

Freely reading and writing musical notation;

Developing musical hearing;

Accurate perception of rhythm and intonation;

Analyzing musical works;

Developing creative and improvisational skills;

Effective organization of musical pedagogical activity.

Research in the field of music pedagogy shows that a high level of formation of musical theoretical knowledge directly affects the pedagogical skills and creative activity of the teacher. According to the modern competency-based approach, a future teacher should not only have certain knowledge, but also be able to apply it in practice. Theoretical knowledge allows the correct interpretation of the content and artistic idea of the work during the performance process. Knowledge of harmony, pitch and form helps to deeply understand the musical work.

Musical analysis skills allow the teacher to identify the genre, stylistic and compositional features of the work.

Also, referring to the analysis of international experience, it can be said that in countries such as Finland, Germany, the USA and South Korea, special attention is paid to music theory in the training program for music teachers. In the Finnish educational model, musical literacy, auditory skills and creative activity are taught in an integrated manner. In Germany, harmony, There are in-depth courses in polyphony, and music analysis. Digital music technologies and music analysis programs are widely used in US universitie. The recommendations on arts education developed by UNESCO also identify creative thinking, cultural competence, and as priority tasks. The introduction of digital technologies into the educational process in Burundi today creates broad opportunities for the effective mastery of music theory knowledge. Interactive presentations, virtual pianos, music analysis programs, notation writing and listening platforms support students' independent learning, increase their interest in lessons, and combine theoretical knowledge with practice. At the same time, international experience shows that a competency-based approach, project-based learning, problem-based learning, integrative and digital pedagogical technologies take the theoretical training of music teachers to a new level. Such approaches develop students' ability to think independently, analyze, make creative decisions, and apply innovative ideas in professional activities. Also, the harmonious study of national musical heritage and world musical culture is important in forming the cultural competence of future teachers. This process strengthens in them respect for national values, openness to universal culture and a sense of professional responsibility.

In conclusion, music theoretical knowledge is one of the main factors shaping the professional competence of future music teachers. This knowledge serves to develop the teacher's musical literacy, creative potential, analytical thinking and practical skills. The musical theoretical training of future music teachers can be further improved by effectively applying modern pedagogical technologies, digital educational tools and international experience in the educational process. This will serve to improve the quality of music education in secondary educational institutions and train highly qualified pedagogical personnel.

LIST OF REFERENCES USED

1. Abdullin E.B. Theory and practice of musical education.(Moscow Academy)
2. Asaf'ev B. V. Muzykalnaya forma kak process.
3. Law of the Republic of Uzbekistan "On Education».
4. The field of education of the President of the Republic of Uzbekistan development decrees and decrees.
5. UNESCO. Road Map for Arts Education.
6. UNESCO. Framework for Culture and Arts Education.

ISBN: 978-625-90699-4-4

RESEARCHING THE AESTHETIC CONTENT OF NATIONAL CULTURE THROUGH MUSIC AND ART

Umida Akbarova
First-Year Student
Music Education Program
Faculty of Pedagogy, Psychology
and Art Studies Fergana State
University, Uzbekistan

Abstract

This article examines the aesthetic content of national culture through the philosophical and cultural significance of music and art. National culture is understood not only as a system of traditions, customs, and historical values, but also as a form of spiritual experience expressed through artistic images, aesthetic ideals, and cultural symbols. Music and art occupy a special position in this process because they preserve collective memory, transmit cultural meanings between generations, and shape an individual's relationship with beauty, harmony, emotion, and artistic value. The article analyzes the relationship between national culture, aesthetic consciousness, artistic creativity, and cultural identity. Particular attention is paid to the role of music as a form of aesthetic communication and as a means of expressing the historical and spiritual experience of society. The study also considers the philosophical approaches of John Dewey, Susanne Langer, Immanuel Kant, and G. W. F. Hegel concerning aesthetic experience, artistic expression, beauty, and the social significance of art. The cultural heritage of Uzbekistan is considered through internationally recognized examples such as Shashmaqom and Katta Ashula. UNESCO identifies performing arts as one of the major domains of intangible cultural heritage and recognizes Shashmaqom and Katta Ashula within the Representative List of the Intangible Cultural Heritage of Humanity.

The study argues that music and art provide an important conceptual and practical basis for understanding the aesthetic dimensions of national culture and for transmitting cultural values to younger generations.

Keywords: *national culture, music, art, aesthetics, aesthetic consciousness, aesthetic values, cultural identity, artistic creativity, cultural heritage, philosophy of art.*

Introduction

Culture is one of the fundamental forms through which human beings express their relationship with the world. It includes material achievements, social practices, traditions, language, moral principles, artistic values, and collective forms of memory. National culture, in particular, reflects the historical experience and spiritual identity of a people. Its aesthetic dimension becomes visible in the ways a society understands beauty, harmony, artistic expression, tradition, and creativity.

Music and art have a significant role in the formation and preservation of this aesthetic dimension. Unlike purely informational forms of communication, artistic forms influence emotions, imagination, perception, and value judgments. Music communicates through sound, rhythm, melody, intonation, and form, while the visual and performing arts operate through image, movement, color, symbolism, dramatic action, and artistic composition.

From a philosophical perspective, aesthetic culture cannot be separated from human experience. John Dewey regarded aesthetic experience as an integral form of lived experience rather than something limited to a specialized sphere of "fine art." His approach emphasizes the continuity between artistic activity and everyday human life. Susanne Langer, in turn,

ISBN: 978-625-90699-4-4

developed an influential theory of art centered on the relationship between feeling, form, and symbolic expression; her Feeling and Form was published in 1953 as a major work in modern aesthetics.

Therefore, researching national culture through music and art allows us to explore not only artistic phenomena themselves but also deeper questions concerning identity, values, collective memory, and the development of aesthetic consciousness.

Methodology

The article applies philosophical, aesthetic, cultural, historical, and comparative approaches. The philosophical approach is used to interpret the concepts of beauty, artistic value, aesthetic experience, and cultural identity. The cultural approach examines music and art as forms of transmitting and preserving national values. The historical approach makes it possible to understand artistic traditions in their social and cultural development.

The comparative method is used to identify common and distinctive features in different forms of artistic expression. The analysis also draws upon international cultural heritage documentation, particularly UNESCO materials concerning the safeguarding and transmission of intangible cultural heritage.

National Culture and Its Aesthetic Dimension The concept of national culture encompasses the accumulated experience of a society and is expressed through language, customs, traditions, religious and philosophical ideas, forms of social life, and works of art. However, national culture is not simply a collection of historical facts. It is also a living process in which cultural meanings are continuously interpreted and transmitted.

The aesthetic content of national culture can be understood through several interconnected categories: beauty, harmony, artistic taste, emotional experience, symbolism, creativity, and cultural ideals. These categories determine how individuals perceive the world and how they evaluate artistic and cultural phenomena.

Aesthetic consciousness develops through interaction with cultural values. An individual gradually learns to distinguish artistic quality, perceive expressive forms, experience emotional meanings, and establish personal aesthetic judgments. In this process, music and art become important means of cultural education.

National culture acquires its aesthetic meaning when artistic forms embody the worldview and spiritual experience of a particular community. A song, melody, dance, literary image, architectural form, or decorative pattern can therefore function not only as an artistic object but also as a cultural symbol.

Music as a Form of National Cultural Expression

Music possesses a unique capacity to preserve and communicate cultural identity. Melodies, rhythms, performance traditions, and musical genres can carry meanings that are difficult to express through ordinary verbal communication. Music may preserve memories of historical events, social experiences, emotional states, and traditional values.

The relationship between music and culture is particularly visible in traditional musical forms that are transmitted orally from one generation to another. In this context, music becomes a form of cultural memory. It preserves both artistic structures and ways of thinking, feeling, and communicating.

Uzbekistan provides a rich example of this relationship. UNESCO describes Shashmaqom as a classical musical tradition that evolved for more than ten centuries in the urban centers of Central Asia and identifies it as an element of the intangible cultural heritage of Uzbekistan and Tajikistan. It was inscribed on the Representative List in 2008.

ISBN: 978-625-90699-4-4

Katta Ashula provides another significant example. UNESCO describes it as a traditional song genre connected with the cultural identity of peoples of the Fergana Valley and notes that it combines singing, performing arts, instrumental music, Eastern poetry, sacred practices, philosophical themes, and improvisation. It was inscribed on the Representative List in 2009.

These examples demonstrate that music can function simultaneously as artistic expression, cultural memory, social communication, and a carrier of aesthetic values.

Art and the Formation of Aesthetic Consciousness

Art provides a special form of cognition. It does not merely describe reality but transforms experience into artistic images and meaningful forms. Through art, a person encounters different dimensions of human existence, including beauty, suffering, heroism, conflict, love, dignity, nature, and social relationships.

Immanuel Kant connected aesthetic judgment with the experience of beauty and with the distinctive character of reflective judgment. G. W. F. Hegel approached art as a historical form through which the spirit becomes perceptible in sensuous form. These philosophical approaches, despite their differences, emphasize that aesthetic experience is connected with the relationship between human consciousness and artistic form.

Music and the arts therefore influence aesthetic consciousness by expanding emotional and imaginative experience. A person does not merely "see" a work of art or "hear" a musical composition; the artistic experience may lead to reflection, comparison, emotional response, and the formation of values.

From this perspective, aesthetic culture should be understood as a developed ability to perceive, understand, evaluate, and participate in artistic and cultural values.

Cultural Identity and Artistic Heritage

National cultural identity is closely related to the preservation and interpretation of artistic heritage. Cultural heritage provides continuity between generations while also allowing each generation to reinterpret inherited values in accordance with contemporary circumstances. UNESCO's 2003 Convention identifies performing arts among the major domains of intangible cultural heritage and emphasizes the importance of safeguarding living cultural traditions and transmitting them to future generations.

For this reason, national music and art should not be considered museum objects that belong exclusively to the past. Their cultural significance depends on their continued practice, interpretation, transmission, and meaningful integration into contemporary social life.

In Uzbekistan, the international recognition of Shashmaqom, Katta Ashula, Bakhshi art, Khorazm dance Lazgi, the art of miniature, and other cultural forms demonstrates the diversity of the country's intangible cultural heritage.

The preservation of such traditions is important not only for cultural history but also for the development of aesthetic consciousness among younger generations. When young people encounter national artistic heritage through education, performance, research, and creative practice, cultural knowledge can become a personal aesthetic experience.

The Philosophical Relationship between Music, Art, and Culture

The relationship between music, art, and culture can be analyzed through three interconnected dimensions.

First, music and art express cultural values. Artistic forms transform cultural ideas into perceptible images, sounds, movements, and symbols.

ISBN: 978-625-90699-4-4

Second, music and art preserve cultural memory. Artistic traditions transmit historical experiences and cultural meanings from one generation to another.
Third, music and art develop aesthetic consciousness. Participation in artistic culture helps individuals develop artistic taste, emotional sensitivity, interpretive abilities, and a conscious relationship with cultural values.

John Dewey's aesthetics is especially relevant to this understanding because he treats aesthetic experience as an active relationship between people and their environment rather than as a purely passive contemplation of an artistic object.

Susanne Langer's approach also helps explain the expressive and symbolic dimensions of artistic forms. Her theory emphasizes the relationship between feeling and form and provides a philosophical basis for understanding how music can communicate patterns of human experience without relying on ordinary verbal language.

Thus, the aesthetic meaning of national culture emerges through the interaction of artistic form, collective memory, individual experience, and social values.

The Educational Significance of National Music and Art

The study of national music and art has particular significance in education. Education can introduce students not only to artistic works but also to the cultural meanings embedded in those works.

Music education, artistic clubs, cultural events, museums, concert programs, and creative projects can provide practical opportunities for students to experience national artistic heritage. Such activities can support the development of aesthetic taste, creativity, cultural awareness, and respectful attitudes toward cultural diversity.

The educational value of national art becomes especially important in a globalized cultural environment. Young people are increasingly exposed to diverse forms of international popular culture through digital platforms. This creates new opportunities for intercultural communication but also increases the importance of meaningful engagement with one's own cultural heritage.

The purpose is not to isolate national culture from global culture. Rather, the aim is to develop a balanced cultural consciousness in which individuals can understand their own heritage while engaging constructively with other artistic traditions.

Contemporary Challenges and Research Perspectives

Contemporary cultural development creates new forms of artistic production and communication. Digital technologies have changed how music and art are created, distributed, studied, and experienced. Online archives, digital recordings, educational platforms, and multimedia projects can contribute to the documentation and dissemination of national cultural heritage.

At the same time, digital circulation may change the context in which traditional artistic forms are perceived. Therefore, further research should examine how national artistic traditions can be preserved while remaining meaningful for contemporary audiences.

UNESCO's framework for intangible cultural heritage emphasizes safeguarding, transmission, community participation, and the continuing vitality of living traditions. This approach suggests that research into national music and art should pay attention not only to historical documentation but also to contemporary practice and intergenerational transmission.

ISBN: 978-625-90699-4-4

Conclusion

Music and art are essential components of the aesthetic content of national culture. They embody cultural values, preserve collective memory, express historical and spiritual experience, and contribute to the development of aesthetic consciousness.

The philosophical analysis of art demonstrates that aesthetic experience is not limited to the perception of beauty. It also involves interpretation, emotion, cultural meaning, creativity, and the relationship between the individual and society. Music, in particular, possesses a powerful capacity to communicate cultural experience through melody, rhythm, intonation, performance, and symbolic form.

The examples of Shashmaqom and Katta Ashula demonstrate the continuing significance of Uzbekistan's musical heritage as a source of artistic identity and cultural continuity. Their international recognition by UNESCO confirms their place within the framework of intangible cultural heritage.

Therefore, the study of national culture through music and art should be regarded as an important area of philosophical, aesthetic, cultural, and educational research. Such research contributes to a deeper understanding of cultural identity and helps establish conditions for the meaningful transmission of aesthetic and artistic values to future generations.

References

1. Adorno, T. W. (1973). Philosophy of Modern Music. New York: Seabury Press.
2. Dewey, J. (1934). Art as Experience. New York: Minton, Balch & Company.
3. Eagleton, T. (1990). The Ideology of the Aesthetic. Oxford: Blackwell.
4. Hegel, G. W. F. (1975). Aesthetics: Lectures on Fine Art (Vols. 1–2). Translated by T. M. Knox. Oxford: Clarendon Press.
5. Kant, I. (1790). Critique of Judgment.
6. Langer, S. K. (1953). Feeling and Form: A Theory of Art. New York: Charles Scribner's Sons.
7. Shusterman, R. (1992). Pragmatist Aesthetics: Living Beauty, Rethinking Art. Oxford: Blackwell.
8. UNESCO. (2003). Convention for the Safeguarding of the Intangible Cultural Heritage. Paris: UNESCO.
9. UNESCO. Intangible Cultural Heritage: Uzbekistan. UNESCO Intangible Cultural Heritage Lists.
10. . Shashmaqom Music. Representative List of the Intangible Cultural Heritage of Humanity, 2008.
11. UNESCO. Katta Ashula. Representative List of the Intangible Cultural Heritage of Humanity, 2009.
12. UNESCO. Intangible Heritage Domains in the 2003 Convention. UNESCO Intangible Cultural Heritage.

ISBN: 978-625-90699-4-4

THE ROLE AND DEVELOPMENT TRENDS OF COMPOSITIONAL CREATIVITY IN THE DEVELOPMENT OF CULTURE AND ART IN THE CONTEXT OF NEW UZBEKISTAN

Karimova Navro'za
Second-Year Student,
Music Education and Art, Faculty of Pedagogy, Psychology and Art Studies,
Fergana State University
Scientific Supervisor:
Mavluda Najmetdinova, PhD

Abstract.
This article examines the role of compositional creativity in the development of culture and art in the context of New Uzbekistan. The study focuses on the transformation of contemporary musical creativity, the preservation and reinterpretation of national cultural heritage, the interaction between traditional musical values and modern artistic approaches, and the increasing influence of digital technologies on compositional activity. Compositional creativity is considered not only as a form of musical production but also as an important component of national aesthetic consciousness and cultural development. Particular attention is paid to the role of composers in expressing social, spiritual, moral and aesthetic values through artistic images. The article argues that contemporary Uzbek compositional creativity is developing through the interaction of national traditions, global artistic processes, innovative technologies and new forms of cultural communication. These processes contribute to the enrichment of the national artistic environment and the formation of new aesthetic perspectives among younger generations.

Keywords: *New Uzbekistan, culture, art, compositional creativity, musical culture, aesthetic consciousness, national values, artistic creativity, cultural heritage, contemporary music.*

Introduction

The development of culture and art is one of the important indicators of the spiritual and intellectual progress of society. In the contemporary period, cultural development is closely connected with the preservation of national identity, creative freedom, artistic innovation and the ability of society to respond to global cultural processes. In this context, compositional creativity occupies a special place as an artistic phenomenon that combines musical traditions, aesthetic values, historical memory and contemporary creative thinking.

The cultural environment of New Uzbekistan creates new opportunities for the development of artistic creativity. The increasing attention to culture and art, the development of creative institutions, the expansion of international cultural cooperation and the introduction of modern technologies have created new conditions for composers and other representatives of the arts. These processes require a reconsideration of the role of musical creativity in contemporary cultural development.

Compositional creativity should therefore be understood in a broader cultural and philosophical context. A composer does not simply create musical works; through artistic images, musical language and expressive means, the composer reflects the spiritual atmosphere of a particular historical period. Music can express ideas about beauty, harmony, morality, homeland, human dignity and social responsibility.

From this perspective, the study of compositional creativity is closely connected with the philosophy of culture and art. The creative process demonstrates how national cultural

ISBN: 978-625-90699-4-4

values are transformed into artistic forms and how traditional aesthetic ideals acquire new meanings under contemporary social conditions.

1. Compositional Creativity as an Important Component of National Culture

Culture represents the accumulated spiritual, intellectual and artistic experience of society. Music is one of its most influential forms because it communicates emotional and aesthetic meanings through sound. Compositional creativity occupies an important position within this system, as it creates new artistic forms while simultaneously maintaining a connection with cultural memory.

Uzbek musical culture has developed over centuries through the interaction of professional and traditional musical practices. The rich heritage of maqom, traditional melodies, folk songs and instrumental traditions has formed an important foundation for contemporary musical creativity. Modern composers increasingly interpret these sources from new aesthetic and artistic perspectives.

The relationship between tradition and innovation is one of the central problems of contemporary compositional creativity. Tradition cannot be understood simply as the repetition of established forms. In artistic development, tradition becomes meaningful when it is creatively reinterpreted and connected with the aesthetic needs of a new generation.

In this sense, national musical identity is not a static phenomenon. It develops through continuous interaction between historical heritage and contemporary artistic consciousness. A modern composer may use traditional melodic structures, rhythmic patterns, intonations or symbolic images while combining them with contemporary compositional techniques.

Such interaction contributes to the development of national artistic language. It also demonstrates that globalization does not necessarily lead to the disappearance of national cultural identity. On the contrary, global cultural communication can create opportunities for national artistic traditions to enter new cultural contexts.

Compositional creativity therefore performs an important cultural function. It preserves elements of historical memory while giving them new artistic meanings. Through this process, music becomes a medium for transmitting cultural values from one generation to another.

2. Contemporary Trends in Uzbek Compositional Creativity

One of the major trends in contemporary compositional creativity is the integration of national musical traditions with modern artistic methods. Contemporary composers increasingly seek new forms of expression while maintaining connections with Uzbek musical heritage.

The first significant trend is the creative reinterpretation of national musical heritage. Traditional melodies, maqom principles, folk instruments and national intonations can serve as sources of inspiration for contemporary musical works. However, their artistic significance depends on the creative transformation of these elements rather than their mechanical reproduction.

The second trend is the expansion of artistic genres and forms. Contemporary compositional creativity includes not only traditional forms of instrumental and vocal music but also new concert works, chamber compositions, musical theatre, electronic music and interdisciplinary artistic projects. This diversification expands the possibilities of musical expression.

The third trend is the development of intercultural artistic dialogue. International festivals, conferences, competitions, educational programmes and creative cooperation enable Uzbek composers to interact with representatives of different musical cultures. Such interaction contributes to the exchange of artistic ideas and compositional approaches.

At the same time, intercultural dialogue raises an important aesthetic question: how can a composer participate in global artistic processes without losing national artistic identity? The

ISBN: 978-625-90699-4-4

answer lies in the creative synthesis of universal artistic values and national cultural characteristics.

The fourth trend is the increasing role of digital technologies. Digital audio workstations, music notation software, electronic instruments, sound-processing technologies and online cultural platforms have changed the conditions of musical creation and dissemination. Modern technologies provide composers with new possibilities for experimentation with sound, texture, timbre and musical form.

Digitalization also changes the relationship between composer, performer and audience. Musical works can now be created, recorded, distributed and accessed through digital platforms. As a result, the social environment of musical creativity has expanded considerably.

3. Culture, Art and Aesthetic Consciousness

The development of compositional creativity is closely related to the formation of aesthetic consciousness. Aesthetic consciousness includes aesthetic perception, aesthetic feelings, taste, ideals and the ability to evaluate artistic phenomena. Music has a significant influence on these components because it directly affects the emotional and spiritual sphere of the individual.

From the philosophical perspective, art does not merely reproduce reality. It interprets reality and creates an artistic image of the world. Compositional creativity therefore has the potential to reveal the spiritual meanings of social life through musical forms.

The categories of beauty, sublimity, tragedy and comedy, which occupy an important place in aesthetic theory, can also be expressed through musical language. Musical harmony, contrast, rhythm, timbre, dynamics and intonation contribute to the creation of particular emotional and aesthetic meanings.

In the context of New Uzbekistan, the development of artistic culture is also connected with the formation of a spiritually mature younger generation. Young people encounter numerous cultural influences through mass media and digital technologies. Therefore, the development of a strong aesthetic culture becomes increasingly important.

Compositional creativity can contribute to this process by creating artistic works that combine aesthetic quality with cultural and spiritual values. Music that reflects national history, human dignity, patriotism, moral responsibility and cultural identity can become an important instrument of aesthetic education.

At the same time, aesthetic education should not be reduced to ideological or didactic purposes. The artistic value of a musical work depends primarily on its ability to create meaningful aesthetic experience. Therefore, contemporary compositional creativity should preserve artistic freedom and encourage independent aesthetic perception.

4. The Role of Innovation and Digital Technologies

The development of information and communication technologies has significantly transformed the contemporary cultural environment. Music is one of the artistic fields most directly affected by digitalization.

Modern software makes it possible to create musical notation, arrange compositions, edit sound, synthesize timbres, record performances and experiment with electronic sound. These technologies reduce technical barriers and provide composers with broader opportunities for creative experimentation.

Digital technologies also contribute to the preservation and dissemination of cultural heritage. Historical recordings, traditional melodies and musical manuscripts can be digitized and made accessible to researchers, students and performers. This creates new opportunities for studying and creatively interpreting national musical heritage.

However, technological development also creates certain aesthetic challenges. The availability of digital tools does not automatically guarantee artistic quality. Technology is a

ISBN: 978-625-90699-4-4

means of artistic expression, while the creative concept, aesthetic thinking and professional competence of the composer remain fundamental.

Therefore, the contemporary composer needs not only traditional musical knowledge but also digital literacy. The combination of artistic thinking and technological competence can become one of the important characteristics of future compositional creativity.

5. Prospects for the Development of Compositional Creativity

The future development of Uzbek compositional creativity can be associated with several important directions. First, greater attention should be given to the systematic study of national musical heritage and its contemporary interpretation. This requires cooperation between composers, musicologists, philosophers, cultural scholars and educators.

Second, young composers should be supported through educational programmes, creative competitions, festivals, workshops and international cooperation. The development of creative potential among young people is an important condition for the continuity of national artistic culture.

Third, interdisciplinary cooperation should be strengthened. Contemporary art increasingly develops at the intersection of music, theatre, visual arts, literature, digital technologies and cultural studies. Such cooperation can generate new forms of artistic expression.

Fourth, international cultural dialogue should continue to develop. Participation in international festivals and creative projects provides opportunities for Uzbek composers to present national artistic achievements and learn from different cultural traditions. Finally, the philosophical and aesthetic study of contemporary compositional creativity should receive greater attention. Understanding the values, meanings and cultural functions of music allows society to evaluate artistic processes not only from a technical perspective but also from the standpoint of spiritual and aesthetic development.

Conclusion

Compositional creativity occupies an important place in the development of culture and art in the context of New Uzbekistan. Its significance extends beyond the creation of musical works, because contemporary composition participates in the preservation of cultural memory, the transformation of national artistic traditions and the formation of aesthetic consciousness.

The current development of Uzbek compositional creativity is characterized by the interaction of national traditions and contemporary artistic approaches, the expansion of genres and forms, international cultural dialogue, interdisciplinary cooperation and the increasing use of digital technologies.

The synthesis of tradition and innovation provides an opportunity to preserve national identity while participating in global artistic processes. At the same time, the development of digital technologies creates new possibilities for musical creation, preservation and dissemination, although artistic thinking and aesthetic values remain fundamental.

From the perspective of the philosophy of culture and art, compositional creativity can be regarded as an important form of spiritual and aesthetic activity. It reflects the changing cultural consciousness of society and creates artistic interpretations of contemporary reality.

Therefore, the further development of compositional creativity requires the integration of cultural heritage, creative freedom, professional education, technological innovation and international artistic cooperation. Such an approach can contribute to the enrichment of the cultural and artistic environment of New Uzbekistan and support the development of a contemporary national aesthetic consciousness.

ISBN: 978-625-90699-4-4

REFERENCES

1.Abdullaev, A. O‘zbek musiqa madaniyati tarixi va zamonaviy jarayonlar. Tashkent: Fan, 2019.
2.Боревъ, Y. B. Estetika. Moscow: AST, 2002.
3.Kagan, M. S. Estetika kak filosofskaya nauka. Saint Petersburg: Petropolis, 2010.
4.Umarov, E. Estetika. Tashkent: O‘zbekiston, 1995.
5.Bychkov, V. V. Estetika. Moscow: Gardariki, 2005.
6.Karimov, N. O‘zbek madaniyati va san’ati: tarix va zamonaviylik. Tashkent, 2020.
7.UNESCO. Culture and Sustainable Development. Paris: UNESCO, 2021.
8.Ministry of Culture of the Republic of Uzbekistan. Development of Culture and Art in Uzbekistan: Contemporary Perspectives. Tashkent, 2023.
9.Mirziyoyev, Sh. M. Yangi O‘zbekiston strategiyasi. Tashkent: O‘zbekiston, 2021.

ISBN: 978-625-90699-4-4

THE SOCIO-CULTURAL FACTORS OF THE FORMATION AND CREATIVE DEVELOPMENT OF POP ART IN THE FERGANA VALLEY

Abduvoxid Nurmatov
Second-year student of Music Education and Art,
Fergana State University

Abstract

This article examines the socio-cultural factors that influenced the formation and creative development of pop art in the Fergana Valley. The study focuses on the historical, cultural, social, and artistic processes that contributed to the emergence of pop music as an important component of the region's contemporary artistic culture. Particular attention is paid to the interaction between traditional musical heritage and modern forms of popular art, the role of cultural institutions, mass media, professional performers, composers, poets, and public artistic events. The article also considers the transformation of the artistic preferences of young people and the influence of technological and communication processes on the development of pop art. The Fergana Valley, characterized by its rich musical traditions and diverse cultural environment, has provided favorable conditions for the emergence of distinctive forms of pop creativity. The study demonstrates that the development of pop art in the region should be understood not only as a musical process but also as a broader socio-cultural phenomenon reflecting changes in society, aesthetic values, artistic communication, and cultural identity.

Keywords: *Fergana Valley, pop art, popular music, socio-cultural factors, musical culture, artistic development, national identity, traditional culture, contemporary art, creative process.*

Introduction

The development of contemporary artistic culture is closely connected with social changes, cultural modernization, technological progress, and transformations in public aesthetic preferences. In this context, pop art occupies a significant position as one of the most accessible and influential forms of contemporary artistic expression. Pop music combines musical, poetic, theatrical, visual, and technological elements and therefore has a considerable influence on the formation of aesthetic tastes, particularly among younger generations.

The Fergana Valley is one of the important cultural and artistic regions of Uzbekistan. The cities and districts of Fergana, Andijan, and Namangan have historically played an important role in the development of music, performing arts, literature, crafts, and other forms of artistic creativity. The region possesses a rich musical heritage based on traditional songs, maqom traditions, folk performance, and various forms of musical entertainment. These traditions have provided an important cultural foundation for the subsequent development of modern musical genres.

The formation of pop art in the Fergana Valley cannot be considered separately from the general processes of social and cultural transformation. The development of educational institutions, cultural centers, concert organizations, radio and television, recording technologies, and later digital media created new opportunities for performers and composers. At the same time, traditional aesthetic values continued to influence the content, melodic language, performance style, and artistic image of contemporary performers.

The purpose of this article is to analyze the main socio-cultural factors that contributed to the formation and creative development of pop art in the Fergana Valley and to identify its principal artistic and cultural characteristics.

ISBN: 978-625-90699-4-4

1. Historical and Cultural Foundations of Pop Art in the Fergana Valley

The cultural environment of the Fergana Valley has historically been distinguished by its musical diversity. Traditional forms of singing, instrumental performance, wedding and ceremonial music, lyrical songs, and professional musical traditions have formed an important part of the spiritual life of the population.

Traditional musical culture has played a particularly important role in the formation of artistic taste. Folk songs and professional musical traditions have preserved melodic structures, rhythmic patterns, poetic themes, and expressive principles that later found new forms of interpretation in contemporary music.

The transition from traditional musical forms to modern popular music was not a complete rejection of the past. On the contrary, many elements of traditional culture were incorporated into new artistic forms. Melodic intonations, rhythmic structures, poetic imagery, and national instruments have been used in modern compositions and arrangements. This process demonstrates that the development of pop art in the Fergana Valley is characterized by a combination of continuity and innovation. Traditional cultural heritage provides artistic resources, while contemporary social conditions create new forms of their interpretation.

The cultural environment of the region also contributed to the development of professional artistic activity. Music schools, colleges, higher educational institutions, cultural centers, theaters, concert organizations, and creative associations became important institutions for preparing performers and promoting artistic creativity. The establishment and development of cultural institutions provided young performers with opportunities to receive professional education, participate in concerts and festivals, and develop their creative abilities. As a result, pop art gradually became an important part of the region's cultural life.

2. Socio-Cultural Factors in the Development of Fergana Valley Pop Art

The development of pop art is influenced by a complex combination of social, cultural, economic, technological, and aesthetic factors. Among these, the changing cultural needs of society are particularly important. One of the major factors is the development of mass communication. Radio and television played an important role in expanding the audience of musical performers. Musical programs, concerts, television shows, and entertainment programs allowed artists to reach audiences beyond their immediate geographical environment. The development of recording technologies also transformed the creative process. Audio recordings enabled performers to distribute their works more widely and encouraged new approaches to sound production, arrangement, and performance.

Another important factor is the development of cultural and educational institutions. Professional music education contributed to the emergence of performers who possessed not only natural talent but also theoretical and practical knowledge. This process strengthened the professional character of pop art.

The role of poets and composers should also be emphasized. Pop songs are based on the interaction between music and poetic text. Themes such as love, family, homeland, friendship, youth, nature, and social relationships have become important elements of popular song culture. Through these themes, pop music reflects the spiritual and emotional experiences of society. The social environment of the Fergana Valley has also influenced the artistic image of performers. The combination of traditional cultural values and contemporary artistic trends has contributed to the development of specific performance styles.

Young people have become one of the principal audiences of contemporary pop art. Changes in their cultural interests, lifestyles, communication habits, and aesthetic preferences have encouraged artists to search for new forms of expression.

3. Interaction between National Traditions and Contemporary Pop Culture

ISBN: 978-625-90699-4-4

One of the most important characteristics of the development of pop art in the Fergana Valley is the interaction between national musical traditions and contemporary artistic forms. Globalization has created opportunities for the rapid spread of international musical styles. Contemporary performers have access to a wide range of musical materials through television, the Internet, streaming platforms, and social networks. As a result, elements of international pop, rock, jazz, electronic music, and other genres can be observed in contemporary artistic practices.

However, the adoption of international artistic trends does not necessarily mean the disappearance of national identity. On the contrary, many performers combine modern musical techniques with national melodic and poetic elements.

This synthesis can be observed in the use of traditional instruments, national rhythms, Uzbek poetic texts, traditional vocal techniques, and culturally recognizable artistic images. Such combinations allow performers to participate in contemporary global musical culture while maintaining connections with national artistic traditions. From the perspective of aesthetic philosophy, this process can be understood as a dialogue between tradition and innovation. Tradition provides cultural memory and identity, while innovation creates opportunities for new artistic interpretations.

Therefore, the creative development of pop art should not be understood only as the adoption of new musical technologies or foreign stylistic influences. It is also a process of reinterpretation of cultural heritage in accordance with contemporary social and aesthetic requirements.

4. The Role of Modern Technologies in the Creative Development of Pop Art

Technological development has significantly changed the methods of production, distribution, and perception of popular music. Digital technologies have become an important component of contemporary artistic creativity. Modern recording software, digital audio processing, electronic instruments, video production technologies, and online distribution platforms have expanded the creative possibilities of performers and producers.

Social networks have also changed the relationship between artists and audiences. Performers can now communicate directly with listeners, publish new songs and videos, promote concerts, and receive immediate feedback. This process has reduced the dependence of artists on traditional media institutions.

For performers in the Fergana Valley, digital platforms create opportunities to reach audiences not only within Uzbekistan but also abroad. The cultural products created in the region can therefore become part of broader national and international artistic communication.

At the same time, digitalization creates new challenges. The rapid growth of musical content increases competition between performers and may encourage the production of commercially oriented works. Consequently, the question of artistic quality and aesthetic value becomes increasingly important.

The development of modern pop art therefore requires a balance between technological innovation, commercial interests, artistic creativity, and cultural responsibility.

5. Contemporary Development and Cultural Significance

Contemporary pop art in the Fergana Valley continues to develop under the influence of changing social and cultural conditions. Festivals, concerts, cultural events, television projects, educational programs, and digital platforms contribute to the expansion of artistic activity.

The region's performers increasingly participate in national and international cultural events. Such participation strengthens artistic communication and creates opportunities for the exchange of creative experience.

The cultural significance of pop art extends beyond entertainment. Popular songs can contribute to the transmission of cultural values, the expression of social experiences, and the formation of aesthetic preferences. For young people, popular music often becomes an

ISBN: 978-625-90699-4-4

important component of cultural identity. Musical preferences may reflect their understanding of beauty, lifestyle, interpersonal relationships, and social values.

Therefore, the study of pop art should be approached not only from the perspective of musicology but also from the perspectives of cultural studies, aesthetics, sociology, and philosophy of art.

Conclusion

The formation and creative development of pop art in the Fergana Valley is a complex socio-cultural process shaped by historical traditions, cultural institutions, professional artistic education, mass media, technological development, and changing aesthetic preferences.

The rich musical heritage of the region has provided an important foundation for contemporary artistic creativity. Traditional musical elements have not disappeared with the development of modern pop culture; instead, many of them have been reinterpreted through contemporary forms of musical expression.

The development of radio, television, recording technologies, and digital communication has expanded opportunities for performers and changed the relationship between artists and audiences. At the same time, globalization has introduced new musical styles and artistic approaches, creating conditions for dialogue between national traditions and international pop culture. The contemporary stage of pop art development in the Fergana Valley is characterized by the interaction of tradition and innovation. Its further development depends on the ability of artists to combine creative experimentation with artistic quality and national cultural values.

Thus, Fergana Valley pop art can be regarded as an important component of contemporary Uzbek cultural life. Its study contributes to a deeper understanding of the transformation of aesthetic values, cultural identity, and artistic creativity in modern society.

References

1.Abdullaev, R. S. (2007). O‘zbek musiqasi tarixi. Tashkent: Musiqa.

2.Fitrat, A. (1993). O‘zbek klassik musiqasi va uning tarixi. Tashkent: Fan.

3.Karimov, N. (2010). O‘zbek madaniyati va san’ati tarixi. Tashkent: Sharq.

4.Kagan, M. S. (1996). Estetika kak filosofskaya nauka. Saint Petersburg: Petropolis.

5.Keldysh, Y. V. (Ed.). (1990). Music Encyclopedia. Moscow: Soviet Encyclopedia.

6.Umarov, E. (1995). Estetika. Tashkent: O‘zbekiston.

7.Vaxidov, R. (2018). O‘zbek musiqa madaniyati va zamonaviy jarayonlar. Tashkent: Fan.

8.Bychkov, V. V. (2004). Aesthetics. Moscow: Gardariki.

9.UNESCO. (2003). Convention for the Safeguarding of the Intangible Cultural Heritage. Paris: UNESCO.

10.UNESCO. (2005). Convention on the Protection and Promotion of the Diversity of Cultural Expressions. Paris: UNESCO.

11.Bennett, A. (2000). Popular Music and Youth Culture: Music, Identity and Place. London: Macmillan.

12.Frith, S. (1996). Performing Rites: On the Value of Popular Music. Cambridge, MA: Harvard University Press.

13.Middleton, R. (1990). Studying Popular Music. Milton Keynes: Open University Press.

14.Shuker, R. (2017). Popular Music: The Key Concepts. 3rd ed. London: Routledge.

15.Toynbee, J. (2000). Making Popular Music: Musicians, Creativity and Institutions. London: Arnold.

ISBN: 978-625-90699-4-4

NATIONAL AESTHETIC THOUGHT AND ARTISTIC REPRESENTATION OF THE MAIN CHARACTERS IN SULAYMON YUDAKOV'S OPERA "MAYSARA'S WORK"

Ruhshona Aktiyorova
Second-Year Master's Student, Music and Art Program
Faculty of Pedagogy, Psychology and Art Studies
Fergana State University, Uzbekistan

Abstract

This article examines the manifestation of national aesthetic thought and the artistic representation of the main characters in Sulaymon Yudakov's opera Maysara's Work. The opera occupies a significant place in the history of Uzbek musical and theatrical art due to its combination of national traditions, social observation, humor, and vivid characterization. Particular attention is paid to the artistic image of Maysara and other principal characters, whose actions and relationships reveal important aspects of Uzbek national mentality, moral values, aesthetic ideals, and social consciousness. The article considers the opera not only as a musical composition but also as a philosophical and aesthetic phenomenon reflecting the relationship between beauty, justice, humor, wisdom, and human dignity. The analysis demonstrates that Yudakov successfully combines traditional Uzbek melodic elements with the expressive possibilities of European operatic composition, creating a distinctive artistic language.

Keywords: *Sulaymon Yudakov, Maysara's Work, Uzbek opera, national aesthetic thought, aesthetic values, artistic image, national culture, humor, musical theatre, Uzbek art.*

The development of Uzbek musical culture in the twentieth century is closely connected with the emergence and development of professional musical theatre and opera. The formation of the national opera tradition created new opportunities for expressing historical memory, national character, moral ideals, social relations, and aesthetic values through music and stage art. Within this process, the creative heritage of Sulaymon Yudakov occupies an important position.

Sulaymon Yudakov's opera Maysara's Work (Maysaraning ishi) is one of the distinctive examples of Uzbek musical theatre. The work is based on the dramatic and humorous world associated with Hamza Hakimzoda Niyozi's famous play and presents social and moral situations through comic characterization, theatrical movement, musical contrast, and expressive dialogue. The opera is distinguished by its lively dramatic structure and its ability to transform everyday social phenomena into an aesthetically meaningful artistic narrative.

The significance of Maysara's Work can be understood not only through its musical qualities but also through its representation of national aesthetic consciousness. National aesthetic thought encompasses ideas about beauty, dignity, justice, humor, human relationships, morality, and the ideal person that emerge within a particular cultural environment. In Yudakov's opera, these values are expressed through the characters, their actions, musical language, stage situations, and the relationship between comic and serious elements.

National Aesthetic Thought in the Opera

One of the important characteristics of Maysara's Work is the organic connection between national cultural traditions and professional musical composition. Yudakov uses the expressive possibilities of Uzbek musical intonation while simultaneously employing the structural and dramatic principles of opera. As a result, the work demonstrates the interaction between national artistic identity and universal theatrical principles.

ISBN: 978-625-90699-4-4

The national aesthetic character of the opera is particularly evident in its treatment of humor. In Uzbek traditional culture, humor has often functioned not merely as entertainment but also as a means of social criticism and moral evaluation. Through laughter, satire, irony, and comic situations, negative human qualities can be exposed and criticized. Yudakov transforms this cultural characteristic into an important artistic principle of the opera.

The comic situations in Maysara's Work reveal the contradiction between appearance and reality, personal interests and social responsibility, selfishness and justice. The audience is encouraged to laugh at the characters' weaknesses, but this laughter simultaneously carries an ethical and aesthetic meaning. Thus, humor becomes a form of aesthetic judgment.

The opera also emphasizes the aesthetic significance of human dignity. The positive characters are not presented merely as individuals participating in a particular plot. They embody certain moral and aesthetic qualities: wisdom, courage, resourcefulness, sincerity, social awareness, and the ability to defend justice. In this sense, the artistic images acquire a broader philosophical meaning.

The national aesthetic worldview is also reflected in the musical language of the opera. Uzbek melodic patterns, rhythmic characteristics, intonational expressions, and elements of traditional musical thinking contribute to the creation of a recognizable national atmosphere. At the same time, Yudakov's professional compositional technique allows these elements to function within a complex operatic structure. This synthesis is one of the essential artistic features of the work.

Artistic Representation of Maysara

Maysara is the central artistic image of the opera. Her character represents intelligence, practical wisdom, courage, and the ability to overcome difficult social circumstances. She is not portrayed as a passive participant in events. On the contrary, she actively influences the development of the plot and becomes one of the main forces determining its dramatic direction.

The artistic strength of Maysara's image is associated with the combination of humor and wisdom. Her actions often produce comic situations, yet behind the comic surface there is a serious social and moral meaning. She understands human nature, recognizes hypocrisy, and uses her intelligence to confront injustice. Consequently, the comic dimension of her character is inseparable from her ethical significance.

Maysara can also be interpreted as an embodiment of the national ideal of the wise and resourceful woman. Her strength does not depend on physical power or social status. Her principal weapon is intelligence. Through speech, action, humor, and psychological insight, she influences the people around her. This aspect gives the character considerable aesthetic and philosophical depth.

Musically, the representation of Maysara requires expressive flexibility. Her character is associated with dynamic musical phrases, rhythmic mobility, theatrical expressiveness, and contrasting emotional states. The music supports the dramatic development of her image and helps reveal her personality through sound as well as action.

The aesthetic significance of Maysara's character lies in the fact that she represents the victory of intelligence and justice over hypocrisy and selfishness. Therefore, her image extends beyond the framework of an individual theatrical character and becomes a symbolic expression of human dignity and social wisdom.

Artistic Representation of Other Main Characters

The other characters of Maysara's Work are also important for understanding the national aesthetic and philosophical content of the opera. They are constructed through contrast with one another. Positive and negative qualities are revealed through their relationships, conflicts, comic situations, and musical characterization.

Characters representing selfishness, hypocrisy, greed, or social injustice are deliberately presented through comic exaggeration. Their behavior creates the conditions for satire. The audience recognizes the contradiction between their external claims and actual intentions. This artistic contrast strengthens the moral meaning of the work.

ISBN: 978-625-90699-4-4

The comic representation of negative characters has an important aesthetic function. Rather than presenting social criticism in a direct and didactic form, Yudakov transforms it into theatrical humor. The audience laughs at the characters, but at the same time understands the social problems underlying their behavior. This approach allows the opera to combine entertainment with ethical reflection.

The image of Cho‘pon, for example, contributes to the human and emotional dimension of the opera. Through his character, relationships of trust, affection, and social interaction become more visible. The interaction between characters creates a multilayered theatrical environment in which personal interests intersect with broader social values.

Oqil and other positive figures also participate in the creation of the opera's moral and aesthetic structure. Their actions and relationships with Maysara help emphasize the distinction between honesty and hypocrisy, sincerity and selfishness, justice and injustice. Thus, the characters form a system rather than existing independently.

The Unity of Music, Drama, and National Character

One of Yudakov's significant artistic achievements is the unity of musical expression and dramatic action. The music does not simply accompany the stage events; it actively participates in the creation of character and meaning. Rhythmic movement, melodic development, vocal expression, ensemble scenes, and orchestral elements contribute to the psychological and theatrical representation of the characters.

The national character of the opera emerges through the interaction of music and dramatic action. Traditional Uzbek musical thinking is reflected in melodic intonations and rhythmic organization, while the operatic form provides a broader dramatic framework. This combination creates a musical language that is simultaneously national and professionally developed.

The ensemble scenes are especially important in this regard. They allow individual characters to interact and reveal different perspectives on the same social situation. Through musical contrast, the composer creates a dynamic relationship between personal and collective voices. The resulting artistic structure reflects the complexity of social life.

Another important feature is the use of comic musical expression. Rhythmic mobility, sudden contrasts, expressive vocal lines, and theatrical situations intensify the humorous character of particular scenes. However, the humor is not merely decorative. It contributes directly to the philosophical meaning of the opera by revealing contradictions within human behavior.

Philosophical and Aesthetic Significance

From the perspective of aesthetics, Maysara’s Work demonstrates the relationship between beauty and morality, humor and social criticism, individuality and collective values. The opera shows that aesthetic experience is not limited to the perception of musical beauty. It also involves the recognition of moral and social meanings. The category of the comic occupies a particularly important position in the work. In aesthetics, the comic often emerges from the contradiction between what should be and what actually exists. Yudakov uses this principle to reveal the weaknesses of certain characters and social situations. The audience's laughter therefore becomes a form of aesthetic and moral reflection.

At the same time, the opera contains elements of the beautiful and the humane. These qualities are represented through sincere relationships, intelligence, courage, loyalty, and the defense of justice. The positive characters embody an aesthetic ideal based on the unity of moral and human values.

The opera's national significance can also be understood through its representation of Uzbek cultural mentality. The characters communicate, joke, argue, and solve problems within a recognizable national cultural environment. Their behavior reflects traditions of interpersonal communication, social relationships, humor, and moral evaluation. Consequently, the opera becomes a form of artistic preservation and reinterpretation of national cultural experience.

ISBN: 978-625-90699-4-4

Conclusion

Sulaymon Yudakov's Maysara's Work occupies an important place in Uzbek musical and theatrical culture because it combines national artistic traditions with professional operatic composition. The work demonstrates how music, drama, humor, and characterization can be united to express national aesthetic thought.

The image of Maysara is central to this artistic system. Her intelligence, courage, resourcefulness, humor, and sense of justice make her one of the most memorable female images in Uzbek musical theatre. Through her character, the opera expresses an aesthetic ideal in which human dignity and intelligence overcome hypocrisy and injustice.

The other characters complement this central image and create a complex system of artistic contrasts. Positive and negative characters, comic and serious situations, individual and collective voices interact to form the philosophical and aesthetic structure of the opera.

The artistic value of Maysara's Work therefore lies not only in its musical composition but also in its representation of national consciousness and human values. Yudakov transformed social and moral contradictions into an accessible, humorous, and aesthetically meaningful theatrical form. His opera demonstrates that national aesthetic thought can develop through the synthesis of traditional cultural values and modern professional artistic forms.

In this respect, Maysara's Work remains significant for the study of Uzbek aesthetic thought, national musical culture, and the philosophical foundations of artistic representation. The opera illustrates how national identity, moral ideals, humor, beauty, and social consciousness can be integrated into a single artistic whole.

REFERENCES

Jabbarov, A., Begmatov, S., & Azamova, M. (2018). History of Uzbek Music. Tashkent: G'afur G'ulom Publishing House.

Plungyan, V. (1979). S. Yudakov. Tashkent.

Plungyan, V. (Ed.). (2003). Sulaymon Yudakov in the Memories of His Contemporaries. Tashkent.

Solomonova, T. Yu. (1981). History of Uzbek Music. Tashkent.

History of Uzbek Music. Vols. I–II. (1972). Tashkent.

Uzbek Opera. (1963). Moscow.

Ibrohimov, A. I. (2023). The creation of Sulaymon Yudakov's "Maysaraning ishi," the first comic opera in Uzbek opera art. Academic Research in Modern Science, 2(6), 57–63. https://doi.org/10.5281/zenodo.7663018

National Encyclopedia of Uzbekistan. (2000). Tashkent.

Union of Composers and Bastakors of Uzbekistan. Sulaymon Yudakov: Biography and Creative Heritage. Tashkent.

Khodjimamatov, A. (2023). Theoretical and methodological foundations of changing attitudes toward national musical heritage in the context of globalization. Journal of Science-Innovative Research in Uzbekistan, 1(2), 249–253.

PHILOSOPHICAL FOUNDATIONS OF MUSIC CLUBS IN SHAPING STUDENTS' AESTHETIC CULTURE

Kakhramon Tillaboyev
Second-Year Master's Student
Music Education and Art, Faculty of Pedagogy,
Psychology and Art Studies
Fergana State University, Uzbekistan

Abstract

This article examines the philosophical foundations of music clubs in shaping students' aesthetic culture in general secondary education. The study focuses on the role of musical activity in developing students' aesthetic consciousness, artistic taste, emotional perception, creative abilities, and cultural values. Music clubs provide opportunities for students to engage with artistic values beyond the formal classroom environment and contribute to their spiritual and cultural development. From a philosophical and aesthetic perspective, music is considered not only as an artistic form but also as an important means of understanding beauty, harmony, human emotions, and social values. The article analyzes the relationship between aesthetic consciousness, aesthetic taste, artistic perception, and aesthetic culture in the educational process. Particular attention is paid to the role of national musical traditions in developing students' cultural identity and appreciation of artistic heritage. The study concludes that systematically organized music club activities can contribute significantly to the formation of students' aesthetic culture and their harmonious personal development.

Keywords: *music clubs, aesthetic culture, aesthetic consciousness, philosophy of art, musical education, artistic taste, aesthetic values, students, national culture, spiritual development.*

Introduction

The formation of a young person's aesthetic culture is an important component of modern education. Education is not limited to the transmission of knowledge and professional skills; it also involves the development of a person's worldview, moral values, emotional sensitivity, artistic taste, and ability to appreciate beauty. In this context, aesthetic education occupies an important place in the comprehensive development of students.

Music is one of the most influential forms of artistic expression. It affects the emotional and spiritual world of a person and creates opportunities for understanding beauty and harmony. Music clubs organized in general secondary schools provide students with additional opportunities to participate in artistic activities, develop their creative abilities, and form an aesthetic attitude toward reality.

From a philosophical point of view, aesthetic culture represents the ability of an individual to perceive, understand, evaluate, and creatively express aesthetic values. Therefore, music club activities can be considered not only as an educational or extracurricular activity but also as an important factor in the formation of students' aesthetic consciousness and cultural worldview.

The Philosophical Essence of Aesthetic Culture

Aesthetic culture is closely connected with the concepts of beauty, harmony, artistic value, aesthetic perception, and creativity. In the philosophy of art, aesthetic development is understood as a process through which an individual develops the ability to perceive and evaluate phenomena from an aesthetic perspective.

Aesthetic consciousness reflects a person's ideas and feelings about beauty and ugliness, harmony and disharmony, the sublime and the tragic, as well as other aesthetic categories.

ISBN: 978-625-90699-4-4

Aesthetic culture, however, is broader because it includes not only perception and understanding but also the practical manifestation of aesthetic values in human behavior and creative activity.

The development of aesthetic culture among students requires an educational environment in which they can directly experience artistic values. Music clubs create such an environment by combining learning, creativity, communication, and artistic performance.

The Role of Music Clubs in Developing Students' Aesthetic Consciousness

Music clubs have significant educational and cultural potential. Through participation in singing, instrumental performance, musical listening, creative exercises, and concert activities, students develop their ability to perceive artistic works and distinguish their expressive and aesthetic features.

Participation in collective musical activities also develops cooperation, responsibility, discipline, mutual respect, and emotional sensitivity. These qualities are closely related to the development of an individual's cultural and aesthetic worldview.

Musical activity enables students to experience the relationship between sound, emotion, image, rhythm, and artistic expression. As students gradually learn to understand these elements, their aesthetic perception becomes more developed. Consequently, music becomes an important means of transforming simple emotional impressions into conscious aesthetic experiences.

National Musical Values and Aesthetic Culture

An important aspect of aesthetic education is the introduction of students to national cultural heritage. National music reflects the historical memory, traditions, worldview, values, and spiritual experiences of a people. Therefore, the study and performance of national musical works can contribute to the development of students' cultural identity.

Uzbek national musical heritage includes traditional songs, melodies, maqom traditions, folk music, and works of contemporary composers. Introducing students to these artistic values allows them to understand the continuity between cultural heritage and modern artistic development.

From a philosophical perspective, national musical values represent a form of cultural memory. Their transmission from one generation to another contributes to the preservation of cultural identity and the formation of students' respectful attitude toward their national heritage.

Music Clubs as a Space for Creative Self-Expression

Creative activity is one of the essential components of aesthetic culture. A student who participates in a music club does not merely reproduce musical material but also develops an individual relationship with artistic expression.

Singing, playing musical instruments, creating musical compositions, interpreting artistic works, and participating in performances provide students with opportunities for self-expression. Through such activities, students learn to express emotions and ideas in an artistic form.

Creative activity also contributes to the development of independent thinking. Students begin to compare different artistic interpretations, evaluate musical performances, and form their own aesthetic preferences. In this way, music clubs become an important environment for the development of aesthetic judgment and artistic taste.

Modern Approaches to Music Club Activities

Contemporary educational technologies create new opportunities for organizing music clubs. Digital musical resources, multimedia technologies, audio and video materials, and interactive learning methods can make musical activities more engaging and accessible.

However, technological development should not replace the philosophical and cultural essence of aesthetic education. Technology should serve as a tool for expanding students' creative possibilities and improving their access to artistic values.

ISBN: 978-625-90699-4-4

The effective organization of music clubs requires consideration of students' age, interests, abilities, and individual creative characteristics. A combination of traditional musical heritage and modern pedagogical approaches can create favorable conditions for developing students' aesthetic culture.

Conclusion

Music clubs play an important role in the formation of students' aesthetic culture. Their significance extends beyond musical knowledge and performance skills because they influence students' aesthetic consciousness, artistic taste, emotional sensitivity, creative thinking, and cultural worldview.

From a philosophical and aesthetic perspective, music represents a form of understanding reality through artistic images, emotions, and harmony. Participation in music clubs enables students to experience these values directly and gradually develop a conscious attitude toward beauty and artistic expression.

The inclusion of national musical heritage in music club activities strengthens students' connection with cultural traditions and contributes to the preservation and transmission of spiritual values. At the same time, modern technologies and innovative educational methods can expand the creative and educational potential of music clubs.

Thus, systematically organized music club activities can be regarded as an important pedagogical and cultural mechanism for shaping students' aesthetic culture and supporting their harmonious intellectual, spiritual, and creative development.

References

1.Aristotle. Poetics. Translated editions.
2.Kant, I. Critique of Judgment.
3.Hegel, G. W. F. Lectures on Aesthetics.
4.Dewey, J. Art as Experience. New York: Perigee Books, 1980.
5.Kagan, M. S. Estetika kak filosofskaya nauka. Saint Petersburg.
6.Borev, Y. B. Estetika. Moscow: Politizdat.
7.Umarov, E. Estetika. Tashkent.
8.Bychkov, V. V. Estetika. Moscow.
9.O‘zbekiston Respublikasi. Umumiy o‘rta ta’limning davlat ta’lim standarti.
10.O‘zbekiston Respublikasi. Ta’lim to‘g‘risidagi Qonun. Tashkent.

ISBN: 978-625-90699-4-4

КЛИНИКО-ФУНКЦИОНАЛЬНАЯ ДИАГНОСТИКА И СПЕЦИФИЧЕСКАЯ ТЕРАПИЯ У ДЕТЕЙ С БРОНХИАЛЬНОЙ АСТМОЙ.
BRONXIAL ASTMA BILAN KASALLANGAN BOLALARDA KLINIK-FUNKSIONAL DIAGNOSTIKA VA MAXSUS TERAPIYA
CLINICAL AND FUNCTIONAL DIAGNOSTICS AND SPECIFIC THERAPY IN CHILDREN WITH BRONCHIAL ASTHMA

Akhmedova Matluba Mukhammadjonovna
Doctor of Medical Sciences; Department of Pediatrics, Central Asian Medical University.

Khadjaev Tokhir Avazkhonovich
Assistant Lecturer, Department of Pediatrics, Central Asian Medical University.

Авторами изучены клинико-функциональная диагностика и эффективность специфической терапии у детей, больных бронхиальной астмой. У большинства больных выявлены основные критерии бронхиальной астмы, высокий уровень содержания в крови общего Ig E, гиперреактивность бронхов к действию биологически активных веществ, наличие наследственной предрасположенности, положительные аллергологические тесты на специфические аллергены. Исследование функции внешнего дыхания позволило выявить изменения легочной вентиляции, зависимые от периода бронхиальной астмы и от тяжести течения.

Обострение среднетяжелого и особенно тяжелого течения, бронхиальной астмы сопровождалось выраженными обструктивными нарушениями: ЖЕЛ (75,6 ± 2,3%), ФЖЕЛ (60,4 ± 2,3%), $ОФВ_1$ (59,8 ± 2,5%), а также существенному повышению бронхиальной проходимости периферических отделов бронхиального дерева $МОС_{75}$ (74,6 ± 4,2%). При проведении аллергенспецифической иммунотерапии отличные и хорошие результаты лечения наблюдались у 86,8% случаев.

Ключевые слова: бронхиальная астма, поливалентная аллергия, гиперреактивность бронхов, аллерговакцинация.

Mualliflar bronxial astma bilan kasallangan bolalarda klinik-funksional diagnostika hamda maxsus terapiyaning samaradorligini o‘rgandilar. Bemorlarning aksariyatida bronxial astmaning asosiy diagnostik mezonlari, jumladan, qonda umumiy IgE miqdorining yuqori darajasi, biologik faol moddalar ta’siriga bronxlar giperreaktivligi, irsiy moyillik hamda muayyan allergenlarga o‘tkazilgan allergologik testlarning ijobiy natijalari aniqlangan.

Tashqi nafas olish funksiyasini tekshirish o‘pka ventilyatsiyasidagi o‘zgarishlarni aniqlash imkonini berdi. Ushbu o‘zgarishlar bronxial astmaning davri va kasallik kechishining og‘irlik darajasiga bog‘liq bo‘lgan.

Bronxial astmaning o‘rtacha og‘ir va, ayniqsa, og‘ir kechishidagi zo‘rayish davri yaqqol obstruktiv buzilishlar bilan kechgan: o‘pkaning tiriklik sig‘imi (O‘TS) 75,6 ± 2,3%, majburiy tiriklik sig‘imi (MTS) 60,4 ± 2,3%, bir soniyadagi majburiy nafas chiqarish hajmi ($O‘MNH_1$)

ISBN: 978-625-90699-4-4

59,8 ± 2,5% gacha kamaygan. Shuningdek, bronx daraxtining periferik bo‘limlarida bronxial o‘tkazuvchanlikning sezilarli darajada buzilishi kuzatilgan, bunda 75% majburiy tiriklik sig‘imida maksimal ekspirator oqim tezligi (MEF_{75}) 74,6 ± 4,2% ni tashkil etgan.

Allergen-spetsifik immunoterapiya (ASIT) o‘tkazilganda davolashning a’lo va yaxshi natijalari 86,8% hollarda kuzatilgan.

Kalit so‘zlar: bronxial astma, polivalent allergiya, giperreaktivlik, allergen-spetsifik immunoterapiya.

The authors investigated the clinical and functional characteristics of diagnosis and the efficacy of specific therapy in children with bronchial asthma. The majority of patients demonstrated the main diagnostic criteria of bronchial asthma, including elevated levels of total serum IgE, bronchial hyperresponsiveness to biologically active substances, a hereditary predisposition, and positive allergological tests for specific allergens.

Assessment of pulmonary function revealed abnormalities in lung ventilation that were dependent on the phase of bronchial asthma and the severity of the disease.

Exacerbations of moderate and, particularly, severe bronchial asthma were accompanied by pronounced obstructive ventilatory disorders, including a decrease in vital capacity (VC) to 75.6 ± 2.3%, forced vital capacity (FVC) to 60.4 ± 2.3%, and forced expiratory volume in one second (FEV_1) to 59.8 ± 2.5%, as well as a significant impairment of airway patency in the peripheral parts of the bronchial tree, with maximal expiratory flow at 75% of forced vital capacity (MEF_{75}) amounting to 74.6 ± 4.2%.

During allergen-specific immunotherapy (AIT), excellent and good treatment outcomes were observed in 86.8% of cases.

Keywords: bronchial asthma, polyvalent allergy, hyperresponsiveness, allergen-specific immunotherapy.

Актуальность проблемы аллергии в педиатрии объясняется широкой распространенностью этой патологии среди детей. Полагают, что только бронхиальной астмой страдает 10% детского населения нашей планеты [1,2,3,5,6,7]. Проблема бронхиальной астмы актуальна и для региона Узбекистана, где за последние 10 лет отмечается рост этой болезни почти в 20 раз [4,8,9,11].

Рост заболеваний обусловлен в первую очередь антропогенными факторами: загрязнением окружающей среды, химическими и радиоактивными выбросами, ростом использования химии в быту, медико-биологическими факторами, распространением генетической предрасположенности к атопии, наличием в окружающей среде факторов, которые способствуют сенсибилизации, таких как пыльца растений, протеины животных и насекомых.

Наряду с ростом аллергических заболеваний часто стало наблюдаться состояние полисенсибилизации и сочетанные формы бронхиальной астмы с другими аллергическими заболеваниями, требующие особых методов диагностики и терапии [1,2,10,12]. В связи с этим возникает необходимость в ранней специфической функциональной диагностике и эффективной терапии больных детей.

Материалы и методы. Под наблюдением находились 30 практически здоровых детей, (контрольная группа): мальчики -15, девочки -15, и 230 больных детей с бронхиальной астмой. Из них 107(46,5%) пациентов с диагнозом — атопическая бронхиальная астма и бронхиальная астма, сочетанная с аллергическими риносинуситами-123 (53,5%): из них мальчиков 130 (56,5%), девочек 100 (43,5%). Возраст детей: 7-15 лет, находящихся на лечении в детском многопрофильном медицинском центре Ферганской области в отделении аллергологии. Специфическую диагностику проводили на основе комплексного клинико-аллергического, иммунологического, функционального и лабораторного методов исследования [1,4].

Кожные, скарификационные и внутрикожные пробы и специфическую аллерговакцинацию проводили методом, утвержденным президиумом РААКИ (Российской ассоциации аллергологов и клинических иммунологов) [8].

Функции внешнего дыхания и вентиляции легких определяли методом компьютерной спирографии. Цифровые данные обрабатывали методом вариационной статистики с вычислением достоверности числовых различий. Различия считали достоверными при условии $t \geq 2$, а $p < 0,05$.

Результаты исследования и их обсуждение.

Клинические формы бронхиальной астмы были следующими: бронхиальная астма у 107 (46,5%), и бронхиальная астма с аллергическими риносинуситами (АРС) — у 123 (53,5%) исследуемых. Основное заболевание часто сочеталось с другими аллергическими реакциями и заболеваниями: отеком Квинке, крапивницей, нейродермитом, риносинуситом, лекарственной и пищевой аллергией. По нашим данным преобладали случаи со среднетяжелым и тяжелым клиническим течением бронхиальной астмы.

Таблица №1 Степень тяжести больных детей с бронхиальной астмой.

Степень тяжести	**Тяжесть по течению**		**Всего**
	БА	**БА+АРС**	
Лёгкая	25 (10,9 ± 2,0)	24 (10,4 ± 2,1)	49 (21,2 ± 2,6)
Средняя	50 (13,0 ± 2,2)	36 (15,7 ± 2,3)	86 (28,6 ± 2,9)
Тяжёлая	52 (22,6 ± 2,7)	63 (27,4 ± 2,9)	115 (50,0 ± 3,2)
Всего	**107 (46,5 ± 3,2)**	**123 (53,5 ± 3,2)**	**230 (100)**

Анализ материала показал, что в большинстве случаев у больных группы бронхиальной астмы отмечалась сенсибилизация организма на пыльцевые аллергены. У больных с сочетанной бронхиальной астмой с АРС часто выявлена сенсибилизация больных на

ISBN: 978-625-90699-4-4

бытовые аллергены: домашняя пыль — 58(47,2%) случаев, и пищевые аллергены — 25(20,3%), эпидермальные аллергены — 23(18,7%) случая. Результаты скарификационных кожных тестов у больных приведены в таблице 2.

Таблица №2 Частота сенсибилизации больных на неинфекционные аллергены.

Аллергены	**БА**	**БА+АРС**	**Всего**
Домашняя пыль	26 (24,3%)	58 (47,2%)	84 (36,5%)
Пыльца растений	44 (41,1%)	17 (13,8%)	61 (26,5%)
Шерсть животных	24 (22,4%)	25 (20,3%)	49 (21,3%)
Пищевые аллергены	13 (12,1%)	23 (18,7%)	36 (15,7%)
Всего	**107 (100%)**	**123 (100%)**	**230 (100%)**

Обострение симптомов заболевания отмечалось преимущественно в весенне-летний сезон года и совпадало с периодом цветения тех или иных растений, к пыльце которых наблюдалась повышенная чувствительность организма. При бронхиальной астме, сочетанной с АРС, обострение у большинства больных- 55,8%, было круглогодичным, у 38% — в осенне-зимнем периоде. Приступы удушья у этих больных были тяжелыми: выраженная одышка экспираторного характера, участие вспомогательных мышц грудной клетки в акте дыхания, вынужденное положение, покраснение лица, цианоз губ, затруднение носового дыхания, зуд в носу, головные боли.

В возникновении и развитии бронхиальной астмы большое значение имеют факторы риска: предрасполагающие, причинные, способствующие, вызывающие обострение симптомов болезни (триггеры). Среди располагающих факторов имеют значение повышение концентрации общего IgE в сыворотке крови больных детей, гиперреактивность рецепторов бронхов и наследственная аллергическая отягощенность.

Таблица №3 Факторы риска развития БА и сочетанной БА.

Факторы риска	Атопическая БА	БА сочетанная с АРС
Предрасполагающие:		
- содержание IgE в сыворотке крови	676,5 ± 56,5 МЕ/мл	813,5 ± 46,5 МЕ/мл
- гиперреактивность бронхов	78,5%	30,0%
- аллергическая наследственная отягощённость	80,3%	35,7%
Сопутствующие:		
- токсикозы беременности	66,3%	71,5%
- индуцированные роды	38,3%	29,2%
- Кесарево сечение, наложение шипцов и др.	26,1%	31,7%
- исскуственное и смешанное вскармливание	68,2%	57,7%
- аллергический диатез	59,8%	47,9%

ISBN: 978-625-90699-4-4

Содержание общего IgE в сыворотке крови было достоверно повышено при бронхиальной астме, сочетанной с АРС — 813,5±46,5 МЕ/мл, по сравнению с атопической бронхиальной астмой — 676,5±56,5 МЕ/мл (p <0,005).

Гиперреактивность рецепторов бронхов, выявили определением пороговой дозы биологически активных веществ. Бронхоспазм развивался при минимальных концентрациях гистамина — 100–2000 мкг, и ацетилхолина — 50–3000 мкг (p <0,005).

Наследственная аллергическая отягощенность отмечалась в целом у 121 (52,60%) больных детей. Однако частота наследственного предрасположения относительно зависела от причины сенсибилизации организма. У детей с бронхиальной астмой наследственная предрасположенность отмечалась у 80,3%, в то время как при бронхиальной астме, сочетанной с АРС — 35,71%, то есть в 2,6 раза реже, что согласуется с данными литературы [2,5,7,8].

Специфическую аллерговакцинацию проводили предсезонно, в период ремиссии заболеваний после предварительной санации очагов хронической инфекции. После проведенной терапии отмечали ремиссию болезни длительностью 1,5-2 года. Дети становились более активными, восстанавливалась успеваемость в школе, улучшался сон, внимание.

Исследование функций внешнего дыхания (ФВД), методом компьютерной спирографии, позволило выявить изменения в лёгочной вентиляции, зависимые от периода бронхиальной астмы и от тяжести течения (таблица №4).

Таблица №4 Показатели функции внешнего дыхания, зональной вентиляции лёгких в периоде обострения в зависимости от степени тяжести БА с АРС

Параметры			Здоровые дети (n=26)	Степень тяжести БА		
				Легкая (n=33)	Среднетяжелая (n=107)	Тяжелая (n=90)
ЖЕЛ, %			99,5±2,1	80,1±2,4	75,4±2,3*	75,6±2,3*
ФЖЕЛ, %			89,3±2,4	73,5±2,8*	62,6±3,1*	60,4±2,3*
ОФВ1, %			95,6±3,1	71,2±3,1*	64,6±2,7*	59,8±2,5*
ПЕВ, %			91,2±3,2	87,1±3,0	91,5±4,2	83,3±3,4
МОС25, %			95,4±2,8	78,8±3,3	76,2±4,8	78,5±3,6
МОС50, %			92,1±2,6	72,4±4,2	81,5±4,8	71,9±3,6
МОС75, %			96,5±4,3	78,3±5,5	74,6±4,2*	66,4±3,5*
ЧД, дв/мин			18,2±1,1	19,7±2,2	22,4±1,5	25,4±1,2*
ООВ, Ом/мин			122,7±2,4	182,8±2,1*	199,8±2,9*	273,4±42* ***
ПЛ	ВЗ	ДО, Ом	0,9±0,01	1,3±0,09	0,9±0,04	1,5±0,09* ***
		МОВ, Ом/мин	16,1±0,8	26,3±0,8	19,8±1,0	38,2±0,6* ****
	СЗ	ДО, Ом	1,2±0,03	1,5±0,07	1,9±0,06**	2,1±0,09* ***
		МОВ, Ом/мин	22,0±0,8	29,2±0,7	41,8±1,3***	52,7±1,5* ****
	НЗ	ДО, Ом	1,5±0,06	2,0±0,07*	1,7±0,06	1,8±0,08
		МОВ, Ом/мин	27,6±0,9	38,8±0,6*	38,5±0,8*	46,5±1,7*
ЛЛ	ВЗ	ДО, Ом	0,7±0,01	1,1±0,05	1,0±0,07	1,4±0,09*
		МОВ, Ом/мин	13,3±0,5	22,5±0,6	22,4±0,5	36,5±1,2* ****
	СЗ	ДО, Ом	1,1±0,04	1,4±0,05	1,8±0,04***	2,0±0,09**

ISBN: 978-625-90699-4-4

		МОВ, Ом/мин	20,0±0,8	27,3±0,7	40,4±1,2***	50,7±1,7* ****
	НЗ	ДО, Ом	1,3±0,08	2,0±0,07*	1,6±0,08*	1,9±0,08*
		МОВ, Ом/мин	23,7±0,8	38,7±0,9*	36,9±0,6*	48,8±1,8*

Примечание: *— достоверность различий групп больных и контроля; ** — достоверность различий с лёгкой БА; *** — достоверность различий со среднетяжёлой БА, p <0,05

Наименьшее отклонение ФВД отмечалось в остром периоде бронхиальной астмы, когда бронхиальная проходимость страдала незначительно, приводя к снижению ФЖЕЛ (73,5 ± 2,8%) и ОФВ1 (71,2 ± 3,1%) при лёгком течении заболевания. Незначительное повышение максимального объёма вентиляции (МОВ) за счёт некоторого возрастания дыхательного объёма (ДО) отмечено преимущественно в нижних отделах лёгких.

Обострение среднетяжёлой бронхиальной астмы сопровождалось выраженными обструктивными нарушениями, которые вели к более значительному снижению ЖЕЛ (75,6 ± 2,3%), ФЖЕЛ (62,6 ± 3,1%), ОФВ1 (64,6 ± 2,7%), а также повышению бронхиальной проходимости в периферических отделах бронхиального дерева ($МОС_{75}$ =74,6 ± 4,2%).

Результатом бронхиальной обструкции явилась гиперинфляция средних (МОВ=41,8–40,4 Ом/мин) и нижних лёгочных полей (МОВ=38,5–36,3 Ом/мин), как справа, так и слева. Наиболее существенно проходимость бронхов снижалась в остром периоде тяжёлой бронхиальной астмы. Это выражалось в уменьшении как объёмных ЖЕЛ =75,6 ± 2,3%; ФЖЕЛ =60,4 ± 2,3%; ОФВ1 =59,8 ± 2,5%), так и скоростных ($МОС_{25-75}$) параметров, указывающих на развитие генерализованной обструкции, максимально выраженной на уровне мелких бронхов ($МОС_{75}$ =66,4 ± 3,5%).

Гипервоздушность лёгочной ткани, на фоне генерализованной бронхиальной обструкции у пациентов с обострением тяжёлой астмы, свидетельствовала о развитии механизма так называемой «воздушной ловушки» вследствие коллапса мелких бронхов и преждевременного прекращения воздушных потоков из альвеол до их полного опорожнения.

Выводы.

1. При атопической пыльцевой бронхиальной астме у детей, часто выявлена сенсибилизация организма на пыльцевые, бытовые аллергены. При сочетанной бронхиальной астме с АРС, больше выявлена сенсибилизация организма на бытовые, пищевые, пыльцевые аллергены.

2. Показатели ФВД значительно нарушены при среднетяжёлом и резко нарушены при тяжёлом течении заболевания, сопровождались выраженными обструктивными нарушениями и повышением проходимости в периферических отделах бронхиального дерева ($МОС_{75}$ =74,6 ± 4,2%).

3. Комплексная терапия и аллерговакцинация причинно-значимыми аллергенами даёт отличный хороший результат —на 86,8% снизить частоту рецидивов, улучшить качество жизни больных и способствует стойкой ремиссии.

ISBN: 978-625-90699-4-4

Литература

1. Akhmedova M.M. The functions of external respiration and zonal lung ventilation in children with bronchial asthma. Фундаментальные науки и практика. Том 1 №2, С6, научных работ с материалами трудов 2-ой международной телеконференции. Томск, 2010. С. 34–36.
2. Akhmedova M.M. A clinical allergic features, specific diagnosis and therapy of children, suffering from allergic diseases // European applied sciences #5 2015. 24–26.
3. Вахрушев С.Г., Брюханова А.В., Бычковская С.В. Аллергический ринит как причина назальной обструкции у детей после эндоскопической аденотомии // Рос. Ринология. Москва, 2006, №2, с. 20–21.
4. Засорин Б.В., Ермуханова Л.С. Влияние факторов окружающей среды на иммунологическую резистентность организма // Гигиена и санитария. Москва, 2012, №3, с. 8–9.
5. Кондрина Е.Г., Еликина Т.Н., Филатова Т.А. Динамика аллергического марша у школьников г. Новосибирска // Аллергология. 2003, №4, с. 36–39.
6. Кудайбергенова С.Ф., Шортанбаева А.А. Аллергический ринит и сопутствующие заболевания со стороны ЛОР-органов в Рудном Алтае // Вестник оториноларингологии. Москва, 2009, №5, с. 13–16.
7. Романова О.Н. Особенности клиники и лечебной тактики при полипозном риносинусите в сочетании с аллергическими заболеваниями // Вестник оториноларингологии. 2003, №1, с. 32–34.
8. Федеральные клинические рекомендации по проведению аллерген-специфической иммунотерапии. — М.: РААКИ, 2013, с. 14.
9. Aberg N., Ospanov S.T., Nikitin N.P., et al. A nasal spray applied cellulose powder in seasonal allergic rhinitis in adults with grass pollen allergy: a double-blind, randomized, placebo-controlled, parallel-group study // Int Arch Allergy Immunol. 2014, 163, p. 313–318.
10. Adam D., Grabenhenrich L., Ortiz M., et al. Impact of acupuncture on antihistamine use in patients suffering seasonal allergic rhinitis: secondary analysis of results from a randomised controlled trial // Acupunct Med. 2018, 36, p. 139–145.
11. Ana B., de la Torre F.; EpidMite Study Group. Characteristics, quality of life and control of respiratory allergic diseases caused by house dust mites (HDMs) in Spain: a cross-sectional study // Clin Transl Allergy. 2019, 9, p. 30–39.
12. Akhmedova M.M. The effectiveness of lazer akupunkture in bronchial asthma combined with allergic rhinosinusitis // Associate Professor, Candidate of Medical Institute of Public Health, Uzbekistan. 2021 y.

ISBN: 978-625-90699-4-4

MORPHOLOGICAL REMODELING OF VENOUS VALVES AND THE MUSCULOVENOUS PUMP IN CHRONIC VARICOSE DISEASE OF THE LOWER LIMBS

Kosimov Sh.Kh.
Fergana Medical Institute of Public Health, Fergana, Uzbekistan

Background. Chronic varicose disease of the lower limbs is one of the most common manifestations of chronic venous disease and remains an important clinical problem because of its progressive course, tendency to recurrence, and development of thrombotic and trophic complications. Venous reflux and valvular incompetence are recognized as major components of disease progression; however, the structural mechanisms underlying persistent dysfunction of the venous wall and musculovenous pump remain incompletely characterized. Morphological assessment of the venous wall and valve apparatus may provide an objective basis for understanding the progression of chronic venous insufficiency and for optimizing surgical treatment.

Objective. To determine the characteristic morphological changes in the venous valve apparatus, venous wall, and structures involved in the musculovenous pump in patients with chronic varicose disease of the lower limbs.

Materials and Methods. Morphological examination was performed on fragments of the venous wall and tissues associated with the musculovenous pump obtained during surgical treatment of lower-limb varicose disease in 175 patients. General tissue architecture was assessed using hematoxylin and eosin staining. Connective-tissue and fibrous components of the vascular wall were evaluated using Van Gieson staining with picrofuchsin, while carbohydrate-containing substances and mucopolysaccharides were identified using Alcian blue staining. Morphometric assessment included quantitative evaluation of the structural components of the venous wall and musculovenous pump.

Results. Morphological examination demonstrated marked structural remodeling of all major components of the venous wall in chronic venous stasis. Persistent elevation of intraluminal hydrostatic pressure was associated with deformation of venous valves, widening of the interleaflet space, and progressive impairment of valvular closure. The most pronounced abnormalities were observed in the supra- and infravalvular segments exposed to substantial hemodynamic loading. Microscopy revealed plasma impregnation of the endothelium and muscular layer, increased vascular permeability, disorganization and fragmentation of collagen and reticular fibers, and focal inflammatory infiltration. The muscular layer showed heterogeneous remodeling: areas of compensatory smooth-muscle hypertrophy coexisted with dystrophic changes, fragmentation of muscular bundles, interstitial edema, and focal loss of normal orientation. In advanced lesions, fibrous connective tissue progressively replaced structurally altered muscular elements, particularly in regions adjacent to venous valves.

Significant abnormalities were also detected in the microcirculatory component of the venous wall. Vasa vasorum demonstrated congestion, erythrocyte sludge, perivascular edema, and focal microthrombosis, indicating impaired tissue perfusion and progressive hypoxic injury. Increased permeability promoted penetration of plasma proteins into the interstitial

ISBN: 978-625-90699-4-4

stroma, followed by fibrillar protein deposition and connective-tissue remodeling. In advanced varicose transformation, endothelial desquamation, erythrocyte adhesion, and deposition of fibrin-containing material were observed on the luminal surface and venous valve leaflets. In severely altered segments, red thrombotic masses predominantly composed of erythrocytes were identified. Mucoid and fibrinoid changes, fibroblast proliferation, and increased collagen formation contributed to the development of phlebofibrosis and phlebosclerosis.

The observed changes reflected a sequential pattern of venous wall remodeling. Early alterations were characterized mainly by compensatory hypertrophy of smooth-muscle and fibrous structures in response to prolonged hemodynamic stress. During subsequent progression, dystrophic and dysregenerative changes developed together with connective-tissue disorganization, fibrosis, and structural damage to the valve apparatus. Further progression was accompanied by endothelial injury, persistent reflux-related deformation, erythrocyte and fibrin deposition, and formation of a morphological substrate predisposing to venous thrombosis.

Conclusion. Chronic varicose disease of the lower limbs is associated with progressive and heterogeneous remodeling of the venous wall, valve apparatus, and structures contributing to the musculovenous pump. The pathological process includes endothelial injury, increased vascular permeability, degeneration and disorganization of muscular and connective-tissue elements, microcirculatory disturbances, fibrosis, valvular deformation, and thrombogenic changes. The most pronounced abnormalities are localized in functionally overloaded perivalvular segments. These findings support the concept that chronic venous insufficiency is determined not only by mechanical valvular incompetence but also by progressive structural failure of the venous wall-valve-musculovenous pump complex. Morphological assessment of these changes may contribute to a differentiated approach to the optimization of surgical treatment in patients with chronic varicose disease.

Keywords: varicose disease; chronic venous insufficiency; venous valve; venous wall; musculovenous pump; morphological remodeling; phlebosclerosis; venous thrombosis.

OPTIMIZATION OF MINIMALLY INVASIVE SURGICAL TREATMENT IN ACUTE CHOLECYSTITIS

Axrorov A.H.
Central Asian Medical University, Fergana, Uzbekistan

Background. Acute cholecystitis is a common acute inflammatory disease of the hepatobiliary system and may be associated with severe local and systemic complications when diagnosis and surgical management are delayed. Progression of inflammation can result in pericholecystic inflammatory changes, abscess formation, peritonitis, sepsis, and a complicated postoperative course. The development of minimally invasive surgery has substantially changed the management of this condition. Laparoscopic cholecystectomy has become the principal minimally invasive technique because it reduces operative trauma and is generally associated with faster postoperative recovery. Nevertheless, open cholecystectomy remains clinically relevant in patients with severe inflammatory changes, technically difficult anatomy, previous abdominal surgery, or circumstances in which a safe laparoscopic procedure cannot be completed. Therefore, optimization of the choice and timing of surgical intervention remains an important clinical task, particularly with regard to balancing minimal invasiveness with operative safety.

Objective. To compare the clinical effectiveness of laparoscopic and open cholecystectomy in patients with acute cholecystitis and to define a rational approach to selecting the optimal surgical strategy on the basis of clinical severity, perioperative characteristics, postoperative outcomes, and rehabilitation parameters.

Materials and Methods. The study concept provides for a comparative clinical assessment of patients with acute cholecystitis treated by laparoscopic or open cholecystectomy. The planned evaluation includes the patient's general condition, pain syndrome, laboratory parameters, and results of instrumental diagnostics, including ultrasonography and computed tomography when clinically indicated. Surgical variables include preoperative preparation, duration of the procedure, anesthetic course, and the technical characteristics of laparoscopic and open interventions. Postoperative assessment includes infectious complications, bleeding, functional disturbances of abdominal organs, pain intensity, duration of hospitalization, rate of recovery, return to usual daily activity, and overall rehabilitation. Analytical, comparative, clinical-observational, and statistical methods are planned for evaluation of perioperative outcomes. In parallel, national and international scientific publications, clinical guidelines, meta-analyses, and recommendations concerning laparoscopic and open cholecystectomy are analyzed to determine the evidence base for surgical decision-making.

Results. The evidence summarized in the study materials indicates a consistent clinical advantage of laparoscopic cholecystectomy in appropriately selected patients. A cited meta-analysis reported lower postoperative complication rates with laparoscopic compared with open cholecystectomy (odds ratio 0.46) and lower mortality (odds ratio 0.20), while the mean hospital stay was reduced by 4.74 days. In the same evidence summary, operative time and intraoperative blood loss were reported to be broadly comparable between the two approaches. Retrospective data involving 250 patients also demonstrated a shorter hospital stay, fewer complications, and faster recovery after laparoscopic surgery. Additional prospective clinical observations involving 200 patients reported shorter operative duration,

ISBN: 978-625-90699-4-4

lower blood loss, and higher patient satisfaction with the laparoscopic approach. In another comparative series of 120 patients, laparoscopic surgery was associated with shorter operating time; conversion to an open procedure was required in 5 cases. Taken together, these findings support the clinical value of minimally invasive surgery while also emphasizing that conversion should be regarded as a safety strategy rather than a treatment failure when severe inflammation or unfavorable anatomy prevents safe continuation of laparoscopy.

Discussion. The reviewed data indicate that the effectiveness of surgical treatment for acute cholecystitis depends not only on the nominal choice between laparoscopic and open access but also on appropriate patient selection and timely recognition of technical limitations. A minimally invasive strategy provides the greatest benefit when the severity of inflammation, anatomic conditions, and the patient's general status permit safe laparoscopic dissection. Conversely, extensive inflammatory infiltration, difficult anatomy, previous surgical interventions, or intraoperative uncertainty may require conversion or primary open surgery. Thus, optimization of treatment should focus on an individualized surgical algorithm rather than an unconditional preference for a single technique. Evaluation of postoperative morbidity, length of stay, pain, and speed of functional recovery provides clinically relevant criteria for comparing treatment strategies and for developing local recommendations adapted to routine surgical practice.

Practical significance. A structured comparison of laparoscopic and open cholecystectomy may provide a practical basis for selecting the safest operative approach according to disease severity, anatomic conditions, and individual patient characteristics. The proposed evaluation of operative duration, postoperative complications, pain, hospitalization, and rehabilitation is intended to identify clinically meaningful criteria for treatment optimization. Such an approach may facilitate the development of locally applicable recommendations for surgical departments, improve perioperative decision-making, and support earlier recovery and return to daily activity after surgery.

Conclusion. Laparoscopic cholecystectomy is the preferred minimally invasive approach for acute cholecystitis when it can be performed safely and is supported by the evidence summarized in the study materials as being associated with lower postoperative morbidity, shorter hospitalization, and faster rehabilitation. Open cholecystectomy remains necessary in selected complicated cases and when safe laparoscopic completion is not possible. Further prospective comparative evaluation of clinical, operative, and postoperative parameters is required to refine indications, identify predictors of conversion, and develop an evidence-based algorithm for selecting the optimal surgical approach in patients with acute cholecystitis.

Keywords: acute cholecystitis; laparoscopic cholecystectomy; open cholecystectomy; minimally invasive surgery; surgical treatment; postoperative complications; rehabilitation; conversion.

THE SEARCH FOR TRADITION AND IDENTITY IN TURKISH PAINTING FROM THE 19TH CENTURY TO THE PRESENT

Prof. Dr. İsa ELİRİ
Kırıkkale University, Faculty of Fine Arts, Department of Painting, Kırıkkale, Turkey
ORCID ID: https://orcid.org/0000-0003-3591-0648

ABSTRACT

Turkish painting has continuously redefined the relationship between tradition and modernity throughout its development, extending from the process of Westernization accelerated by Ottoman modernization in the nineteenth century to the pluralistic art environment of the present day. During this process, while artists adopted the technical and aesthetic accumulation of Western painting, they also sought to transform local cultural values, historical heritage, and social experiences into an original visual language. The aim of this study is to examine the transformation of the search for tradition and identity in Turkish painting from the nineteenth century to the present through selected artists and works within a historical and thematic framework.

Adopting a qualitative research approach, the study conducts a descriptive and comparative evaluation based on art historical literature and analyses of artworks. The Westernizing tendencies of the late Ottoman period, efforts to construct a national artistic identity during the early Republican period, the search for abstract and original forms after the 1950s, and contemporary artistic approaches that became more prominent after the 1980s are considered as the principal periods of analysis. Within this context, the works of artists such as Osman Hamdi Bey, Hoca Ali Rıza, İbrahim Çallı, Turgut Zaim, Bedri Rahmi Eyüboğlu, Erol Akyavaş, and Gülsün Karamustafa are evaluated in terms of subject matter, form, cultural references, and representations of identity.

The study aims to demonstrate that tradition in Turkish painting is not limited merely to the preservation of forms belonging to the past, but constitutes a dynamic source that is continuously reinterpreted within the changing expressive possibilities of modern and contemporary art. Accordingly, it argues that the search for identity cannot be reduced to the dichotomies of East and West or tradition and modernity; rather, it should be understood as a multilayered process diversified through artists' individual experiences, social transformations, and cultural memory.

Keywords: Turkish Painting, Tradition, Identity, Modernization, Contemporary Art.

BOZKIRIN GÖRSEL HAFIZASI TÜRK RESMİNDE COĞRAFYA VE KÜLTÜREL KİMLİK

THE VISUAL MEMORY OF THE STEPPE: GEOGRAPHY AND CULTURAL IDENTITY IN TURKISH PAINTING

Mustafa ÇOLAK
Şair Nedim Primary School, Ankara, Türkiye

Özet

Coğrafya, toplumların yalnızca fiziksel yaşam alanlarını değil, aynı zamanda kültürel kimliklerini, toplumsal deneyimlerini ve geçmişle kurdukları ilişkiyi biçimlendiren önemli bir unsurdur. Türk kültürel belleğinde bozkır, bu bağlamda belirli bir coğrafi alanın ötesinde, yaşam biçimi, hareketlilik, göç, doğayla ilişki, aidiyet ve toplumsal hafıza gibi farklı anlam katmanlarını bünyesinde barındıran güçlü bir kültürel imge niteliğindedir. Bu imgenin Türk resmindeki karşılığı ise yalnızca doğal çevrenin betimlenmesiyle sınırlı kalmayarak, coğrafyanın kültürel kimlik ve belleğin oluşumundaki rolünü görünür kılan bir görsel anlatı alanına dönüşmüştür.

Bu çalışmanın amacı, bozkırın Türk resmindeki görsel hafızasını coğrafya ve kültürel kimlik ilişkisi bağlamında incelemektir. Bu doğrultuda bozkır, yalnızca bir peyzaj unsuru olarak değil, geçmişin, toplumsal yaşam biçimlerinin ve kültürel aidiyetin görsel olarak aktarıldığı bir bellek alanı olarak ele alınmaktadır. Araştırmada nitel araştırma yaklaşımından ve sanat eseri inceleme yönteminden yararlanılmaktadır. Bu kapsamda Türk resminde bozkır ve Anadolu coğrafyasını konu edinen seçilmiş eserler; kompozisyon, renk, mekân, figür, ışık, perspektif ve boşluk kullanımları açısından incelenmekte, söz konusu görsel unsurların coğrafyanın kültürel anlamını nasıl yapılandırdığı değerlendirilmektedir. Eserler aynı zamanda bozkırın hangi toplumsal ve kültürel değerlerle ilişkilendirildiği açısından karşılaştırmalı olarak ele alınmaktadır.

Araştırma sonucunda, bozkırın Türk resminde yalnızca fiziksel bir coğrafyanın temsili olmadığı; kültürel deneyimlerin, toplumsal belleğin ve kimlik algısının görsel olarak taşındığı bir alan oluşturduğu görülmektedir. Bozkırın genişlik, açıklık, süreklilik, yalnızlık ve doğayla bütünleşme gibi görsel özellikleri, sanatçıların bireysel yaklaşımları aracılığıyla kültürel ve sembolik anlamlar kazanmaktadır. Bu bağlamda bozkır, fiziksel çevreden kültürel bir imgeye dönüşerek geçmiş ile bugün arasında görsel bir süreklilik kurmaktadır. Türk resminde coğrafyanın bu şekilde temsil edilmesi, kültürel kimliğin yalnızca tarihsel veya toplumsal unsurlar aracılığıyla değil, yaşanılan ve hatırlanan mekânların görsel temsilleri üzerinden de üretildiğini göstermektedir. Sonuç olarak bozkır, Türk resminde kültürel kimliğin ve toplumsal belleğin görsel taşıyıcılarından biri olarak değerlendirilebilir.

Anahtar Kelimeler: Bozkır, Türk resmi, görsel hafıza, kültürel kimlik, coğrafya, kültürel bellek.

Abstract

Geography is an important factor that shapes not only the physical living spaces of societies but also their cultural identities, social experiences, and relationships with the past. Within Turkish cultural memory, the steppe is not merely a specific geographical area; rather, it represents a powerful cultural image encompassing various layers of meaning, such as ways of life, mobility, migration, the relationship with nature, belonging, and collective memory. Its representation in Turkish painting, therefore, extends beyond the depiction of the natural environment and becomes a visual field of expression that makes visible the role of geography in the formation of cultural identity and memory.

The aim of this study is to examine the visual memory of the steppe in Turkish painting within the context of the relationship between geography and cultural identity. Accordingly, the steppe is approached not merely as a landscape element but as a space of memory through which the past, social ways of life, and cultural belonging are visually conveyed. The study employs a qualitative research approach and the method of artwork analysis. Within this framework, selected works depicting the steppe and Anatolian geography in Turkish painting are examined in terms of composition, color, space, figure, light, perspective, and the use of empty space, while the ways in which these visual elements construct the cultural meaning of geography are evaluated. The artworks are also comparatively analyzed in terms of the social and cultural values with which the steppe is associated.

The findings indicate that the steppe in Turkish painting is not merely a representation of physical geography but constitutes a space through which cultural experiences, collective memory, and perceptions of identity are visually **transmitted**. The visual characteristics of the steppe, such as vastness, openness, continuity, solitude, and integration with nature, acquire cultural and symbolic meanings through the individual approaches of artists. In this context, the steppe transforms from a physical environment into a cultural image, establishing visual continuity between the past and the present. The representation of geography in Turkish painting in this manner demonstrates that cultural identity is produced not only through historical or social elements but also through the visual representations of spaces that are lived in and remembered**.** Consequently, the steppe can be regarded as one of the visual carriers of cultural identity and collective memory in Turkish painting.

Keywords: Steppe, Turkish painting, visual memory, cultural identity, geography, cultural memory.

ISBN: 978-625-90699-4-4

GELENEKTEN ALGORİTMAYA TÜRK GÖRSEL KÜLTÜRÜNÜN DİJİTAL ÇAĞDA YENİDEN KODLANMASI

FROM TRADİTİON TO ALGORİTHM: THE RECODİNG OF TURKİSH VİSUAL CULTURE İN THE DİGİTAL AGE

Veysel PEKDOĞAN
Tınaz Primary School, Gaziantep, Türkiye

Özet

Dijital teknolojilerin gündelik yaşamın yanı sıra sanat ve görsel kültür alanlarını da dönüştürmesi, kültürel mirasın üretim, dolaşım ve algılanma biçimlerinde önemli değişimlere neden olmuştur. Geleneksel kültürlere ait motif, sembol, biçim ve görsel anlatım unsurları artık yalnızca fiziksel sanat nesneleri içerisinde değil; dijital tasarım, sosyal medya, sanal platformlar ve yapay zekâ destekli görsel üretim sistemleri aracılığıyla da yeniden üretilmektedir. Bu durum, kültürel mirasın aktarılması açısından yeni olanaklar yaratırken, geleneksel görsel kodların bağlamından koparılarak yeniden anlamlandırılması ve görsel tüketime açılması gibi sorunları da beraberinde getirmektedir.

Bu çalışmanın amacı, Türk görsel kültürüne ait geleneksel biçim, motif ve sembollerin dijital çağda nasıl yeniden üretildiğini ve bu yeniden üretim sürecinde kültürel anlamlarının nasıl dönüştüğünü incelemektir. Çalışmada geleneksel Türk sanatlarına ait seçilmiş görsel unsurlar; dijital sanat, dijital tasarım, sosyal medya görselleri ve yapay zekâ aracılığıyla oluşturulan görsel üretimler bağlamında ele alınmaktadır. Araştırmada nitel araştırma yöntemi kullanılmakta; seçilen görsel örnekler biçim, renk, motif, sembol, bağlam ve anlam açısından karşılaştırmalı olarak analiz edilmektedir. Böylece geleneksel görsel kod ile dijital ortamda ortaya çıkan yeni görsel kod arasındaki süreklilik ve farklılaşmalar ortaya konulmaktadır.

Araştırma sonucunda, geleneksel Türk sanatlarına ait görsel unsurların dijital ortamda yeniden üretilmesinin yalnızca biçimsel bir aktarım olmadığı, aynı zamanda kültürel anlamların yeniden yapılandırıldığı bir süreç oluşturduğu görülmektedir. Dijital teknolojiler ve özellikle üretken yapay zekâ, geleneksel motiflerin farklı estetik ve bağlamsal ilişkiler içerisinde yeniden yorumlanmasına olanak sağlarken, bu süreç motiflerin tarihsel ve kültürel bağlamlarından uzaklaşarak yalnızca dekoratif görsel unsurlara indirgenmesi riskini de ortaya çıkarmaktadır. Bu nedenle dijital yeniden üretim, bir yandan kültürel belleğin görünürlüğünü ve erişilebilirliğini artırırken diğer yandan kültürel anlamın dönüşmesine neden olan çift yönlü bir süreç olarak değerlendirilmektedir. Sonuç olarak geleneksel Türk görsel kültürünün dijital çağdaki varlığı, geçmişin olduğu gibi korunmasından ziyade, kültürel imgelerin teknoloji aracılığıyla yeniden kodlandığı dinamik bir süreç olarak ortaya çıkmaktadır. Bu durum, dijital kültürel üretimlerde estetik yenilik ile kültürel özgünlük arasındaki ilişkinin yeniden değerlendirilmesini gerekli kılmaktadır.

Anahtar Kelimeler: Türk kültürü, görsel kültür, dijital sanat, kültürel miras, yapay zekâ, kültürel bellek.

Abstract

The transformation of everyday life, as well as the fields of art and visual culture, by digital technologies has led to significant changes in the ways cultural heritage is produced, circulated, and perceived. Motifs, symbols, forms, and visual narrative elements belonging to traditional cultures are no longer reproduced solely within physical art objects; they are also being recreated through digital design, social media, virtual platforms, and artificial intelligence-supported visual production systems. While this situation creates new opportunities for the

transmission of cultural heritage, it also brings challenges such as the detachment of traditional visual codes from their original contexts, their reinterpretation, and their exposure to visual consumption.

The aim of this study is to examine how traditional forms, motifs, and symbols belonging to Turkish visual culture are reproduced in the digital age and how their cultural meanings are transformed during this process of reproduction. The study focuses on selected visual elements from traditional Turkish arts within the contexts of digital art, digital design, social media visuals, and AI-generated visual productions. A qualitative research method is employed, and selected visual examples are comparatively analyzed in terms of form, color, motif, symbol, context, and meaning. In this way, the continuities and differences between traditional visual codes and new visual codes emerging in digital environments are identified.

The findings indicate that the reproduction of visual elements belonging to traditional Turkish arts in digital environments is not merely a formal transfer but rather a process through which cultural meanings are reconstructed. While digital technologies, particularly generative artificial intelligence, enable traditional motifs to be reinterpreted within different aesthetic and contextual relationships, this process also carries the risk of distancing motifs from their historical and cultural contexts and reducing them to merely decorative visual elements. Therefore, digital reproduction can be considered a two-way process that, on the one hand, increases the visibility and accessibility of cultural memory while, on the other hand, contributes to the transformation of cultural meaning. Ultimately, the presence of traditional Turkish visual culture in the digital age emerges not as a process of preserving the past exactly as it was, but as a dynamic process in which cultural images are recoded through technology. This situation necessitates a reconsideration of the relationship between aesthetic innovation and cultural authenticity in digital cultural production.

Keywords: Turkish culture, visual culture, digital art, cultural heritage, artificial intelligence, cultural memory.

ARCHIVAL TRANSFORMATION IN CONTEMPORARY ART IN THE CONTEXT OF MEMORY, FICTION, AND ALTERNATIVE HISTORIOGRAPHY

Asst. Prof. Dr. Mevlüt ÖZEMİR
Kırıkkale University, Faculty of Fine Arts, Department of Painting, Kırıkkale, Turkey
ORCID ID: https://orcid.org/0000-0002-2539-9041

ABSTRACT

This study examines the transformation of the concept of the archive in contemporary art through the axes of document, memory, and fiction. Although the archive has often been regarded in modern thought as a record space in which documents from the past are objectively preserved, contemporary theoretical approaches demonstrate that the archive is a dynamic structure shaped by processes of selection, exclusion, classification, and representation. In this context, the study discusses the critical function of archival practices in contemporary art with reference to Foucault's approach to discourse and knowledge, Derrida's discussion of archive, authority, and structural loss, Assmann's theory of cultural memory, and Foster's concept of the archival impulse. Designed within a qualitative research approach, the study employs literature review and descriptive-interpretive artwork analysis as its methods. Rather than attempting to encompass archival practice in all its dimensions, the study aims to discuss this transformation through selected works by Walid Raad and Christian Boltanski. Raad's artistic production is evaluated in relation to fictional archive, document, and alternative historiography, while Boltanski's works are examined in the context of loss, anonymity, and the representation of collective memory. Consequently, the study argues that the archive in contemporary art is not merely a structure that preserves the past, but an aesthetic-political field of production that reconstructs, represents, and critically transforms it.

Keywords: Contemporary Art, Archive, Cultural Memory, Fictional Archive, Representation.

INTRODUCTION

The relationships between memory, representation, and historiography occupy an important place within the critical fields of debate in contemporary art. In this context, the archive is approached not merely as a static system of record in which documents belonging to the past are preserved, but as a dynamic field in which meaning is produced, history is reinterpreted, and modes of representation are questioned. In particular, theoretical approaches that developed from the second half of the twentieth century onward challenged the modernist assumption that the archive is a neutral and objective structure, demonstrating that archival processes are shaped by operations such as selection, exclusion, classification, and interpretation.

Within this framework, Foucault's approach, which relates the archive to the conditions under which discursive formations emerge; Derrida's discussion of the archive through the concepts of authority, law, and preservation; Assmann's theory of cultural memory; and Foster's concept of the archival impulse provide a fundamental theoretical basis for understanding archival practices in contemporary art. Rather than discussing these theoretical approaches in detail in the introductory section, however, this study aims to examine how the archive has become an aesthetic, political, and critical field of production within contemporary art.

In contemporary art practices, the archive is not merely a means of accessing the past or exhibiting historical documents. By reorganizing archival material, artists can reveal narratives that have been omitted or rendered invisible and can question the boundaries between document and fiction, testimony and representation, and history and memory. In this respect, the archive

becomes less a direct and complete record of historical reality than a critical structure that makes visible how the past is represented and which narratives are legitimized.

The central problem of this study is to reveal how the archive is transformed in contemporary art along the axes of document, memory, and fiction, and how this transformation is related to alternative historiography. Accordingly, the article first addresses the concept of the archive at the theoretical level and subsequently discusses archival practices in contemporary art in the context of the transformation of the document into an aesthetic object, fictional archives, and alternative historiography. In the final section, the relationship established by the archive with memory, representation, fiction, and the production of historical narratives is evaluated through the works of Walid Raad and Christian Boltanski.

The study does not aim to encompass every aspect of archival practice in contemporary art; rather, it examines the transformation of the archive in a limited and focused manner through selected works by Walid Raad and Christian Boltanski. Raad's *The Atlas Group* project is evaluated in the context of the fictional archive, the document, memories of war, and alternative historiography, while Boltanski's works are considered in relation to loss, anonymity, personal traces, and the representation of collective memory. Structured within a qualitative research approach, the study employs a literature review and a descriptive-interpretive method of artwork analysis. The theoretical framework is based on Foucault's discussion of the relationship between archive and discourse, Derrida's treatment of the archive, authority, and structural loss, Assmann's theory of cultural memory, and Foster's concept of the archival impulse. The selected works are examined according to the criteria of document use, archival organization, fiction, the representation of memory, and the reconstruction of historical narrative.

ARCHIVE, MEMORY, AND THEORETICAL APPROACHES

The Relationship of the Archive to Power and Selectivity

Within traditional epistemological approaches, the archive has often been conceived as a system of record in which the past is objectively stored. However, the concept of the archive developed by Michel Foucault in *The Archaeology of Knowledge* provides an important theoretical framework that challenges this assumption. For Foucault, the archive is not merely a physical or institutional space in which documents are preserved; rather, it is a discursive system that determines the conditions under which statements emerge, are organized, and acquire operative force within a particular field of knowledge in a given historical period. In this respect, the archive may be understood as a historical domain of regulation that determines what can be said, which statements gain visibility, and which forms of knowledge are recognized as legitimate (Foucault, 1972).

Jacques Derrida, in *Archive Fever*, discusses the archive through the concepts of power, authority, law, and preservation. Drawing attention to the word *arkhe*, from which the concept of the archive derives, Derrida emphasizes that it signifies both beginning and command or authority, thereby demonstrating that the archive is not a neutral site of preservation. Within this framework, the archive is directly related to questions concerning which traces are preserved, by whom they are classified, and in what form they are transmitted to the future. Archiving, therefore, may be understood not merely as a technical process that preserves documents belonging to the past, but as a constitutive intervention that shapes modes of remembering and forgetting (Derrida, 1995).

When the approaches of Foucault and Derrida are considered together, the archive emerges not as a closed repository in which the past is preserved in its entirety, but as a critical structure

ISBN: 978-625-90699-4-4

shaped by relations among knowledge, power, and representation. The significance of this perspective for contemporary art becomes evident in the ways artists approach archival material not merely as a source of historical data, but as a field of production open to intervention. The reorganization and fragmentation of archival material, or the rendering visible of its omissions and absences, generates aesthetic strategies that question how historical narratives are constructed.

Cultural Memory and the Archive

Cultural memory can be defined as a structural domain that extends beyond processes of individual remembering and enables social groups to transmit knowledge, experiences, values, and symbolic meanings related to the past across generations. In this context, memory is not merely a mental mechanism of preservation, but a dynamic process socially produced through interpersonal interaction and, in particular, through external systems of record, such as writing, that make intergenerational transmission possible. Jan Assmann's theory of cultural memory constitutes one of the principal points of reference for explaining this process. According to Assmann, cultural memory may be understood not as the passive preservation of the past, but as a long-term domain of remembrance shaped in accordance with societies' needs to produce identity, continuity, and meaning (Assmann, 2011). Within this framework, the archive may be considered not as the direct and sole source of cultural memory, but as an important medium of memory associated with the processes through which traces of the past are preserved, selected, and reinterpreted.

Through his distinction between communicative memory and cultural memory, Assmann makes visible the temporal and institutional layers of memory. Communicative memory refers primarily to the memory of the recent past sustained among living generations through everyday communication and oral transmission. Cultural memory, by contrast, produces longer-term historical continuity through writing, ritual, texts, symbolic forms, and institutionalized modes of transmission (Assmann, 2011). At this point, the archive gains significance in relation to the external forms through which cultural memory is recorded and preserved. However, the function of the archive is not limited to preserving information; it may also be understood as a selective structure that influences which traces of the past are preserved, which are made accessible, and which narratives are recirculated.

This discussion becomes more explicit through Aleida Assmann's distinction between the *canon* and the *archive*. According to Assmann, the part of cultural memory that remains in active circulation, supports collective identity, and is selectively foregrounded is associated with the canon. The archive, by contrast, is understood as a domain of reference memory that does not occupy the center of active remembrance, but can be reinterpreted in new contexts precisely because it has been preserved and can, when necessary, be reintegrated into cultural circulation (Assmann, 2008). This distinction demonstrates that the archive is not merely a passive repository within cultural memory, but also a potential domain that enables the reinterpretation of the past.

The relationship between the archive and cultural memory is also significant in terms of the construction of social identity. Collective identity is shaped not only through shared narratives of the past, but also through the documents, images, rituals, and institutional means of memory through which these narratives are made visible. The archive should therefore be regarded as a selective structure that determines through which traces and representational means collective identity is rendered visible (Assmann, 2008; Assmann, 2011).

ISBN: 978-625-90699-4-4

In the context of contemporary art, this relationship becomes visible in the use of the archive not merely as a source of historical data, but as a field of intervention in which memory can be aesthetically and critically reconstructed. By reorganizing archival material, artists can bring to light layers of social memory that have been suppressed, forgotten, or rendered invisible, thereby producing alternative forms of memory outside official historical narratives. Archival practices in contemporary art may therefore be understood not only in relation to acts of remembrance, but also in connection with the production of counter-memory and the politics of memory (Foster, 2004; Assmann, 2008).

The Archival Impulse in Contemporary Art

The turn toward the archive in contemporary art is not limited to the use of historical documents in artistic production; it is also regarded as a critical aesthetic strategy concerned with representation, historiography, and the politics of memory. The concept of the archival impulse, developed by Hal Foster in his essay *An Archival Impulse*, constitutes a fundamental point of reference for understanding this tendency. According to Foster, archival artists often seek to make physically present historical information that has been lost, displaced, or insufficiently visible (Foster, 2004). The archival impulse should therefore be understood not as a nostalgic return to the past, but as a productive artistic orientation that enables historical ruptures and suppressed narratives to be reconsidered.

Within this approach, the archive is not a passive field of representation that merely confirms existing historical narratives. By working with found images, objects, texts, and fragmentary records, artists reassemble these materials not in order to construct a linear and coherent historical narrative, but within multilayered arrangements that remain open to interpretation. In this way, the archive becomes an aesthetic field of production associated with processes of research, montage, recontextualization, and critical interpretation (Foster, 2004).

One of the defining aspects of the archival impulse in contemporary art is its capacity to make visible the tension between document and fiction. Archival art not only draws upon existing archives, but also produces its own archival configurations. These configurations demonstrate that archival material can simultaneously possess the qualities of the found and the constructed, the factual and the fictional. For this reason, the archive in contemporary art ceases to function as a fixed domain in which verifiable historical data are presented; instead, it becomes an aesthetic structure in which the representational power, fragility, and interpretability of the document are critically examined.

From a critical perspective, Foster's conceptualization of the archival impulse offers a strong theoretical model for explaining the turn toward the archive in contemporary art. Nevertheless, the grouping of archival practices that emerge within different political, geographical, and cultural contexts under a single aesthetic tendency requires the concept to be used with caution. Despite this limitation, the archival impulse provides an important theoretical framework for explaining how the archive functions in contemporary art as a field of critical production, alternative memory, and aesthetic intervention.

ARCHIVAL PRACTICES IN CONTEMPORARY ART

The Transformation of the Document into an Aesthetic Object

Traditionally, the document has been understood as a form of record that conveys information, possesses evidentiary value, and refers to a specific factual reality. Within this framework, the document was long associated with processes of historical verification, testimony, and archival

ISBN: 978-625-90699-4-4

preservation and was regarded as an instrumental material positioned outside the field of art. Contemporary art practices, however, have transformed this fixed and functional status of the document, making it a direct component of aesthetic and conceptual production. As Enwezor demonstrates in the context of *Archive Fever*, photographic and archival documents in particular are used in contemporary art not merely as records of the past, but as critical materials that enable the relationships among history, memory, representation, and power to be reconsidered (Enwezor, 2008).

In this process, the document becomes an object of aesthetic intervention not only because of the information it contains, but also because of its materiality, contextuality, and capacity to be reconstructed. Documents such as photographs, official records, letters, catalogues, maps, transcripts of testimony, and bureaucratic papers are often removed from their original functional contexts in contemporary art and transformed into visual and conceptual structures that generate new layers of meaning. This condition is closely related to the structure of archival art, which, through found images, objects, and texts, opens the incomplete, fragmented, or obscured aspects of the past to reconsideration (Foster, 2004).

The transformation of the document into an aesthetic object also entails questioning its relationship with objective reality. At this point, the document should not be regarded as a direct guarantee of the reality it represents, but rather as a structure that acquires meaning within specific conditions of production, preservation, classification, and circulation. Derrida's approach to the archive in relation to authority and processes of interpretation demonstrates that the document is neither entirely neutral nor inherently endowed with meaning (Derrida, 1995). Contemporary artists likewise use the document within this framework not as a fixed bearer of truth, but as a material that can be selected, organized, manipulated, and reread.

One important dimension of this transformation is the aesthetic problematization of the document's relationship with testimony, authenticity, and truth. In contemporary art, the document is often used not merely as corroborative evidence, but as a structure that generates doubt, ambiguity, and interpretive space. This approach directs the viewer to question not only the document's representational power but also its discursive construction. When considered in relation to Foucault's approach, which treats the document not as a passive trace of the past but as an element organized within the production of historical knowledge and endowed with meaning through a network of relations, such interventions into the document in contemporary art may be understood not merely as formal operations, but also as epistemological inquiries (Foucault, 1972).

From a critical perspective, the transformation of the document into an aesthetic object may be regarded as an important issue that opens the relationship among representation, testimony, and ethical responsibility to debate in contemporary art. In particular, the use of documents related to trauma, violence, or political memory within an artistic context can render the boundaries between aesthetic representation and ethical responsibility contentious. Martha Rosler's critiques of documentary photography are significant in this regard. Rosler does not entirely reject documentary photography's claim to make social problems visible; however, she emphasizes that such modes of visualization can, in some cases, render the represented subject passive while placing the viewer in a privileged position in relation to suffering and poverty (Rosler, 1981). The document should therefore be understood in contemporary art practice not merely as data or evidence, but as a critical structure that calls into question the ethical, political, and aesthetic limits of representation.

ISBN: 978-625-90699-4-4

Fictional Archives and Alternative Historiography

One of the major tendencies in archival practices within contemporary art is the questioning of the traditional understanding of the archive as a repository of verifiable and objective knowledge. This questioning is transformed into an aesthetic and critical strategy particularly through fictional archives. Foster's concept of the *archival impulse* is significant in demonstrating that contemporary art does not employ archival material merely as a pre-existing field of documentation, but approaches such material as structures that can be reorganized, interpreted, and constructed (Foster, 2004). Fictional archives should therefore not be regarded as structures that entirely reject historical reality, but as critical interventions that make visible the archival forms and representational strategies through which historical knowledge is constructed.

Spieker's assessments of the relationship between the archive and bureaucratic order demonstrate how the modern archive's claims to objective recording, classification, control, and the production of historical continuity can be called into question within artistic practices. According to Spieker, the bureaucratic archive influenced twentieth-century artistic practice in various forms, from Dadaist montage to late-period installations; as a result, the archival form came to function not merely as a system for preserving documents, but also as an aesthetic and critical structure (Spieker, 2008). Van Alphen's discussion of *The Atlas Group*, meanwhile, offers a more concrete account of the logic of the fictional archive. According to Van Alphen, documents and images that possess an archival appearance are not inherently false or fictional; rather, they acquire a new epistemic status within montage and the archival frame. Fictional archives therefore do more than simply blur the boundary between reality and fiction; they also open to question the representational mechanisms through which concepts such as historical truth, evidence, and authenticity are produced (Van Alphen, 2014).

One of the notable examples of fictional archives in contemporary art is Walid Raad's *The Atlas Group* project. The project is significant in that it questions how historical knowledge is produced and represented through documents, images, and narratives that assume an archival appearance (The Atlas Group, n.d.-a; Van Alphen, 2014).

In this context, fictional archives possess the potential to develop plural, fragmented, and discontinuous forms of narrative in opposition to the coherent, linear, and institutional narratives of traditional historiography. Foucault's genealogical conception of history, which questions the ideas of continuity, origin, and linear development, also supports this discussion. By enabling the reinterpretation of experiences that have been suppressed, marginalized, or rendered invisible within official historical narratives, fictional archives may be associated with alternative historiography and the production of counter-memory (Foucault, 1977; Foster, 2004; Enwezor, 2008). At the same time, the use of documentary forms in fictional production within the contexts of historical trauma or political memory generates an ethical tension that must be addressed with care. Fictional archives should therefore be understood not as a game that entirely suspends claims to testimony and historical truth, but as a critical intervention that interrogates the processes through which archival forms produce knowledge, authority, and representation.

ISBN: 978-625-90699-4-4

ARTIST ANALYSES

Walid Raad and the Fictional Archive

One of the significant examples that makes visible the relationship of archival practice in contemporary art with fiction, memory, and historiography is *The Atlas Group* project developed by Walid Raad. *The Atlas Group* is a long-term art project conducted by Raad between 1989 and 2004, with the aim of researching and documenting the contemporary history of Lebanon, particularly within the context of the Lebanese wars between 1975 and 1990. Within the scope of the project, written, visual, and audio documents were brought together; some of these materials were found, while others were produced by the artist or structured within fictional narratives (The Atlas Group, n.d.-a). In this respect, the project may be regarded as a distinctive artistic structure that demonstrates how the archival form can transform the relationships among historical narrative, memory, and representation (Van Alphen, 2014).

In Raad's approach, the archival form is not used merely as a method for presenting historical material; rather, it becomes an aesthetic and epistemological tool that calls into question the reliability of representation, the conditions under which historical knowledge is produced, and the authority of the document. The exhibition text prepared by MoMA on Raad likewise states that the photographs, videotapes, notebooks, and lectures produced within the framework of *The Atlas Group* are fictionalized constructions related to real events and to original research conducted in sound, film, and photographic archives in Lebanon and elsewhere (The Museum of Modern Art, 2015). In this context, Raad's practice may be considered one of the key examples for explaining how the concept of the fictional archive operates in contemporary art.

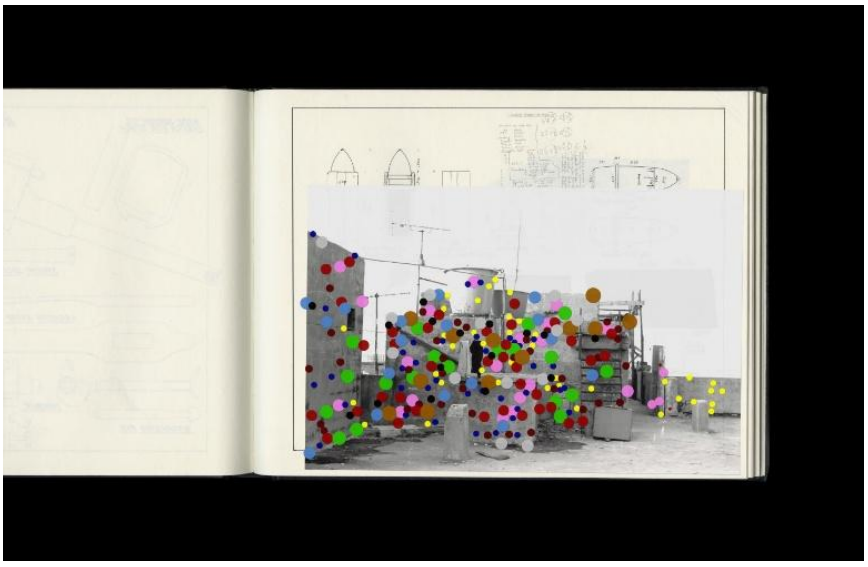


Figure 1. Walid Raad / The Atlas Group, *Let's Be Honest, the Weather Helped I*, 1998/2006, color photograph, 46x72 cm, The Atlas Group Archive (TBA21, n.d.).

In this series, Raad marks the locations of bullet impacts on black-and-white photographs with colored dots. According to TBA21 collection and exhibition texts, *Let's Be Honest, The Weather Helped I* (Figure 1) is based on traces left by color-coded ammunition used by different militias and armies during the Lebanese wars; these color codes are stated to be related to systems used by manufacturers in different countries to mark ammunition and cartridge cases (TBA21, n.d.). In this respect, rather than representing war directly, the work focuses on the material traces, color codes, and indirect signs left by war on surfaces. While the colored dots initially create the impression of an abstract and aesthetic arrangement, they simultaneously become a system of marking that renders the material remnants of violence visible.

ISBN: 978-625-90699-4-4

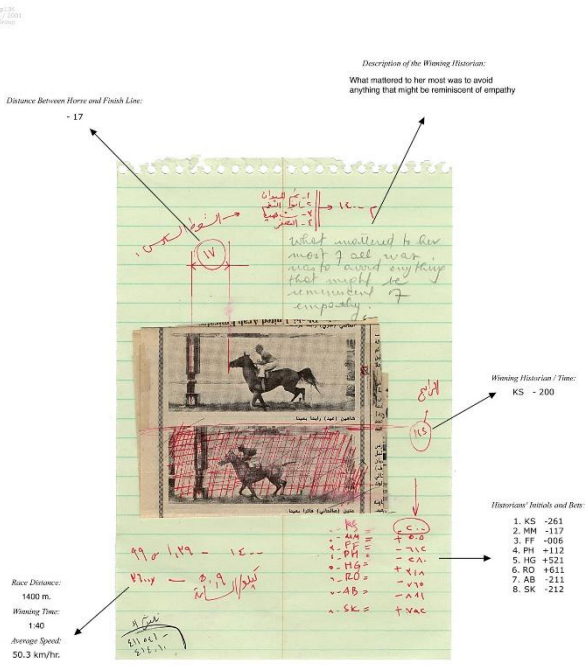


Figure 2. Walid Raad, *Notebook Volume 72: Missing Lebanese Wars, Plate 134*, 1989/1998, pigmented inkjet print, 34x24.8 cm, courtesy of the artist and Paula Cooper Gallery, New York (The Atlas Group, n.d.-b).

This work (Figure 2) is presented in *The Atlas Group* archive as a document attributed to Dr. Fadl Fakhouri under the title *Notebook Volume 72: Missing Lebanese Wars_Plate 134*. According to the project page, the notebook is based on a narrative in which historians studying the Lebanese wars gathered at the racetrack on Sundays and placed bets on the exact moment at which the race photographer would photograph the winning horse (The Atlas Group, n.d.-b). Spieker recounts the same narrative, noting that the historians wagered on how many fractions of a second before or after the horse crossed the finish line the photographer would take the picture (Spieker, 2008). In this respect, the work ironically reverses the relationship among statistics, record keeping, and historiography. The complex and traumatic reality of war is represented here through measurable intervals of time, betting records, and archival notes, thereby calling into question the ways in which historical knowledge is shaped through rational systems of documentation.

The originality of Raad's approach lies in suspending the assumption that the document functions solely as a carrier of verifiable information. Although the archival materials presented within *The Atlas Group* have the appearance of historical documents, they are often re-signified through narrative, montage, and fictional frameworks. This strategy may be considered alongside Derrida's approach to the archive in terms of authority, preservation, and interpretation. For Derrida, the archive is not a complete and spontaneously formed record of the past, but an institutional structure shaped by questions concerning which traces are preserved, how they are classified, and under what conditions they are made accessible (Derrida, 1995). Raad's fictional archive likewise functions not as the opposite of historical truth, but as a critical strategy that opens the modes through which truth is represented and archived to scrutiny.

ISBN: 978-625-90699-4-4

One of the significant dimensions of *The Atlas Group* is its production of alternative historiography. Particularly in the contexts of war, trauma, and collective memory, experiences that are often silenced or rendered invisible by official historical narratives are re-represented through Raad's archival strategy (Enwezor, 2008; The Atlas Group, n.d.-a). This tendency may be read in relation to Foucault's concepts of genealogical history and counter-memory. Foucault's genealogical approach questions notions of historical continuity and origins, making it possible to reconsider history through ruptures, struggles, contingencies, and relations of power (Foucault, 1977). In this context, Raad's practice may be understood as a critical structure that produces alternative domains of discourse and memory in opposition to dominant historical narratives.



Figure 3. Walid Raad / The Atlas Group, *My Neck Is Thinner Than a Hair: Engines*, 1996–2001, inkjet print, series of 100 works, each 24x34 cm, The Museum of Modern Art, New York (The Atlas Group, n.d.-c).

My Neck Is Thinner Than a Hair: Engines (Figure 3) is presented by *The Atlas Group* as a research project concerning 3,641 car bombs used during the Lebanese wars between 1975 and 1990. According to the project text of *The Atlas Group*, the engine was often the only part to remain intact after an explosion; it could be thrown tens or even hundreds of meters from the blast site, and during the war photojournalists competed to be the first to locate and photograph these engines (The Atlas Group, n.d.-c). Spieker likewise notes that, in this context, Raad collected 100 photographs of engines left behind after car bomb attacks (Spieker, 2008). In this work, war is represented not through direct images of violence, but through engine fragments remaining after the explosions. The engine becomes both a material remnant of the attack and an indirect witness to the event. In this way, the work opens the experience of war to reflection not through bodies or scenes of conflict, but through remnants, displacement, photographic traces, and incomplete information.

In Raad's practice, the relationship between the document and the aesthetic is also redefined. Archival materials are transformed into aesthetic objects through exhibition, montage, and narrative construction, rather than functioning merely as records that convey information. The Museo Nacional Centro de Arte Reina Sofía's exhibition text on *The Atlas Group* similarly states that the project is based on an extensive archive composed of visual, oral, and written documents; some of these documents were produced by the artist, while others were found, appropriated, and re-signified within a mechanism that questions the processes of research, documentation, historical narration, and verifiability (Museo Nacional Centro de Arte Reina

ISBN: 978-625-90699-4-4

Sofía, 2009). This demonstrates that archival material in contemporary art can function both as a means of representation and as a critical form.

From a critical perspective, Walid Raad's strategy of the fictional archive offers a strong model for questioning the epistemological foundations of historical representation. Although the blurring of boundaries between documentary appearance and fictional production creates an ethical tension, particularly in relation to testimony and historical accuracy, this ambiguity also constitutes one of the central elements of the critical force of his practice. Through this zone of uncertainty, Raad challenges the archive's claim to objectivity and makes visible the aesthetic and political possibilities of alternative historiography. For this reason, *The Atlas Group* may be regarded as one of the significant examples of fictional archival practice in contemporary art (The Atlas Group, n.d.-a; Van Alphen, 2014).

Christian Boltanski and the Representation of Memory

Christian Boltanski is one of the artists who has extensively problematized the relationship among archive, memory, and representation in contemporary art. In his artistic practice, materials with archival associations, such as old photographs, used clothing, lighting installations, shadows, and personal belongings, occupy an important place. These materials are employed not merely as objects that preserve traces of the past, but as aesthetic means that make visible the fragile structure of individual and collective memory. The Guggenheim Museum Bilbao's description of the artist likewise states that Boltanski presents old photographs, clothing, and personal belongings as traces left behind from the lives of others, and that this atmosphere intensifies a sense of loss and absence (Guggenheim Museum Bilbao, n.d.). In this context, Boltanski's works can be associated with Assmann's approach to cultural memory as a process shaped through social transmission and symbolic forms (Assmann, 2011). At the same time, the artist's effort to make physically present the traces of lives that have been lost, anonymized, or rendered invisible can also be considered in relation to Foster's concept of the archival impulse (Foster, 2004).



Figure 4. Christian Boltanski, *Monument: Les enfants de Dijon (Monument: The Children of Dijon)*, 1985, installation comprising photographs and lighting elements, Museum of Contemporary Art Chicago, Chicago (Museum of Contemporary Art Chicago, n.d.).

Boltanski's *Monument: Les enfants de Dijon (Monument: The Children of Dijon)* (Figure 4) transforms anonymous portraits of children into a semi-monumental form through the use of light, repetition, and arrangement. In the collection record of the Museum of Contemporary Art

ISBN: 978-625-90699-4-4

Chicago, the work is identified as a 1985 piece composed of gelatin silver prints, chromogenic prints, and lighting elements (Museum of Contemporary Art Chicago, n.d.). In this work, the portraits cease to function as documents identifying specific individuals and instead become anonymized faces. The use of light both foregrounds these faces as if they were sacred objects of remembrance and conveys a sense of their fragile and transient existence. In this way, the work makes visible the relationship among the erasure of individual identity, the uncertainty of remembrance, and the sense of collective mourning.

At this point, Boltanski's archival approach does not simply affirm photography's traditional function as testimony; rather, it proceeds by questioning that function. The portraits are no longer documents that fully represent particular individuals, but incomplete traces that remain from the past and cannot be fully explained. For this reason, *Monument: Les enfants de Dijon* makes visible not so much the preservation of personal identity within the archive as the process through which identity becomes anonymized and incorporated into a field of collective mourning. Here, photography ceases to function as evidence that definitively documents the past and instead becomes a fragile sign of a past that cannot be fully represented.



Figure 5. Christian Boltanski, *No Man's Land*, 2010, site-specific installation comprising used clothing and a sound installation, Park Avenue Armory, New York (Park Avenue Armory, 2010).

No Man's Land (Figure 5), composed of piles of used clothing, constructs ideas of presence, absence, and what remains behind through space without directly depicting the human body. In the exhibition text of the Park Avenue Armory, the work is described as a companion piece to the installation *Personnes*, presented at the Grand Palais in January 2010 (Park Avenue Armory, 2010). The arrangement of the garments in piles and their continuous displacement by means of an industrial crane transform objects left behind by individual bodies into a field of collective memory. In this respect, the work approaches memory not primarily through personal portraits, but through objects detached from the body and a spatial logic of accumulation.

In *No Man's Land*, clothing functions not merely as a used object, but as a witness to absence and loss. These objects, separated from the body, point to individuals who once existed but are no longer visible. The piles of clothing therefore do not directly narrate individual personal stories; instead, they lead the viewer to reflect on anonymized lives, mass loss, and a past that resists representation. This condition foregrounds the testimonial function of the object in Boltanski's archival practice: the object does not fully explain the past, but it enables absence to be sensed in a tangible way.

ISBN: 978-625-90699-4-4

In Boltanski's practice, archival aesthetics is not limited to the arrangement of photographs or objects belonging to anonymous individuals. In some of his works, the artist also subjects traces of his own life to an archival order, thereby questioning the extent to which autobiography can be recorded and represented. In this context, *Les Archives de Christian Boltanski, 1965–1988* (Figure 6) constitutes a notable example of the transformation of personal memory into archival form.



Figure 6. Christian Boltanski, *Les Archives de Christian Boltanski 1965–1988*, 1989, illuminated installation comprising metal, lamps, electrical cables, photographs, and paper, Centre Pompidou, Paris (Centre Pompidou, n.d.).

This work (Figure 6), in which the artist presents traces of his own life within an archival order, opens the relationship between autobiographical representation and the logic of archiving to discussion. According to the Centre Pompidou collection record, the work consists of 646 biscuit tins said to contain approximately 1,200 photographs and 800 different documents; these materials are presented as a wall installation together with table lamps and electrical cables (Centre Pompidou, n.d.). Here, personal documents become visible not as evidence that directly and comprehensively explains the artist's life, but as fragmentarily organized traces of subjective experience. In this respect, the work demonstrates that the personal archive is a structure that both enables remembrance and reduces the narrative of a life to limited and selected fragments.

Les Archives de Christian Boltanski 1965–1988 also demonstrates how personal memory, when transferred into an archival order, opens onto a collective field of meaning. Although the artist's use of documents from his own life may initially appear autobiographical, the presentation of these documents through boxes, lamps, and an organizing logic connects individual memory to a broader problematics of memory. In this way, the personal does not remain merely a trace belonging to the artist's biography; rather, it becomes a collective field of representation that makes visible the selective, reductive, and reorganizing structure of the archive.

This approach becomes clearer when considered in relation to Jan Assmann's theory of cultural memory. According to Assmann, memory does not consist solely of processes of individual recollection; societies sustain their relationship with the past through writing, texts, rituals, monuments, symbolic forms, and institutionalized practices of transmission (Assmann, 2011). Boltanski's anonymous portraits, personal belongings, garments, and archival arrangements may likewise be evaluated within this field of symbolic production. His works transform traces belonging to individuals from private remnants of memory into signs that are re-signified within collective memory.

From a critical perspective, Christian Boltanski's archival practice offers significant aesthetic and theoretical insights into the representation of memory. In his work, materials such as photographs, garments, metal boxes, light, and personal belongings function less as documents

ISBN: 978-625-90699-4-4

that verify the past than as archival elements that make visible the incomplete, fragile, and selective nature of remembrance. The archive in Boltanski's practice is therefore not a system that reconstructs the past as a coherent whole, but a fragmented field of representation shaped around loss, absence, anonymity, and collective mourning. At the same time, the aesthetic circulation of images associated with trauma, death, and collective loss can also give rise to ethical questions of representation. This tension, however, does not diminish the artist's practice; rather, it carries critical value insofar as it makes visible the problematic relationship between memory and representation.

Comparative Evaluation: From the Fictional Archive to the Archive of Memory

The works of Walid Raad and Christian Boltanski reveal two different yet complementary dimensions of archival practice in contemporary art. In Raad's practice, the archive is addressed in relation to war, fiction, the document, and alternative historiography, whereas in Boltanski's works it is shaped primarily through loss, anonymity, death, personal traces, and collective memory. Evaluating the two artists together therefore demonstrates that, in contemporary art, the archive is not merely a structure that preserves historical documents; rather, it is a critical field that makes visible both the modes through which historical truth is produced and the fragile structure of memory.

In Walid Raad's *The Atlas Group* project, the archive functions particularly as a structure that questions how historical narratives are constructed and under what conditions documents are regarded as reliable. Through photographs, videos, notebooks, and narratives that he either produces or presents in the appearance of found documents within the context of the Lebanese wars, the artist deliberately blurs the boundary between reality and fiction. This approach challenges the assumption that the archive is a neutral and complete repository of historical records. In Raad's work, the archive functions less as a system that organizes verifiable information about the past than as an aesthetic-political tool that makes visible the representational strategies through which historical knowledge is produced.

In Christian Boltanski's practice, by contrast, archival practice focuses less on the construction of historical truth than on the relationship of memory to loss, absence, and anonymization. The artist's installations composed of old photographs, used clothing, metal boxes, lighting devices, and personal belongings transform the traces left behind by individual lives into a field of collective memory. In Boltanski's works, the archive is not a recording system that definitively explains the past; rather, it is a mode of representation that evokes the fragmented, incomplete, and often ambiguous nature of remembrance. The archive in his practice therefore makes visible not so much the preservation of presence as absence, loss, and the possibility of forgetting.

The fundamental difference between these two approaches emerges in the function assigned to the archive. In Raad's work, the archive comes to the fore as a fictional structure that questions the reliability of historical narratives and the authority of the document, whereas in Boltanski's practice it becomes a sensory and monumental mode of arrangement that renders visible the fragility of personal and collective memory. Raad's archive directs the viewer to reflect on how historical knowledge is produced, while Boltanski's archive confronts the viewer with remembrance, mourning, anonymity, and absence. In this context, Raad may be considered primarily along the axes of alternative historiography and counter-memory, while Boltanski may be evaluated in relation to the representation of memory and the aesthetics of loss.

Nevertheless, the two artists converge in their critical stance toward the archive as an objective, complete, and neutral structure. Rather than employing archival materials as documents that directly transmit information, both artists make visible the ways in which such documents are

ISBN: 978-625-90699-4-4

shaped through processes of representation, selection, organization, and interpretation. In Raad's work, this relationship is established through fiction and historical narrative, whereas in Boltanski's practice it is constructed through the material traces of memory mediated by objects, photographs, and installation. In this way, the practices of both artists demonstrate that the archive functions in contemporary art as a field of both epistemological and affective inquiry.

CONCLUSION

This study has examined how archival practices in contemporary art have been transformed in relation to document, memory, fiction, and alternative historiography through the examples of Walid Raad and Christian Boltanski. The analysis has shown that, within contemporary art, the archive functions less as a fixed repository that transmits material from the past than as a critical ground that questions the reliability of the document, the selective structure of memory, and the construction of historical narratives.

One of the principal conclusions reached in this study is that the document in contemporary art has ceased to function solely as a record possessing evidentiary value and has instead become an aesthetic and intellectual material. Photographs, official records, testimonies, personal belongings, and objects organized according to an inventory logic make visible the constructed nature of representation within the artwork, while simultaneously opening issues such as testimony, authenticity, and ethical responsibility to discussion.

Walid Raad's *The Atlas Group* project foregrounds the relationship between the archive, fictional strategies, and alternative historiography, whereas Christian Boltanski's works approach archival material through the axes of loss, anonymity, and collective memory. While the archival structure developed by Raad in the context of the Lebanese wars questions the gaps, records, and fictions through which historical narratives are produced, Boltanski's installations constructed with anonymous portraits, used clothing, metal boxes, and lighting devices make visible the incomplete and fragile structure of memory and the ways in which it is constituted through objects.

These two artists demonstrate that the archive in contemporary art is a transformative tool that questions both the authority of historical knowledge and the limits of modes of remembrance. In Raad's work, the archive operates through fiction, document, and counter-memory, whereas in Boltanski's practice it becomes an affective field of memory associated with absence, mourning, and anonymization.

Future studies may examine archival practices in contemporary art in greater detail through examples of artists from Türkiye, digital archival technologies, and local politics of memory. In particular, online archives, AI-assisted forms of data organization, and artistic practices focused on social memory offer productive areas of inquiry for evaluating new expansions of the concept of the archive in contemporary art.

REFERENCES

Assmann, A. (2008). Canon and archive. In A. Erll & A. Nünning (Eds.), *Cultural memory studies: An international and interdisciplinary handbook* (pp. 97–108). Walter de Gruyter. https://doi.org/10.1515/9783110207262.2.97

Assmann, J. (2011). *Cultural memory and early civilization: Writing, remembrance, and political imagination*. Cambridge University Press. https://doi.org/10.1017/CBO9780511996306

Centre Pompidou. (n.d.). *Les Archives de Christian Boltanski 1965–1988*. https://www.centrepompidou.fr/fr/ressources/oeuvre/c4rrdBq

Derrida, J. (1995). Archive fever: A Freudian impression (E. Prenowitz, Trans.). *Diacritics, 25*(2), 9–63. https://doi.org/10.2307/465144

Enwezor, O. (2008). *Archive fever: Uses of the document in contemporary art*. International Center of Photography; Steidl.

Foster, H. (2004). An archival impulse. *October, 110*, 3–22. https://doi.org/10.1162/0162287042379847

Foucault, M. (1972). *The archaeology of knowledge and the discourse on language* (A. M. Sheridan Smith, Trans.). Pantheon Books.

Foucault, M. (1977). *Language, counter-memory, practice: Selected essays and interviews* (D. F. Bouchard, Ed.; D. F. Bouchard & S. Simon, Trans.). Cornell University Press.

Guggenheim Museum Bilbao. (n.d.). *Humans*. https://www.guggenheim-bilbao.eus/en/exhibition/humanos

Museo Nacional Centro de Arte Reina Sofía. (2009). *The Atlas Group (1989–2004): A project by Walid Raad*. https://www.museoreinasofia.es/en/exhibition/atlas-group-1989-2004-project-walid-raad

Museum of Contemporary Art Chicago. (n.d.). *Monument: Les enfants de Dijon (Monument: The Children of Dijon)*. https://mcachicago.org/collection/items/christian-boltanski/2750-monument-les-enfants-de-dijon-monument-the-children-of-dijon

Park Avenue Armory. (2010). *Christian Boltanski's No Man's Land*. https://www.armoryonpark.org/season-events/2010-season/christian-boltanskis-no-mans-land/

Rosler, M. (1981). *3 works*. The Press of the Nova Scotia College of Art and Design.

Spieker, S. (2008). *The big archive: Art from bureaucracy*. MIT Press.

TBA21. (n.d.). *Walid Raad / The Atlas Group: Let's Be Honest. The Weather Helped I, 1998/2006*. https://tba21.org/lets-be-honest-the-weather

The Atlas Group. (n.d.-a). *The Atlas Group (1989–2004)*. https://www.theatlasgroup1989.org/

The Atlas Group. (n.d.-b). *Notebook volume 72: Missing Lebanese wars*. https://www.theatlasgroup1989.org/n72

The Atlas Group. (n.d.-c). *My neck is thinner than a hair*. https://www.theatlasgroup1989.org/neck

The Museum of Modern Art. (2015). *Walid Raad*. https://www.moma.org/calendar/exhibitions/1493

Van Alphen, E. (2014). *Staging the archive: Art and photography in the age of new media*. Reaktion Books.

ISBN: 978-625-90699-4-4

BO'LAJAK MUSIQA O'QITUVCHILARINING IJROLIK KOMPETENSIYASINI RIVOJLANTIRISH MAZMUNI VA TEXNOLOGIYASI TADQIQOTNING DOLZARBLIGI

CONTENT AND TECHNOLOGY OF DEVELOPING THE PERFORMANCE COMPETENCE OF FUTURE MUSIC TEACHERS

Sumbula Maxmudova
Fergana State University, Senior Research Fellow at the "Victims of Repression" Museum, Doctor of Philosophy (PhD) in Pedagogical Sciences, Associate Professor Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0004-6260-152X

Shuxrat Tursunov
Fergana State University, Independent Researcher, Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0008-4159-6118

Abstract. The article addresses the content and technology of developing the performance (executant) competence of future music teachers within the competency-based approach. Performance competence is modelled as an integrative structure comprising technical-executant, artistic-interpretive, musical-analytical, psycho-physiological (stage-readiness), creative-improvisational, and demonstrative-communicative components. The developmental technology is presented as a five-stage process – motivational, cognitive-orienting, operational-activity, creative-independent, and reflective-evaluative – supported by methods such as master demonstration (ustoz–shogird), slow and sectional practice, deliberate practice, mental rehearsal, video self-analysis, ensemble work, staged concert practice, and digital tools. The study argues that the national performance tradition (maqom, folk instruments) should be integrated with contemporary pedagogical technologies rather than replaced by them.

Keywords: *performance competence, music teacher, competency-based approach, pedagogical technology, deliberate practice, interpretation, stage readiness, maqom, ustoz–shogird, reflection.*

Musiqa o‘qituvchisi kasbining o‘zagini ijrochilik faoliyati tashkil etadi: o‘qituvchi cholg‘u chalar, kuylaydi, jo‘rnavozlik qiladi va o‘quvchi oldida badiiy namuna ko‘rsatadi. Shu bois ijrochilik kompetentligi musiqa pedagogining kasbiy kompetentligi tarkibidagi tayanch, tizim tashkil etuvchi tarkibiy qismdir. Kompetensiyaviy yondashuv sharoitida uni faqat texnik ko‘nikma sifatida emas, balki bilim, mahorat, badiiy-estetik idrok va shaxsiy sifatlarni real ijro vaziyatida safarbar eta olish qobiliyati sifatida tushunish qabul qilingan[1].

Amaliyotda esa bo‘lajak o‘qituvchilar tayyorlashda ikki xil bir tomonlamalik uchraydi: goh texnik mashqqa haddan ortiq urg‘u berilib, badiiy-interpretatsion va sahnaviy jihatlar chetda qoladi, goh aksincha. Buning ustiga, ijrochilik kompetentligini rivojlantirishning yaxlit, bosqichli *texnologiyasi* ko‘pincha aniq belgilanmagan bo‘lib, jarayon ustoz tajribasiga tayangan stixiyali tarzda kechadi. Musiqiy ijro psixologiyasi bo‘yicha zamonaviy tadqiqotlar esa bu jarayonni ilmiy asosda boshqarish mumkinligini ko‘rsatadi[2].

[1]Kasbiy kompetentlikning tuzilmaviy-komponent talqini haqida: Zimnyaya I.A. Klyuchevye kompetentnosti kak rezultativno-tselevaya osnova kompetentnostnogo podxoda v obrazovanii. – Moskva, 2004.
[2]Musiqiy ijrochilik faoliyatining psixologik asoslari bo‘yicha fundamental manba: Lehmann A.C., Sloboda J.A., Woody R.H. Psychology for Musicians: Understanding and Acquiring the Skills. – New York: Oxford University Press, 2007.

ISBN: 978-625-90699-4-4

O‘zbekistonda ta’lim islohotlari o‘qituvchi kadrlar sifatiga yuqori talab qo‘ymoqda[3]. Milliy musiqiy meros – maqom, xalq cholg‘ulari ijrochiligi va “ustoz–shogird” an’anasi – ijrochilik kompetentligini shakllantirish uchun boy zamin beradi. Biroq bu boylikni zamonaviy pedagogik texnologiyalar bilan uyg‘unlashtiruvchi yaxlit metodik ta’minot yetarli darajada ishlab chiqilmagan. Mazkur holat muammoning dolzarbligini belgilaydi.

TADQIQOT MAQSADI

Bo‘lajak musiqa o‘qituvchilarining ijrochilik kompetentligini rivojlantirishning mazmuni (tarkibiy tuzilmasi) va texnologiyasini (bosqichli metodikasi) ilmiy-nazariy jihatdan asoslash. Maqsad quyidagi vazifalarni belgiladi:

1) “ijrochilik kompetentligi” tushunchasining mazmunini aniqlashtirish va uning tarkibiy komponentlarini belgilash;
2) kompetentlikning har bir komponenti uchun ko‘rsatkichlar (kriteriylar) tizimini ishlab chiqish;
3) uni rivojlantirishning bosqichli pedagogik texnologiyasi va metodlarini asoslash;
4) milliy ijrochilik an’anasini zamonaviy texnologiyalar bilan integratsiyalash yo‘nalishlarini belgilash.

TADQIQOT MATERIALLARI VA METODLARI

Tadqiqot nazariy xarakterga ega bo‘lib, unda metodlar majmuidan foydalanilgan.

Ilmiy-nazariy tahlil va sintez musiqiy ijro psixologiyasi, cholg‘u va vokal ta’limi metodikasi hamda kompetensiyaviy yondashuv bo‘yicha adabiyotlarni o‘rganishda qo‘llanildi.

Tuzilmaviy-funksional modellashtirish ijrochilik kompetentligini o‘zaro bog‘liq komponentlar tizimi sifatida ifodalash imkonini berdi. Pedagogik tajribani umumlashtirish va qiyosiy tahlil milliy hamda xorijiy metodikalarni solishtirishda ishlatildi.

Manbaviy bazani musiqiy ijro va cholg‘u pedagogikasining klassik hamda zamonaviy ishlari[4], pedagogik texnologiya nazariyasi[5] va O‘zbekiston ta’lim sohasidagi me’yoriy hujjatlar tashkil etdi. Tadqiqot cheklovi – uning empirik-eksperimental emas, nazariy-metodik xarakterga egaligidir; taklif etilgan model kelgusida amaliy tekshiruvni talab qiladi.

TADQIQOT NATIJALARI

Manbalar tahlili ijrochilik kompetentligini quyidagi olti komponentli integrativ tuzilma sifatida modellashtirishga imkon berdi:

1) ***texnik-ijrochilik komponenti*** – cholg‘u yoki ovoz apparatini egallash, aplikatura, shtrix, nafas, intonatsiya tozaligi va texnik ravonlik;

2) ***badiiy-interpretatsion komponenti*** – asar mazmunini his qilish, uslub, obraz, dinamika va agogikani badiiy talqin eta olish;

3) ***musiqiy-analitik komponenti*** – asar shakli, garmoniyasi, uslubi va tarixiy konteksti haqidagi tahliliy bilim;

4) ***psixofiziologik-sahnaviy komponenti*** – sahna oldi hayajonini boshqarish, diqqat barqarorligi va ijroga psixologik tayyorgarlik;

5) ***ijodiy-improvizatsion komponenti*** – aranjirovka, jo‘rnavozlik (akkompanement), improvizatsiya va ijodiy talqin;

6) ***kommunikativ-namoyishkorlik komponenti*** – o‘quvchiga ijro namunasini ko‘rsata olish, tushuntirish va badiiy ta’sir o‘tkaza olish.

---

[3]O‘zbekiston Respublikasining “Ta’lim to‘g‘risida”gi Qonuni (yangi tahrir). – Toshkent, 2020-yil 23-sentabr, № O‘RQ-637.

[4]Ijrochilik san’atining badiiy-interpretatsion masalalari klassik manbada tahlil qilingan: Neygauz G.G. Ob iskusstve fortepiannogo igry: Zapiski pedagoga. – Moskva: Muzyka, 1988.

[5]Pedagogik texnologiya tushunchasi va tuzilishi: Bespalko V.P. Slagaemye pedagogicheskoy tekhnologii. – Moskva: Pedagogika, 1989; Selevko G.K. Sovremennye obrazovatelnye tekhnologii. – Moskva, 1998.

ISBN: 978-625-90699-4-4

Oxirgi komponent musiqa o‘qituvchisi ijrochiligini konsert ijrochisinikidan farqlaydi: pedagog uchun ijro nafaqat badiiy natija, balki o‘qitish vositasidir. Komponentlar iyerarxik emas, o‘zaro shartlangan: texnika badiiy niyatga xizmat qiladi, tahliliy bilim interpretatsiyani asoslaydi, refleksiya esa butun tizimni rivojlantiradi[6].

Pedagogik texnologiya – belgilangan natijaga erishishni kafolatlovchi, bosqichli va boshqariladigan jarayondir[7]. Ijrochilik kompetentligini rivojlantirish texnologiyasini besh bosqichli tsikl sifatida taqdim etamiz:

1) ***Motivatsion-qadriyat bosqichi*** – ijroga qiziqish uyg‘otish, badiiy ideal shakllantirish, namunaviy ijrolarni tinglash va tahlil qilish;

2) ***Kognitiv-orientirlovchi bosqich*** – asar bilan tanishish, tahliliy o‘rganish, texnik va badiiy vazifalarni aniqlash;

3) ***Operatsion-faoliyat bosqichi*** – sekin va bo‘lakli mashq, texnik qiyinchiliklarni maqsadli ishlash (deliberate practice), takroriy va aqliy mashq;

4) ***Ijodiy-mustaqil bosqich*** – yaxlit badiiy talqin, jo‘rnavozlik va ansambl amaliyoti, konsert-sahna sinovi;

5) ***Refleksiv-baholash bosqichi*** – video/audio yozuv orqali o‘z ijrosini tahlil qilish, xatolarni tuzatish va keyingi maqsadlarni belgilash.

Bunda “maqsadli mashq” tamoyili markaziy o‘rin tutadi: mahorat mashq hajmi bilangina emas, balki uning sifati – aniq vazifaga yo‘naltirilgan, refleksiv va sekin bajarilishi bilan belgilanadi[8]. Sahnaviy komponentni rivojlantirishda diqqatni boshqarish va sahna oldi hayajonini yumshatish usullari[9] alohida ahamiyat kasb etadi.

Texnologiyaning amaliy o‘zagini quyidagi metodlar tashkil etadi: ustoz tomonidan ijro namunasini ko‘rsatish va taqlid (“ustoz–shogird”); sekin va bo‘lakli mashq; aqliy (ichki eshitishga tayangan) mashq; video-tahlil orqali o‘z-o‘zini nazorat; ansambl va jo‘rnavozlik amaliyoti; konsert-sahna mashqi; usta darslar (master-klass). Zamonaviy raqamli vositalar – metronom va tюner ilovalari, notografiya dasturlari, audio-video yozuv va “minus” jo‘rliklar – mashq samaradorligini oshiradi.

Milliy zaminda “ustoz–shogird” an’anasi, mohiyatan, ko‘rsatish-taqlid va individuallashtirilgan mashqqa asoslangan tabiiy texnologiyadir[10]. Maqom va xalq cholg‘ulari ijrochiligi esa mazmuniy asos beradi. Shu bois milliy an’anani zamonaviy texnologiyalar bilan almashtirish emas, balki uni video-tahlil, maqsadli mashq va refleksiya kabi vositalar bilan boyitish maqsadga muvofiq. Ijodiy-improvizatsion komponentni rivojlantirishda esa maqom ijrochiligidagi og‘zaki-improvizatsion tabiat Orf yondashuvidagi improvizatsiya g‘oyalari bilan uyg‘unlashadi[11].

Yuqoridagi natijalarni komponent – ko‘rsatkich – texnologiya bog‘lanishida umumlashtirilgan holda jadvalda taqdim etamiz.

---

[6]Refleksiv amaliyot g‘oyasi: Schön D.A. The Reflective Practitioner: How Professionals Think in Action. – New York: Basic Books, 1983.

[8]“MaqsadIi mashq” (deliberate practice) nazariyasi: Ericsson K.A., Krampe R.T., Tesch-Römer C. The Role of Deliberate Practice in the Acquisition of Expert Performance // Psychological Review. – 1993. – Vol. 100, No. 3. – P. 363–406.

[9]Diqqat, ichki e’tibor va sahnaviy holatni boshqarish masalasi: Green B., Gallwey W.T. The Inner Game of Music. – New York: Doubleday, 1986.

[10]“Shashmaqom” 2003-yilda YuNESKOning Insoniyatning nomoddiy madaniy merosi ro‘yxatiga kiritilgan. “Ustoz–shogird” an’anasi maqom ijrochiligini yetkazishning tabiiy mexanizmidir.

[11]Ijodiy-improvizatsion ko‘nikmalarni rivojlantirishga oid yondashuv: Orff C., Keetman G. Orff-Schulwerk: Music for Children. – London: Schott, 1958.

Komponent	Ko‘rsatkichlar	Rivojlantirish texnologiyasi / metodi
Texnik-ijrochilik	Ravonlik, intonatsiya tozaligi, shtrix va aplikatura	Sekin va bo‘lakli mashq, maqsadli mashq
Badiiy-interpretatsion	Obraz, uslub, dinamika va agogikani talqin etish	Namunaviy ijro tahlili, ustoz ko‘rsatmasi, qiyosiy tinglash
Musiqiy-analitik	Asar shakli, garmoniyasi va uslubini bilish	Asarni nazariy tahlil qilish, uslubiy sharh
Psixofiziologik-sahnaviy	Hayajonni boshqarish, diqqat barqarorligi	Konsert-sahna mashqi, aqliy mashq, diqqatni boshqarish
Ijodiy-improvizatsion	Jo‘rnavozlik, aranjirovka, improvizatsiya	Ansambl amaliyoti, improvizatsion topshiriqlar (Orf)
Kommunikativ-namoyishkorlik	Ijro namunasini ko‘rsatish va tushuntira olish	Master-klass, o‘qitish amaliyoti, video-tahlil

1-jadval. Ijrochilik kompetentligi komponentlari, ko‘rsatkichlari va ularni rivojlantirish texnologiyasi.

Kompetentlikning shakllanganlik darajasi uch bosqichda (past, o‘rta, yuqori) baholanadi: past darajada texnik ijro yetakchilik qilib, badiiy va sahnaviy jihatlar zaif; o‘rta darajada texnika va talqin muvozanatlashadi; yuqori darajada esa ijro badiiy yaxlit, mustaqil va pedagogik jihatdan namunaviy bo‘ladi.

TADQIQOT NATIJALARINING MUHOKAMASI

Olingan natijalar ijrochilik kompetentligini bir o‘lchamli – faqat texnik yoki faqat badiiy – hodisa sifatida talqin qilib bo‘lmasligini tasdiqlaydi. Mazmun (tuzilma) va texnologiya (uni rivojlantirish jarayoni) ajralmas: har bir komponent o‘ziga mos metodni talab qiladi, jadvalda bu bog‘lanish yaqqol ko‘rinadi.

Muhokamaning markazida uch ziddiyat turadi. Birinchisi – texnika va badiiylik muvozanati: texnik mashq badiiy niyatdan uzilib qolmasligi, aksincha, unga bo‘ysunishi lozim[12]. Ikkinchisi – individuallik va jamoaviylik: “ustoz–shogird”ning individual an’anasi ansambl va jo‘rnavozlik amaliyoti bilan to‘ldirilishi kerak. Uchinchisi – an’ana va zamonaviy texnologiya: og‘zaki-taqlidiy an’anani video-tahlil, maqsadli mashq va refleksiya bilan boyitish samaradorlikni oshiradi.

Zamonaviy tadqiqotlar mahorat o‘sishini mashq hajmi emas, balki uning sifati belgilashini ko‘rsatadi[13]. Bu – an’anaviy “ko‘p mashq qil” ko‘rsatmasidan “to‘g‘ri va refleksiv mashq qil” tamoyiliga o‘tishni taqozo etadi. Ko‘pincha e’tibordan chetda qoladigan sahnaviy-psixologik component esa bo‘lajak o‘qituvchi uchun alohida ahamiyatlidir, zero u o‘quvchilar oldida muntazam ijro etadi.

Natijalar kompetensiyaviy yondashuv tamoyillarini tasdiqlaydi, biroq ularni ijrochilik faoliyatining o‘ziga xosligi va milliy kontekst bilan aniqlashtiradi. Refleksiv komponentga urg‘u o‘qituvchini “butun umr o‘rganish” sub’ektiga aylantiradi[14]. Tadqiqotning nazariy xarakteri uning cheklovi bo‘lib, taklif etilgan model va texnologiya kelgusida pedagogik eksperimentda tekshirilishi lozim.

[14]Uzluksiz kasbiy rivojlanish (lifelong learning): Learning: The Treasure Within. Report to UNESCO. – Paris: UNESCO, 1996.

ISBN: 978-625-90699-4-4

XULOSA

Birinchidan, bo‘lajak musiqa o‘qituvchisining ijrochilik kompetentligi texnik-ijrochilik, badiiy-interpretatsion, musiqiy-analitik, psixofiziologik-sahnaviy, ijodiy-improvizatsion va kommunikativ-namoyishkorlik komponentlarining o‘zaro bog‘liq birligi sifatida modellashtirildi.

Ikkinchidan, uni rivojlantirish texnologiyasi motivatsion, kognitiv-orientirlovchi, operatsion-faoliyat, ijodiy-mustaqil va refleksiv-baholash bosqichlarini qamrab oluvchi, “maqsadli mashq” va refleksiyaga tayangan boshqariladigan jarayon sifatida asoslandi.

Uchinchidan, samarali yo‘l – milliy ijrochilik an’anasini (“ustoz–shogird”, maqom, xalq cholg‘ulari) zamonaviy pedagogik va raqamli texnologiyalar bilan almashtirish emas, balki integratsiyalashdir. Bu yondashuv bo‘lajak musiqa o‘qituvchilarining ijrochilik tayyorgarligi sifatini oshirishga xizmat qiladi.

Foydalanilgan adabiyotlar

1. O‘zbekiston Respublikasining “Ta’lim to‘g‘risida”gi Qonuni (yangi tahrir). – Toshkent, 2020.
2. Bespalko V.P. Slagaemye pedagogicheskoy tekhnologii. – Moskva: Pedagogika, 1989.
3. Ericsson K.A., Krampe R.T., Tesch-Römer C. The Role of Deliberate Practice in the Acquisition of Expert Performance // Psychological Review. – 1993. – Vol. 100, No. 3. – P. 363–406.
4. Green B., Gallwey W.T. The Inner Game of Music. – New York: Doubleday, 1986.
5. Hallam S. Instrumental Teaching: A Practical Guide to Better Teaching and Learning. – Oxford: Heinemann, 1998.
6. Jørgensen H. Instrumental Performance Expertise and Amount of Practice among Instrumental Students in a Conservatoire // Music Education Research. – 2002. – Vol. 4, No. 1. – P. 105–119.
7. Kenny D.T. The Psychology of Music Performance Anxiety. – Oxford: Oxford University Press, 2011.
8. Lehmann A.C., Sloboda J.A., Woody R.H. Psychology for Musicians: Understanding and Acquiring the Skills. – New York: Oxford University Press, 2007.
9. Neygauz G.G. Ob iskusstve fortepiannogo igry: Zapiski pedagoga. – Moskva: Muzyka, 1988.
10. Orff C., Keetman G. Orff-Schulwerk: Music for Children. – London: Schott, 1958.
11. Schön D.A. The Reflective Practitioner: How Professionals Think in Action. – New York: Basic Books, 1983.
12. Selevko G.K. Sovremennye obrazovatelnye tekhnologii. – Moskva: Narodnoe obrazovanie, 1998.
13. Tsypin G.M. Obuchenie igre na fortepiano. – Moskva: Prosveshenie, 1984.
14. Zimnyaya I.A. Klyuchevye kompetentnosti kak rezultativno-tselevaya osnova kompetentnostnogo podxoda v obrazovanii. – Moskva, 2004.
15. Learning: The Treasure Within. Report to UNESCO. – Paris: UNESCO, 1996.

ISBN: 978-625-90699-4-4

BO'LAJAK MUSIQA O'QITUVCHILARINING KASBIY KOMPETENSIYASINI RIVOJLANISH BO'YICHA MILLIY VA XALQARO TAJRIBASI TAHLILI.

ANALYSIS OF NATIONAL AND INTERNATIONAL EXPERIENCE IN DEVELOPING THE PROFESSIONAL COMPETENCE OF FUTURE MUSIC TEACHERS

Namozova Dilorom Tursunovna
Fergana State University, PhD, Associate Professor
Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0002-4724-1517

Jo‘raboyeva Dilobarxon Sherali qizi
Fergana State University, Doctoral Researcher
Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0000-6853-0938

Abstract. The article examines the problem of developing the professional competence of future music teachers from the perspective of the competency-based approach. Based on a comparative pedagogical analysis of theoretical sources, regulatory documents, and educational curricula, international experience (Hungary, Germany, Finland, Japan, and the United States) is compared with the national experience of Uzbekistan. The findings make it possible to clarify the structural components of music teachers’ professional competence, including specialist-performance, psychological-pedagogical, creative-innovative, cultural-national, and digital competencies. The study substantiates the need to integrate traditions based on national musical heritage, including maqom and traditional folk musical instruments, with internationally recognized teaching methodologies.

Keywords: professional competence, music education, future teacher, competency-based approach, comparative pedagogy, national experience, international experience, maqom, digital competence.

TADQIQOTNING DOLZARBLIGI

Zamonaviy ta’lim paradigmasining bilimga yo‘naltirilgan (“znaniyevaya”) modeldan natijaga va shaxs faoliyat qobiliyatiga yo‘naltirilgan modelga o‘tishi kasbiy tayyorgarlik mazmuniga tubdan qayta qarashni taqozo etmoqda. “Kompetentlik” toifasi bugungi kunda pedagogik tadqiqotlarning markaziy tushunchalaridan biriga aylandi[1] va u bilim, ko‘nikma, malaka hamda shaxsiy sifatlarni muayyan kasbiy vaziyatda samarali safarbar eta olish qobiliyati sifatida talqin qilinadi[2].

Musiqa o‘qituvchisi tayyorlash bu umumiy jarayonda alohida o‘rin tutadi. Boshqa fan o‘qituvchilaridan farqli o‘laroq, musiqa pedagogi bir vaqtning o‘zida ijrochi (vokalchi yoki cholg‘uchi), nazariyotchi, ijodkor-improvizator va tarbiyachi vazifalarini uyg‘unlashtirishi lozim. Shu bois uning kompetentligi ko‘p qatlamli, integrativ tuzilmaga ega bo‘lib, ijrochilik mahoratini psixologik-pedagogik bilim, badiiy-estetik didi va milliy-madaniy o‘zlikni anglash bilan bog‘laydi.

[1] McClelland D.C. Testing for Competence Rather Than for “Intelligence” // American Psychologist. – 1973. – Vol. 28, No. 1. – P. 1–14. Kompetensiya (“competence”) tushunchasini ilmiy muomalaga kiritgan dastlabki ishlardan biri.

[2] The Definition and Selection of Key Competencies (DeSeCo): Executive Summary. – Paris: OECD, 2005. Loyihada kompetentlik bilim, ko‘nikma, munosabat va qadriyatlarni muayyan vaziyatda safarbar eta olish qobiliyati sifatida ta’riflanadi.

ISBN: 978-625-90699-4-4

O‘zbekistonda ta’lim sohasidagi islohotlar, xususan “Ta’lim to‘g‘risida”gi Qonunning yangi tahriri[3] hamda taraqqiyot strategiyalari[4] o‘qituvchi kadrlar sifatiga qo‘yiladigan talablarni oshirdi. Biroq amaliyotda an’anaviy “bilim uzatish” modeli bilan kompetensiyaviy yondashuv talablari o‘rtasida muayyan tafovut saqlanib qolmoqda. Bu tafovutni bartaraf etishda milliy va jahon tajribasini tizimli qiyosiy o‘rganish muhim ilmiy-amaliy ahamiyat kasb etadi.

TADQIQOT MAQSADI

Bo‘lajak musiqa o‘qituvchilarining kasbiy kompetentligini rivojlantirishga oid milliy va jahon tajribasini qiyosiy tahlil qilish hamda ular asosida kompetentlikning tarkibiy modelini va integratsiya yo‘nalishlarini asoslash. Ushbu maqsad quyidagi vazifalarni belgiladi:

1) “Musiqa o‘qituvchisining kasbiy kompetentligi” tushunchasining mazmun-mohiyatini aniqlashtirish;

2) jahonning yetakchi musiqa-pedagogik metodikalari va o‘qituvchi tayyorlash modellarini o‘rganish;

3) milliy tajribaning kuchli va zaif tomonlarini baholash;

4) integratsion tavsiyalar ishlab chiqish.

TADQIQOT MATERIALLARI VA METODLARI

Tadqiqot nazariy xarakterga ega bo‘lib, unda quyidagi metodlar majmuidan foydalanilgan.

Ilmiy-nazariy tahlil va sintez – kompetentlik, kompetensiyaviy yondashuv va musiqa ta’limi bo‘yicha falsafiy, psixologik-pedagogik hamda metodik adabiyotlarni o‘rganishda qo‘llanildi.

Qiyosiy-pedagogik metod (comparative education) turli mamlakatlardagi o‘qituvchi tayyorlash modellari va o‘quv dasturlarini bir xil mezonlar bo‘yicha solishtirish imkonini berdi[5]. Solishtirish uchun to‘rtta mezon tanlandi: (a) kompetentlik tarkibiy komponentlari; (b) nazariya va amaliyot nisbati; (c) milliy musiqiy meros o‘rni; (d) o‘qituvchi tayyorlash darajasi va davomiyligi.

Manbaviy bazani xalqaro me’yoriy hujjatlar (DeSeCo, Tuning, EQF), O‘zbekiston Respublikasining ta’lim sohasidagi qonun hujjatlari va davlat ta’lim standartlari, shuningdek jahonning yetakchi musiqa-pedagogik konsepsiyalari (Koday, Orf, Dalkroz, Suzuki, Gordon) tashkil etdi. Tanlangan mamlakatlar (Vengriya, Germaniya, Finlyandiya, Yaponiya, AQSh) musiqa ta’limi metodikasi yoki o‘qituvchi tayyorlash tizimida yetakchi tajribaga egaligi bo‘yicha maqsadli tanlab olindi.

Tahlil natijalari kontent-tahlil va tizimlashtirish orqali umumlashtirilib, qiyosiy jadval ko‘rinishida taqdim etildi. Tadqiqot cheklovi shundaki, u empirik-eksperimental emas, balki hujjatlar va manbalarga asoslangan nazariy-qiyosiy tahlil doirasi bilan chegaralanadi.

TADQIQOT NATIJALARI

Manbalar tahlili shuni ko‘rsatdiki, xalqaro amaliyotda kompetensiyalar umumiy (generic) va sohaviy (subject-specific) turlarga ajratiladi[6], malaka darajalari esa bilim,

[3] O‘zbekiston Respublikasining “Ta’lim to‘g‘risida”gi Qonuni (yangi tahrir). – Toshkent, 2020-yil 23-sentabr, № O‘RQ-637.

[4] O‘zbekiston Respublikasi Prezidentining “2022—2026-yillarga mo‘ljallangan Yangi O‘zbekistonning taraqqiyot strategiyasi to‘g‘risida”gi Farmoni (2022-yil 28-yanvar, PF-60) hamda keyingi “O‘zbekiston – 2030” strategiyasi ta’lim sifatini oshirishni ustuvor vazifa sifatida belgilaydi.

[5] Qiyosiy pedagogika (comparative education) metodologiyasi asoslari haqida: Bereday G.Z.F. Comparative Method in Education. – New York: Holt, Rinehart and Winston, 1964.

[6] Tuning Educational Structures in Europe: Universities’ Contribution to the Bologna Process. – Bilbao: University of Deusto, 2008. Kompetensiyalar umumiy (generic) va sohaviy (subject-specific) turlarga ajratiladi.

ISBN: 978-625-90699-4-4

ko‘nikma va mustaqillik/mas’uliyat mezonlari bo‘yicha tavsiflanadi[7]. Shu asosda musiqa o‘qituvchisi kompetentligini besh komponentli integrativ tuzilma sifatida umumlashtirish mumkin:

1) ***mutaxassislik-ijrochilik kompetensiyasi*** – vokal-cholg‘u ijrochiligi, musiqa nazariyasi, solfedjio, garmoniya va analiz bo‘yicha tayyorgarlik;

2) ***psixologik-pedagogik kompetensiya*** – o‘quvchi yosh xususiyatlarini hisobga olgan holda dars loyihalash, motivatsiya va baholay olish;

3) ***ijodiy-innovatsion kompetensiya*** – improvizatsiya, aranjirovka, ijodiy topshiriqlar tuzish va noan’anaviy metodlarni qo‘llash;

4) ***madaniy-milliy kompetensiya*** – milliy musiqiy meros (maqom, xalq qo‘shiqlari va cholg‘ulari) hamda jahon musiqa madaniyatini bilish va yetkaza olish;

5) ***raqamli kompetensiya*** – musiqiy dasturiy ta’minot, notografiya, audio-montaj va masofaviy ta’lim vositalaridan foydalanish.

Jahon musiqa pedagogikasida XX asr davomida bir necha yetakchi konsepsiya shakllandi. Z. Koday (Vengriya) metodi ovozga tayangan solmizatsiya, milliy xalq qo‘shig‘i materiali va bosqichma-bosqich ta’limni birlashtiradi[8]; u ona-tilidagi qo‘shiqni musiqiy savodxonlik poydevori sifatida ko‘radi. K. Orfning “Schulwerk” tizimi nutq, harakat, ritm va cholg‘u improvizatsiyasini uyg‘unlashtirib, bolaning faol ijodiy ishtirokini birlamchi deb biladi[9].

E.Jak-Dalkrozning evritmikasi musiqiy idrokni tana harakati orqali rivojlantiradi[10]; Sh. Suzukining “ona tili” metodi esa erta tinglash, taqlid va oila ishtirokiga urg‘u beradi[11]. E. Gordonning Musiqiy o‘rganish nazariyasi markaziga “audiatsiya” – musiqani ichdan idrok etish qobiliyatini qo‘yadi[12]. Nazariy jihatdan ta’lim falsafasidagi estetik (B. Raymer) va praksial (D. Elliott) yo‘nalishlar musiqa o‘qituvchisi tayyorlashning maqsad va mazmuniga turlicha qaraydi[13].

O‘qituvchi tayyorlash tizimlari darajasida ham farqlar sezilarli. Finlyandiyada o‘qituvchi magistratura darajasida, tadqiqotga asoslangan yondashuvda tayyorlanadi[14]; Germaniyada musiqa pedagogi ko‘pincha oliy musiqa maktabi va universitetni qamrab olgan

---

[7]The European Qualifications Framework for Lifelong Learning (EQF). – Luxembourg: Office for Official Publications of the European Communities, 2008.

[8]Koday konsepsiyasi haqida qarang: Chöksy L. The Kodály Method I: Comprehensive Music Education. – New Jersey: Prentice Hall, 1999. Metod ovoz (solmizatsiya), xalq qo‘shig‘i va ketma-ket (sequential) ta’limga tayanadi.

[9]Orff C., Keetman G. Orff-Schulwerk: Music for Children. – London: Schott, 1958. Yondashuv nutq, harakat, ritm va cholg‘u improvizatsiyasini birlashtiradi.

[10]Jaques-Dalcroze É. Rhythm, Music and Education / Transl. by H. Rubinstein. – London: The Dalcroze Society, 1921. Evritmika – tana harakati orqali musiqiy idrokni rivojlantirish tizimi.

[11]Suzuki Sh. Nurtured by Love: A New Approach to Education / Transl. by W. Suzuki. – New York: Exposition Press, 1969. “Ona tili” metodi tinglash, taqlid va oila ishtirokiga asoslanadi.

[12]Gordon E.E. Learning Sequences in Music: A Contemporary Music Learning Theory. – Chicago: GIA Publications, 2012. Markaziy tushuncha – “audiatsiya” (audiation), ya’ni ovoz eshitilmayotgan paytda musiqani ichdan idrok etish.

[13]Reimer B. A Philosophy of Music Education: Advancing the Vision. 3rd ed. – New Jersey: Prentice Hall, 2003; Elliott D.J. Music Matters: A New Philosophy of Music Education. – New York: Oxford University Press, 1995. Ikki qarama-qarshi – estetik va praksial – yo‘nalishni ifodalaydi.

[14]Finlyandiya ta’lim modeli va o‘qituvchi tayyorlashning magistratura darajasidagi tadqiqotga asoslangan xarakteri haqida: Sahlberg P. Finnish Lessons 2.0: What Can the World Learn from Educational Change in Finland? – New York: Teachers College Press, 2015.

ISBN: 978-625-90699-4-4

qo‘sh mutaxassislik bo‘yicha tayyorgarlikdan o‘tadi[15]; AQShda esa kompetentlik milliy standartlar va portfolio-baholash orqali tartibga solinadi. Yaponiya tajribasi Suzuki an’anasi bilan bog‘liq holda erta va ommaviy musiqiy tarbiyani namoyish etadi. Bu tajribalarni umumlashtirishda ISME kabi xalqaro tashkilotlar muhim rol o‘ynaydi[16].

O‘zbekistonda musiqa o‘qituvchisi tayyorlash boy an’anaviy zaminga ega. Milliy pedagogik tafakkurda musiqa azaldan axloqiy-estetik tarbiya vositasi sifatida qaralgan; “ustoz–shogird” an’anasi cholg‘u va maqom ijrochiligini avloddan-avlodga yetkazishning tabiiy mexanizmi bo‘lgan. Bugungi tizimda kadrlar pedagogika oliy ta’lim muassasalari, konservatoriya va san’at institutlari orqali tayyorlanadi.

Milliy tajribaning eng kuchli jihati – noyob musiqiy merosdir. Maqom san’ati, xususan “Shashmaqom” YuNESKO tomonidan insoniyatning nomoddiy madaniy merosi sifatida e’tirof etilgan[17]. Dutor, tanbur, g‘ijjak, nay, doira kabi cholg‘ular, an’anaviy ijrochilik uslublari bo‘lajak o‘qituvchining madaniy-milliy kompetensiyasi uchun boy manba beradi. Davlat siyosati darajasida ta’lim sifatini oshirish va milliy qadriyatlarni asrash ustuvor vazifa sifatida belgilangan[18].

Shu bilan birga, tahlil bir qator zaif jihatlarni ham ko‘rsatdi. Birinchidan, o‘quv dasturlarida nazariy bilim ijrochilik va metodik amaliyotdan ko‘ra ustuvorlik qilishi ba’zan kompetensiyaviy natijani susaytiradi. Ikkinchidan, jahon metodikalari (Koday, Orf, Dalkroz) tizimli ravishda emas, balki tarqoq holda o‘zlashtirilmoqda. Uchinchidan, raqamli kompetensiya va zamonaviy musiqiy texnologiyalar bo‘yicha tayyorgarlik yetarli darajada institutsionallashmagan. To‘rtinchidan, milliy meros va jahon metodikasini uslubiy jihatdan bog‘lovchi yaxlit metodik ta’minot cheklangan.

Yuqoridagi natijalarni belgilangan mezonlar bo‘yicha umumlashtirilgan holda quyidagi jadvalda taqdim etamiz.

Mezon	Jahon tajribasi	Milliy tajriba (O‘zbekiston)	Integratsiya imkoni
Kompetentlik komponentlari	Ijodiy-faoliyatli, aniq natijaga yo‘naltirilgan; standartlashtirilgan	Mutaxassislik-ijrochilik va milliy komponent kuchli	Barcha komponentlarni yaxlit modelga birlashtirish
Nazariya–amaliyot nisbati	Amaliyot va improvizatsiyaga urg‘u (Orf, Dalkroz)	Nazariy bilim nisbatan ustuvor	Amaliy-ijodiy modullar ulushini oshirish
Milliy meros o‘rni	Milliy folklor asos qilib olinadi (Koday)	Maqom va xalq cholg‘ulari – boy manba	Maqomni Koday tamoyillari asosida metodlashtirish
Tayyorlash darajasi	Ko‘pincha magistratura, tadqiqotga asoslangan	Bakalavriat asosiy, uzluksizlik cheklangan	Uzluksiz kasbiy rivojlanish tizimini kuchaytirish

[15]Germaniyada musiqa o‘qituvchisi, qoida tariqasida, oliy musiqa maktabi (Musikhochschule) va universitet dasturlarini qamrab oladigan qo‘sh mutaxassislik bo‘yicha tayyorlanadi.

[16]International Society for Music Education (ISME) – 1953-yilda YuNESKO homiyligida tashkil etilgan xalqaro musiqa ta’limi jamiyati.

[17]“Shashmaqom” 2003-yilda YuNESKOning Insoniyatning nomoddiy madaniy merosi reprezentativ ro‘yxatiga kiritilgan (2008-yilda ro‘yxatga rasman o‘tkazilgan).

ISBN: 978-625-90699-4-4

Mezon	Jahon tajribasi	Milliy tajriba (O‘zbekiston)	Integratsiya imkoni
Raqamli komponent	Musiqiy texnologiyalar dasturga singdirilgan	Institutsional jihatdan zaif	Raqamli musiqa modullarini joriy etish

1-jadval. Musiqa o‘qituvchisining kasbiy kompetentligini rivojlantirishning milliy va jahon tajribasi qiyosi.

TADQIQOT NATIJALARINING MUHOKAMASI

Olingan natijalar musiqa o‘qituvchisi kompetentligini bir o‘lchamli – faqat ijrochilik yoki faqat nazariy – hodisa sifatida talqin qilib bo‘lmasligini tasdiqlaydi. Jadvaldagi qiyos shuni ko‘rsatadiki, jahon va milliy tajriba bir-birini istisno etmaydi, balki to‘ldiradi: jahon metodikalari ijodiy-faoliyatli texnologiyalarga boy bo‘lsa, milliy tajriba noyob madaniy mazmun va “ustoz–shogird” an’anasi kabi tabiiy ta’lim mexanizmlariga ega.

Muhokamaning markaziy masalasi – integratsiyaning uslubiy modelini topishdir. Masalan, Koday metodining “ona-tilidagi qo‘shiqdan boshlash” tamoyilini O‘zbekiston sharoitida to‘g‘ridan-to‘g‘ri ko‘chirib bo‘lmaydi; uni mahalliy folklor va bolalar qo‘shiqlari materialiga moslashtirish lozim. Xuddi shu tarzda, maqom ijrochiligining og‘zaki-improvizatsion tabiati Orf va Dalkroz yondashuvlaridagi improvizatsiya g‘oyalari bilan uslubiy jihatdan uyg‘unlashishi mumkin. Bu – mexanik ko‘chirish emas, balki metodologik moslashtirish (adaptatsiya) masalasidir.

Ikkinchi muhim jihat – nazariya va amaliyot muvozanati. Milliy tajribadagi nazariy ustuvorlikni kamsitmagan holda, ijodiy-amaliy modullar (aranjirovka, improvizatsiya, ansambl amaliyoti) ulushini oshirish kompetensiyaviy natijani mustahkamlaydi. Bu esa o‘qituvchini uzluksiz kasbiy rivojlanish sub’ektiga aylantiruvchi “butun umr o‘rganish” (lifelong learning) g‘oyasiga tayanadi[19].

Uchinchidan, raqamli kompetensiya bo‘yicha aniqlangan tafovut alohida e’tiborni talab qiladi. Zamonaviy musiqa o‘qituvchisi notografiya dasturlari, audio-montaj, masofaviy ta’lim platformalari va musiqiy sun’iy intellekt vositalaridan foydalana olishi kerak. Shu ma’noda mavjud dasturlarni faqat mazmunan emas, balki texnologik jihatdan ham zamonaviylashtirish talab etiladi.

Tadqiqot natijalarini oldingi ilmiy qarashlar bilan qiyoslaganda, ular kompetensiyaviy yondashuvning umumiy tamoyillarini (DeSeCo, Tuning) tasdiqlaydi, ammo ularni musiqa ta’limining o‘ziga xosligi va milliy kontekst bilan boyitadi. Shu bilan birga, ushbu maqola nazariy-qiyosiy tahlil doirasi bilan cheklangani bois, taklif etilgan model kelgusida empirik-eksperimental tekshiruvni talab qiladi. Kelgusi tadqiqotlar integratsion metodik ta’minotni ishlab chiqish va uni pedagogik amaliyotda sinovdan o‘tkazishga qaratilishi maqsadga muvofiq.

XULOSA

O‘tkazilgan qiyosiy tahlil quyidagi xulosalarni asoslaydi. Birinchidan, bo‘lajak musiqa o‘qituvchisining kasbiy kompetentligi mutaxassislik-ijrochilik, psixologik-pedagogik, ijodiy-innovatsion, madaniy-milliy va raqamli komponentlarni birlashtiruvchi integrativ tuzilma sifatida tavsiflanadi.

Ikkinchidan, jahon tajribasi (Koday, Orf, Dalkroz, Suzuki, Gordon metodlari hamda turli mamlakatlardagi o‘qituvchi tayyorlash modellari) ijodiy-faoliyatli texnologiyalar va standartlashtirilgan baholash borasida qimmatli manba beradi, milliy tajriba esa noyob musiqiy meros va an’anaviy ta’lim mexanizmlari bilan ajralib turadi.

[19] Andragogik va kasbiy rivojlanish kontekstida uzluksiz ta’lim (lifelong learning) g‘oyasi YuNESKOning “Delor komissiyasi” hisobotida asoslangan: Learning: The Treasure Within. – Paris: UNESCO, 1996.

ISBN: 978-625-90699-4-4

Uchinchidan, samarali rivojlanish yo‘li – bu tajribalarning birini ikkinchisiga qarama-qarshi qo‘yish emas, balki metodologik moslashtirish asosidagi integratsiyadir: milliy meros (maqom, xalq cholg‘ulari) jahon metodik tamoyillari asosida uslublashtirilishi, nazariya va amaliyot muvozanati ta’minlanishi hamda raqamli kompetensiya institutsionallashtirilishi lozim. Bu yo‘nalishlar bo‘lajak musiqa o‘qituvchilari tayyorlash sifatini oshirishga xizmat qiladi.

Foydalanilgan adabiyotlar

1. O‘zbekiston Respublikasining “Ta’lim to‘g‘risida”gi Qonuni (yangi tahrir). – Toshkent, 2020.
2. O‘zbekiston Respublikasi Prezidentining “2022—2026-yillarga mo‘ljallangan Yangi O‘zbekistonning taraqqiyot strategiyasi to‘g‘risida”gi Farmoni, PF-60. – Toshkent, 2022.
3. Chöksy L. The Kodály Method I: Comprehensive Music Education. – New Jersey: Prentice Hall, 1999.
4. Elliott D.J. Music Matters: A New Philosophy of Music Education. – New York: Oxford University Press, 1995.
5. Gordon E.E. Learning Sequences in Music: A Contemporary Music Learning Theory. – Chicago: GIA Publications, 2012.
6. Jaques-Dalcroze É. Rhythm, Music and Education. – London: The Dalcroze Society, 1921.
7. McClelland D.C. Testing for Competence Rather Than for “Intelligence” // American Psychologist. – 1973. – Vol. 28, No. 1. – P. 1–14.
8. Orff C., Keetman G. Orff-Schulwerk: Music for Children. – London: Schott, 1958.
9. Reimer B. A Philosophy of Music Education: Advancing the Vision. 3rd ed. – New Jersey: Prentice Hall, 2003.
10. Sahlberg P. Finnish Lessons 2.0: What Can the World Learn from Educational Change in Finland? – New York: Teachers College Press, 2015.
11. Suzuki Sh. Nurtured by Love: A New Approach to Education. – New York: Exposition Press, 1969.
12. The Definition and Selection of Key Competencies (DeSeCo): Executive Summary. – Paris: OECD, 2005.
13. Tuning Educational Structures in Europe. – Bilbao: University of Deusto, 2008.
14. Learning: The Treasure Within. Report to UNESCO of the International Commission on Education for the Twenty-first Century. – Paris: UNESCO, 1996.

ISBN: 978-625-90699-4-4

THE SPIRITUAL AND CULTURAL VALUES OF ART IN TILAB MAHMUDOV'S PHILOSOPHY: A CONTEMPORARY INTERPRETATION OF AESTHETIC THOUGHT

Laylo Tursunova
Senior Lecturer, Fergana State University Doctor of Philosophy (PhD) in Philosophy

Abstract

This article examines the philosophical views of Tilab Mahmudov, one of the prominent representatives of Uzbek aesthetic thought, on art, spirituality, and culture. It explores his scientific legacy by revealing the role of art in the spiritual development of individuals, the formation of aesthetic consciousness, and the preservation of national cultural values. The paper also discusses the spiritual and aesthetic functions of art in social development, emphasizing beauty, artistic thinking, cultural memory, and aesthetic education from the perspective of contemporary philosophy. Particular attention is paid to the relevance of Tilab Mahmudov's aesthetic ideas in the context of globalization and intercultural dialogue. The study demonstrates that his philosophical heritage remains an important theoretical foundation for understanding the relationship between art, culture, and human values in the modern world.

Keywords: *Tilab Mahmudov; aesthetic thought; art; spirituality; culture; aesthetic values; beauty; artistic thinking; national values; aesthetic consciousness; philosophy; cultural heritage.*

Introduction

Tilab Mahmudov is recognized as one of the prominent representatives of Uzbek aesthetic thought who provided a profound philosophical interpretation of the role of art in the spiritual development of the individual, cultural progress, and the formation of aesthetic consciousness. In his scholarly views, art is understood not merely as an artistic manifestation of beauty but as a significant cultural phenomenon that embodies both national and universal values while enriching the moral, aesthetic, and spiritual world of human beings. In this respect, Mahmudov's aesthetic conception occupies an important theoretical and methodological place in the development of national aesthetic thought.

In the contemporary era of globalization, digital culture, and rapidly expanding intercultural communication, the spiritual and educational functions of art, the transformation of aesthetic values, and the preservation of national cultural heritage have become highly relevant research issues. These circumstances create the necessity of reinterpreting Tilab Mahmudov's philosophical ideas on art, culture, and spirituality from the perspective of modern aesthetic philosophy and contemporary cultural studies.

The primary objective of this study is to analyze Tilab Mahmudov's scholarly views on art, spirituality, and culture from the standpoint of aesthetic philosophy, while revealing their contribution to the development of national aesthetic thought and their contemporary scientific significance. The research is based on a comparative analysis of Mahmudov's works devoted to aesthetics and philosophy of culture, together with the theoretical concepts developed by prominent representatives of both Eastern and Western aesthetic traditions.

The methodological framework of the research is founded on dialectical, historical-logical, systemic, comparative-philosophical, axiological, and hermeneutic approaches. These methods provide a comprehensive basis for examining the theoretical foundations of Mahmudov's aesthetic conception, evaluating his contribution to the evolution of aesthetic thought, and explaining the philosophical essence of art as a spiritual and cultural value.

ISBN: 978-625-90699-4-4

The scientific novelty of the study lies in the reinterpretation of Tilab Mahmudov's aesthetic conception through contemporary axiological, cultural-philosophical, and hermeneutic perspectives. Furthermore, the research systematically reveals the theoretical foundations of his philosophy of art and demonstrates the significance of his scholarly heritage for the development of aesthetic thought in the context of globalization. The findings indicate that Mahmudov's scientific legacy serves as an important theoretical source not only for the advancement of Uzbek aesthetic thought but also for modern aesthetics, philosophy of culture, cultural studies, and research on spirituality and cultural values.

By examining the role of art in human spiritual development, aesthetic consciousness, and cultural progress through the example of Tilab Mahmudov's scholarly heritage, this study contributes to a deeper understanding of the developmental principles of national aesthetic thought. Moreover, the research findings provide a solid theoretical and methodological foundation for future studies concerning contemporary aesthetic philosophy, the preservation of national cultural heritage, and the promotion of spiritual and cultural values.

REFERENCES

1.Mirziyoyev, Sh. M. (2021). The Strategy of New Uzbekistan. Tashkent: Uzbekistan Publishing House.

2.Al-Farabi. The Virtuous City. Tashkent: Yangi Asr Avlodi Publishing House.

3.Avicenna (Ibn Sina). The Book of Knowledge (Danishnama). Tashkent: Fan Publishing House.

4.Navoi, A. Mahbub ul-Qulub (Beloved of Hearts). Tashkent: Gafur Ghulam Publishing House.

5. Hegel, G. W. F. Lectures on Aesthetics (Vols. 1–2). Oxford: Clarendon Press.

6. Kant, I. Critique of Judgment. Cambridge: Cambridge University Press.

7.Gadamer, H.-G. Truth and Method. London: Continuum.

8.Cassirer, E. An Essay on Man. New Haven: Yale University Press.

ISBN: 978-625-90699-4-4

AMIR TEMUR SALTANATIDA MADANIYATLAR ARO HAMKOLLIKNING USTUVORLIGI

THE PRIORITY OF INTERCULTURAL COOPERATION IN THE EMPIRE OF AMIR TEMUR

Mavluda Najmetdinova
Associate Professor, Doctor of Philosophy (PhD) in Philological Sciences
Department of Music Education and Culture
Fergana State University
ORCID ID: 0000-0002-4894-9106

Abstract

This article examines the development of intercultural cooperation during the reign of Amir Temur and its significance in the advancement of socio-spiritual life, science, architecture, fine arts, music, literature, and craftsmanship. It analyzes the processes of cultural integration and creative collaboration that emerged as a result of Amir Temur's policy of bringing scholars, architects, artists, and craftsmen from various countries to Samarkand and other major cities of the empire. The study also highlights the role of tolerance, interethnic harmony, and cultural exchange in the Timurid period, which contributed to the emergence of a new stage of the Eastern Renaissance, based on historical sources. Furthermore, the article substantiates the importance of the cultural heritage created during the reign of Amir Temur and the Timurids for both national and world civilization, emphasizing its relevance to the development of contemporary intercultural dialogue and cooperation.

Keywords :Timurid Empire, culture, art, architecture, fine arts, music, poetry, craftsmanship, architects, master craftsmen, ornamental painting, wood carving.

Annotatsiya:

Ushbu maqolada Amir Temur saltanatida madaniyatlararo hamkorlikning shakllanishi, uning ijtimoiy-ma'naviy hayot, ilm-fan, me'morchilik, tasviriy san'at, musiqa, adabiyot va hunarmandchilik taraqqiyotidagi o'rni tahlil qilingan. Sohibqiron Amir Temur tomonidan turli mamlakatlardan olimlar, me'morlar, san'atkorlar va hunarmandlarning Samarqand hamda boshqa shaharlarga jalb etilishi natijasida yuzaga kelgan madaniy uyg'unlik va ijodiy hamkorlik jarayonlari yoritilgan. Shuningdek, Temuriylar davrida shakllangan bag'rikenglik, millatlararo totuvlik va madaniy almashinuv muhitining Sharq Renessansining yangi bosqichini vujudga keltirishdagi ahamiyati tarixiy manbalar asosida ochib berilgan. Maqolada Amir Temur va Temuriylar davrida yaratilgan madaniy merosning bugungi kunda milliy va jahon sivilizatsiyasi taraqqiyotidagi o'rni hamda uning zamonaviy madaniyatlararo muloqotni rivojlantirishdagi ahamiyati ilmiy jihatdan asoslab berilgan.

Kalit so'zlar: Temuriylar saltanati, madaniyat, san'at, me'morchilik, tasviriy san'at, musiqa, she'riyat, hunarmad, me'morlar, ustalar, naqqoshlik, o'ymakorlik

Amir Temur va Temuriylar tomonidan asos solingan madaniyatlararo hamkorlik an'anasi mustaqil O'zbekistonimizning ma'naviy yuksalishida muhim omil bo'lib hizmat qilmoqda. Bu tarixiy haqiqat yurtboshimiz Sh.Mirziyoev tomonidan "Buyuk sohibqiron Amir Temur bobomiz Oqsaroy peshtoqiga "Adolat – davlatning asosi va hukmdorlarning shiori" degan shiorni yozdirgani bejiz emas, albatta. Ushbu ulug'vor g'oya inson qadr-qimmatini oliy

darajaga ko‘tarish borasidagi amaliy harakatlarimiz poydevoriga aylanadi”[1] - deya ta’kidlaganlari bejiz emas.

Amir Temur davrida davlat boshqaruvi, harbiy san’at shuningdek, ilmu-fan, me’morchilik, tasviriy san’at, musiqa, she’riyat xalqlar totuvligi yo‘lida ulkan ma’naviy omil bo‘lib xizmat qildi.

Tarixchi Ibn Arabshoh “Temur har bir (foydali) jonni atrofiga yig‘ib, nimaiki bo‘lsa sarasini Samarqandga keltirdi. Natijada Samarqandda har bir ajib fan ahli namoyondasidan va san’atlar g‘aroyib uslubidan nishona bo‘lib o‘z tengqurlaridan ustun turgan, o‘z sohasida alloma kishilar yig‘ilgan edi”[2] deya ta’rif bergan.

1403-1406 yillar mobaynida Amir Temur saltanatini o‘z ko‘zi bilan ko‘rgan ispan elchisi Rui Gonsales de Klavixoning yozishicha, Amir Temur “Qaysi bir mamlakatni zabt etgan va bo‘ysuntirgan bo‘lsa, ularning hammasidan odamlarni, Samarqand va uning atrofidagi yerlarga joylashtirdi. Shoh har xil hunarmadlarni yig‘ishga, ayniqsa, ko‘p harakat qildi” [3] deya qayd etadi. Bu albatta mamalakatda hunarmandchilik, adabiyot va san’at rivojiga muhim omil bo‘lib xizmat qildi.

Shuningdek, “Shoh, - deb yozadi Klavixo, - turli tomondan Samarqandga keltirilgan har xil toifadagi erkak va ayollarning hammasi, aytishlaricha, bir yuz ellik mingdan oshiq bo‘lgan. Bular orasida turk, arab va boshqa elatlar, arman xristianlari, yunon katoliklari, nasroniylar, yakobitlar va yuzi bilan o‘tga topinuvchi o‘ziga xos mazhabga ega bo‘lgan kishilar ham bor edi”[4].

Turli mamlakatlardan olib kelingan san’at ahli Samarqand shahri atroflariga joylashtirildi. Natijada Samarqand atrofida Damashq, Misr, Bog‘dod, Sultoniya, Sheroz nomli qishloqlar yuzaga keldi. Bunday qishloqlar Shahrisabz, Qarshi, Buxoro atroflarida ham yuzaga kelgan.

XIV asr oxirlaridayoq qurilishda birga ishlagan mahalliy va kelgindi me’morlar, ustalar o‘rtasida o‘zaro ta’sir va o‘ziga xos ijodiy amaliy birdamlik yuzaga kelgan. Musiqa, raqs, tomosha san’atlarida bunday birdamlik va uyg‘unlikni yanada mustahkamlagan. XV asr boshlaridayoq umumiy badiiy maktablar shakllangan. Natijada nainki me’morchilik, naqqoshlik, o‘ymakorlik va boshqa qator hunarlarda, balki musavvirchilik, musiqa, raqs, tomosha san’atlarida ham keskin yuksalishlar yuz bergan. Buni aksar olimlar uyg‘onish davri, temuriylar renessansi deb ataydilar[5].

Amir Temur saltanatidagi bunday ijtimoiy ma’naviy muhit albatta madaniyatlararo totuvlikka asos soldi. Shu tufayli Amir Temur va temuriylar davlatida turli bayramlar, sayillar, tomoshalar o‘tkazilib kelindi. Ma’rakalarda har toifa ijrochilar alohida - alohida tarabxona va xosxona san’atkorlarning aralash guruhlari o‘z mahoratlarini namoyish etishgan bo‘lsa, teatrlashgan sayillar va namoyishlarda minglab har xil ijrochilar qatnashgan va o‘zaro bellashuv natijasida ijtimoiy madaniy yaqinlik muhiti yuzaga kelgan.

Xos bazmlarda maqom kuylari chalingan. Bu kuylarga raqqos va raqqosalar xirom etgan, masxaraboz va muqallidlar kuldirgan, bayramlarda katta maydon va ma’rakalarga

---

[1]Mirziyoyev Sh.M. Bilimli avlod – buyuk kelajakning, tadbirkor xalq – farovon hayotning, do‘stona hamkorlik esa taraqqiyotning kafolatidir. O‘zbekiston Respublikasi Konstitutsiyasi qabul qilinganining 26 yilligiga bag‘ishlangan tantanali marosimdagi ma’ruza // Xalq so‘zi, 2018 yil 8 dekabr.

[2]Karimov I.A. Amir Temr haqida so‘z. – T.: “O‘zbekiston”, 1996. 34-bet.

[3]Madaniyatshunoslik. –T., 2017. 133-143 betlar.

[4]Madaniyatshunoslik. –T., 2017. 145-156 betlar.

[5]Tashkanbaev X. Amir Temur va temuriylar davrida san’at va madaniyat // http://shosh.uz

yarasha tomoshalar ko‘rsatilgan. Maydon tomoshalari orasida ot bilan bajariladigan poyga, uloq chopish (ko‘pkari), otdan ag‘darish, chavgon, qaboq o‘yin kabilar, haqqoniy kuch sinovi hisoblanmish kurash (gushtirlik), qilich, nayza, gurzi va boshqa jangovar qurol va aslahalar bilan o‘tadigan bellashuvlar, shuningdek, qo‘chqor, xo‘roz urishtirish kabi qadimiy o‘yin va musobaqalar madaniyatlar yaqinlashuviga asos bo‘lgan.

XIV-XV asrlar Markaziy Osiyo xalqlarining musiqa san’ati taraqqiyotida ham yangi bosqich bo‘ldi. Yangi kuy va qo‘shiqlar, cholg‘u asboblari va musiqa nazariyasiga doir asarlar yaratildi. Mahoratli sozandalar, bastakorlar va hofizlar yetishdi. Abduqodir Nayiy, Qulmuhammad Shayxiy, Xusayn Udiy, Shohquli G‘ijjakiy, Ahmad Qonuniy, Yusuf Andijoniy kabilar shular jumlasidandir. Ulug‘bek, Jomiy, Navoiy va Binoiylar musiqa ilmiga oid asarlar yozib yangi kuylar ijod qildilar. IX-XIII asrlarda shakllangan 12 maqom bu davrda takomillashdi. Shuningdek, keng ommaga mo‘ljallangan teatrlashgan tomoshalar, xalq sayllarida mas’harabozlar, qo‘g‘irchoqbozlar, dorbozlar o‘z san’atini namoyish qilgan[6]. Aytish mumkinki, bunday ijodkorlik va bunyodkorlik harkatlari o‘zaro do‘stlik, birodarlik va hamkorlik madaniyatlari uyg‘unlashuvini yuzaga keltirgan.

Temuriylar davridagi musiqa ijodiyoti (Peshrav, Savt, Nag‘ma, Naqsh, Surud, Changu) janrlari va (Navo, Navosoz, Navobaxsh, Dostonnavoz, Navogar) yasama so‘zlari bilan boyitildi[7]. Bu esa o‘z navbatida fors, arab va turkiy tillar atamalarining madaniy iste’moliga kirib keldi.

O‘sha davrning tarixchilaridan biri Hofizi Abru Amir Temur saroyida bo‘lib o‘tgan tantanalarni “Shira ovozli qo‘shiqchi va mohir cholg‘uchilar fors taronalari arabcha ohanglarda turkiychasiga, mo‘g‘ulcha ovoz bilan Xitoy qo‘shiqlari qonuniyatlariga va oltoyliklar o‘lchamlariga muvofiq chalishgan, kuylashgan”[8]ligini o‘z asarida qayd etadi. Bundan ko‘rinadiki, Amir Temur har bir sohaga alohida e’tibor bilan yondashgan tarzda turli millat va elat madaniyatlarini uyg‘unlashuviga e’tibor qaratganligini ko‘rish mumkin.

Bu davrda Amir Temur davlati tarkibiga kirgan va ta’siri ostida bo‘lmagan mamlakatlar o‘rtasida madaniy aloqalar tez rivojlandiki, bunday aloqalar ma’naviy boyliklarni o‘zaro almashishga keng yo‘l ochib berdi. Eron, arab mamlakatlari, Hindiston, Xitoy kabi mamlakatlar bilan bo‘lgan aloqalarda madaniy aloqalar almashinuvi yuzaga keldi.

Amir Temur va temuriy shahzodalar o‘z davri tarixini yozib qoldirish, Movarounnahr va Xurosonning mo‘g‘ullar zulmidan ozod etilishi tarixini o‘rganish va yoritishga katta e’tibor berdilar. Nizomiddin Shomiy, Ali Yazdiy, Abdurazzoq Samarqandiy, Xofizi Abru, Natanziy, Fosix Xavofiy, Muyniddin Isfizoriy, Mirxond, Xondamir kabi tarixchilar temuriylar davri tarixini yozib qoldirdilarki, ular yozib qoldirgan asarlar hozirda biz uchun madaniy yuksalishini o‘rganishda, muhim manba bo‘lib xizmat qilib kelmoqda.

Markaziy Osiyoda madaniyatning rivojlanishiga qo‘shni mamlakatlar bilan madaniy aloqalar muhim rol o‘ynadi. Ayniqsa, Markaziy Osiyo va Eron o‘rtasida qadimdan mustahkam aloqa o‘rnatilgan bo‘lib, XIV - XV asrlarda bu ikki davlat o‘rtasida iqtisodiy, madaniy aloqalar ham kuchaya boshladi. Bu davrda Xitoy bilan ham aloqalar mustahkamlanib bordi. Shohrux mirzo davriga kelib, Hindiston bilan ham aloqalar o‘rnatildi. Temuriylar davrida madaniyat yangi bosqichga ko‘tarilib, Markaziy Osiyoda qadimgi yunon va hind olimlarining falakiyot, riyoziyot, tibbiyot, kimyo va boshqa fan sohalaridagi tadqiqotlar keng tarqaldi.

[6]Ma’naviyat yulduzlari. T., 1999, 15-20 betlar.

[7]Karimov Sh., Shamsutdinov R. Vatan tarixi. Andijon, Meros. 1995. 518-519 betlar.

[8]Boburnoma. T. 1948.100-b

ISBN: 978-625-90699-4-4

Xorijning ko‘plab mamlakatlari teatr sahnalarida Amir Temur va temuriylar siymosi yillar davomida tushmay kelgan. Yevropa tillarida 500 dan ziyod, Sharq tillarida esa 1000 ga yaqin kitoblar yozilgan, ko‘pdan-ko‘p suratlar ishlangan. Dunyoga mashhur Amir Temur va temuriylar davri madaniyati jahon xalqlari qalbidan munosib o‘rin oldi[9].

Shunday ekan, bobokalonimiz sohibqiron Amir Temur va temuriyzodalar davridagi madaniyat va san’atning rivojlanishi butun jahon madaniyatining taraqqiyotiga ulkan xissa qo‘shganligini guvohi bo‘lamiz.

Amir Temur saltanatining nafaqat siyosiy, harbiy, iqtisodiy balki madaniy-ma’rifiy jihatdan ham negizlari mustahkam bo‘lgan. Chunki Amir Temur bobomiz o‘zlari o‘qimishli, savodxon va ma’rifatparvar rahbar sifatida olimu ulamolar, ziyoli, iste’dod egalarini qadriga yetgan. Bu Amir Temur saltanatida o‘zbek halqi va turli millat-u, elat madaniy hamkorligi misolida qadimiy moziy buloqlarining ma’naviy manfaat topganligidan yana bir dalolatdir[10].

Xulosa o‘rnida ta’kidlash joizki, Amir Temur davrida asos solingan ulkan saltanatda barqaror tinchlikning o‘rnatilishi natijasida, mazkur saltanat tarkibiga kirgan halqlarning o‘zaro madaniy munosabatlarga kirishishiga juda katta zamin hozirladi. Shuningdek, IX-XII asrlardagi Sharq renessansi Amir Temur va temuriylar zamonasida yana qaytadan uyg‘ondi. Bu jarayon keyinchalik haqli ravishda Sharqning “yangi uyg‘onish davri” sifatida tarixdan joy oldi.

FOYDALANILGAN ADABIYOTLAR:

1. Mirziyoyev Sh.M. Bilimli avlod – buyuk kelajakning, tadbirkor xalq – farovon hayotning, do‘stona hamkorlik esa taraqqiyotning kafolatidir. O‘zbekiston Respublikasi Konstitutsiyasi qabul qilinganining 26 yilligiga bag‘ishlangan tantanali marosimdagi ma’ruza // Xalq so‘zi, 2018 yil 8 dekabr.
2. Karimov I.A. Amir Temr haqida so‘z. – T.: “O‘zbekiston”, 1996. 34-bet.
3. Madaniyatshunoslik. –T., 2017. 133-143,145-156 betlar.
4. Tashkanbaev X. Amir Temur va temuriylar davrida san’at va madaniyat // http://shosh.uz
5. Sharafiddin Ali Yazdiy. “Zafarnoma”. – T.: “Sharq” nashriyot-mabaa konsernining Bosh tahririyati. 1997. 11-bet
6. Amir Temur. Temur tuzuklari. – T.: Fan va texnologiya, 2014.
7. Ma’naviyat yulduzlari. T., 1999, 15-20 betlar.
8. Karimov Sh., Shamsutdinov R. Vatan tarixi. Andijon, Meros. 1995. 518-519 betlar.

[9]Xalq so‘zi. -1996.-27 oktyabr.

[10]Sultonov A. Amir Temur davrida musiqiy hayot. FarDU. Ilmiy xabarlar jurnali 4. 2005. 65-66 betlar.

TANOVAR IS A GENUINE PHILOSOPHICAL WORK

Qambarov Abdumutal Ahadjonovich
Professor, Department of Philosophy,
Fergana State University,
Doctor of Philosophy (DSc)
ORCID ID: 0009-0001-1916-4174

Abstract

This article examines “Tanovar,” one of the genres widely represented in Uzbek performing art, realized in both folk and classical vocal and instrumental traditions. “Tanovar” is a philosophical work that embodies the history, identity, and social, emotional, and national characteristics of the Uzbek people’s consciousness, and it constitutes an activity of the oral and professional creativity of the Uzbek people. The article further analyzes "Tanovar" as one of the examples of Uzbek musical folklore that emerged at the end of the nineteenth century and continues to develop to the present day.

Keywords: Tanovar, folk and classical vocal and instrumental traditions, Uzbek musical folklore, music, performance, heart, sorrow, dreams and aspirations, joy and happiness, elegance and grace, happiness and strength.

INTRODUCTION

There exists a melody imbued with anguished sorrow known as “Tanovar” In ancient times, Tanovar was a melody about a love that was forbidden and forced into perpetual concealment — the love of a woman suffering within the confines of her home. It is also one of the folk and classical vocal and instrumental traditions widely practiced in Uzbek performing art.

The term “Tanovar” is usually understood as composed of two words: “tan” (body) and “ovar” (bringing delight or pleasure). According to another source, “Tanovar” is a Persian word meaning “brave, mighty, powerful.” “Tanovar” is widespread in the Fergana Valley, where more than fifteen song and instrumental variants are known. Today, the vocal variants of “Tanovar” have become especially popular.

Whether performed for the tenth or the hundredth time, Tanovar always finds its mark in the heart. It seems to soar from mountain valleys and grassy meadows, as if waterfalls were cascading from cliff to cliff, as if a white-sailed ship were gliding over the waves into the sea, as if the mythical Huma bird had alighted upon the shore. With a single bow and a single smile, it captivates you.[1]

LITERATURE REVIEW AND METHODS

In the twentieth century, Tanovar was transcribed into musical notation by N. Mironov, V. Uspensky, E. Romanovskaya, A. Kozlovsky, and Yu. Rajabiy. In 1936, the composer A. Kozlovsky notated “Tanovar” as performed by Kh. Nosirova and subsequently arranged it for solo voice and symphony orchestra (this work was later presented to audiences in a performance by Halima Nosirova, with the symphony orchestra conducted by A. Kozlovsky).

The composer later drew on this melody to create the symphonic poem “Tanovar” (1940) and the ballet "Tanovar" (1971). Based on “Tanovar,” Tolibjon Sodiqov composed a piece for solo voice and orchestra, while Mutal Burhonov arranged the song “Endi Sendek” for

unaccompanied choir, producing an original work of his own. The “Tanovar” melody was also used in the opera “Buron” (“The Storm”) by Mukhtar Ashrafi and S. Vasilenko. A. Nabiyev arranged “Tanovar” for piano, creating a distinctive piano work. “Tanovar” has become a widely embraced work of Uzbek art and culture, occupying a prominent place in the repertoire of numerous singers and instrumentalists and in the creative output of Uzbek songwriters and composers.

Folk-text variants of Tanovar such as “Qora Soch” (also known as “Adolcha Tanovar”), “Sumbula,” and “Endi Sendek” (set to a ghazal by Muqimiy) were originally interpreted with dutar accompaniment, from which its classical vocal, “katta ashula” (grand song), and instrumental variants later developed. Among the instrumental Tanovar pieces is “Gulbahor va Tanovar,” performed in sequence with the melody “Gulbahor”; among the “katta ashula” variants are “Yovvoyi Tanovar” (“Asl Yorim”), “Farg’onacha Tanovar,” “Qo‘qon Tanovari,” “Marg‘ilon Tanovar,” and “Namangan Tanovari” (as performed by Kamoliddin Rakhimov), as well as “Yangi Tanovar” (performed by the ensemble “Sarbon”). Within songwriting and composition, notable examples include “Ulkun Jonon” by B. Mirzayev, “Yovvoyi Tanovar" by Jo‘rakhon Sultonov, and “Tanovarni Tinglab” by A. Ismoilov. Today, local variants such as the song “Tanovar,” performed in the Tanovar style by the singer Jo’rabek Qodirov, continue to be created and have become popular among our people. The instrumental line of “Tanovar” has also been performed on the dutar, tanbur, g‘ijjak, and chang, including “Qo’qon Tanovari” for dutar, “Turg‘un Tanovari” for dutar, tanbur, and sato, and “Gulbahor va Tanovar” for chang (the melody “Gulbahor” also being composed on the basis of the “Dugoh-Husayniy IV” mode).

It is a matter of concern that immortal Tanovar works — such as “Endi Sendek,” “Gulbahor va Tanovar,” “Marg’ilon Tanovari,” “Qo’qon Tanovari,” and “Farg’onacha Tanovar” — are gradually drifting away from the development of contemporary culture and art and are being overlooked by our talented singers, instrumentalists, and dancers.[2]

The songs of Tanovar reflect the spiritual beauty of the Uzbek maiden. They also express the inevitability of her reunion and union with her beloved. Among these, “Adolcha Tanovar” holds a distinctive history of its own.

According to the researcher Iroda G’aniyeva, in her book “Tanovarlar” (“Tanovars”), she writes: “...In the past there lived a beautiful, exceedingly wise, and sorrowful-voiced girl named Adolat. Everyone who heard her singing longed to hear it again. Word of her voice reached one of the noblemen of that era, who fell in love with her and made great efforts to win her, yet without success. Faithful to her own love, Adolat refused the nobleman. Deeply offended upon learning of this, the nobleman ordered that the girl be put to death. Before her death, Adolat pleaded to be granted one final wish. Once it was granted, she asked for a dutar to be brought to her, and it was brought. As Adolat plucked the magical strings of the dutar and began to sing, the weapons fell from the hands of the executioners who listened to her song; moved to the depths of their hearts by her melody, they could not bring themselves to kill her. Following the dictates of their own hearts, they refused to carry out the deed. It was then that Adolat’s cruel brother took up a weapon himself and killed his sister. Beneath her veil, with her last breath, faithful to her love until the end, Adolat sang: ‘Do not part from me, and I shall not part from you...’ and gave up her life. The song she sang remained in people’s ears. Passed from mouth to mouth among the people, Adolat’s pure love lived on in the form of this song." In this way, the song that Adolat sang spread widely among the people and came to be known as

ISBN: 978-625-90699-4-4

"Adolat Tanovari" ("Adolat's Tanovar"). To understand the sorrow of such women, it is necessary to know the anguished, hope-filled verses of the songs of freedom sung by the countless women who, like Adolat, suffered at the hands of tyrants and lived out their days as though imprisoned in darkness within the confines of their homes, and to become familiar with their distinctive manner of performance.

RESULTS

The folk-text variant of Tanovar known as "Qora Soch," or "Adolcha Tanovar," in effect opened the way for all subsequent Tanovar works, introducing them into the enduring treasury of Uzbek song.[3] In particular, "Yovvoyi Tanovar," beginning with the words "Asl Yorim," which the People's Hafiz of Uzbekistan Jo'rakhon Sultonov performed with great affection in the yalla style in 1948, carries its own distinctive philosophical meaning. It is called "Yovvoyi" ("Wild") Tanovar because it is performed in a wild, unrestrained manner: our hafizes have sought to express this song freely, giving full voice to the cries of the heart and revealing it from every angle. To this day, besides the master hafiz himself, "Yovvoyi Tanovar" has been performed by People's Artists of Uzbekistan Nasiba Abdullayeva and Sherali Jo'rayev, Honored Artist of Uzbekistan Abdulla Shomag'rupov, and singers Boqijon Sattorov and Feruza Rakhimova.

The melody or song of Tanovar cannot truly be understood — it can only be felt. A listener of the Tanovar melody gradually falls into deep reflection; hearing its song, the heart is consumed with longing; and upon watching the Tanovar dance, the entire body begins to tremble. For this is a song of freedom, a lament of the heart, the dream of every soul. It is heard in the melody, felt in the song, and in the dance one sees the very woman who bore that sorrow. Tanovar is the dream of openly declaring one's love. The Tanovar dance, too, has a history of its own.

In 1930, the renowned Uzbek dancer Mukarrama Turg'unboyeva attended one of the concerts staged in Moscow, where she saw the celebrated Russian ballerina Gelser perform the ballet "The Dying Swan." This ballet made an enormous impression on Turg'unboyeva, stirring her soul deeply and inspiring her to persevere through arduous labor. From that moment, she set herself the goal of creating and performing just such a passionate dance within Uzbek dance art. Upon her return from Moscow, she began collecting women's songs from across the Fergana Valley that resembled one another in melody, tune, and content; master dancers and singers determined that this distinctive genre of women's song-and-dance should be called "Tanovar." She worked extensively on Tanovar, carefully studying the content of each song, and on this basis created the dance "Tanovar" in 1943.

DISCUSSION

In fact, the word "tanovar" originally derives from applied craft and entered common usage from there. In particular, it is connected with the earliest stage of working with raw hide in traditional leather-craft practice: the creaking sound made by finished mahsi (soft leather boots) and kovush (overshoes) as one walked was itself called "tanovar." This view is endorsed by Temur Makhmudov, Honored Art Worker of the Republic of Uzbekistan and professor, who explains it as follows: "In my opinion, the reason Mukarrama-opa named her dance "Tanovar" was not because "Tanovar" was the general name given to the melodies and songs performed by women in the Fergana Valley, but rather because, during the first performance of this dance, mahsi and kovush were worn, and the creaking of the mahsi and kovush provided the dancer

ISBN: 978-625-90699-4-4

with rhythm. In those days, mahsi-makers called this creaking sound “tanovar.” It would not be surprising, then, if this is the very reason Mukarrama-opa named her dance ‘Tanovar.’"

The “Tanovar” dance staged by Mukarrama Turg‘unboyeva in 1943 remains widely performed today. “Tanovar” is a dance-epic that has preserved its traditional manner of performance from its own era down to the present day. Although this dance appears to consist of very simple and light movements, the inner spiritual world of its lyrical protagonist, her feelings, her rich soul, and her delicate, subtle movements have captivated audiences ever since. In content, form, and performance alike, it stands apart from other dances through its own particular radiance.

“Every creative artist has an invention that becomes, so to speak, the wellspring of their art,” wrote our renowned poetess Zulfiya. “Mukarrama-khonim has many wonderful works, but in my view the true wellspring of this artist’s creativity is ‘Tanovar.’ No one, ever, anywhere, has performed ‘Tanovar’ with the grace and refinement, the mastery and sorrowful warmth, that Mukarrama-khonim brought to it.”

Lyubov Avdeyeva, Doctor of Art History, also wrote of “Tanovar” in her memoirs: “This dance is one that flings wide open the doors of the heart, expressing the sorrow within, yearning for happiness, and revealing the fervent longing to move from solitude toward one’s beloved and toward other human beings.”

As Akbar Mo’minov, Honored Art Worker of the Republic of Uzbekistan, has observed: “Tanovar is no ordinary dance, and it is not right for just anyone to perform it. Even during Mukarrama-opa’s lifetime, many dancers performed the movements of this dance with skill, yet it was Mukarrama-opa’s own performance that truly captivated audiences. This was because, once she began performing ‘Tanovar,’ she would forget the outside world entirely and live only within the dance and its sorrow. For some time after finishing the performance, she would be unable to step out of that character. Such a performance is not granted to everyone."

In fact, the name of the work derives from the sound “tan-tan” (bum-bak), a rhythmic pattern played on the doira (frame drum). “Tanovar” thus signifies a work based on lively doira rhythms. For this reason, the term "Tanovar" should not be interpreted in a solemn or ceremonial sense. Providing such information helps develop readers’ knowledge and skills in the art of music to the expected degree.

Mukarrama-opa traveled the world with her ensemble “Bahor.” She left behind an enormous cultural and educational legacy — dances, each more beautiful and captivating than the last, that have become deeply embedded in the consciousness of our people. Each of these dances may be likened to a murmuring river or adorned like a mournfully resounding song. In every dance she created, the heart, sorrow, dreams and aspirations, joy and happiness, elegance and grace, and happiness and strength of the Uzbek woman proudly reveal themselves. At the same time, in this rich legacy left by “Bahor,” one can still sense the voice, the breath, and the warmth of the heart of Mukarrama Turg’unboyeva.

CONCLUSION

In conclusion, numerous Uzbek singers and composers have approached the Tanovar tradition, achieving unique and distinctive interpretations in both composition and performance. This work stands apart in content, form, and its own melodiousness and emotional intensity. The broad development of the melody, its enrichment with ornamental figures, and the resonance of its tune lend the work a passionate, rich, and deeply affecting quality that brings

ISBN: 978-625-90699-4-4

the listener joy and delight. As noted above, the spiritual beauty of the Uzbek woman finds its reflection in the classical vocal variants of Tanovar.

The opening melodic phrases of Tanovar are, without exception, situated in the middle register, gradually developing over the course of performance — the range of the melody expanding — until it reaches its most affecting state at the climax (avj). In this way, both listener and performer come to share an excited feeling, and the melody acquires a dual quality that is at once lively and sorrowful. In general, the spiritual world of the human being finds its reflection within every image and every formal structure of the song. “Tanovar” also denotes a particular musical form and method, as well as the name of the dutar instrument style associated with it.

Tanovar is a philosophical work that embodies history, identity, and the social, emotional, and national characteristics of the Uzbek people’s consciousness; this creative tradition constitutes an activity of the oral and professional creativity of the Uzbek people. It is, moreover, one of the examples of Uzbek musical folklore that emerged at the end of the nineteenth century and continues to develop to this day.

Today, we should not approach all the “Tanovar” works from a single, one-sided perspective. They contain not only the difficult moments of our people’s past life, but also beautiful dreams and aspirations, life experiences, and the sweetest, most delightful moments of all. In the course of studying “Tanovar” works, it becomes clear that they are, in truth, inexhaustible.

REFERENCES

1. Ohunova E. *The Rivers We Drank From: Dance, Too, Is Poetry.* — Tashkent: Uzbekiston, 2006. — P. 6.

2. Rakhimov A. *Mukarramakhonim's "Tanovar."* — Tashkent: Muharrir Publishing House, 2018. — P. 43.

3. See: Ohunova E. *The Rivers We Drank From: Dance, Too, Is Poetry.* — Tashkent: Uzbekiston, 2006. — P. 6.

4. Rakhimov A. *Mukarramakhonim's "Tanovar."* — Tashkent: Muharrir Publishing House, 2018. — P. 43.

5. Rakhimov A. *Mukarramakhonim's "Tanovar."* — Tashkent: Muharrir Publishing House, 2017. — P. 42.

ISBN: 978-625-90699-4-4

TADQIQOTNING DOLZARBLIGI

A MODEL FOR DEVELOPING THE COMMUNICATIVE COMPETENCE OF FUTURE PRIMARY SCHOOL TEACHERS

Matkarimova Shahnoza Maxamadjonovna
Lecturer at Korea International University in Fergana
Fergana, Uzbekistan
ORCID ID: https://orcid.org/0009-0009-7846-28-66

Abstract. This article proposes a theoretical and practical model for developing the communicative competence of future primary school teachers. Based on an analysis of scholarly sources and education documents, five components of this competence are identified: verbal, interactive, socio-emotional, reflective, and digital. The model comprises goal-setting, content, process, and assessment blocks, as well as four stages: initial assessment, practice, teaching practicum, and reflection. Assessment criteria are defined using an observation checklist, a microteaching session, scenario-based tasks, and a portfolio. The proposed model is conceptual, and its effectiveness requires testing through a pedagogical experiment.

Keywords*: primary education, future teacher, communicative competence, pedagogical communication, dialogic teaching, teaching practicum, reflection, assessment.*

Boshlang‘ich sinf o‘qituvchisi bolaga yangi bilimni tushuntirish bilan birga uning fikrini tinglaydi, savollariga javob beradi, tengdoshlari bilan hamkorligini boshqaradi va oila bilan aloqani yo‘lga qo‘yadi. Shu sababli pedagogik muloqotdagi aniqlik, hurmat va fikr almashish imkoniyati darsning kundalik sifatiga bevosita ta’sir qiladi. Bir xil ko‘rsatmani barcha bolalar bir xil anglamasligi, o‘quvchilarning til tajribasi va hissiy ehtiyojlari turlicha bo‘lishi bu kompetensiyani maqsadli tayyorlashni talab etadi.

O‘zbekiston Respublikasining “Ta’lim to‘g‘risida”gi Qonuni ta’limning tashkiliy va huquqiy asoslarini belgilaydi[1]. O‘qituvchini tayyorlashda kommunikativ kompetensiya faqat ravon so‘zlash bilan chegaralanmaydi: u bolaga tushunarli savol berish, javobni rivojlantirish, muloqotda teng ishtirokni ta’minlash, nizoli holatda odobli yechim topish va ota-onaga aniq qayta aloqa berishni ham o‘z ichiga oladi. Dialogik ta’lim bo‘yicha amaliy baholashlar sinfdagi suhbat sifatini rivojlantirish o‘quv jarayoni uchun istiqbolli yo‘nalish ekanini ko‘rsatadi[2].

Mavjud tayyorgarlikda nutq madaniyati, pedagogika va amaliyot alohida o‘qitilishi mumkin. Ularning yagona kutilgan xatti-harakatlar va tekshiriladigan ko‘rsatkichlar atrofida bog‘lanishi bo‘lajak o‘qituvchining bilimini real sinf muloqotiga ko‘chirishga xizmat qiladi. Maqolada aynan shu bog‘lanishni ifodalovchi model ishlab chiqiladi.

TADQIQOT MAQSADI

Tadqiqot maqsadi bo‘lajak boshlang‘ich sinf o‘qituvchilarining kommunikativ kompetensiyasini shakllantirishning tarkibiy va jarayonli modelini asoslash, uning shartlari hamda baholash mezonlarini aniqlashdan iborat. Buning uchun tushuncha tarkibi tahlil qilindi, dars va maktab–oila hamkorligiga xos muloqot vaziyatlari tizimlashtirildi, mashq va amaliyot o‘rtasidagi izchillik belgilandi.

TADQIQOT MATERIALLARI VA METODLARI

Maqola nazariy-metodik tadqiqot sifatida tayyorlandi. Normativ hujjat, dialogik ta’limga doir tadqiqot va xalqaro kompetensiya tavsiflari mazmuniy tahlil qilindi [1–4]. Tahlil, sintez, pedagogik modellashtirish va vaziyatlarni tipologiyalash usullaridan foydalanildi. Yevropa Kengashining muloqot va vositachilik tavsiflari til o‘qitish uchun ishlab chiqilgan bo‘lsa-da, ularning hamkorlikda ma’no yaratish g‘oyasi pedagogik suhbatni

loyihalashga ehtiyotkorlik bilan moslashtirildi [3]. Ushbu maqolada talabalar yoki o‘quvchilar bilan tajriba o‘tkazilmagan; keltirilgan mezonlar empirik natija sifatida talqin qilinmaydi.

TADQIQOT NATIJALARI

Kommunikativ kompetensiya bo‘lajak o‘qituvchining pedagogik maqsadga mos ravishda axborotni tushunarli ifodalashi, suhbatni tashkil etishi, bolaning fikrini anglab javob qaytarishi, munosabat va hissiy muhitni boshqarishi hamda o‘z muloqotini tahlil qilib yaxshilashi bilan namoyon bo‘ladigan integrativ qobiliyat sifatida ta’riflandi. Uning tarkibi besh o‘zaro bog‘liq komponentdan iborat.

1. Nutqiy komponent: adabiy til me’yorlariga rioya qilish, yoshga mos izohlash, savolni aniq ifodalash, ovoz tempi va intonatsiyasini boshqarish.

2. Interaktiv komponent: faol tinglash, ochiq savollar orqali fikrni kengaytirish, suhbat navbatini taqsimlash va o‘quvchilar o‘rtasidagi hamkorlikni tashkil etish.

3. Ijtimoiy-emotsional komponent: empatiya, hurmatli murojaat, xatoga xavfsiz munosabat, kelishmovchilikni tinch hal etish va ota-onalar bilan odobli aloqa.

4. Refleksiv komponent: o‘z nutqini va suhbatdagi ishtirok taqsimotini kuzatish, qayta aloqani qabul qilish va keyingi dars uchun aniq o‘zgarish belgilash.

5. Raqamli komponent: elektron yozishmalarni ravshan va maxfiylikka rioya qilgan holda yuritish, masofaviy muloqotda bolaga mos ko‘rsatmalar berish.

Modelning maqsadli bloki o‘quvchi bilan tushunarli, dialogik va hurmatga asoslangan muloqotni mustaqil olib borishga tayyor o‘qituvchini shakllantirishni ko‘zlaydi. Mazmuniy blok yuqoridagi besh komponent, boshlang‘ich yosh psixologiyasi, nutq madaniyati va maktab–oila munosabatlariga doir bilim va amaliy vazifalarni birlashtiradi. Jarayonli blok mashg‘ulot, mikrodars, rolli vaziyat, maktab amaliyoti va qayta aloqani o‘zaro bog‘laydi. Diagnostik blok esa kuzatiladigan harakatlarni mezonlar asosida qayd etadi.

Jarayon to‘rt bosqichda tashkil etiladi. Dastlabki tashxisda talaba qisqa mikrodars o‘tadi, o‘z nutqi va savollarini yozuv yoki kuzatuv varaqasi yordamida ko‘rib chiqadi. Mashq bosqichida yoshga mos izohlash, qayta so‘rash, ochiq savol va muloyim qayta aloqa berish mashqlari bajariladi. Pedagogik amaliyotda bu harakatlar real sinf sharoitida, mentor ko‘magida qo‘llanadi. Yakuniy refleksiyada talaba dalil sifatida dars rejasi, kuzatuv varaqasi va tuzatilgan mikrodarsni portfolioga jamlaydi.

Masalan, “O‘quvchi javob berishdan qo‘rqyapti” vaziyatida talaba xatoni darhol e’lon qilish o‘rniga bolaning fikrini aniqlashtiruvchi savol beradi, unga o‘ylash uchun vaqt ajratadi va javobning foydali qismini ta’kidlaydi. “Ota-ona bolaning natijasidan norozi” vaziyatida kuzatilgan o‘quv harakatlarini bahodan ajratib tushuntiradi va birgalikdagi keyingi qadamni kelishadi. Bunday vaziyatlar kommunikativ ko‘nikmani faqat deklarativ bilimdan kuzatiladigan pedagogik harakatga aylantiradi.

1-jadval. Model komponentlari va baholash indikatorlari

Komponent	Mashq va amaliy vaziyat	Kuzatiladigan indikator
Nutqiy	Mavzuni 2 daqiqada izohlash	Ko‘rsatma qisqa, yoshga mos va tushunarli
Interaktiv	Juftlik muhokamasini boshqarish	Ochiq savol beradi, javobni davom ettiradi, navbatni taqsimlaydi
Ijtimoiy-emotsional	Xato yoki kelishmovchilik holati	Bolaning qadrini saqlaydi, vaziyatni xotirjam hal qiladi
Refleksiv	Mikrodars yozuvini tahlil qilish	Aniq dalilga tayangan takomillashtirish qadamini belgilaydi
Raqamli	Ota-onaga elektron xabar yozish	Xabar aniq, hurmatli va shaxsiy ma’lumotni asraydi

Har bir indikator 0–2 ball bilan baholanishi mumkin: 0 — harakat namoyon bo‘lmadi; 1 — qisman yoki yordam bilan bajarildi; 2 — vaziyatga mos, mustaqil va izchil bajarildi. Besh

ISBN: 978-625-90699-4-4

indikator bo‘yicha 0–10 ball yig‘iladi. 0–3 ball boshlang‘ich, 4–7 ball rivojlanayotgan, 8–10 ball barqaror darajani tavsiflash uchun taklif etiladi. Bu chegara qiymatlar ishchi mezonlar bo‘lib, amaliy sinov natijasida qayta kalibrlanishi zarur. Bahoni bitta kuzatuvga bog‘lamasdan, kamida ikki vaziyat va mentor fikri bilan asoslash maqsadga muvofiq.

TADQIQOT NATIJALARINING MUHOKAMASI

Taklif etilgan modelning asosiy xususiyati kompetensiya tarkibi bilan o‘quv faoliyati va baholash o‘rtasidagi moslikdir. Masalan, faol tinglashni faqat ma’ruzada ta’riflash uning amalda bajarilishini kafolatlamaydi. Talaba suhbatni olib boradi, kuzatuvchi uning savollari va javobga munosabatini qayd etadi, so‘ng talaba fikrini qayta ko‘rib chiqadi. Dialogik ta’limga oid dastur va baholashlarda o‘qituvchining sinf suhbati bo‘yicha tayyorgarligi hamda qayta aloqasi muhim o‘rin egallaydi [2].

Boshlang‘ich ta’lim kontekstida model bir necha ehtiyot shartni talab qiladi. Birinchidan, o‘quvchi yoshi va til tajribasiga mos nutq ishlatiladi. Ikkinchidan, “ko‘p gapirish” muloqot sifati bilan tenglashtirilmaydi: o‘qituvchi bolaning so‘zlashiga joy qoldirishi kerak. Uchinchidan, sinfdagi faoliyat va ota-onalar bilan yozishmada bolaning sha’ni hamda shaxsiy ma’lumotlari ehtiyot qilinadi. To‘rtinchidan, kommunikativ harakat matematika, ona tili va boshqa fanlarning haqiqiy mavzulari ichida mashq qilinsa, ko‘nikmani amaliyotga ko‘chirish imkoniyati kuchayadi.

Modelning chegarasi uning konseptual tavsifida: komponentlar orasidagi bog‘liqlik va taklif etilgan ball chegaralarining ishonchliligi hozircha empirik tekshirilmagan. Keyingi tadqiqotda amaliyot oldidan va keyin bir xil rubrika bo‘yicha mikrodarslar taqqoslanishi, mustaqil kuzatuvchilar baholarining mosligi aniqlanishi va o‘quvchilar hamda mentorlarning fikri yig‘ilishi kerak. Bu yondashuv modeldagi qaysi faoliyatlar ko‘proq foyda berishini aniqlashtiradi.

XULOSA

Bo‘lajak boshlang‘ich sinf o‘qituvchisining kommunikativ kompetensiyasi nutqiy, interaktiv, ijtimoiy-emotsional, refleksiv va raqamli tarkiblarning birligida namoyon bo‘ladi. Uni shakllantirish modeli maqsad, mazmun, faoliyat va diagnostikani bitta izchil jarayonga bog‘laydi. Tashxis, maqsadli mashq, pedagogik amaliyot va refleksiya ketma-ketligi talabaga muloqotni ko‘rish, sinab ko‘rish va takomillashtirish imkonini beradi. Taklif etilgan indikatorlar o‘qituvchi tayyorlash dasturida mikrodars va pedagogik amaliyotni baholash uchun ishchi asos bo‘la oladi; model samaradorligi alohida tajriba-sinov bilan tasdiqlanishi kerak.

FOYDALANILGAN ADABIYOTLAR

1. O‘zbekiston Respublikasining “Ta’lim to‘g‘risida”gi Qonuni. 2020-yil 23-sentabr, O‘RQ-637-son. https://lex.uz/uz/doc-passport/-5013007
2. Education Endowment Foundation. Dialogic Teaching: project and evaluation. https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/dialogic-teaching
3. Council of Europe. Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Companion Volume. Strasbourg, 2020. https://www.coe.int/en/web/common-european-framework-reference-languages/cefr-companion-volume-and-its-language-versions
4. Education Endowment Foundation. Dialogic Teaching: programme overview. https://educationendowmentfoundation.org.uk/projects-and-evaluation/promising-programmes/dialogic-teaching

ISBN: 978-625-90699-4-4

THE MANIFESTATION OF AESTHETIC VALUES IN MUSICAL ART AND THE FORMATION OF AESTHETIC CULTURE

Abdurahimova Zukhra Khan
First-Year Student, Music Education Program
Faculty of Pedagogy, Psychology and Art Studies
Fergana State University

Abstract

This article examines the philosophical and aesthetic significance of musical art in the manifestation of aesthetic values and the formation of aesthetic culture. Aesthetic culture is considered as an important component of an individual's spiritual world, reflecting the ability to perceive, understand, evaluate, and create beauty. Music, as one of the most influential forms of art, has a special capacity to express aesthetic ideals, emotional experiences, moral values, and cultural traditions. The article analyzes the relationship between aesthetic consciousness, aesthetic values, music, and culture. Particular attention is paid to the role of national musical traditions in preserving cultural identity and transmitting aesthetic values from one generation to another. The article also discusses the importance of musical art in developing aesthetic taste, emotional sensitivity, creative thinking, and spiritual maturity among young people. It is argued that the systematic use of the educational and cultural potential of music contributes to the formation of a harmonious personality and the development of aesthetic culture in contemporary society.

Keywords: aesthetics, aesthetic culture, aesthetic values, musical art, aesthetic consciousness, aesthetic taste, culture, national values, art, spirituality.

Introduction

Aesthetics is one of the important branches of philosophical knowledge that studies the nature of beauty, artistic creativity, aesthetic perception, and the relationship between humans and reality through aesthetic values. In the process of social and cultural development, aesthetic values have always played an important role in shaping people's worldview, spiritual needs, moral principles, and cultural identity. Beauty, harmony, harmony of form and content, artistic expression, and creative activity are important manifestations of aesthetic culture.

Aesthetic culture reflects a person's ability to perceive and understand aesthetic phenomena, distinguish artistic and cultural values, evaluate them, and participate creatively in cultural life. It is not limited to external beauty. Rather, it represents a complex spiritual phenomenon associated with aesthetic consciousness, taste, ideals, emotions, and creative abilities.

Among different forms of art, music occupies a special place in the development of aesthetic culture. Music directly influences human emotions and spiritual experiences. It can express joy, sorrow, hope, love, patriotism, heroism, compassion, and other complex emotional states. Therefore, musical art serves not only as a form of artistic expression but also as an important means of transmitting cultural and aesthetic values.

The Philosophical Essence of Aesthetic Culture

Aesthetic culture can be understood as the level of development of an individual's and society's relationship with beauty, art, and aesthetic values. It is manifested through aesthetic perception, aesthetic feeling, aesthetic taste, aesthetic judgment, aesthetic ideals, and creative activity. Aesthetic consciousness is one of the fundamental components of aesthetic culture. Through aesthetic consciousness, a person perceives the world not only rationally but also

emotionally and artistically. Natural phenomena, works of art, social relationships, traditions, and human behavior can all become objects of aesthetic perception.

Aesthetic values emerge in the process of human interaction with reality and culture. Beauty, harmony, grandeur, tragedy, and comedy are among the major categories through which people understand and evaluate aesthetic phenomena. These categories are historically and culturally conditioned, while at the same time possessing universal human significance.

Aesthetic culture develops throughout a person's life. Family, educational institutions, social environment, literature, visual arts, theater, cinema, architecture, and especially music influence its formation. Therefore, aesthetic culture should be considered not as an isolated individual characteristic but as an important part of general cultural development.

The Manifestation of Aesthetic Values in Musical Art

Musical art is one of the most powerful forms of artistic expression. Unlike many other forms of art, music primarily communicates through sound, rhythm, melody, harmony, tempo, dynamics, and timbre. These expressive means create an artistic image and allow the listener to experience various emotional and aesthetic states. Aesthetic values in music are manifested through the unity of artistic form and content. A musical composition becomes aesthetically significant when its artistic language, emotional content, structural organization, and expressive possibilities create a meaningful artistic whole. In this sense, musical beauty is not simply pleasant sound; it is the artistic expression of ideas, emotions, cultural meanings, and human experiences.

Music also reflects the historical and cultural characteristics of society. Every nation has its own musical traditions, genres, melodies, rhythms, instruments, and performance practices. These elements preserve the cultural memory of the people and represent an important form of national aesthetic values.

National musical traditions therefore have a dual function. First, they preserve historical and cultural heritage. Second, they contribute to the formation of aesthetic consciousness among younger generations. Through traditional music, young people become familiar with the artistic worldview, emotional culture, values, and historical memory of their nation. At the same time, music has universal aesthetic significance. Different musical cultures may have different systems of melody, rhythm, performance, and artistic expression, but music can create emotional communication among people regardless of language and national boundaries. This demonstrates the universal human potential of musical art.

Music and the Formation of Aesthetic Culture

The formation of aesthetic culture is closely connected with the development of aesthetic taste. Aesthetic taste allows a person to distinguish artistic quality, recognize beauty and harmony, and make meaningful aesthetic judgments. Musical education and regular interaction with high-quality musical works can contribute significantly to this process.

When a person listens to music consciously, analyzes its artistic structure, recognizes its emotional content, and compares different musical works, their aesthetic perception becomes more developed. As a result, musical experience gradually becomes an important component of general aesthetic culture.

Music also develops emotional sensitivity. A person who is able to understand the emotional language of music can become more sensitive to the experiences of other people and to the cultural environment. In this sense, music has not only an aesthetic but also a significant spiritual and educational function.

The educational potential of music is particularly important for young people. During adolescence and youth, aesthetic preferences and cultural orientations are actively developing.

ISBN: 978-625-90699-4-4

Exposure to meaningful musical works can help young people develop artistic taste, creative thinking, emotional intelligence, and respect for cultural heritage.

The formation of aesthetic culture through music should therefore be understood as a continuous process. It involves not only listening to music but also learning, performing, analyzing, discussing, and creatively interpreting musical works.

National and Universal Aesthetic Values in Music

One of the important characteristics of musical art is its ability to combine national and universal values. National musical traditions reflect the historical experience, worldview, customs, and spiritual values of a particular people. At the same time, themes such as love, freedom, friendship, nature, motherhood, homeland, justice, and human dignity have universal significance.

The combination of national and universal values strengthens the cultural and philosophical significance of music. National music allows an individual to recognize and appreciate their cultural identity, while universal musical values create opportunities for intercultural dialogue.

In the context of globalization, the preservation of national aesthetic values becomes particularly important. Modern technologies have expanded access to musical culture and created opportunities for communication between different artistic traditions. However, this process also requires a conscious attitude toward cultural heritage. Therefore, contemporary musical education should combine respect for national traditions with openness to universal artistic achievements. Such an approach contributes to the development of an aesthetically mature individual who is capable of appreciating both national and world cultural values.

The Role of Music in Contemporary Aesthetic Education

Contemporary society is characterized by rapid technological and cultural changes. Digital platforms provide young people with access to a huge amount of musical information. This creates new opportunities for artistic education but also increases the importance of developing critical aesthetic judgment.

In these conditions, aesthetic education should help individuals distinguish artistic quality from superficial entertainment, understand the cultural context of musical works, and develop independent aesthetic preferences. Educational institutions have an important role in this process.

Music education should therefore go beyond technical performance skills. It should develop students' ability to listen, understand, analyze, interpret, and evaluate music. Such an approach transforms music from a simple educational subject into an important means of cultural and spiritual development.

Digital technologies can also support aesthetic education through access to digital archives, musical databases, recording technologies, notation software, and online educational resources. When used appropriately, these technologies can expand students' opportunities for creative activity and deepen their understanding of musical culture.

Conclusion

Musical art occupies an important place in the formation of aesthetic culture because it combines artistic expression, emotional experience, cultural memory, and spiritual values. Aesthetic values manifested in music influence human aesthetic consciousness, taste, ideals, and worldview.

The formation of aesthetic culture is a complex and continuous process that involves the development of aesthetic perception, emotional sensitivity, artistic judgment, and creative abilities. Music contributes to this process by creating opportunities for individuals to

ISBN: 978-625-90699-4-4

experience beauty, understand artistic meanings, appreciate cultural heritage, and develop creative thinking. National musical traditions are especially significant because they preserve cultural identity and transmit aesthetic values from generation to generation. At the same time, music possesses universal human significance and can serve as a means of intercultural dialogue.

In contemporary society, the effective use of the educational and cultural potential of music is essential for the development of a spiritually and aesthetically mature personality. Therefore, the integration of aesthetic education, cultural heritage, and musical art can be considered an important condition for the development of aesthetic culture and the enrichment of the spiritual life of society.

REFERENCES

1.Adorno, T. W. (1997). Aesthetic Theory. Minneapolis: University of Minnesota Press.
2.Dewey, J. (2005). Art as Experience. New York: Perigee Books.
3.Eagleton, T. (1990). The Ideology of the Aesthetic. Oxford: Blackwell.
4.Hegel, G. W. F. (1975). Aesthetics: Lectures on Fine Art. Oxford: Clarendon Press.
5.Kant, I. (2000). Critique of the Power of Judgment. Cambridge: Cambridge University Press.
6.Kagan, M. S. (1997). Estetika kak filosofskaya nauka. Saint Petersburg: Petropolis.
7.Tatarkiewicz, W. (1980). A History of Six Ideas: An Essay in Aesthetics. The Hague: Martinus Nijhoff.
8.Bychkov, V. V. (2005). Estetika. Moscow: Gardariki.
9.Umarov, E. (1995). Estetika. Tashkent: O‘zbekiston.
10.G‘aybullayev, O. (2020). Estetik madaniyat. Tashkent: Navro‘z.

ISBN: 978-625-90699-4-4