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O'zbekiston Respublikasi Prezidenti Administratsiyasi huzuridagi Axborot va ommaviy kommunikatsiyalar agentligi tomonidan 16.08.2022 yilda olingan №1701 sonli guvohnomaga ega. Jurnalning ushbu soni [Index Copernicus](#), [ResearchGate](#), [ResearchBIB](#), [eLIBRARY.ru](#), [Academia.edu](#), [OpenAire](#), [Directory of Research Journals Indexing](#), [ZENODO](#), [Cyberleninka](#) va [Google Scholar](#) xalqaro ilmiy bazalarida indekslandi.

O'zbekiston Respublikasi Oliy attestatsiya komissiyasining 2026-yil 5-martdagi №382/5-sonli qarori bilan, 06.00.00 – Qishloq xo'jaligi fanlari hamda 2025-yil 13-iyundagi №371/5-sonli qarori bilan 16.00.00 – Veterinariya fanlari bo'yicha asosiy ilmiy natijalarni chop etish tavsiya etilgan milliy jurnal sifatida tan olinadi.

Barcha maqolalar jurnalning elektron ilmiy bazasi ([ReFocus.uz](https://refocus.uz)) ga joylashtirildi.

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“Research Focus” xalqaro ilmiy jurnali №4. 2026 yil

Ushbu to'plamda **“Research Focus”** xalqaro ilmiy jurnali 4-soniga qabul qilingan ilmiy maqolalar joy olgan.

Ushbu ilmiy jurnalda O'zbekiston Respublikasi va xalqaro oliy ta'lim muassasalari professor-o'qituvchilari, mustaqil ilmiy izlanuvchilari, doktorantlari, magistrantlari tomonidan olib borilayotgan ilmiy-tadqiqot ishlari natijalari ilmiy maqola tarzida chop etildi. Shuningdek, jurnalga oliy ta'lim muassasalaridan tashqari viloyatimiz va respublikamizning boshqa ilmiy-tadqiqot institutlari, ishlab chiqarish tashkilotlari va korxonalarida faoliyat ko'rsatib, ilmiy-tadqiqot ishlari olib borayotgan xodimlarning ham ilmiy maqolalari kiritildi.

Jurnal materiallaridan professor-o'qituvchilar, mustaqil izlanuvchilar, doktorantlar, magistrantlar, talabalar, litsey-kollejlar va maktab o'qituvchilari, ilmiy xodimlar hamda barcha ilm-fanga qiziquvchilar foydalanishlari mumkin.

Eslatma! Jurnal materiallari to'plamiga kiritilgan ilmiy maqolalardagi raqamlar, hisobotlar, ma'lumotlar haqqoniyligiga va keltirilgan iqtiboslar to'g'riligiga mualliflar shaxsan javobgardirlar.

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“Research Focus” xalqaro ilmiy jurnali tahririyati
Saloydinov Sardorjon Qodirjon o'g'li - Bosh muharrir
Abdurahmonov Javohir Sobir o'g'li - Texnik muharrir

Tahrir hay'ati a'zolari

01.00.00 – Fizika-matematika fanlari

Sharibaev Nosir Yusupjonovich – Namangan davlat texnika universiteti fizika-matematika fanlari doktori, professor

Tukfatullin Oskar Faritovich – O'zMU Huzuridagi Yarimo'tkazgichlar fizikasi va mikroelektronika ilmiy-tadqiqot instituti Muqobil energiya manbalari laboratoriyasi mudiri

Ergashev To'xtasin Gulamjanovich – TIQXMMI Milliy tadqiqot universiteti oliy matematika kafedrasida professori v.b. fizika-matematika fanlari nomzodi

Nuriddinova Mashxura Anvarbekovna – Namangan davlat texnika universiteti fizika kafedrasida o'qituvchisi PhD

Fayzullaev Qahramon Maxmudjonovich – Yarimo'tkazgichlar fizikasi va mikroelektronika ilmiy-tadqiqot instituti katta ilmiy xodimi, fizika-matematika fanlari bo'yicha PhD

Anifa Paluanova – Nukus davlat-pedagogika instituti dotsenti, Fizika-matematika fanlari bo'yicha falsafa doktori PhD

Isayev Maxmudxodcha Sharipovich - O'zMU Yarimo'tkazgichlar va polimerlar fizikasi kafedra dotsenti, fizika matematika fanlari nomzodi

Raxmanov Dilmurod Abdujabbor o'g'li – O'zMU xuzuridagi Yarimo'tkazgichlar fizikasi va mikroelektronika ilmiy tadqiqot instituti, Yarimo'tkazgichlar fizikasi laboratoriyasi kichik ilmiy xodimi

Xorilov Maxmud Abdumalikovich – Namangan davlat universiteti Matematik analiz kafedrasida o'qituvchisi fizika matematika fanlari bo'yicha falsafa doktori PhD

Mamadaliyev O'ktamjon Xasanboyevich - Namangan davlat universiteti Matematika kafedrasida dotsenti, fizika-matematika fanlari bo'yicha falsafa doktori PhD

02.00.00 – Kimyo fanlari

Abdullayev Shavkat Vaxidovich – Namangan davlat universitetining “Organik kimyo” kafedrasida professori, Kimyo fanlari doktori, tabobat fanlari akademigi

Xolmurodova Dilafroz Quvatovna – Samarqand Davlat tibbiyot universiteti tibbiy kimyo kafedrasida mudiri texnika fanlari doktori (DSc)

Xujaboev Safarboy Tuxtaboevich – Samarqand davlat tibbiyot universiteti umumiy xirurgiya kafedra dotsenti Tibbiyot fanlari doktori.

Eshmamatova Nodira Baxromovna – Mirzo Ulug'bek nomidagi O'zbekiston Milliy universiteti Fizikaviy kimyo kafedrasida dotsenti Kimyo fanlari doktori

Ziyayev Dilshod Abdullayevich – Mirzo Ulug'bek nomidagi O'zbekiston Milliy universiteti analitik kimyo kafedrasida dotsenti, kimyo fanlari doktori

Kasimov Sherzod Abduzoirovich – Kimyo fanlari doktori professor, Termiz davlat universiteti noorganik kimyo kafedrasida mudiri

Dehqonov Raxmatilla Sultonovich – Namangan davlat universiteti kimyo kafedrasida dotsenti, kimyo fanlari doktori

Raxmatullayev Izatulla – Farg'ona jamoat salomatligi tibbiyot instituti dotsenti. kimyo fanlari nomzodi dotsenti

Baykulov Azim Kenjaevich – Samarqand davlat tibbiyot universiteti Farmatsevtika va toksikologik kimyo kafedrasida mudiri

Xalikov Kaxor Mirzaevich – Samarqand davlat tibbiyot universiteti biologik kimyo kafedrasida mudiri Biologiya fanlari bo'yicha falsafa doktori

Todjiyev Jamoliddin Nasiriddinovich – Mirzo Ulug'bek nomidagi O'zbekiston milliy universiteti Analitik kimyo kafedrasida dotsenti, kimyo fanlari doktori (DSc)

Xaydarova Dilrabo Raximjanovna – Namangan davlat universiteti Tabiiy fanlar fakulteti Organik kimyo kafedrasida o'qituvchisi PhD
Eshkobilova Mavjuda Ergashboyevna - SamDAQU “Qurilish materiallari, buyumlari va konstruksiyalarini ishlab chiqarish” kafedrasida dotsenti (v.b)

Lutpillayeva Ma'suda Xayrullo qizi - Namangan davlat pedagogika instituti o'qituvchi, PhD

Karimova Gavxar Shovkatjanovna – O'zbekiston Respublikasi Energetika vazirligi huzuridagi Qayta tiklanuvchi energiya manbalari milliy ilmiy-tadqiqot instituti Ilmiy kotibi, Kimyo fanlari nomzodi katta ilmiy xodim

03.00.00 – Biologiya fanlari

Abdullayev Shavkat Vaxidovich – Kimyo fanlari doktori, Namangan davlat universitetining “Organik kimyo” kafedrasida professori, tabobat fanlari akademigi

Shodikulova Gulandom Zikriyevna – Samarqand davlat tibbiyot universiteti 3-son Ichki kasalliklar va endokrinologiya kafedrasida dotsenti, kafedra mudiri tibbiyot fanlari doktori dotsent

Asqarov Kamoliddin Abdug'aniyevich – Farg'ona davlat universiteti Tabiiy fanlar fakulteti dekani, biologiya fanlari bo'yicha falsafa doktori, PhD

Rasulova Moxidil Tursunaliyevna – Farg'ona jamoat salomatligi tibbiyot instituti “Davolash ishi” fakulteti dekani

Shavazi Nargiz Nuralievna – Samarqand davlat tibbiyot universiteti 3-son akusherlik va ginekologiya kafedrasida mudiri

Baykulov Azim Kenjaevich – Samarqand davlat tibbiyot universiteti Farmatsevtika va toksikologik kimyo kafedrasida mudiri Biologiya fanlari bo'yicha falsafa doktori

Mirzayev Saidmaxmud - Namangan davlat universiteti sport faoliyati kafedrasida dotsenti biologiya fanlari nomzodi dotsent

05.00.00 – Texnika fanlari

Xudaykuliye Rajabboy Ruzmatovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti direktori, texnika fanlari nomzodi, katta ilmiy hodim

Ibragimov Abdirasuli Abdikarimovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti ilmiy ishlat va innovatsiyalar bo'yicha direktor o'rinbosari, texnika fanlari doktori, professor

Norchayev Davron Rustamovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti direktorning ilm-fan va ilmiy faoliyat bo'yicha maslahatchisi, texnika fanlari doktori, professor

G'aybullaev Burxonjon Shermatjonovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti ilmiy kotibi, PhD, katta ilmiy hodim

Zaxidov Romen Abdullayevich – Energetika muammolari instituti laboratoriyasi rahbari, texnika fanlari doktori, akademik

Murzaqulov Nurqul Abdilazizovich – Qirg'iziston Respublikasi O'sh Texnika Universiteti professor texnika fanlari doktori. “Elektr energetika” instituti direktori

Abdurahmonov Abdukarim Athamovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot institutida “Ekin va o'simliklarni

parvarishlash mashinalari” laboratoriyasi rahbari, texnika fanlari nomzodi, katta ilmiy hodim

Muradov Rustam – Namangan davlat texnika universiteti professori, texnika fanlari doktori

Ergashev Ma'rufjon Muhammadovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti “Chorvachilik uchun ozuqa yem-xashak yetishtirish mashinalari laboratoriyasi rahbari, PhD, katta ilmiy hodim

Imomqulov Qutbiddin Boqijonovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti “Bog'dorchilik va sabzavotchilikni mexanizatsiyalash” laboratoriyasi rahbari, texnika fanlari doktori, professor

Artikbayev Baxtiyar Pirniyazovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti “Mashina-texnologiyalar tizimi va mashina-traktor parkidan foydalanish” laboratoriyasi mudiri, PhD, katta ilmiy hodim

Kambarov Baxtiyor Akbaralievich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot institutining “Mobil energetika va transport vositalari” laboratoriyasi mudiri, texnika fanlari doktori, dotsent

Ravshanov Shavkat Ulashovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti “Ekinlar hosilini yig'ishtirish mashinalari laboratoriyasi rahbari, texnika fanlari nomzodi, katta ilmiy hodim

Rosabayev Abduqodir To'xtaqo'ziyevich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti “Innovatsion ishlanmalarni joriy etish va marketing bo'limi bosh mutahassisi, texnika fanlari nomzodi, katta ilmiy hodim

Tuxtakuziyev Abdusalim – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti “Tuproqqa ishlov berish mashinalari” laboratoriyasi rahbari texnika fanlari doktori, professor

Xolliqov Baxtiyor Abdug'opporovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti “Suv tejovchi texnologiyalar va ularni amalga oshiruvchi mashinalar” laboratoriyasi rahbari, PhD, katta ilmiy hodim

Tagayev Baxodir Kuchkarbekovich – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti “Qishloq xo'jaligida mehatronika, dasturiy boshqarish va texnologik jarayonlarni avtomatlashtirish” laboratoriyasi rahbari, PhD, katta ilmiy hodim

Rasuljonov Abduraxmon Ravshanbek o'g'li – Qishloq xo'jaligini mexanizatsiyalash ilmiy-tadqiqot instituti PhD, katta ilmiy hodim

Sitdiqov Rashid Abduraxmanovich – Islom Karimov nomidagi Toshkent davlat texnika universiteti energetika fakulteti professori texnika fanlari doktori

Ergashev Sirojiddin Fayazovich – Farg'ona davlat texnika universiteti ilmiy va ilmiy pedagogik kadrlarni tayyorlash bo'limi boshlig'i. Texnika fanlari doktori, dotsent

Soliyev Rustamjon Hakimjanovich – Namangan davlat texnika universiteti energetika fakultet dekani. Texnika fanlari doktori, dotsent

Yunusov Baxtiyar Xodjakbarovich – Toshkent davlat texnika universiteti: “Energetika” fakultetlari “Issiqlik energetikasi” kafedrasida Mudiri, dotsent

Quchqarov Akmaljon – Farg'ona davlat texnika universiteti “Elektronika va asbobsozlik” kafedrasida mudiri. Texnika fanlari nomzodi (PhD)

Radionova Olga Vinsetovna – Islom Karimov nomidagi Toshkent davlat texnika universiteti «Elektr stansiyalari, tarmoqlari va tizimlari» kafedra dotsenti texnika fanlari nomzodi

Vaxobova Sojidxon Komiljonovna – Namangan davlat texnika universiteti energetika kafedrasida dotsenti, PhD, dotsent

Agzamov Shovkat Kozimovich – Toshkent davlat texnika universiteti: “Energetika” fakultetlari “Issiqlik energetikasi” kafedrasida dotsenti

Saodullayev Tuymurod Mardullo o'g'li – Islom Karimov nomidagi Toshkent Davlat Texnika Universiteti dotsenti, PhD

Xolbayev Doniyor Juraboyevich – Namangan davlat texnika universiteti, energetikasi kafedrasida o'qituvchisi PhD, dotsent

Yusupov Dilshodbek Turdaliyevich – O'zbekiston Respublikasi Energetika vazirligi huzuridagi Qayta tiklanuvchi energiya manbalari milliy ilmiy-tadqiqot instituti laboratoriyasi rahbari, PhD katta ilmiy hodim

06.00.00 – Qishloq xo'jaligi fanlari

Raxmankulov Murod Said-Akbarovich – Paxta selektsiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti direktori, qishloq xo'jaligi fanlari doktori DSc, professor

Rashidova Dilbar Karimovna – Paxta selektsiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti Organik paxtachilik laboratoriyasi mudiri, Qishloq xo'jaligi fanlari doktori DSc, professor

Suvanov Boymurod Uralovich – Ozuqa ekinlari ilmiy-tajriba stansiyasi Agrotexnika va o'simliklarni himoya qilish bo'limi boshlig'i, qishloq xo'jaligi fanlari doktori (DSc), katta ilmiy xodim

Durdiyev Normat Hasanovich – “Toshkent irrigatsiya va qishloq xo'jaligini mexanizatsiyalash muxandislari instituti” Milliy tadqiqot universiteti “Gidromeliorativ tizimlardan foydalanish” kafedrasida dotsenti, qishloq xo'jaligi fanlari doktori

Sherov Anvar Gulamovich – “Toshkent irrigatsiya va qishloq xo'jaligini mexanizatsiyalash muhandislari instituti” Milliy tadqiqot universiteti Gidromeliorativ tizimlaridan foydalanish kafedrasida mudiri, Texnika fanlari doktori DSc, professor

Abduraxmanov Ubaydulla Zulfikorovich – O'zbekiston Respublikasi Oliy ta'lim, fan va innovatsiyalar vazirligi huzuridagi Oliy attestatsiya komissiyasi kotibiyati qishloq xo'jaligi va veterinariya fanlari bo'yicha bosh inspektori, Qishloq xo'jaligi fanlari doktori DSc, katta ilmiy xodim

Karimov Xusniddin Nagimovich – Ak.M.Mirzaev nomidagi bog'dorchilik, uzumchilik va vinochilik ilmiy-tadqiqot instituti “O'simliklar fiziologiyasi va agrokimyo” laboratoriyasi mudiri, Qishloq xo'jaligi fanlari doktori DSc, katta ilmiy xodim

Allanov Xolik Keldiyorovich – Toshkent davlat agrar universiteti Agronomiya va agrotexnologiyalar kafedrasida professori, qishloq xo'jaligi fanlari doktori DSc

Nabiev Saydig'ani Muxtorovich – O'zbekiston Respublikasi Fanlar akademiyasi Genetika va o'simliklar eksperimental biologiyasi instituti laboratoriya mudiri, loyiha rahbari, biologiya fanlari doktori DSc, professor

Saidmurat Kimsanboevich Baboev – Donli ekinlar genetikasi, selektsiyasi va urug'chiligi laboratoriyasi mudiri, biologiya fanlari doktori DSc, professor

Nazarov Xudayberdi Kuydimuratovich – Toshkent davlat agrar universiteti “Qishloq xo'jaligi ekinlari genetikasi, selektsiyasi va urug'chiligi” kafedrasida dotsenti, Qishloq xo'jaligi fanlari doktori DSc

Gafarova Aziza Israilovna – “Toshkent irrigatsiya va qishloq xo'jaligini mexanizatsiyalash muhandislari instituti” Milliy tadqiqot universiteti katta o'qituvchisi, Texnika fanlari falsafa doktori PhD

Ganiyev Sanjar Ernazarovich – Samarqand Davlat Veterinariya Meditsinasi, Chorvachilik Va Biotexnologiyalar Universitetining Toshkent Filial Agrobiologiya va dorivor o'simliklar yetishtirish kafedrasida, q.x.f.f.d., (PhD), dotsent

Idrisov Xusanjon Abdujabborovich – Farg'ona davlat universiteti mevachilik va sabzavotchilik kafedrasida, dosenti, qishloq xo'jaligi fanlari falsafa doktori (PhD)

Mamedov Normuxammad Mardanovich – Paxta selektsiyasi, urug'chilik va agrotexnologiya ilmiy-tadqiqot instituti, Organik paxta laboratoriyasi katta ilmiy xodimi, q.x.f.f.d., (PhD)

Yakubov Muzaffar Matyakubovich – "Organik paxta yetishtirish" Paxta seleksiyasi, urug'chilik va agrotexnologiyalar ilmiy-tadqiqot instituti, q.x.f.f.d., (PhD)

Yaxyoeva Nafisa Nuriddinova – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti Aqlli qishloq xo'jaligi texnologiyalari laboratoriyasi katta ilmiy xodimi, Qishloq xo'jaligi fanlari bo'yicha falsafa doktori (PhD)

Mamatqulova Lobar O'rolovna – Termiz davlat muhandislik va agrotexnologiyalar universiteti Agronomiya seleksiya va urug'chilik kafedrasida katta o'qituvchisi, qishloq xo'jaligi fanlari bo'yicha falsafa doktori (PhD)

Rayimberdiyev Xoliyigit Abduraxmanovich – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti, Sirdaryo ilmiy-tajriba stansiyasi direktori, qishloq xo'jaligi fanlari bo'yicha falsafa doktori (PhD), katta ilmiy xodim

Xamidova Shaxnoza Muxamadxonova – Toshkent irrigatsiya va qishloq xo'jaligini mexanizatsiyalash muhandislari instituti Milliy Tadqiqot Universiteti Hidromeliorativ tizimlardan foydalanish kafedrasida dotsenti, qishloq xo'jaligi fanlari bo'yicha falsafa doktori (PhD)

Galdayev Nodirjon Nosirjonovich – «Toshkent irrigatsiya va qishloq xo'jaligini mexanizatsiyalash muhandislari instituti» milliy tadqiqot universitetining gidromelioratsiya tizimlaridan foydalanish kafedrasida dotsenti, texnika fanlari falsafa doktori (PhD)

Paximov Avazbek Xolmamatovich – Toshkent davlat agrar universiteti, O'quv - ilmiy tajriba bo'limi, bosh mutaxassisi. Qishloq xo'jaligi fanlari doktori, Katta ilmiy xodim

Avtonomov Viktor Aleksandrovich – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti Markerlarga asoslangan g'o'za navlari seleksiyasi laboratoriyasi mudiri, qishloq xo'jaligi fanlari doktori, professor

Amanturdiyev Alisher Balkibovich – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy tadqiqot institutida laboratoriya mudiri. Qishloq xo'jaligi fanlari doktori, professor

Amanturdiyev SHavkat Balkibaevich – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy tadqiqot instituti Bada seleksiyasi va urug'chiligi laboratoriyasi mudiri. qishloq xo'jaligi fanlari doktori, katta ilmiy xodim

Kozubaev SHuxrat Sattardjanovich – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti "G'o'za urug'chiligi va urug'shunoslgi" laboratoriyasi mudiri. qishloq xo'jaligi fanlari doktori, professor

Jalolov Xurshidbek Xurram o'g'li – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy tadqiqot instituti ilmiy kotibi. qishloq xo'jaligi fanlari falsafa doktori (PhD), Katta ilmiy xodim

Avliyakov Mirzoolim Avazovich – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti, Aqlli qishloq xo'jaligi texnologiyalari laboratoriyasi mudiri. Qishloq xo'jaligi fanlari doktori (DSc) professor

Kurbonov Abrorjon Yorkinovich – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti "G'o'za biotexnologiyasi" laboratoriyasi mudiri. qishloq xo'jaligi fanlari doktori (DSc), katta ilmiy xodim

Negmatova Surayyo Teshaeвна – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti, bosh ilmiy xodim. Qishloq xo'jaligi fanlari doktori (DSc), professor

Ravshanov Azam Erkinovich – Paxta seleksiyasi, urug'chilik va agrotexnologiyalar ilmiy-tadqiqot instituti tola texnologiyasi laboratoriyasi mudiri. Qishloq xo'jaligi fanlari doktori, katta ilmiy xodim, professor

Tungushova Dilbar Abdukayumovna – Paxta seleksiyasi urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti Agroinnovatsiyalar va trening markazi, bo'lim boshlig'i, Qishloq xo'jaligi fanlari doktori, professor

Xalikova Maloxat Babamuradovna – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti laboratoriya mudiri, qishloq xo'jaligi fanlari doktori, professor

Xalikov Baxodir Meylikovich – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy tadqiqot instituti laboratoriya mudiri. qishloq xo'jaligi fanlari doktori professor

Nurmatov SHermat – Paxta seleksiyasi urug'chiligi va yetishtirish agrotexnologiyalari ilmiy tadqiqot instituti Tuproqni eritishdan himoya qilish uning meliorativ xolatini yaxshilash va agroekologiya laboratoriyasi yetakchi ilmiy xodim. Qishloq xo'jaligi fanlari doktori, professor

Babaev Yashin Amanovich – Paxta seleksiyasi, urug'chiligi va yetishtirish agrotexnologiyalari ilmiy-tadqiqot instituti direktorning ilmiy ishlar va innovatsiyalar bo'yicha o'rinbosari. qishloq xo'jaligi fanlari doktori, Professor

07.00.00 – Tarix fanlari

Mirzayev Gulom Rizoqulovich – O'zbekiston Respublikasi Jamoat xavfsizligi universiteti Ijtimoiy gumanitar fanlar kafedrasida dotsenti tarix fanlari bo'yicha falsafa doktori (PhD), dotsent

Yo'ldoshev Salimjon Valiyevich – Farg'ona davlat universiteti O'zbekiston tarixi kafedrasida o'qituvchisi Tarix fanlari bo'yicha falsafa doktori (PhD) dotsenti

08.00.00 – Iqtisodiyot fanlari

Xonkeldiyeva Komilaxon Ravshanjon qizi – Farg'ona davlat universiteti ijtimoiy ish kafedrasida o'qituvchisi Iqtisodiyot fanlari bo'yicha falsafa doktori

Xasanov Ilyos Maxmudovich – Farg'ona jamoat salomatligi tibbiyot instituti Davolash ishi fakulteti dekan o'rinbosari. Iqtisodiyot fanlari bo'yicha falsafa doktori (PhD)

Umarov Abduxamid Sattarovich – Kamoliddin Behzod nomidagi Milliy rassomlik va dizayn institutining informatika va menejment kafedrasida dotsenti iqtisod fanlari nomzodi dotsent

Abdullayev Baxodir Abdug'afforovich – Andijon mashinasozlik instituti «Sanoat ishlab chiqarishini tashkil yetish» kafedrasida dotsenti Iqtisod fanlari bo'yicha falsafa doktori (PhD)

09.00.00 – Falsafa fanlari

Xolmirzayev Nodirjon Nizomjonovich – TDTU Qo'qon filiali Ijtimoiy va aniq fanlar kafedrasida mudiri Falsafa fanlari bo'yicha falsafa doktori, (PhD)

Normatova Dildor Esonalievna – Farg'ona davlat universiteti Falsafa kafedrasida dotsenti. Falsafa fanlari nomzodi dotsent

Djumanazarova Zilola Obidjanovna – University of Business and Science til va adabiyoti ta'limi kafedrasida dotsenti v.b., f.f.f.d., PhD

10.00.00 – Filologiya fanlari

Gunel Hummetova Saleh – Azarbayjon pedagogika universiteti Filologiya fanlari doktori professor

Abdupattoyev Muhammadtohir Tojimatovich - Farg'ona davlat universiteti o'zbek tili va adabiyoti kafedrasida mudiri filologiya fanlari doktori (DSc) dotsent

Murodov G'ayrat – Buxoro davlat universitetining o'zbek tili va adabiyoti kafedrasida professori. filologiya fanlari doktori professor

Usmanov Farxad Faxriddinovich - Andijon davlat universiteti o'zbek tilshunosligi kafedrasida mudiri DSc, dotsent

Nurmanova Dilfuza Abduxamidovna – Andijon davlat universiteti O'zbek tilshunosligi kafedrasida professori

Sobirov Abdulxay SHukirovich – Alisher Navoiy nomidagi Toshkent davlat universiteti mahnaviyat va mahrifat bo'yicha prorektori, filologiya fanlari doktori, professor.

Mirzayev Murodil Abdulla ugli – Muxammad al-Xorazmiy nomidagi Toshkent axborot texnologiyalari universiteti Farg'ona filiali kengash kotibi filologiya fanlari nomzodi

Axmédova Anorxon Nasivali qizi – O'zbekiston davlat jahon tillari universiteti Tarjimonlik fakulteti "Ingliz tili tarjima nazariyasi" kafedrasida o'qituvchisi Filologiya fanlari bo'yicha PhD

Sobirova Dilafroz Abdulhay qizi – Andijon davlat pedagogika instituti "Boshlang'ich ta'lim metodikasi" kafedrasida katta o'qituvchisi Filologiya fanlari bo'yicha falsafa doktori (PhD)

Ergashev Abduhalim Abduljalilovich – Andijon davlat universiteti Filologiya fakulteti yoshlar bilan ishlash bo'yicha dekan o'rinbosari filologiya fanlari nomzodi

Zakirova Hafiza Razaqovna – Andijon davlat universiteti o'zbek tilshunosligi kafedrasida dotsenti, filologiya fanlari nomzodi

Alimjon Tojiev Mo'ydinovich – Andijon davlat universiteti o'zbek tilshunosligi kafedrasida dotsenti, filologiya fanlari nomzodi

Qodirov Ziyoidin Mamadaliyevich – Andijon davlat universiteti o'zbek tilshunosligi kafedrasida katta o'qituvchisi filologiya fanlari nomzodi

SHaxobov Kamoldin Biloldinovich – Andijon davlat universiteti filologiya fakulteti o'quv ishlari bo'yicha dekan o'rinbosari, Filologiya fanlari bo'yicha falsafa doktori (PhD)

Eshqobilov Abdivali Kazakovich - Samarqand davlat chet tillari institute Axborot resurs markazi direktori

13.00.00 – Pedagogika fanlari

Raxmatova Dilnoza Nigbayevna – O'zbekiston davlat jismoniy tarbiya va sport universiteti jismoniy tarbiya, sport nazariyasi va uslubiyati professor v.v.b

Ergashev Bobirjon Boxodirovich – Namangan davlat universiteti ilmiy va ilmiy pedagogik kadrlarni tayyorlash bo'limi boshlig'i. DSc

Jalolova Pokiza Muzaffarovna – Shahrisabz davlat pedagogika instituti,

Pedagogika kafedrasida professori v.b., Pedagogika fanlari doktori DSc

Obidova Gulmira Kuzibayevna – Farg'ona politexnika instituti Magistratura bo'limi boshlig'i PhD, Pedagogika fanlari bo'yicha falsafa doktori

Azizov Nosirjon Nematillayevich – Namangan davlat universiteti Sport faoliyati kafedrasida mudiri, pedagogika fanlari nomzodi, Dostent

Qurbonova Maftuna Faxriddinova – Toshkent viloyati Chirchiq davlat pedagogika instituti Iqtidorli talabalarning ilmiy tadqiqot faoliyatini tashkil etish bo'limi boshlig'i Pedagogika fanlari bo'yicha falsafa doktori (PhD)

Mirzayeva Nodira Abduxamidovna – Toshkent viloyati Chirchiq davlat pedagogika instituti "Genetika va evolyusion biologiya" kafedrasida dotsenti. Pedagogika fanlari falsafa doktori(PhD)

Valiyeva Feruza Rashidovna - Maktabgacha ta'lim tashkilotlari direktor va mutaxassislarini qayta tayyorlash va ularning malakasini oshirish intituti "Maktabgacha ta'lim menejmenti" kafedrasida mudiri. Pedagogika fanlari bo'yicha falsafa Doktori (PhD)

Yuldashov Ikromjon Abdulazizovich - Farg'ona davlat universiteti jismoniy madaniyat fakulteti dekani. Pedagogika fanlari bo'yicha falsafa doktori (PhD). Stol tennisi bo'yicha Oliy toifali hakam.

Hamidjonov Abdulaziz Usubjon o'g'li – Namangan davlat universiteti Sport faoliyati kafedrasida dotsenti, pedagogika fanlari bo'yicha falsafa doktori PhD Xalqaro sport ustasi

Qosimova Ozoda Xudoynazarovna – Samarkand davlat tibbiyot instituti pedagogika va psixologiya kafedrasida dotsenti Pedagogika fanlari bo'yicha falsafa doktori PhD

Raximov Atanazar Karimovich – Toshkent viloyati Chirchiq davlat pedagogika instituti tabiiy fanlar fakulteti dekani. Pedagogika fanlari doktori professor vazifasini bajaruvchi

Yunusova Nilufar Xamrayevna – Toshkent Moliya instituti, O'zbek va rus tili kafedrasida mudiri, pedagogika fanlari nomzodi dotsenti

Umarov Mars Narziyevich – O'zbekiston davlat jismoniy tarbiya va sport universiteti gimnastika sport turlari nazariyasi va uslubiyati kafedrasida professor, pedagogika fanlari nomzodi professor

Umarov Xurshidjon Xasanovich – O'zbekiston Davlat jismoniy tarbiya va sport universiteti "Gimnastika nazariyasi va uslubiyati" kafedrasida p.f.b.f.d.(PhD), dotsenti

Sobirova Laylo Baxromovna – O'zbekiston davlat jismoniy tarbiya va sport universitetining "Adaptiv jismoniy tarbiya va parasport" kafedrasida dotsent v.b.

Tojiyev Muzafarjon Akbarovich – O'zbekiston davlat jismoniy tarbiya va sport universitetining jismoniy tarbiya sport nazariyasi va uslubiyati kafedrasida v.b.professor

Matnazarov Xayrulla Yuldashovich – O'zbekiston davlat jismoniy tarbiya va sport universiteti "Suv sporti, eshkak eshish turlari nazariyasi va uslubiyati" kafedrasida mudiri

To'ychiev Tohirjon Saxodullaevich - Namangan Davlat universiteti jismoniy madaniyat kafedrasida o'qituvchisi PhD.

Sirojiddinova Nodira Rivojiddinovna - Professional ta'limni rivojlantirish instituti "Innovatsion ta'lim texnologiyalari" kafedrasida mudiri

Salimova Zebo Kenjayevna - Pedagogika fanlari bo'yicha falsafa doktori PhD, Termiz davlat universiteti fakultetlararo chet tillari kafedrasida o'qituvchisi

Mamatqulov Mirzaolim Xaydaraliyevich – Namangan davlat universiteti jismoniy madaniyat fakulteti jismoniy madaniyat kafedrasida katta o'qituvchisi, pedagogika fanlari doktori

Amanullayev Abdunabi Abdumuminovich – Namangan davlat universiteti Tasviriy va amaliy san'at kafedrasida professori, pedagogika fanlari nomzodi

Sharipjonov Muxiddin SHokirjon o'g'li – Namangan davlat universiteti Tavsiy va amaliy san'at kafedrasida dotsent, PhD

Raxmatova Xayrixon Ashiraliyevna - Namangan davlat universitetining pedagogika nazariyasi va tarixi kafedrasida professor, pedagogika fanlari nomzodi

Karimov Ne'matjon Xolyigitovich - Namangan davlat universiteti Jismoniy madaniyat fakulteti Jismoniy madaniyat kafedrasida dotsenti, PhD

14.00.00 – Tibbiyot fanlari

Daminov Feruz Asadullayevich – Samarqand davlat tibbiyot universiteti Akademik litsey va jamoat salomatligi texnikumlari bilan ishlash bo'yicha prorektori, Tibbiyot fanlar doktori

Ruziboyev Sanjar Abdusalomovich – Samarqand davlat tibbiyot instituti 2-xirurgik kasalliklar va urologiya kafedrasida mudiri. Tibbiyot fanlar doktori

Djabbarov Sherzod Raximberdiyevich – Sog'liqni saqlash boshqarmasi Lisenziyalash va Akkreditatsiyalash sektori bosh mutaxassisi Tibbiyot fanlari nomzodi

Mustafakulov Ishnazar Boynazarovich – Samarqand davlat tibbiyot institutining davolash fakulteti dekani o'rinbosari tibbiyot fanlari nomzodi

Shonazarov Iskandar Shonazarovich – Samarqand davlat tibbiyot universiteti diplomdan keyingi ta'lim fakulteti, Xirurgiya, endoskopiya va anesteziologiya-reanimatologiya kafedrasida o'qituvchisi Tibbiyot fanlari nomzodi

Achilov Mirzakarim Temirovich – Samarkand davlat tibbiyot instituti diplomdan keyingi ta'lim fakulteti xirurgiya, endoskopiya, anesteziologiya va reanimatologiya kafedrasida dotsenti tibbiyot fanlari nomzodi

Najmiddinov Otabek Baxriddin o'g'li – Andijon davlat tibbiyot instituti klinikasi Rengenalogiya bo'limi vrachi PhD

Saydullayev Zayniddin Yaxshiboyevich – Samarqand davlat tibbiyot instituti “Umumiy xirurgiya kafedrası assistenti

Ibragimova Marina Fyodorovna – Samarqand davlat tibbiyot universiteti 1-son Pediatriya kafedrası o'qituvchisi PhD

Kardjavova Gulnoza Abilkasimovna – Samarqand davlat tibbiyot universiteti 1-son Pediatriya kafedrası o'qituvchisi PhD

Murtazaev Zafar Isrofilovich – Samarqand davlat tibbiyot universiteti Umumiy xirurgiya, nurlı diagnostika va terapiya kafedrası dotsenti

Pulatov Ulugbek Sunatovich – Samarqand davlat tibbiyot universiteti Klinik (o'quv) bazalari bilan ishlash bo'limi boshlig'i

Boymanov Farxod Xolboyevich – Samarqand davlat tibbiyot universiteti “Sud tibbiyot” Kafedrası dotsenti

Mustafoyev Zafarjon Mustafo o'g'li – Samarqand Davlat tibbiyot universiteti, Odam anatomiyasi kafedrası o'qituvchisi

Ergashova Madina Muxtorovna – Samarqand davlat tibbiyot universiteti 3-son ichki kasalliklar kafedrası assistenti PhD

Rustamov Inoyatulla Muradulla o'g'li – Samarkand Davlat tibbiyot universiteti umumiy xirurgiya kafedrası o'qituvchisi, tibbiyot fanlari bo'yicha falsafa doktori PhD

Axmedov G'ayrat Keldibayevich – SamDTU Ta'lim sifatini nazorat qilish bo'limi boshlig'i tibbiyot fanlari bo'yicha falsafa doktori (PhD)

Tairova Zarangis Kamolidinovna – Samarkand Davlat tibbiyot universiteti tibbiyot fanlari bo'yicha falsafa doktori (PhD)

Mizamov Furkat Ochilovich – Samarqand davlat tibbiyot universiteti Diplomdan keyingi ta'lim fakulteti Xirurgiya, endoskopiya va anesteziologiya-reanimatologiya kafedrası o'qituvchisi PhD

Umedov Xushvaqt Alisherovich – Samarqand davlat tibbiyot universiteti 1-son Davolash fakulteti 2-son Xirurgik kasalliklar kafedrası

Samatov Dilshod Karimovich – Samarqand davlat tibbiyot universiteti 3-son ichki kasalliklar kafedrası assistenti

Mirzayev Ozod Voxidovich – Samarqand Davlat Tibbiyot Universiteti “3-Ichki kasalliklar” kafedrası o'qituvchisi, PhD

Nurmurazayev Zafar Narbay o'g'li – Samarqand davlat tibbiyot universiteti diplomdan keyingi ta'lim fakulteti tibbiy kardiologiya kafedrası o'qituvchisi, tibbiyot fanlari bo'yicha falsafa doktori, PhD

Umarmuklov Zabur Zafarjonovich – Samarqand davlat tibbiyot universiteti diplomdan keyingi ta'lim fakulteti tibbiy kardiologiya kafedrası o'qituvchisi, tibbiyot fanlari bo'yicha falsafa doktori, PhD

Xaydarova Laylo Olimjonzoda – Samarkand davlat tibbiyot universiteti Umumiy xirurgiya kafedrası o'qituvchisi PhD

Xudoyberdiyeva Gulrux Sobirovna – Tibbiyot fanlari bo'yicha falsafa doktori PhD Samarqand davlat tibbiyot universiteti Anesteziologiya, reanimatsiya va shoshilinch tibbiyot kafedrası o'qituvchisi

Xursanov Yoqubjon Erkin o'g'li – SamDTU 2-son xirurgik kasalliklar kafedrası v.b. dotsent, PhD

Shonazarova Nodira Xudoyberdiyevna – Tibbiyot fanlari bo'yicha falsafa doktori PhD, Samarqand davlat tibbiyot universiteti 3-son ichki kasalliklar kafedrası o'qituvchisi

Maqsudov Dilshod Davronovich – SamDTU yuz-jag jarrohlıgi kafedrası o'qituvchisi PhD

Akramov Baxodir Raxmonovich – SamDTU Anesteziologiya, reanimatsiya va shoshilinch tibbiyot kafedrası o'qituvchisi

Yusupova Nargiza Abdikodirovna – SamDTU Klinik laborator diagnostika va DKTF klinik laborator diagnostika o'qituvchisi, PhD

Amonov Xudoyberdi Ravshanovich – SamDTU 2-son Xirurgik kasalliklar kafedrası o'qituvchisi, PhD

Ismati Odiljon Obidovich – SamDTU 2-son xirurgik kasalliklar kafedrası o'qituvchisi, PhD

Djuraeva Zilola Aramovna – Samarqand davlat tibbiyot universiteti, endokrinologiya kafedrası katta o'qituvchisi PhD

15.00.00 – Farmatsevtika fanlari

Shavazi Nurali Muxammad o'g'li – Samarqand davlat tibbiyot universiteti farmatsiya fakulteti dekani tibbiyot fanlari doktori professor

Xolmurodova Dilafruz Quvatovna – Samarqand Davlat tibbiyot universiteti tibbiy kimyo kafedrası mudiri texnika fan doktori (DSc) *SHodikulova Gulandom Zikriyaevna* – Samarkand davlat tibbiyot universiteti 3-son Ichki kasalliklar va endokrinologiya kafedrası dotsenti, kafedra mudiri tibbiyot fanlari doktori dotsent

Bozorova Nigina Sobirjonovna – Samarqand davlat tibbiyot universiteti Farmatsevtika ishini tashkil qilish kafedrası mudiri

Yuldashev Soatboy Jiyambaevich – Samarqand davlat tibbiyot universiteti farmakologiya kafedrası mudiri

Zokirov Farxod Istamovich – Samarqand shahar 2-son tug'ruqxonasi shifokor akusher-ginekolog PhD

Kodirov Nizomiddin Daminovich – Samarqand davlat tibbiyot universiteti farmakognoziya va farmatsevtik texnologiya kafedrası kafedra mudiri

Babamuradova Zarrina Baxtiyarovna – Samarqand davlat tibbiyot Universitetining Pediatriya fakulteti Ichki kasalliklar kafedrası mudiri

Kamalov Anvarjon Ibragimovich – Samarkand davlat tibbiyot universiteti ta'lim sifatini nazorat qilish bo'limi boshlig'i

Kudratova Zebo Erkinovna – Samarkand davlat tibbiyot instituti Klinik laboratoriya diagnostikasi kafedrasida o'qituvchi PhD

16.00.00 – Veterinariya fanlari

Yuldoshev Xojiakbar Toshpo'latovich – Veterinariya ilmiy-tadqiqot instituti direktori (Kengash raisi)

Azimov Jaloliddin Azimovich – O'z.RFA akademigi

Norqobilov Bahrom To'raevich – Veterinariya va chorvachilikni rivojlantirish qo'mitasi raisi

Djabbarov Shuxrat Abdumajidovich – Veterinariya va chorvachilikni rivojlantirish qo'mitasi raisi o'rinbosari, v.f.d., professor

Mamatova Muborak Nurpo'latovna – Samarqand davlat tibbiyot instituti klinik laborator diagnostika kafedrası professori v.b. Veterinariya fanlari doktori professor v.b.

Yunusov Xudonazar Beknazarovich – Samarqand davlat veterinariya meditsinasi, chorvachilik va biotexnologiyalar universiteti rektori, b.f.d., professor

Safarov Alisher Abduqahor o'g'li – Qo'mita boshqarmasi boshlig'i, b.f.d., dotsent

Mavlonov Sobirjon Ibodullaevich – Veterinariya fanlari doktori, professor

Daminov Asadullo Suvonovich – Veterinariya fanlari doktori, professor

Yuldoshev Nurbek Ergashevich – Veterinariya fanlari doktori, professor

Salimov Xait Salimovich – Veterinariya fanlari doktori, professor

Gafurov Aktam Gafurovich – Veterinariya fanlari doktori, professor

Elmurodov Bozorboy Aktamovich – Veterinariya fanlari doktori, professor

Ruzimurodov Muxiddin Axrorovich – Veterinariya fanlari nomzodi, professor

Mamadullayev Gulmurod Hamidovich – Veterinariya fanlari doktori, katta ilmiy xodim

Kuldoshev Otamurod Urazovich – Veterinariya fanlari doktori, katta ilmiy xodim

Salimov Ilxom Xayitovich – Veterinariya fanlari doktori, katta ilmiy xodim

Eshburiyev Sobir Baxtiyorovich – Veterinariya fanlari doktori, dotsent

Bo'tayev Maxmud Qarshievich – Veterinariya fanlari nomzodi, katta ilmiy xodim

Djurayev Olimjon Axrorovich – Veterinariya fanlari nomzodi, katta ilmiy xodim

Ismatova Ra'no Asadovna – Veterinariya fanlari nomzodi, katta ilmiy xodim

Pulotov Faxriddin Sayfiddinovich – Veterinariya fanlari bo'yicha falsafa doktori, katta ilmiy xodim

Ulug'muradov Azamat Daminovich – Veterinariya fanlari bo'yicha falsafa doktori, katta ilmiy xodim

Isayev Jasur Muaffarovich – Veterinariya fanlari bo'yicha falsafa doktori, katta ilmiy xodim

Navruzov Nurali Itolmasovich – Veterinariya fanlari bo'yicha falsafa doktori, katta ilmiy xodim

Qurbonov Feruz Enadullaevich – Veterinariya fanlari bo'yicha falsafa doktori, v.b. dotsent

Akramov Komiljon Shuhrat o'g'li – Veterinariya fanlari bo'yicha falsafa doktori

Safarov Xurshid Abdurajabovich – Veterinariya fanlari bo'yicha falsafa doktori

Meyliyev Salohiddin Salim o'g'li – Veterinariya fanlari bo'yicha falsafa doktori

Xushnazarov Alisher Xudoyberdi o'g'li – Veterinariya fanlari bo'yicha falsafa doktori

Murodov Xurshid Uktamovich – Veterinariya fanlari bo'yicha falsafa doktori

Hamroqulov Nuriddin Shokir o'g'li – Veterinariya fanlari bo'yicha falsafa doktori

Baliyev Shavkat Kuchkarovich – Veterinariya fanlari bo'yicha falsafa doktori

Karimova Nazira Umukulovna – Veterinariya fanlari bo'yicha falsafa doktori

Sultonova Intizor Yuldosheva – Veterinariya fanlari bo'yicha falsafa doktori

Raximov Muxamad Yunusovich – Veterinariya fanlari bo'yicha falsafa doktori

Ulashov Ilxom Axmadovich – Veterinariya fanlari bo'yicha falsafa doktori

17.00.00 – San'atshunoslik fanlari

Mirzayev Murodil Abdulla ugli – Muxammad al-Xorazmiy nomidagi Toshkent axborot texnologiyalari universiteti Farg'ona filiali kengash kotibi filologiya fanlari nomzodi

Xolmirzayev Nodirjon Nizomjonovich – TDTU Qo'qon filiali Ijtimoiy va aniq fanlar kafedrasi mudiri Falsafa fanlari bo'yicha falsafa doktori, (PhD)

Normatova Dildor Esonaliyevna – Farg'ona davlat universiteti Falsafa kafedrasi dotsenti. Falsafa fanlari nomzodi dotsent

19.00.00 – Psixologiya fanlari

Qo'chqarova Feruza Maxammatqosimovna – University of economics and pedagogy Ijtimoiy gumanitar fanlar kafedrasi professori, psixologiya fanlari doktori (DSc)

Ruzmetova Sayyoraxon Temurxonovna – Toshkent davlat texnika universiteti pedagogika va psixologiya kafedrasi P.f.f.d. (PhD) v.b. dotsent

22.00.00 – Sotsiologiya fanlari

Zaitov Elyor Xolmamatovich – Mirzo Ulug'bek nomidagi O'zbekiston Milliy universitetining "Ijtimoiy ish" kafedrasi dotsenti sosiologiya fanlari bo'yicha falsafa doktori (PhD) dotsent

Jurabayeva Zamira Axmedovna – Andijon davlat universiteti Boshlang'ich va maktabgacha ta'lim kafedrasi dotseni, PhD

02.00.00 – Kimyo fanlari

02.00.00 – Chemical sciences

02.00.00 – Химические науки

FLAVONOID PROFILE OF “AS-INFUSUM” AND ITS BIOLOGICAL ACTIVITY

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Abstract: This study investigates the flavonoid composition of the “As-Infusum” plant-based infusion using high-performance liquid chromatography (HPLC). The results demonstrated that rutin (39.12 mg/g) is the predominant component, determining the antioxidant and cardioprotective properties of the infusion. Additionally, flavonoids such as dihydroquercetin, rosavin, quercetin, and salidroside were identified, contributing to the biological activity and enhancing the pharmacological and nutraceutical potential of the infusion.

Keywords: As-Infusum, flavonoids, HPLC, rutin, antioxidant activity, nutraceutical potential.

“AS-INFUSUM”NING FLAVONOID PROFILI VA UNING BIOLOGIK FAOLLI

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Annotatsiya: Ushbu maqolada “As-Infusum” o‘simlik damlamasi tarkibidagi flavonoidlar yuqori samarali suyuqlik xromatografiyasi (HPLC) usuli yordamida tahlil qilindi. Tadqiqot natijalariga ko‘ra, rutin (39,12 mg/g) asosiy komponent sifatida aniqlanib, damlamaning antioksidant va kardioprotektiv xususiyatlarini belgilashi ilmiy asoslandi. Shuningdek, dihidrokversetin, rozavin, kversetin va salidrozyd kabi flavonoidlar aniqlanib, damlamaning biologik faolligi hamda farmakologik va nutrasevtik salohiyatini oshirishi ko‘rsatildi.

Kalit so‘zlar: As-Infusum, flavonoidlar, HPLC, rutin, antioksidant faollik, nutrasevtik salohiyat.

ФЛАВОНОИДНЫЙ ПРОФИЛЬ «AS-INFUSUM» И ЕГО БИОЛОГИЧЕСКАЯ АКТИВНОСТЬ

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Аннотация: В данной работе исследован флавоноидный состав настоя «As-Infusum» методом высокоэффективной жидкостной хроматографии (ВЭЖХ). Установлено, что рутин (39,12 мг/г) является основным компонентом, определяющим антиоксидантные и кардиопротекторные свойства настоя. Также выявлены флавоноиды, такие как дигидрокверцетин, розавин, кверцетин и салидрозид, способствующие повышению биологической активности и усиливающие фармакологический и нутрицевтический потенциал настоя.

Ключевые слова: As-Infusum, флавоноиды, ВЭЖХ, рутин, антиоксидантная активность, нутрицевтический потенциал.

INTRODUCTION

Flavonoids represent one of the most abundant and biologically active classes of plant secondary metabolites, characterized by their antioxidant, anti-inflammatory, cardioprotective, hepatoprotective, and anticancer properties. These compounds play a crucial role in plant physiological processes, including defense mechanisms, photosynthesis, and responses to environmental stress. Moreover, flavonoids are of significant importance for human health, as their intake has been associated with the reduction of oxidative stress, enhancement of immune function, and regulation of metabolic processes. In pharmaceutical and nutraceutical applications, both the qualitative and quantitative composition of flavonoids, as well as their bioactive effects, serve as key indicators for evaluating the pharmacological potential of a product. Plant infusions and extracts are particularly rich in complex mixtures of bioactive compounds, where the concentration, ratio, and synergistic interactions of flavonoids determine their overall therapeutic efficacy. Therefore, the flavonoid profile of such preparations is considered a critical parameter for the scientific assessment of antioxidant capacity, anti-inflammatory activity, and other biological functions. Currently, high-performance liquid chromatography (HPLC) is regarded as one of the most reliable and effective analytical techniques for the identification and quantification of flavonoids. This method enables precise characterization of individual compounds and their distribution within complex mixtures. Furthermore, HPLC facilitates the evaluation of pharmacological activity, the investigation of bioactive compound profiles, and the scientific substantiation of their application in nutraceutical products [1-2].

From this perspective, the “As-Infusum” herbal infusion, prepared from *Pyrus* (pear shoots), *Styphnolobium japonicum* (Japanese sophora flower buds), and *Matricaria* (chamomile), represents a relevant object of study for the determination of its flavonoid profile and their quantitative characteristics. Such analysis is essential not only for the scientific substantiation of

the pharmacological and nutraceutical potential of this infusion, but also for ensuring quality control in the production of medicinal and nutraceutical products.

MATERIALS AND METHODS

The “As-Infusum” herbal infusion was selected as the object of this study. The infusion was prepared based on *Pyrus* (pear shoots), *Styphnolobium japonicum* (Japanese sophora flower buds), and *Matricaria* (chamomile). The aim of the study was to determine the flavonoid profile of the infusion and to investigate their quantitative characteristics.

Sample Preparation. Flavonoid extraction was carried out according to the following procedure: A 1.0 g sample was accurately weighed using an analytical balance and placed into a 300 mL flat-bottom flask. Subsequently, 50 mL of 70% ethanol solution was added. The mixture was subjected to intensive heating at 70 °C for 1 hour using a magnetic stirrer equipped with a reflux condenser to enhance extraction efficiency. After heating, the mixture was stirred at room temperature for 2 hours to ensure maximum transfer of flavonoids into the solvent phase. The obtained extract was then allowed to settle and filtered. To ensure complete extraction, the remaining residue was re-extracted twice with an additional 25 mL of 70% ethanol. The combined filtrates were adjusted to a final volume of 100 mL and centrifuged at 8000 rpm for 20 minutes. The supernatant was separated and used for subsequent analytical determination.

HPLC Analysis. Flavonoid identification and quantification were performed using a phosphate buffer-acetonitrile system, which represents a widely accepted standard approach in HPLC methodology for the analysis of flavonoids and related compounds. This system ensures the stability of flavonoid profiles and enables their accurate identification and quantification [4-5].

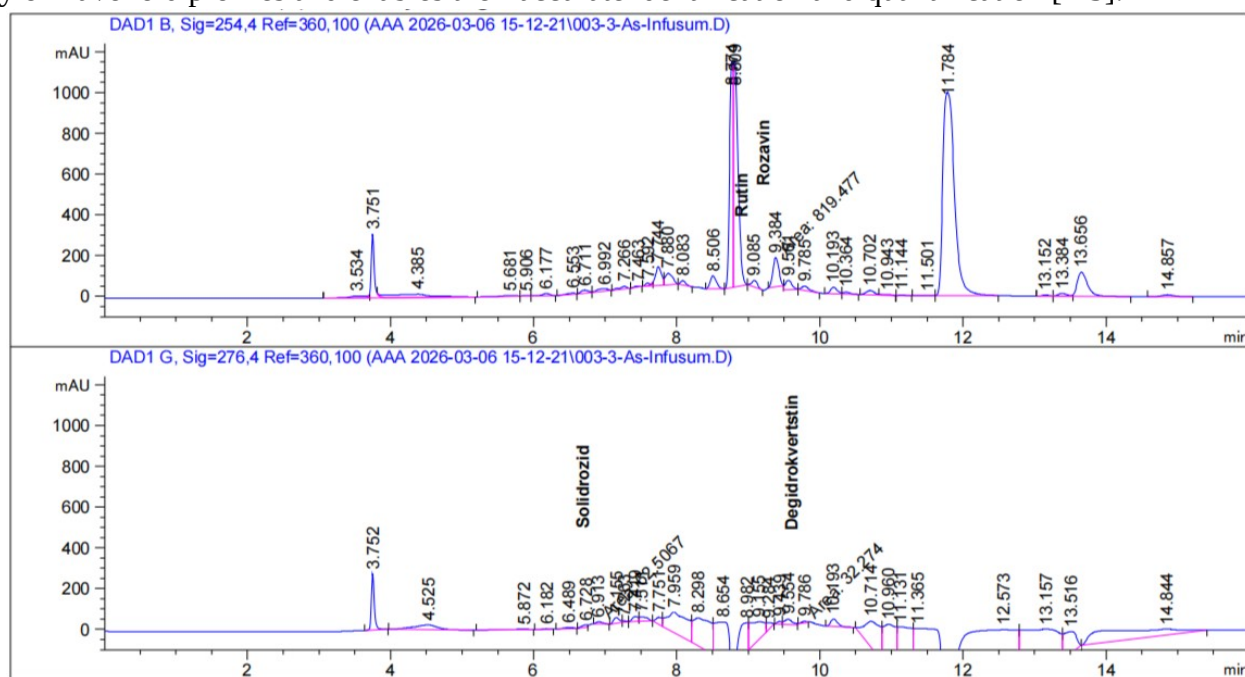


Figure 1. HPLC analysis of “As-Infusum” infusion

Chromatographic Conditions. Flavonoid analysis was performed under the following HPLC conditions:

Chromatograph: Agilent 1200 system equipped with an autosampler;

Column: Eclipse XDB C18 (reversed-phase), 5 µm, 4.6 × 250 mm;

Detector: Diode Array Detector (DAD) at 254 nm and 276 nm;

Flow rate: 0.8 mL/min;

Eluent (phosphate buffer : acetonitrile): 0-5 min - 95:5; 6-12 min - 70:30; 12-13 min - 50:50; 13-15 min - 95:5;

Column temperature: 30 °C;

Injection volume: 10 μ L.

During the analysis, standard reference solutions were introduced into the HPLC system first, followed by the prepared sample solutions. This method enables accurate identification of individual flavonoid components and precise quantification of their concentrations [3].

RESULTS

The flavonoid composition of the “As-Infusum” infusion was determined using high-performance liquid chromatography (HPLC), revealing the presence of the following components (Table 1).

Table 1. Flavonoid composition of “As-Infusum” infusion

N ^o	Flavonoid name	Concentration (mg/g)
1	Dihydroquercetin	5.68
2	Luteolin	0.06
3	Rutin	39.12
4	Quercetin	2.41
5	Salidroside	2.19
6	Rosavin	7.69

DISCUSSION

The results indicate that rutin is present at the highest concentration (39.12 mg/g), suggesting that it is the principal component responsible for the antioxidant and cardioprotective activity of the infusion. Additionally, dihydroquercetin (5.68 mg/g) and rosavin (7.69 mg/g) were identified in considerable amounts, contributing to the anti-inflammatory and protective properties of the preparation.

Other flavonoids, including quercetin (2.41 mg/g) and salidroside (2.19 mg/g), although present in lower concentrations, play an important role in complementing the pharmacological and biological activity profile of the infusion. Luteolin (0.06 mg/g) was detected at a minimal level; however, it may still contribute to the overall biological activity of the flavonoid spectrum.

Overall, the obtained results demonstrate that the high concentration and diversity of flavonoids contribute to the complex antioxidant, anti-inflammatory, and cardioprotective properties of the infusion. Furthermore, the broad flavonoid spectrum enhances the nutraceutical and medicinal potential of the preparation, supporting its possible application in pharmacological and dietary products. These findings scientifically confirm that the flavonoid composition plays a decisive role in determining the biological activity of plant infusions and serves as a key indicator in the evaluation of their bioactive component profile.

CONCLUSION

The “As-Infusum” infusion is rich in flavonoids, and its bioactive components significantly enhance its pharmacological and nutraceutical potential. Rutin was identified as the predominant compound (39.12 mg/g), playing a key role in determining the antioxidant and cardioprotective properties of the infusion.

In addition, dihydroquercetin (5.68 mg/g) and rosavin (7.69 mg/g) were present in considerable amounts, contributing to the anti-inflammatory and cytoprotective effects, thereby enriching the overall bioactive profile of the preparation. Flavonoids such as quercetin and salidroside provide synergistic biological effects, further enhancing the overall pharmacological potential of the infusion.

Moreover, the complex spectrum of flavonoids supports the scientific justification of “As-Infusum” as a medicinal and nutraceutical product and confirms its prospects for pharmacological applications.

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05.00.00 – Texnika fanlari

05.00.00 – Technical sciences

05.00.00 – Технические науки

MAHALLIY XOMASHYOLAR ASOSIDA POLIETILENTEREFTALAT ISHLAB CHIQRISHNI TASHKIL ETISH

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Annotatsiya: Polietilentereftalat (PET) o'zining ajoyib fizik va kimyoviy xususiyatlari tufayli turli sohalarda keng qo'llaniladigan polimerdir. Bundan tashqari, PET mahsulotlaridan tobora ko'proq foydalanish chiqindilarni boshqarishda global inqirozga olib keldi, chunki mahsulotlarni noto'g'ri yo'q qilish atrof-muhitga jiddiy zarar yetkazdi. PET chiqindixonalarda to'plangan chiqindilarning asosiy manbai bo'lib, bu muammoni hal qilish uchun qayta ishlash usullari rivojlandi. Shu munosabat bilan ushbu sharhda PETni qayta ishlash bilan bog'liq turli usullar ko'rib chiqiladi. An'anaviy qayta ishlash usullari va turli depolimerizatsiya reaksiyasi o'zgaruvchilarining ta'siri muhokama qilindi hamda har bir usulning ijobiy va salbiy tomonlari ko'rib chiqildi.

Kalit so'zlar: plastik butilkalar, polietilentereftalat, gidroliz jarayoni, etilenglikol, quyi molekulyar spirtlar.

ОРГАНИЗАЦИЯ ПРОИЗВОДСТВА ПОЛИЭТИЛЕНТЕРЕФТАЛАТА НА ОСНОВЕ МЕСТНОГО СЫРЬЯ

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Аннотация: Полиэтилентерефталат (ПЭТ) — это полимер, широко применяемый в различных областях благодаря своим превосходным физическим и химическим свойствам. Наряду с этим всё более широкое использование продукции из ПЭТ привело к глобальному кризису в сфере обращения с отходами, поскольку неправильная утилизация изделий нанесла серьёзный ущерб окружающей среде. ПЭТ является основным источником отходов, скапливающихся на свалках, и для решения этой проблемы были разработаны

методы его переработки. В связи с этим в данном обзоре рассматриваются различные подходы к переработке ПЭТ. Обсуждаются традиционные методы переработки и влияние различных параметров реакции деполимеризации, а также анализируются преимущества и недостатки каждого метода.

Ключевые слова: пластиковые бутылки, полиэтилентерефталат, процесс гидролиза, этиленгликоль, низкомолекулярные спирты.

ORGANIZATION OF POLYETHYLENE TEREPHTHALATE PRODUCTION BASED ON LOCAL RAW MATERIALS

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Abstract: Polyethylene terephthalate (PET) is a polymer widely used in various fields due to its excellent physical and chemical properties. However, the ever-increasing use of PET products has led to a global waste management crisis, as the improper disposal of these items has caused serious environmental damage. PET is a primary source of waste accumulating in landfills, and methods for its recycling have been developed to address this problem. Accordingly, this review examines various approaches to PET recycling. It discusses traditional recycling methods and the influence of various depolymerization reaction parameters, as well as analyzes the advantages and disadvantages of each method.

Keywords: plastic bottles, polyethylene terephthalate, hydrolysis process, ethylene glycol, low-molecular-weight alcohols.

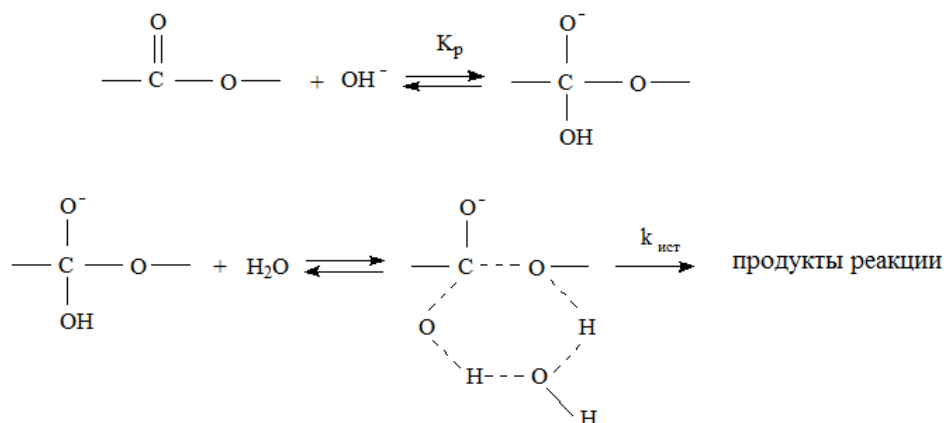
KIRISH

Chiqindilarni kimyoviy qayta ishlash muammosi plastik butilkalar qoldiqlari va boshqa axlatlar bilan jiddiy ifloslangan barcha mamlakatlar uchun o'ta dolzarbdir. Chiqindilarni kimyoviy qayta ishlash depolimerizatsiya, ya'ni polimer chiqindilaridan dastlabki monomerlar hamda boshqa quyi molekulyar yoki oligomer mahsulotlarni olish demakdir. Xorijda bunday texnologiya ancha vaqtdan beri muvaffaqiyatli qo'llanib kelinmoqda. Bu texnologiya iqtisodiy jihatdan samarasiz, deb hisoblanadi. Sanoat miqyosida ishlab chiqariladigan sintetik yuqori molekulyar birikmalarning keng turlari orasida poliefirlar eng keng tarqalgan hisoblanadi. Ushbu sinfning eng muhim vakili polietilentereftalat (PETF) bo'lib, u asosan tola va plyonkalar tayyorlash uchun ishlatiladi. Tahlillarga ko'ra [1], 2000-2015-yillar oralig'ida polietilentereftalat asosidagi tolaning iste'mol hajmi paxtanikidan oshib ketadi.

So'nggi yillarda PETFning materiallar va magnit lentalar uchun asos sifatida ishlatilishi tufayli kul miqdori past polimerlarga bo'lgan talab sezilarli darajada oshdi. Aniqlanishicha, yakuniy mahsulot xossalari ko'p jihatdan uning forpolimer olinish bosqichidagi sintez sharoitlariga bog'liq ekan. Shu sababli, polikondensatsiyadan oldingi bosqichlardagi fizik-kimyoviy jarayonlarning o'ziga xos xususiyatlarini tadqiq etish, shubhasiz, dolzarb hisoblanadi. Polietilentereftalat sintezi uchun dastlabki moddalar sifatida tereftal kislotasi (TFK) yoki uning dimetil efiri (DME) hamda etilenglikol (EG) xizmat qiladi. Hozirgi kunda polietilentereftalatning qariyb 80 foizi DME va etilenglikol asosida ishlab chiqarilmoqda [2]. Polietilentereftalat — o'lchamlarini saqlaydigan, ishlov berish xususiyatlari a'lo darajada bo'lgan termoplastdir. U shaffof, yengil, yarim kristalli, cho'zilishga yuqori darajada mustahkam, deyarli sinmaydigan, erituvchilarga chidamli hamda yaxshi gaz to'siq xususiyatlariga ega. Polietilentereftalat inert va xavfsiz plastmassa hisoblanadi, shuningdek, osonlik bilan qayta ishlanadi. U polikondensatsiya reaksiyasi jarayonida etilenglikol va tereftal kislotasi yoki dimetiltereftalatni polimerlash orqali olinadi. Bugungi kunda bu dunyodagi eng keng tarqalgan termoplastik polimerdir. U oziq-ovqat sanoatida va ichimliklar ishlab chiqarishda qadoqlash materiali sifatida keng qo'llaniladi. Shuningdek, undan tolalar, farmatsevtika preparatlari va kosmetika vositalari tayyorlanadi. Yengilligi, mustahkamligi va ko'p qirraliligi tufayli u zamonaviy jamiyat uchun almashtirib bo'lmaydigan materialga aylandi. Mazkur maqolada Polietilentereftalat asosidagi plastmassa chiqindilari bilan ishlash usullari va ularni samarali qayta ishlash yo'llari ko'rib chiqdilar[3]. Poliestrlar gidrolizining o'ziga xos jihati jarayonning geterogen-geterofaza tarzida kechishidir. Shuni ta'kidlash joizki, tabiiy murakkab efirlardan farqli o'laroq, reaksiya emulsiyada emas, balki suspenziyada sodir bo'ladi. Poliestrlarning gidroliz tezligiga ularning tuzilishi ta'sir ko'rsatadi. Masalan, alifatik poliestrlar va poliparafenilenadipat uzoq vaqt, hatto oddiy nam havo ta'sirida ham ancha beqaror birikmalar bo'lsa, lavsan tolasi hatto kuchsiz ishqor eritmalarida ham barqarorligini saqlaydi. Bu farqlarni tegishli past molekulyar analoglar reaksiyalarini tahlil qilish natijasida olingan kinetik ma'lumotlarni taqqoslash orqali tushunish mumkin [4].

MATERIALLAR VA METODLAR

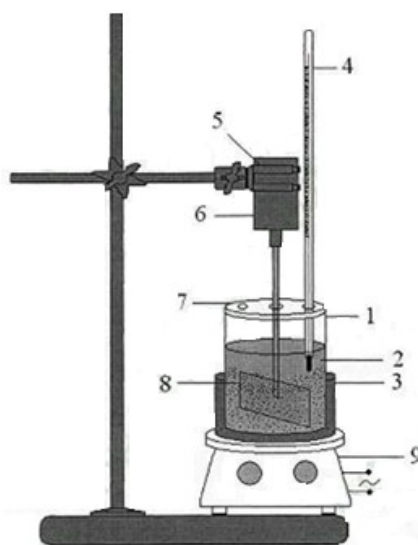
Ishqoriy eritmalarda efir bog'ining gidroliz mexanizmi gidroksil ionining efir bog'i karbonil guruhiga tez muvozanatli birikishi va so'ngra ionlashgan shaklning (1.3) suv bilan sekin parchalanishdan iborat:



Termoplastik poliefirlar sanoat, tibbiyot va boshqa sohalarda keng qo'llanadigan polimerlarning universal sinfini tashkil etadi. Eng keng tarqalgan poliefirlar - polietilentereftalat

(PETF) va polibutilentereftalat (PBTF) bo'lib, boshqa gomo- va sopoliefirlar esa keng qo'llanmaydi. Bunday poliefirlar qatoriga to'qimagan materiallarda qo'llanadigan izoftal kislotasi asosidagi amorf sopoliefirlar hamda siklogeksandimetanol va uning toza tereftal kislotasi bilan etilenglikol sopoliefirlari asosidagi yuqori haroratda eriydigan gomopoliefirlar kiradi. So'nggi vaqtlarda tolalar va qadoqlash materiallari uchun ikkita yangi murakkab poliefir: politrimetilentereftalat va polietilennaftalat joriy qilindi. Shunga qaramay, bugungi kunda PETF iqtisodiy jihatdan eng samarali va keng qo'llanadigan poliefir bo'lib, jahondagi umumiy poliefir iste'molining qariyb 95 foizini tashkil etadi. Shu bois, ushbu ishni aynan PETFni qayta ishlashga yo'naltirish maqsadga muvofiqdir.

Vazifalarga qarab, gidroliz jarayonini o'tkazishning bir nechta usulidan foydalanildi. PETF va boshqa murakkab efirlar gidrolizining kinetik qonuniyatlarini o'rganish uchun 1-rasmda ko'rsatilgan qurilma ishlatildi.



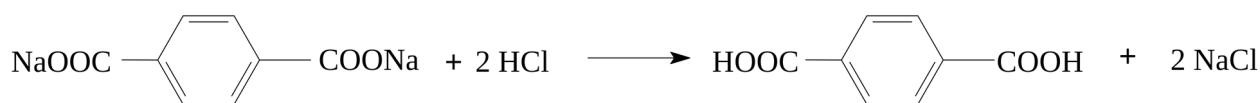
1-rasm. Shisha munchoqlar yordamida PETF va boshqa murakkab efirlarni asosiy gidrolizlash qurilmasining sxemasi: 1 - shisha reaktor; 2- shisha munchoqli reaksiya aralashmasi; 3 - suv hammomi; 4 - termometr; 5 - shtativ panjasi; 6 - elektr dvigatel; 7 - termometr va namuna olish uchun teshiklari bo'lgan qopqoq; 8 - kurakli aralashtirgich; 9 - elektr plita.

Qurilma (1-rasm) shisha reaktor (1) dan iborat bo'lib, u shtativ panjasi (5) bilan mahkamlangan 750 Vt quvvatli elektr dvigatel (6) yordamida harakatga keltiriladigan, daqiqasiga 1750 marta aylanuvchi parrakli mexanik aralashtirgich (8), termometr uchun teshikli qopqoq (4) va namuna olish teshigi (7) bilan jihozlangan. Qurilma, shuningdek, elektr plitka (9) yordamida qizdiriladigan suyuqlik vannasi (3) bilan ta'minlangan.

Polietilentereftalat gidrolizi quyidagi ketma-ketlikda amalga oshiriladi. Shisha munchoqlar solingan shisha reaktorga hisoblab olingan miqdordagi distillangan suv va ishqor kiritiladi. Zaruratga ko'ra, reaksiya massasiga etilenglikol yoki quyi molekulyar spirtlar qo'shiladi. Mexanik aralashtirish va isitish yoqilib, reaktor ichidagi massaning harorati belgilangan darajaga yetkaziladi. Shundan so'ng, ishqorga ekvivalent miqdorda, oldindan kukun holiga keltirilgan ($0 < 0,25$ mm) polimer qo'shiladi. Jarayon davomida namunalar olib turilib, ishqorning konversiyasi 95% va undan yuqori darajaga yetguncha davom ettiriladi. Tadqiqotlar uchun nafaqat toza PETF maydasi, balki PETF chiqindilari (idishlar) ham olindi. Ular oldindan eritilib, so'ngra suyuqlanma

sovuq suvga quyish orqali sovitiladi. Tajriba yakunlangach, reaksiya aralashmasi komponentlarga ajratiladi. Ajratish usuli murakkab efining tabiatiga bog'liq bo'ladi. Polietilentereftalat misolida, ishqor zaruriy aylanish darajasiga yetgach, aralashtirish va qizdirish yana 5–10 daqiqa davom ettiriladi. Shundan so'ng, aralashtirishni to'xtatmagan holda, reaksiya aralashmasiga (reaksiyaga kirishmagan polimer va tereftal kislota tuzi suspenziyasiga) tereftal kislota tuzini suspenziyadan eritmaga o'tkazish uchun oldindan ishchi haroratgacha yoki undan biroz yuqoriroq qizdirilgan distillangan suvning hisoblangan miqdori qo'shiladi. Eritma donachalar va reaksiyaga kirishmagan polimerdan ajratib olinadi va qayta ishlashga yuboriladi. Qolgan polimer esa takroriy jarayonga yuklash uchun qaytariladi.

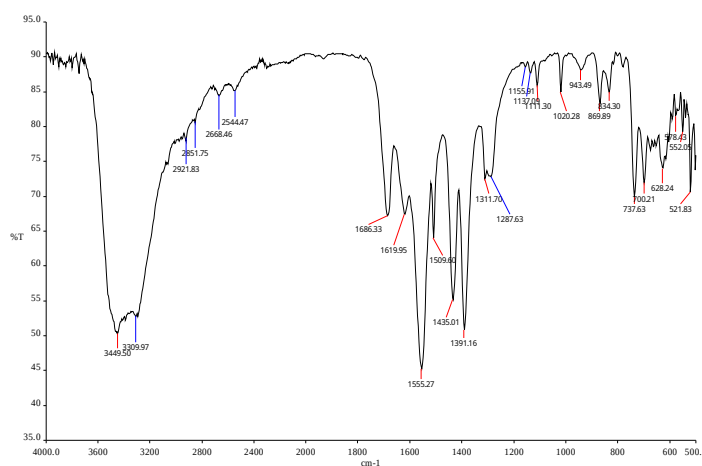
Tarkibida tereftal kislota tuzi (masalan, natriy tereftalat), ishqor va etilenglikol bo'lgan eritmaga asos qoldiqlarini neytrallashtirish hamda suvda deyarli erimaydigan tereftal kislotani cho'ktirish uchun mineral kislota eritmasi qo'shiladi (2.1):



Cho'kmaga tushgan tereftal kislotasi filtrlab olinadi, filtrat esa etilenglikolni ajratib olish uchun past bosim ostida haydaladi.

NATIJALAR

Olingan mahsulotning tuzilishi IQ spektroskopiyasi bilan o'rganildi.



3-rasm. Tereftal kislotasining IQ-spektri

MUHOKAMA

Tereftal kislotaning IQ-spektrida (3-rasm) 2979–2552 cm^{-1} da $\text{CH}_3\text{-CH}_2$ guruhining yutilish sohasidagi tebranishlariga mos keladi. Olingan moddani eng muhim guruhlar 2824–2666 cm^{-1} chastotasida COOH yutilish sohasidagi tebranishlari chastotasi va 1019 cm^{-1} oralig'ida aromatik guruhning erkin egilish tebranishlariga tegishli bo'lgan chiziqlar mavjud, shuningdek, 1574 cm^{-1} tebranishlarda, tor cho'qqi bog' aloqasining kuchayishi bilan yuqori chastotalarga o'tadi. ($-\text{CH}_2-$) guruhlariga mansub chiziqlar 2979 va 1425 cm^{-1} oralig'ida o'zgarib turadi. Karboksil guruhining cho'zilish tebranishlari ($-\text{COOH}$) 2979 cm^{-1} da asimmetrik valent tebranishlari bilan bog'liq bo'lganlar esa 1287 va 1425 cm^{-1} oralig'ida tor ammo intensiv holda ifodalanadi. 1684 - 1697 cm^{-1} yutilish sohasidagi chiziqlar mos ravishda guruhlarining

tebranishlariga bog'liq ($-C=O$). Karboksil guruhlariga tegishli xarakterli chiziqlar 1113 sm^{-1} va 1136 sm^{-1} mintaqasida paydo bo'ladi.

XULOSA

PET gidrolizini o'rganish jarayonida jarayon tezligini boshqaruvchi quyidagi omillar aniqlandi: polimerning disperslik darajasi, harorat, bisser miqdori hamda ishqorning ortiqcha yoki kamligi. Gidroliz jarayonining tezligi, shuningdek, tereftal kislota tuzlari va metall kationining gidroksiddagi eruvchanligiga ham bog'liq. Jarayonning diffuziya bilan boshqarilishi va asos sarflanishining kinetik egri chiziqlari uchta sohaga ega ekanligi aniqlandi. Jarayonning texnologik ko'rsatkichlarini yaxshilash bo'yicha bir qator texnologik usullar taklif etildi. Sulfat kislotadan katalizator sifatida foydalanishning optimal shartlari quyidagicha ekanligi aniqlandi: dastlabki moddalar -tereftal kislota va metanolning og'irlik nisbati 1:12; katalizator miqdori - dastlabki moddalar og'irligining 2,0 foizi; reaksiya o'tkazish harorati - 70°C .

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AYLANUVCHI MEXANIZMLARNING ASOSIY TURLARI VA ULARDA KO'P UCHRAYDIGAN NOSOZLIKLAR

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Annotatsiya: Ushbu maqolada sanoat, transport, energetika va maishiy texnikada keng qo'llaniladigan aylanuvchi mexanizmlarning asosiy ko'rinishlari, ularning ishlash xususiyatlari hamda ekspluatatsiya jarayonida eng ko'p uchraydigan nosozliklar tahlil qilinadi. Aylanuvchi tugunlar deyarli har bir murakkab texnik tizimning yuragi bo'lib, ularning ishonchli ishlashi ishlab chiqarish uzluksizligi, energiya samaradorligi va xavfsizlik bilan bevosita bog'liq. Maqolada val va rotorlar, podshipnikli tayanchlar, tishli uzatmalar, muftalar, nasos va ventilyatorlarning aylanuvchi qismlari hamda elektr mashinalar rotor tizimlari izchil yoritiladi. Shuningdek, nomutanosiblik, markazlashuvning buzilishi, podshipnik yeyilishi, moylash tizimidagi nuqsonlar, tishli juftliklarning shikastlanishi, oqim bilan bog'liq buzilishlar va elektr-mexanik muammolar sabablari, belgilari hamda oldini olish yo'llari ilmiy-amaliy nuqtai nazardan bayon etiladi.

Kalit so'zlar: aylanuvchi mexanizm, rotor, val, podshipnik, mufta, tishli uzatma, vibratsiya, balanslash, markazlashuv, moylash, diagnostika.

ОСНОВНЫЕ ВИДЫ РОТОРНЫХ МЕХАНИЗМОВ И ИХ НАИБОЛЕЕ РАСПРОСТРАНЕННЫЕ НЕИСПРАВНОСТИ

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Аннотация: В данной статье анализируются основные виды роторных механизмов, широко применяемых в промышленности, транспорте, энергетике и бытовой технике, включая их эксплуатационные характеристики и наиболее часто встречающиеся неисправности. Вращающиеся узлы являются «сердцем» практически каждой сложной технической системы, и их надежная работа напрямую связана с непрерывностью производства, энергоэффективностью и безопасностью. В работе представлен систематический обзор валов и роторов, подшипниковых опор, зубчатых передач, муфт,

вращающихся компонентов насосов и вентиляторов, а также роторных систем электрических машин. Кроме того, с научно-практической точки зрения рассматриваются причины, симптомы и методы предотвращения дисбаланса, расцентровки, износа подшипников, дефектов системы смазки, повреждений зубчатых пар, нарушений, связанных с потоком, и электромеханических проблем.

Ключевые слова: роторный механизм, ротор, вал, подшипник, муфта, зубчатая передача, вибрация, балансировка, центровка, смазка, диагностика.

MAIN TYPES OF ROTATING MECHANISMS AND THEIR COMMON FAULTS

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Abstract: This article analyzes the main types of rotating mechanisms widely used in industry, transport, energy, and household appliances, including their operational characteristics and the most common faults encountered during operation. Rotating assemblies are the heart of nearly every complex technical system, and their reliable performance is directly linked to production continuity, energy efficiency, and safety. The paper provides a systematic overview of shafts and rotors, bearing supports, gear drives, couplings, rotating components of pumps and fans, as well as rotor systems of electrical machines. Furthermore, the causes, symptoms, and prevention methods of imbalance, misalignment, bearing wear, lubrication system defects, gear set damage, flow-related failures, and electromechanical issues are discussed from a scientific and practical perspective.

Keywords: rotating mechanism, rotor, shaft, bearing, coupling, gear drive, vibration, balancing, alignment, lubrication, diagnostics.

KIRISH

Aylanish harakati texnika taraqqiyotining eng muhim tayanchlaridan biri hisoblanadi. Bugungi kunda nasos, ventilyator, kompressor, reduktor, elektr dvigatel, generator, stanok shpindeli va avtomobil agregatlari kabi ko'plab qurilmalar aynan aylanuvchi mexanizmlar asosida ishlaydi. Ular energiyani uzatish, momentni o'zgartirish, oqim hosil qilish, mexanik kuchni ishchi organga yetkazish kabi funksiyalarni bajaradi. Shu sababli bunday mexanizmlarning ishdagi barqarorligi butun texnologik tizim samaradorligiga ta'sir ko'rsatadi.

Aylanuvchi tizimlarning o'ziga xos tomoni shundaki, ular ko'pincha yuqori tezlikda, uzluksiz yuklama ostida va murakkab ish muhitida faoliyat yuritadi. Natijada kichik ko'rinadigan konstruktiv xatolik, noto'g'ri montaj, sifatli moylash yoki vibrouzatilishdagi o'zgarish vaqt o'tishi bilan jiddiy nosozlikka aylanadi. Avvaliga faqat shovqin yoki tebranish ko'rinishida namoyon bo'ladigan jarayon keyinchalik podshipnikning ishdan chiqishi, valning qiyshayishi yoki reduktorning sinishigacha olib kelishi mumkin.

Shu jihatdan aylanuvchi mexanizmlarni faqat konstruksiya nuqtai nazaridan emas, balki ularning ekspluatatsiya davomida qanday buzilishlarga moyil ekanini ham tahlil qilish zarur.

Mazkur maqolaning maqsadi aylanuvchi mexanizmlarning asosiy turlarini sodda va tizimli shaklda ko'rsatish, ularda eng ko'p uchraydigan nosozliklarning fizik mohiyatini ochib berish hamda bunday nosozliklarni erta aniqlash va oldini olish bo'yicha amaliy tavsiyalarni bayon etishdan iborat.

MATERIALLAR VA METODLAR

Aylanuvchi mexanizmlarda nosozlikni faqat buzilish sodir bo'lgandan keyin bartaraf etish yetarli emas. Zamonaviy texnik xizmat ko'rsatish tizimlari muammoni erta aniqlash va rejalashtirilgan profilaktika asosida ishlaydi. Bunday yondashuv uskuna resursini uzaytiradi, rejalashtirilmagan to'xtashlarni kamaytiradi va ta'mirlash xarajatlarini sezilarli qisqartiradi.



1-rasm. Aqlli monitoring tizimi

Diagnostikaning eng samarali usullaridan biri vibratsion nazoratdir. Vibratsiya spektrini tahlil qilish orqali nomutanosiblik, markazlashuv xatosi, podshipnik nuqsoni yoki tishli juftlikdagi buzilishlarni ancha erta aniqlash mumkin. Mazkur usul ayniqsa uzluksiz ishlaydigan sanoat agregatlarida katta amaliy samara beradi, chunki u nosozlik belgilarini buzilishning dastlabki bosqichidayoq ko'rsatib beradi.

Temperatura monitoringi ham muhim ahamiyatga ega. Termografiya yoki oddiy temperatura datchiklari yordamida podshipnik, mufta, reduktor va elektr mashinalardagi qizish o'choqlari aniqlanadi. Ko'pincha aynan qizish jarayoni ichki ishqalanish, moy yetishmovchiligi yoki elektr nosimmetriyani birinchi bo'lib oshkor qiladi.

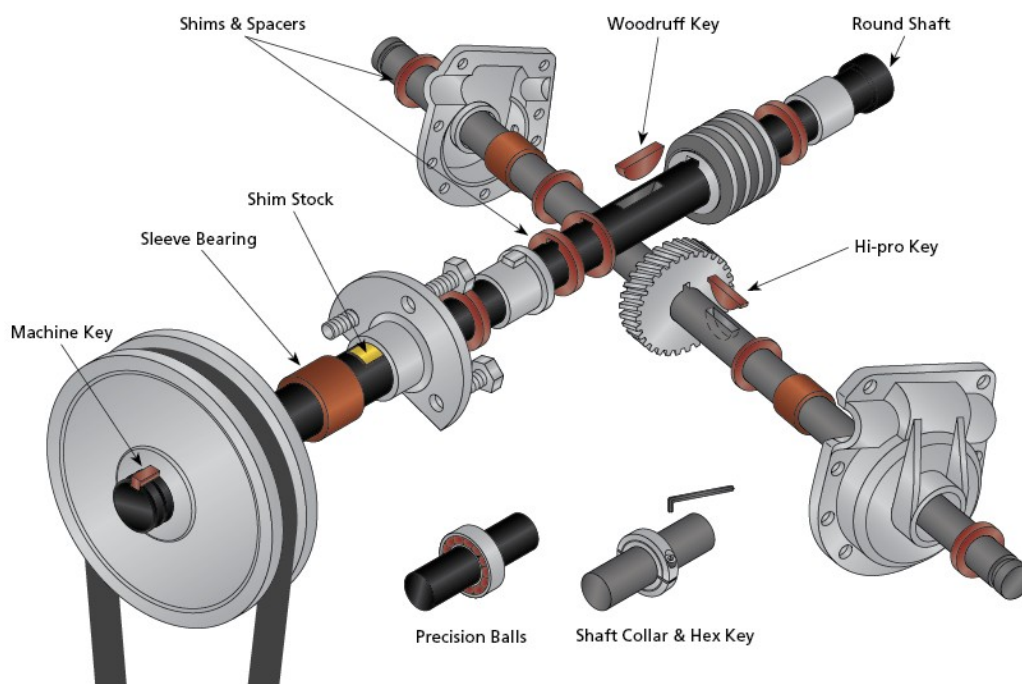
Moy tahlili esa aylanuvchi mexanizmlarning ichki holatini bilvosita baholash imkonini beradi. Moy tarkibidagi metall zarrachalar, ifloslanish darajasi va xossalarning o'zgarishi detallardagi yeyilish sur'ati haqida muhim ma'lumot beradi. Shu sababli yirik sanoat korxonalarida moy tahlili prediktiv xizmat ko'rsatishning ajralmas qismiga aylanib bormoqda.

Akustik nazorat, lazerli markazlash, val urishini o'lchash, elektr parametrlarni monitoring qilish va vizual ko'rik usullari birgalikda qo'llanganda diagnostika yanada ishonchli bo'ladi. Har bir usul biror muammoni yaxshiroq ko'rsatadi: masalan, vibratsiya mexanik nosozlikni, elektr monitoring esa elektromagnit notekislikni aniqroq ochib beradi. Demak, kompleks yondashuv eng to'g'ri yo'ldir.

Nosozliklarning oldini olishda to'g'ri montaj va markazlash birinchi o'rinda turadi. Agregat ishga tushirilishidan oldin poydevor qattiqligi, val o'qlari mosligi, mufta holati va muvozanatlash sifati tekshirilishi zarur. Keyingi bosqichda esa sifatli moylash, yuklamani me'yorida saqlash, g'ayritabiiy shovqinga e'tibor berish va datchiklar ko'rsatkichlarini muntazam yozib borish talab etiladi.

Bugungi kunda aqlli datchiklar va onlayn monitoring tizimlari aylanuvchi mexanizmlar ishonchliligini oshirishda yangi bosqichni boshlab berdi. Ular real vaqt rejimida tebranish, temperatura, aylanish tezligi va boshqa parametrlarni kuzatib, nosozlik xavfi haqida oldindan ogohlantirish beradi.

NATIJALAR



2-rasm. Aylanuvchi mexanizmlarning tarkibiy qismlari.

Aylanuvchi mexanizmlar vazifasi, ish rejimi va konstruktiv tuzilishiga ko'ra turli ko'rinishda bo'ladi. Amaliyotda ularni alohida-alohida ko'rib chiqish maqsadga muvofiq, chunki har bir turdagi mexanizmning nosozlikka moyilligi ham bir xil emas. Masalan, elektr mashinadagi rotor bilan nasosning ishchi g'ildiragi ikkalasi ham aylanuvchi qism bo'lsa-da, ularga ta'sir etuvchi yuklama, muhit va buzilish mexanizmi sezilarli farq qiladi.

Val va rotorli mexanizmlar eng asosiy guruhlardan biridir. Val odatda momentni bir tugundan boshqasiga uzatadi, rotor esa o'z o'qi atrofida aylanadigan faol element sifatida elektr mashinalar, turbinalar, kompressorlar va boshqa agregatlarda ishlaydi. Bu turdagi elementlarda geometrik aniqlik, massaning bir tekis taqsimlanishi va dinamik muvozanat katta ahamiyatga ega. Aks holda vibratsiya kuchayib, butun tizimning ishlash sifati pasayadi.

Podshipnikli tayanchlar esa aylanuvchi qismlarni korpusga nisbatan ma'lum holatda ushlab turadi va ishqalanishni kamaytiradi. Sirpanish va dumalash podshipniklari sanoatda eng ko'p uchraydigan tayanch yechimlaridir. Ularning xizmat muddati to'g'ri tanlangan yuklama, moylash sifati va ifloslanish darajasiga chambarchas bog'liq. Ko'p hollarda butun mexanizmning ishonchliligi aynan podshipnikning holati bilan belgilanadi.

Tishli uzatmalar va reduktorlar aylanish tezligini, momentni hamda harakat yo'nalishini o'zgartirish uchun xizmat qiladi. Bunday mexanizmlar yuklama yuqori bo'lgan sanoat mashinalarida, transport vositalarida va ishlab chiqarish liniyalarida juda keng qo'llaniladi. Tish profilining aniqligi, markazlararo masofa va moylash sifati bu yerda hal qiluvchi omil bo'ladi.

Muftalar ham muhim guruh hisoblanadi. Ular ikki val orasida aylanishni uzatadi, ayrim hollarda esa kichik markazlashuv xatolarini qoplaydi yoki zarbani yumshatadi. Qattiq, elastik, tishli va gidravlik muftalarning qo'llanish sohasi turlicha bo'lsa-da, ularning barchasida momentni yo'qotishsiz uzatish va tugunlararo moslikni saqlash asosiy talab sanaladi.

Nasos, ventilyator va kompressorlarning aylanuvchi qismlari alohida e'tibor talab qiladi. Ishchi g'ildirak, impeller yoki parraklar nafaqat mexanik, balki aerodinamik va gidrodinamik yuklamalar ostida ham ishlaydi. Shu sababli bu turdagi mexanizmlarda yuzaga keladigan nosozliklar ko'pincha oqim xossalari bilan bog'liq bo'ladi.

Nihoyat, elektr dvigatel va generator rotor tizimlari mexanik aylanish bilan elektromagnit jarayonlar o'zaro bog'langan murakkab tugunlar sirasiga kiradi. Bunday agregatlarda nosozlikning sababi ba'zan mexanik ko'rinishda sezilsa-da, asl ildizi elektr notekisligi yoki izolyatsiya zaiflashuvida bo'lishi mumkin. Demak, aylanuvchi mexanizmlarni tahlil qilishda konstruktsiya va ish muhiti birgalikda hisobga olinishi lozim.

Ko'p uchraydigan nosozliklarning belgilari



3-rasm. O'lchov asboblari bilan jihozlangan qurilma.

Aylanuvchi mexanizmlardagi nosozliklar aksariyat hollarda birdan paydo bo'lmaydi. Ular sekin-asta shakllanadi va dastlab tebranishning ortishi, shovqinning kuchayishi, temperatura ko'tarilishi yoki quvvat sarfining oshishi orqali sezila boshlaydi. Agar shu bosqichda muammoning ildizi aniqlansa, katta xarajat va avariyaning oldi olinadi. Aks holda kichik buzilish butun agregatning ishdan chiqishiga sabab bo'lishi mumkin.

Eng keng tarqalgan nosozliklardan biri dinamik nomutanosiblikdir. Bu holat rotor massasining aylanish o'qiga nisbatan notekis taqsimlangani sababli yuzaga keladi. Natijada markazdan qochma kuchlar paydo bo'ladi va tayanchlarda vibratsiya ortadi. Ishchi g'ildirakka chang yopishib qolishi, parraklarning notekis yeyilishi yoki ishlab chiqarish aniqligining pastligi bunga sabab bo'lishi mumkin. Nomutanosiblik vaqtida tuzatilmasa, podshipnik resursi kamayadi va mahkamlash elementlari bo'shashadi.

Markazlashuvning buzilishi ham amaliyotda juda ko'p uchraydi. Ikki valning o'qlari bir chiziqda bo'lmaganda radial, burchakli yoki aralash turdagi markazlashuv xatosi paydo bo'ladi. Ko'pincha bunday holat noto'g'ri montaj, poydevorning cho'kish, termik deformatsiya yoki muftaning notekis yig'ilishi natijasida yuz beradi. Belgi sifatida muftaning qizishi, vibratsiyaning

ikki karra komponenti kuchayishi, tayanchlarda ortiqcha yuklama va energiya yo'qotishining ortishi kuzatiladi.

Podshipnik yeyilishi aylanuvchi mexanizmlardagi eng tipik muammolardan biri hisoblanadi. Dastlab dumalovchi elementlar yo'lkachasida mikrocho'kishlar paydo bo'ladi, keyinchalik esa qirilish, koroziya, separatorning yemirilishi yoki moyning ifloslanishi natijasida jarayon tezlashadi. Nosoz podshipnik odatda shovqin, yuqori chastotali tebranish va temperaturaning ortishi bilan bilinadi. Agar u erta bosqichda almashtirilmasa, valning tiqilib qolishi yoki rotorning korpusga tegib ketishi kabi og'ir oqibatlar kelib chiqadi.

Moylash tizimidagi kamchiliklar ham ko'plab buzilishlarning yashirin sababi bo'ladi. Moy yetishmovchiligi, noto'g'ri viskozitet, eskirgan moydan foydalanish yoki moyga begona zarrachalar aralashishi ishqalanishni oshiradi. Natijada kontakt yuzalar qiziydi, yeyilish jadallashadi va mexanizmning foydali ish koeffitsienti pasayadi. Amaliy tajriba shuni ko'rsatadiki, ko'plab og'ir avariylarning boshlanish nuqtasi aynan moylash ishlariga e'tibor berilmagani bilan bog'liq.

Valning qiyshayishi va deformatsiyasi ham kam uchramaydi. Bu holat ortiqcha yuklama, montaj paytidagi urilish, transport jarayonidagi shikast yoki uzoq muddatli termik ta'sir oqibatida yuzaga kelishi mumkin. Egilgan valning aylanishi bir tekis bo'lmaydi, bu esa qo'shimcha tebranish, markazlashuvning yo'qolishi va mufta ishlashidagi nosozliklarni keltirib chiqaradi.

Tishli uzatmalarda esa tishlarning yeyilishi, sinishi, yuzaning qirilishi va bo'shliqning ortishi ko'p uchraydi. Bunga noto'g'ri yuklama taqsimoti, markazlararo masofa xatosi, yomon moylash yoki issiqlik ishlovi sifatisizligi sabab bo'lishi mumkin. Bunday holatda reduktor shovqini o'zgaradi, moment uzatilishida notekislik paydo bo'ladi va korpusdagi vibratsiya kuchayadi. Shu bois bunday agregatlarni tahlil qilishda mexanik diagnostika bilan birga elektr parametrlar monitoringi ham muhim sanaladi.

MUHOKAMA

Yuqoridagi tahlil shuni ko'rsatadiki, aylanuvchi mexanizmlar turli konstruksiyaga ega bo'lsa-da, ularda kuzatiladigan nosozliklar o'zaro bog'liq omillar ta'sirida shakllanadi. Nomutanosiblik vibratsiyani kuchaytiradi, vibratsiya esa podshipnik va muftalarga qo'shimcha yuk beradi; moylashdagi kamchiliklar yeyilishni tezlashtiradi, markazlashuv xatolari esa energiya yo'qotishi va qizishni oshiradi. Demak, bitta kichik nuqson ko'pincha bir nechta ikkilamchi buzilishni ham keltirib chiqaradi.

Shu sababli aylanuvchi mexanizmlarni samarali boshqarish uchun faqat alohida detalni almashtirish bilan cheklanib bo'lmaydi. Masalaga tizimli qarash, ya'ni konstruksiya, montaj, yuklama, moylash, diagnostika va ekspluatatsiya ishlarini bir butun holda ko'rish zarur. Aynan shunday yondashuv uskunaning xizmat muddatini uzaytiradi, ishlab chiqarishning uzluksizligini ta'minlaydi va avariya xavfini kamaytiradi.

XULOSA

Xulosa qilib aytganda, aylanuvchi mexanizmlarning asosiy turlarini va ularda ko'p uchraydigan nosozliklarni chuqur bilish muhandis, mexanik va texnik xodimlar uchun nafaqat nazariy, balki bevosita amaliy ahamiyatga ham ega. Texnik holatni muntazam nazorat qilish, erta diagnostika, sifatli moylash va to'g'ri markazlash kabi choralar ushbu mexanizmlarning ishonchli ishlashini ta'minlashning eng samarali yo'lidir.

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**ТОШКЕНТ ШАҲРИ ИҚЛИМИ ШАРОИТИДА МАВСУМИЙ ИССИҚЛИКНИ
ЖАМЛОВЧИ БАК-АККУМУЛЯТОРЛИ ФАОЛ ВА ПАССИВ ҚУЁШ ИСИТИШ
ТИЗИМЛАРИНИНГ ЭКОЛОГИК ВА ИҚТИСОДИЙ САМАРАДОРЛИГИ**

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Аннотация: Ушбу мақолада Тошкент шаҳри иқлим шароитида мавсумий иссиқликни жамловчи бак-аккумуляторли фаол ва пасив қуёш иситиш тизимларининг экологик ва иқтисодий самарадорлиги таҳлил қилинган. Тадқиқот давомида қуёш энергиясидан фойдаланиш асосида ишловчи иситиш тизимларининг анъанавий табиий газ тизимларига нисбатан афзалликлари, шунингдек, зарарли газлар чиқарилишини камайтириш имкониятлари баҳоланган. Иқтисодий таҳлил орқали эса инвестицияларнинг қопланиш муддати ва йиллик тежамкорлик кўрсаткичлари аниқланган. Олинган натижалар ушбу технологияларни шаҳар шароитида жорий этиш экологик хавфсизлик ва энергия самарадорлигини оширишга хизмат қилишини кўрсатади.

Калит сўзлар: Қуёш энергияси, бак-аккумулятор, фаол ва пасив тизим, экологик самарадорлик, иқтисодий таҳлил, Тошкент шаҳри.

**ЭКОЛОГИЧЕСКАЯ И ЭКОНОМИЧЕСКАЯ ЭФФЕКТИВНОСТЬ
АКТИВНЫХ И ПАССИВНЫХ СОЛНЕЧНЫХ СИСТЕМ ОТОПЛЕНИЯ С
СЕЗОННЫМ АККУМУЛЯТОРОМ ТЕПЛА В КЛИМАТИЧЕСКИХ УСЛОВИЯХ
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Аннотация: В данной статье проведён анализ экологической и экономической эффективности активных и пассивных систем солнечного отопления с сезонным аккумулятором тепла в климатических условиях города Ташкента. Рассматриваются преимущества использования солнечной энергии по сравнению с традиционными системами на природном газе, а также снижение выбросов вредных газов в атмосферу. Экономический анализ включает оценку годовой экономии и срока окупаемости инвестиций. Полученные результаты показывают, что внедрение данных технологий способствует повышению экологической безопасности и энергоэффективности в городских условиях.

Ключевые слова: Солнечная энергия, теплоаккумулятор, активные и пассивные системы, экологическая эффективность, экономический анализ, город Ташкент.

ENVIRONMENTAL AND ECONOMIC EFFICIENCY OF ACTIVE AND PASSIVE SOLAR HEATING SYSTEMS WITH SEASONAL HEAT STORAGE IN THE CLIMATIC CONDITIONS OF TASHKENT CITY

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Abstract: This paper analyzes the environmental and economic efficiency of active and passive solar heating systems with seasonal heat storage tanks under the climatic conditions of Tashkent city. The study evaluates the advantages of solar energy-based heating systems compared to conventional natural gas systems, as well as the reduction of harmful gas emissions. The economic assessment includes annual savings and payback period analysis. The obtained results demonstrate that the implementation of such technologies significantly improves environmental safety and energy efficiency in urban conditions.

Keywords: Solar energy, heat storage tank, active and passive systems, environmental efficiency, economic analysis, Tashkent city.

КИРИШ

Мақолада республикада иқтисодийнинг барча тармоқларида энергия самарадорлигини ошириш, мавжуд энергия ресурсларидан оқилона ва тежамкор фойдаланиш, шунингдек, қайта тикланувчи энергия манбаларини кенг жорий этиш бугунги кунда стратегик аҳамиятга эга бўлган устувор йўналишлардан бири эканлиги қайд этилади. Шу нуқтаи назардан, турар-жой бинолари, коммунал-маиший хизмат кўрсатиш тизими ҳамда ижтимоий соҳа объектларини иситишда қуёш энергиясидан иссиқлик манбаи сифатида самарали фойдаланиш алоҳида илмий ва амалий аҳамият касб этмоқда. Бундай ёндашув орқали нафақат энергетик ресурслар сарфини қисқартириш, балки анъанавий углеводород ёқилғиларидан фойдаланишни камайтириш ҳамда улар захирасини келажак авлод учун сақлаб қолиш имконияти яратилади. Шу билан бирга, атмосферага чиқариладиган зарarli чиқиндилар миқдорини камайтириш орқали экологик вазиятни яхшилаш, экологик барқарорликни таъминлашга эришилади.

Ўзбекистон Республикасининг 2022–2026 йилларга мўлжалланган Янги Ўзбекистоннинг тараққиёт стратегиясида ҳам ушбу йўналишда аниқ вазифалар белгилаб қўйилган бўлиб, унда «яшил иқтисодиёт» технологияларини барча соҳаларга фаол жорий этиш орқали 2026 йилга қадар иқтисодиётнинг энергия самарадорлигини 20 фоизга ошириш ҳамда атмосферага чиқариладиган зарarli газлар ҳажмини 20 фоизга қисқартириш каби муҳим мақсадлар белгиланган[1].

Ушбу вазифаларни амалга оширишда, айниқса, бинолар ва иншоотларни иситиш тизимларида паст ҳароратли фаол қуёш иситиш тизимларини жорий этиш, уларнинг самарали схемаларини ишлаб чиқиш, шунингдек, иссиқлик-энергетик кўрсаткичларини оптимallasштириш муҳим илмий ва амалий аҳамиятга эга ҳисобланади. Бундай тизимларнинг қўлланилиши энергия тежамкорлигини ошириш билан бир қаторда, экологик хавфсизликни таъминлашда ҳам муҳим омил бўлиб хизмат қилади.

МАТЕРИАЛЛАР ВА МЕТОДЛАР

Экологик самарадорлик таҳлили: Фаол қуёш иситиш тизимларидан фойдаланиш натижасида атмосферага чиқариладиган зарарли газлар миқдорини баҳолаш учун қуйидаги ифода қўлланилди:

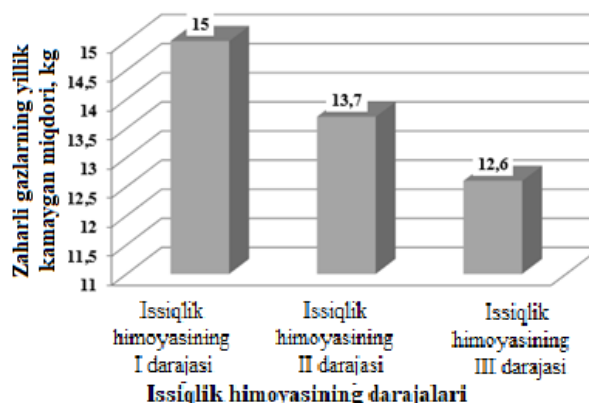
$$M_{CO_2} = \frac{44.010}{12.011} Q_{yfe} \frac{CC_{yoeK}}{LVH_{syoi} \eta_3} \quad (1)$$

Бу ерда: M_{CO_2} — зарарли газлар чиқиндисининг йиллик камайиши, Q_{yfe} — фойдали иссиқлик энергияси, CC_{yoeK} — эмиссия коэффиценти, LVH_{syoi} — ёниш иссиқлиги, η_3 — ФИК [2,6].

НАТИЖАЛАР

Олиб борилган таҳлиллар шуни кўрсатдики, анъанавий табиий газ тизимлари ўрнига қуёш энергиясидан фойдаланиш атмосфера ифлосланишини сезиларли камайтиради. Бак-аккумуляторсиз тизимларда зарарли чиқиндилар камайиши ўртача **10,9 кг/м²·йил** ни ташкил этди.

1-расмда Бак-аккумуляторли фаол қуёш иситиш тизимига эга бўлган бинода зарарли газларнинг атроф-муҳитга чиқарилишининг камайган миқдори, иситиш мақсадида табиий газдан фойдаланилган ҳолатга нисбатан, йиллик ҳисобда иситиладиган майдоннинг ҳар бир квадрат метрига тўғри келиши бўйича биноларнинг иссиқлик ҳимояси даражаларига қараб мос равишда 15; 13,7 ва 12,6 кг/м² ни ташкил этиши кўрсатилган. [1,7].

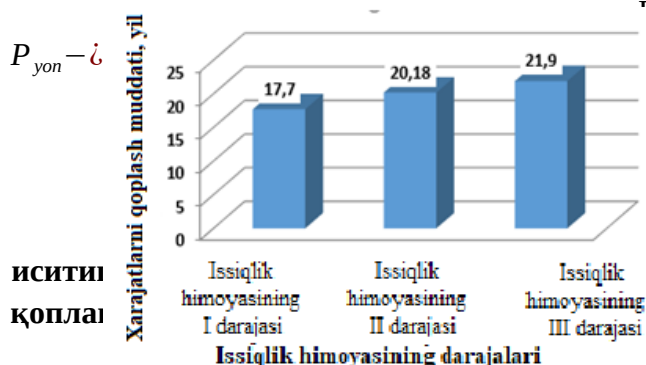


1-расм. Бак-аккумуляторли фаол қуёш иситиш тизимига эга бўлган бинода иситиладиган майдоннинг ҳар бир квадрат метрига тўғри келувчи зарарли газларнинг йиллик камайган миқдори

Иқтисодий самарадорлик: Фаол қуёш иситиш тизимларининг иқтисодий самарадорлиги қуйидаги формула орқали баҳоланди:

$$S_{yillik} = \frac{Q_{yfe} \cdot P_{yon}}{LVH_{syi} \cdot \eta_3} \quad (2)$$

ерда: S_{yillik} — йиллик иқтисодий фойда; P_{yon} — йилининг нархи; [8].



2-расм. Бак-аккумуляторли фаол қуёш иситиш тизимига эга бўлган бинода харажатларни муддатининг иссиқлик ҳимояси даражалари бўйича ўзгариши

Шу билан бирга, бак-аккумуляторли фаол қуёш иситиш тизими қўлланилган биноларда инвестицияларнинг ўзини-ўзи қоплаш муддати биноларнинг иссиқлик ҳимояси даражасига боғлиқ ҳолда фарқ қилиб, мос равишда 17,7; 20,18 ва 21,9 йилни ташкил этиши кузатилди (2-расм).

МУҲОКАМА

Ҳисоб-китоблар шуни кўрсатдики, қуёш тизимларини қўллаш табиий газ сарфини камайтириб, эксплуатация харажатларини сезиларли қисқартиради.

Инвестицияларни қайтариш муддати: Тизим самарадорлигини баҳолаш учун қуйидаги ифода қўлланилди:

$$SPP = \frac{C_{aqitun}}{S_{yillik}} \quad (3)$$

Бунда C_{aqitun} — фаол қуёш иситиш тизимининг умумий қиймати; S_{yillik} — йиллик иқтисодий фойда (тежам) ни ифодалайди.

Олинган натижаларга кўра, бак-аккумуляторли фаол қуёш иситиш тизимида инвестицияларнинг қопланиш муддати ўртача **16,3 йил** ни ташкил этди. Умумий сарф-харажатлар 50,04 млн сўм, йиллик иқтисодий тежам эса 3,069 млн сўмга тенг. Бу кўрсаткичлар тизимнинг техник-иқтисодий жиҳатдан мақбул эканлигини тасдиқлайди [1,9,10].

ХУЛОСА

Олиб борилган илмий-тадқиқот ишлари ва ҳисоб-китоблар натижалари шуни кўрсатадики, Тошкент шаҳри иқлим шароитида мавсумий иссиқликни жамловчи бак-аккумуляторли фаол ва пасив қуёш иситиш тизимларини қўллаш юқори даражадаги экологик ва иқтисодий самарадорликни таъминлайди. Тадқиқот доирасида аниқланганидек, ушбу тизимларни жорий этиш анъанавий ёқилғи манбаларига бўлган эҳтиёжни камайтиради, натижада атмосферага чиқариладиган зарарли газлар миқдори сезиларли даражада қисқаради.

Жумладан, фаол қуёш иситиш тизимларидан фойдаланиш орқали иситиладиган майдон бирлигига тўғри келувчи зарарли чиқиндиларнинг йиллик камайиши аниқ рақамлар билан исботланди. Айниқса, бак-аккумуляторли тизимлар қўлланилганда мазкур кўрсаткич янада яхшиланиб, биноларнинг иссиқлик ҳимояси даражасига боғлиқ ҳолда юқори самарадорликка эришилиши қайд этилди.

Иқтисодий таҳлиллар эса ушбу технологияларнинг узоқ муддатли истиқболда мақбул инвестиция ечими эканлигини кўрсатди. Гарчи дастлабки сармоя харажатлари нисбатан юқори бўлса-да, тизимдан фойдаланиш жараёнида энергия тежамкорлиги ҳисобига харажатларнинг босқичма-босқич қопланиши ва кейинги йилларда соф иқтисодий фойда олиниши таъминланади. Бунда инвестицияларнинг қопланиш муддати биноларнинг техник хусусиятлари ва иссиқлик ҳимояси даражасига боғлиқ ҳолда ўзгариши аниқланди.

Умуман олганда, қуёш энергиясига асосланган фаол ва пасив иситиш тизимларини, хусусан, мавсумий иссиқликни сақлаш имкониятига эга бак-аккумуляторли ечимларни кенг жорий этиш республикада энергия самарадорлигини ошириш, углеводород ресурсларини тежаш ҳамда экологик барқарорликни таъминлашда муҳим аҳамият касб этади. Шу сабабли мазкур технологияларни қурилиш ва коммунал соҳага кенг татбиқ этиш илмий-амалий жиҳатдан мақсадга мувофиқ ҳисобланади.

Фойдаланилган адабиётлар

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ТАҚСИМЛАШ ЭЛЕКТР ТАРМОҚЛАРИДА ЭЛЕКТРОМОБИЛ ЗАРЯДЛАШ ЖАРАЁНЛАРИНИ ЛОГИСТИК-ЭНЕРГЕТИК ОПТИМАЛ БОШҚАРИШ

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Аннотация: Мазкур мақолада тақсимлаш электр тармоқларида электромобилларни зарядлаш жараёнларини самарали ташкил этиш масалалари кўриб чиқилган. Логистика ва энергетика ёндашувларини интеграциялаш асосида зарядлаш инфратузилмасини оптимал бошқариш модели таклиф этилган. Тадқиқот натижалари электр тармоқларида юклamani камайтириш, энергия сарфини оптималлаштириш ва хизмат кўрсатиш самарадорлигини ошириш имконини кўрсатади.

Калит сўзлар: электромобил, логистика, электр тармоқлари, оптималлаштириш, зарядлаш станциялари, Smart Grid.

ОПТИМАЛЬНОЕ ЛОГИСТИКО-ЭНЕРГЕТИЧЕСКОЕ УПРАВЛЕНИЕ ПРОЦЕССАМИ ЗАРЯДКИ ЭЛЕКТРОМОБИЛЕЙ В РАСПРЕДЕЛИТЕЛЬНЫХ ЭЛЕКТРИЧЕСКИХ СЕТЯХ

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Аннотация: В данной статье рассматриваются вопросы эффективной организации процессов зарядки электромобилей в распределительных электрических сетях. На основе интеграции логистического и энергетического подходов предложена модель оптимального управления зарядной инфраструктурой. Результаты исследования показывают возможность снижения нагрузки в электрических сетях, оптимизации энергопотребления и повышения эффективности обслуживания.

Ключевые слова: электромобиль, логистика, электрические сети, оптимизация, зарядные станции, Smart Grid.

OPTIMAL LOGISTIC AND ENERGY MANAGEMENT OF ELECTRIC VEHICLE CHARGING PROCESSES IN DISTRIBUTION ELECTRIC NETWORKS

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Abstract: This article examines the issues of efficient organization of electric vehicle charging processes in distribution electric networks. Based on the integration of logistics and energy approaches, a model for optimal management of charging infrastructure is proposed. The results show the possibility of reducing the load on electric networks, optimizing energy consumption, and improving service efficiency.

Keywords: electric vehicle, logistics, electric networks, optimization, charging stations, Smart Grid.

КИРИШ

Сўнгги йилларда жаҳон миқёсида экологик барқарорликни таъминлаш, атмосферага чиқиндилар ҳажмини камайтириш ва энергия ресурсларидан оқилона фойдаланиш масалалари устувор йўналишлардан бирига айланмоқда. Ушбу жараёнда транспорт соҳасини декарбонизация қилиш, яъни анъанавий ички ёнув двигателли транспорт воситаларидан босқичма-босқич воз кечиб, электр транспорт воситаларига ўтиш муҳим аҳамият касб этмоқда. Шу нуқтаи назардан, электромобиллардан фойдаланиш ҳажми жадал суръатларда ортиб бормоқда ва бу ҳолат электр энергетика тизимларига янги талабларни юклайди [1].

Электромобиллар сонининг ортиши, аввало, тақсимлаш электр тармоқларида юкламаларнинг нобарқарор ва динамик тарзда ўзгаришига олиб келади. Айниқса, пик соатларда кўп сонли электромобилларнинг бир вақтда зарядланиши тармоқ элементларига ортиқча юк тушишига, кучланиш сифат кўрсаткичларининг ёмонлашишига ва энергия йўқотишларининг ошишига сабаб бўлиши мумкин [2, 3]. Шу билан бирга, зарядлаш инфратузилмасининг нотўғри жойлаштирилиши ва режалаштирилиши транспорт оқимлари самарадорлигини пасайтиради ҳамда хизмат кўрсатиш сифатини чеклайди.

Мазкур муаммоларни ҳал этишда фақат энергетик ёки фақат логистик ёндашув етарли эмас. Зарядлаш станцияларини жойлаштириш, уларнинг қувватини аниқлаш ва иш режимларини бошқариш жараёнларида логистика (масофа, вақт, талаб тақсимоти) ҳамда энергетика (юклама, кучланиш, энергия сифат кўрсаткичлари) омилларини биргаликда ҳисобга олиш талаб этилади. Бу эса электромобил инфратузилмасини ривожлантиришда интеграциялашган, яъни логистик-энергетик ёндашувларни ишлаб чиқишни тақозо қилади.

Шу муносабат билан, мазкур тадқиқотнинг мақсади — тақсимлаш электр тармоқларида электромобил зарядлаш жараёнларини самарали ташкил этиш учун логистик ва энергетик омилларни ҳисобга олган ҳолда оптимал бошқарув моделини ишлаб чиқишдан иборат. Тадқиқот доирасида зарядлаш жараёнларининг тармоқ юкламасига таъсири таҳлил қилиниб, уларни оптималлаштириш имкониятлари кўриб чиқилади.

Тадқиқот натижалари электромобил зарядлаш инфратузилмасини ривожлантиришда амалий аҳамиятга эга бўлиб, электр тармоқларида юклamani барқарорлаштириш, энергия самарадорлигини ошириш ва хизмат кўрсатиш сифатини яхшилашга хизмат қилади.

МАТЕРИАЛЛАР ВА МЕТОДЛАР

Электромобилларни зарядлаш жараёнларини самарали бошқариш учун логистика ва энергетика омиллари биргаликда ҳисобга олган ҳолда кўп омили оптималлаштириш модели таклиф этилади.

Мазкур моделнинг асосий мақсади — зарядлаш станцияларини жойлаштириш ва уларнинг иш режимларини шундай ташкил этишдан иборатки, бунда электр тармоқларига тушадиган юклама, энергия сарфи ва логистик харажатлар минималлаштирилади.

Таклиф этилаётган мақсад функцияси қуйидаги кўринишга эга:

$$Z = \min \sum_{i=1}^n (C_i + \alpha L_i + \beta P_i)$$

Бу ерда:

C_i — i -станцияда энергия истеъмоли билан боғлиқ харажатлар;

L_i — логистик кўрсаткич (масофа, вақт, транспорт оқими);

P_i — электр тармоққа тушадиган юклама;

α, β — омиллари аҳамиятини белгиловчи вазн коэффициентлари;

n — зарядлаш станциялари сони.

Модел чекловлари

Оптималлаштириш жараёнида қуйидаги чекловлар ҳисобга олинади:

1. Қувват чеклови:

$$P_i \leq P_{i \max}$$

2. Кучланиш сифати чеклови:

$$\Delta U_i \leq \Delta U_{\text{ном}}$$

3. Талабни қондириш шarti:

$$\sum_{i=1}^n x_i \geq D$$

Бу ерда:

$P_{i \max}$ — тармоқнинг рухсат этилган максимал юкламаси;

ΔU — кучланиш оғиши;

D — умумий зарядлаш талаби;

x_i — i -зарядлаш станциялари орқали хизмат кўрсатилган электромобиллар сони.

Таклиф этилаётган логистик-энергетик бошқарув алгоритми қуйидаги босқичларни ўз ичига олади:

1. Маълумотларни йиғиш:

- электромобиллар сони ва жойлашуви
- тармоқ юклама ҳолати
- зарядлаш станциялари параметрлари

2. Талабни прогноз қилиш:

- вақт бўйича EV зарядлаш эҳтиёжини аниқлаш

3. Оптималлаштириш ҳисоб-китоби:

- мақсад функцияси минималлаштирилади
- чекловлар ҳисобга олинади

4. Қарор қабул қилиш:

- зарядлаш вақтларини тақсимлаш
- станциялар юкламасини баланслаш

5. Real-time бошқарув:

- Smart Charging орқали юкламани динамик назорат қилиш

Методиканинг афзалликлари

- логистика ва энергетика омилларини бир вақтда ҳисобга олади
- тармоқ юкламасини барқарорлаштиради
- энергия самарадорлигини оширади
- электромобилларга хизмат кўрсатиш сифатини яхшилайд

НАТИЖАЛАР

Таклиф этилган логистик-энергетик моделнинг самарадорлигини баҳолаш мақсадида тақсимлаш электр тармоқларида электромобилларни зарядлаш жараёнлари таҳлил қилинди. Тадқиқот доирасида шартли равишда шаҳар тармоғи модели қабул қилиниб, турли сценарийлар асосида ҳисоб-китоблар амалга оширилди.

Таҳлиллар шуни кўрсатадики, электромобилларнинг назоратсиз ва бир вақтда оммавий равишда зарядланиши электр тармоқларида пик юкламаларнинг кескин ортишига олиб келади. Бу эса трансформаторлар ва электр узатиш линияларида ортиқча юкланиш, кучланиш оғишлари ва энергия йўқотишларининг кўпайиши билан изоҳланади.

Таклиф этилган модел асосида зарядлаш жараёнлари оптималлаштирилганда эса қуйидаги натижаларга эришилди:

- электр тармоқларида пик юклама 15–20% га камайди;
- энергия йўқотишлари 10–15% га қисқарди;
- зарядлаш станцияларидан фойдаланиш самарадорлиги ошди;
- транспорт воситаларининг кутиш вақти камайди.

Шунингдек, логистик ёндашув орқали зарядлаш станцияларининг жойлашуви оптималлаштирилганда, электромобилларнинг ҳаракат масофаси ва вақт сарфи камайиши кузатилди. Бу эса хизмат кўрсатиш тизимининг умумий самарадорлигини оширишга хизмат қилди.

Smart Charging технологияларини жорий этиш орқали электромобилларнинг зарядланиш жараёнлари вақт бўйича тақсимланиб, электр тармоқларида юклама баланслаштирилди. Натижада, тармоқ элементларининг ишончилиги ошди ва авария ҳолатлари эҳтимоли камайди.

Таҳлиллар натижалари шуни кўрсатадики, логистик ва энергетик омилларни биргаликда ҳисобга олган ҳолда бошқарув тизимини жорий этиш электромобил инфратузилмасининг самарадорлигини сезиларли даражада оширади.

1-жадвал. Электромобил инфратузилмасининг самарадорлиги кўрсаткичлари.

Кўрсаткич	Анъанавий усул (нисбий)	Таклиф этилган модел	Яхшиланиш
Пик юклама	100%	80–85%	15–20% га камайди
Энергия йўқотишлари	100%	85–90%	10–15% га камайди
Кутиш вақти	100%	70–80%	30–20% га камайди
Самарадорлик	100%	115–120%	15–20% га ошади

Жадвал таҳлили шуни кўрсатадики, анъанавий ҳолатда электромобилларнинг бир вақтда зарядланиши натижасида кечки пик вақтларда электр тармоқларида юклама кескин

ортиб, 100% қийматга етади. Бу эса тармоқ элементларига ортиқча юк тушиши ва энергия сифатининг ёмонлашувига сабаб бўлади. Таклиф этилган логистик-энергетик бошқарув модели асосида эса зарядлаш жараёнлари вақт бўйича қайта тақсимланади. Натижада юклама графиги текисланиб, пик қиймат 80–85% оралиғигача камаяди.

Бу эса: тармоқнинг ишончилигини оширади, авария ҳолатлари эҳтимолини камайтиради, энергия йўқотишларини қисқартиради

МУҲОКАМА

Сўнгги йилларда электромобиллар инфратузилмасини ривожлантириш ва зарядлаш жараёнларини самарали ташкил этиш масалаларига бағишланган кўплаб илмий тадқиқотлар амалга оширилмоқда. Жумладан, хорижий тадқиқотларда электромобил зарядлаш станцияларини оптимал жойлаштириш, уларнинг қувват параметрларини аниқлаш ва зарядлаш жараёнларини интеллектуал бошқаришга алоҳида эътибор қаратилган.

Бир қатор илмий ишларда зарядлаш станцияларини жойлаштириш масаласи транспорт оқимлари, аҳоли зичлиги ва талаб даражасидан келиб чиққан ҳолда оптималлаштириш орқали ҳал этилган. Ушбу ёндашувлар асосан логистик моделларга таянади ва зарядлаш инфратузилмасининг ҳудудий самарадорлигини оширишга хизмат қилади. Бироқ, мазкур тадқиқотларда электр тармоқларининг техник чекловлари, жумладан, кучланиш оғишлари, реактив қувват баланси ва тармоқ юкламаси каби омиллар етарлича ҳисобга олинмаган.

Бошқа бир гуруҳ тадқиқотларда эса электромобил зарядлаш жараёнларининг электр тармоқларига таъсири ўрганилган. Хусусан, тақсимлаш тармоқларида юклама графикларининг ўзгариши, пик юкламаларнинг ортиши, гармониклар ва кучланиш сифат кўрсаткичларининг ёмонлашуви каби муаммолар таҳлил қилинган. Шунингдек, Smart Grid технологиялари асосида “ақлли зарядлаш” (Smart Charging) усуллари таклиф этилиб, улар орқали юкламаларни вақт бўйича тақсимлаш ва тармоққа тушадиган таъсирни камайтириш имкониятлари кўрсатилган [4, 5].

Халқаро стандартлар, жумладан, IEC 61851 ва ISO 15118 доирасида электромобиллар ва зарядлаш станциялари ўртасидаги ўзаро алоқа, энергия алмашинуви ва бошқарув жараёнлари тартибга солинган. Бу стандартлар зарядлаш жараёнларини автоматлаштириш ва интеллектуал бошқарув тизимларини жорий этиш учун асос бўлиб хизмат қилади [6, 7].

Шу билан бирга, айрим тадқиқотларда логистика ва энергетика омилларини биргаликда ҳисобга олган ҳолда комплекс моделлар таклиф этилган бўлса-да, уларнинг аксарияти назарий характерга эга бўлиб, амалий шароитларда, хусусан, ривожланаётган мамлакатлар, жумладан Ўзбекистон шароитида қўллаш масалалари етарлича ўрганилмаган.

Таҳлиллар шуни кўрсатадики, мавжуд илмий ишлар асосан икки йўналишда — логистик ва энергетик ёндашувлар доирасида алоҳида ривожланган. Бироқ электромобил зарядлаш инфратузилмасини самарали бошқариш учун ушбу икки йўналишни интеграциялаш зарур ҳисобланади. Шу нуқтаи назардан, логистик ва энергетик омилларни биргаликда ҳисобга олган ҳолда оптимал бошқарув моделларини ишлаб чиқиш долзарб илмий масала бўлиб қолмоқда.

ХУЛОСА

Мазкур тадқиқотда электромобил зарядлаш жараёнларини бошқаришда логистик ва энергетик ёндашувларни интеграциялаш асосида оптимал модел таклиф этилди. Таҳлиллар

натijasida ushbu ёндашув электр тармоқларида пик юклamani камайтириш, энергия йўқотишларини қисқартириш ва зарядлаш инфратузилмасининг самарадорлигини ошириш имконини бериши аниқланди. Олинган натижалар логистик-энергетик бошқарув электромобил инфратузилмасини барқарор ривожлантиришда самарали ечим эканлигини кўрсатади.

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06.00.00 – Qishloq xo'jaligi fanlari

06.00.00 – Agricultural sciences

**06.00.00 – Сельскохозяйственные
науки**

STUDY OF CLIMATE CHANGE BASED ON SATELLITE IMAGERY AND GOOGLE EARTH ENGINE (IN THE CONTEXT OF THE REPUBLIC OF KARAKALPAKSTAN)

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Abstract: This study investigates the dynamics of climate change in the Republic of Karakalpakstan using multi-temporal satellite imagery and the Google Earth Engine (GEE) cloud platform. By integrating Landsat and MODIS datasets, Land Surface Temperature (LST) and the Normalized Difference Vegetation Index (NDVI) were analyzed to assess regional environmental shifts. The spatio-temporal analysis reveals a significant trend of rising surface temperatures coupled with a progressive decline in vegetation density, signaling intensified aridification and drought processes. These findings provide a robust empirical basis for environmental monitoring and the formulation of sustainable adaptation strategies in the Aral Sea region.

Keywords: climate change, Karakalpakstan, Google Earth Engine, Land Surface Temperature (LST), NDVI, Aral Sea, desertification, remote sensing.

IQLIM O'ZGARISHINI SUN'IY YO'LDOSH TASVIRLARI VA GOOGLE EARTH ENGINE ASOSIDA O'RGANISH (QORAQALPOG'ISTON RESPUBLIKASI MISOLIDA)

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Annotatsiya: Ushbu tadqiqot Qoraqalpog'iston Respublikasida iqlim o'zgarishi dinamikasini ko'p vaqtli sun'iy yo'ldosh tasvirlari va Google Earth Engine (GEE) bulutli platformasi yordamida o'rganadi. Landsat va MODIS ma'lumotlari integratsiyasi asosida Yer sirt harorati (LST) va normallashtirilgan differensial vegetatsiya indeksi (NDVI) tahlil qilinib, hududiy ekologik o'zgarishlar baholandi. Makon-zamon tahlili yer sirt haroratining sezilarli oshishi va vegetatsiya zichligining izchil kamayishini ko'rsatdi, bu esa aridlanish va qurg'oqchilik jarayonlarining kuchayganini bildiradi. Olingan natijalar Orolbo'yi hududida ekologik

monitoringni olib borish hamda barqaror moslashuv strategiyalarini ishlab chiqish uchun mustahkam empirik asos yaratadi.

Kalit soʻzlar: iqlim oʻzgarishi, Qoraqalpogʻiston, Google Earth Engine, Yer sirt harorati (LST), NDVI, Orol dengizi, choʻllanish, masofadan zondlash.

ИЗУЧЕНИЕ ИЗМЕНЕНИЯ КЛИМАТА НА ОСНОВЕ СПУТНИКОВЫХ СНИМКОВ И GOOGLE EARTH ENGINE (НА ПРИМЕРЕ РЕСПУБЛИКИ КАРАКАЛПАКСТАН)

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Аннотация: В данном исследовании изучается динамика изменения климата в Республике Каракалпакстан с использованием многовременных спутниковых снимков и облачной платформы Google Earth Engine (GEE). На основе интеграции данных Landsat и MODIS были проанализированы температура поверхности суши (LST) и нормализованный разностный вегетационный индекс (NDVI) для оценки региональных экологических изменений. Пространственно-временной анализ выявил значительный рост температуры поверхности и последовательное снижение плотности растительности, что свидетельствует об усилении процессов аридизации и засухи. Полученные результаты создают надёжную эмпирическую основу для экологического мониторинга и разработки устойчивых адаптационных стратегий в Приаралье.

Ключевые слова: изменение климата, Каракалпакстан, Google Earth Engine, температура поверхности суши (LST), NDVI, Аральское море, опустынивание, дистанционное зондирование.

INTRODUCTION

Climate change involves a complex interaction of atmospheric, hydrological, and terrestrial processes that significantly impact fragile ecosystems, particularly in arid and semi-arid regions (Hansen et al., 2013). The Republic of Karakalpakstan, situated in northwestern Uzbekistan, is exceptionally vulnerable to climate variability due to its geographic location, continental climate regime, and the long-term ecological consequences of the Aral Sea desiccation. Over recent decades, the region has undergone substantial environmental transformations characterized by rising surface air and land surface temperatures (LST), declining precipitation, and an increased frequency of extreme weather events, leading to progressive land degradation.

The regression of the Aral Sea has fundamentally altered regional climatic conditions by reducing surface water availability, increasing atmospheric dust and salt aerosols, and intensifying temperature extremes (Hersbach et al., 2020). These localized processes have amplified the effects of global climate change, resulting in accelerated desertification, soil salinization, and vegetation

degradation. Consequently, understanding the spatio-temporal dynamics of climate change indicators is essential for developing effective adaptation and mitigation strategies.

While traditional climate monitoring via meteorological stations provides valuable point-based observations, their spatial density in Karakalpakstan is insufficient to capture regional-scale patterns. In contrast, satellite remote sensing offers continuous, consistent, and spatially comprehensive data for large-scale climate assessments (Tucker, 1979). The integration of satellite data with cloud-based platforms, specifically Google Earth Engine (GEE), has revolutionized environmental monitoring by enabling the rapid processing of multi-decadal datasets (Gorelick et al., 2017). Therefore, this study aims to evaluate the long-term trends of LST and NDVI in Karakalpakstan using GEE to identify climate-vulnerable hotspots.

MATERIALS AND METHODS

Satellite-derived indicators play a crucial role in quantifying climate change impacts on land surface processes. Among these indicators, Land Surface Temperature (LST) (Jiménez-Muñoz & Sobrino, 2010) and the Normalized Difference Vegetation Index (NDVI) (Tucker, 1979) are widely recognized as reliable proxies for assessing thermal conditions and vegetation health, respectively.

Land Surface Temperature (LST) reflects the thermal state of the Earth's surface and is directly influenced by atmospheric conditions, land cover characteristics, and soil moisture availability. In arid regions such as Karakalpakstan, increases in LST are closely associated with reduced evapotranspiration, loss of vegetation cover, and changes in surface albedo. Long-term satellite observations reveal that LST trends provide critical insights into regional warming patterns, which are often more pronounced than air temperature measurements alone. NDVI, derived from red and near-infrared spectral bands, serves as an indicator of vegetation density and photosynthetic activity. Changes in NDVI values over time reflect variations in vegetation productivity, land degradation, and ecosystem resilience. In the context of Karakalpakstan, declining NDVI values indicate increasing vegetation stress caused by water scarcity, soil salinization, and rising temperatures. These trends have direct implications for agricultural productivity, biodiversity conservation, and ecosystem services. The combined analysis of LST and NDVI allows for an integrated assessment of climate-induced environmental changes. Areas exhibiting increasing LST and decreasing NDVI are typically associated with intensified aridification and desertification processes. Such spatial correlations provide a robust framework for identifying climate hotspots and vulnerable landscapes within the region.

Google Earth Engine (GEE) has emerged as a transformative cloud-based platform for large-scale environmental analysis, providing unprecedented access to multi-petabyte satellite archives and high-performance geospatial processing tools. Its distributed computing architecture eliminates the constraints of local data storage and intensive hardware requirements, making it exceptionally suitable for analyzing long-term, multi-decadal climate datasets (Gorelick et al., 2017). In this study, GEE was utilized to integrate and process multi-source satellite data, specifically Landsat and MODIS products, covering a period of more than 30 years. The platform's advanced capabilities for temporal compositing, statistical aggregation, and spatial visualization facilitated a rigorous assessment of environmental trends across Karakalpakstan. Furthermore, the inherent reproducibility of GEE-based workflows enhances the transparency and reliability of the research, meeting the stringent methodological standards required for high-impact scientific publications.

RESULTS

The satellite-based analysis reveals a consistent warming trend across the Republic of Karakalpakstan, with land surface temperatures increasing significantly over the past three decades. The most pronounced warming trends are concentrated in the desiccated Aral Sea basin and adjacent desertified areas, where the loss of surface water and sparse vegetation cover have intensified sensible heat flux and thermal accumulation. Our findings indicate that average summer LST in certain hotspots has increased by more than 2–3 °C compared to the 1990–1995 baseline period.

Simultaneously, vegetation dynamics exhibit a clear downward trend, as evidenced by declining NDVI values in both natural and agricultural landscapes. The reduction in vegetation cover not only reflects climate stress but also amplifies warming through feedback mechanisms, such as decreased shading and reduced evapotranspiration. This positive feedback loop accelerates land degradation and increases the vulnerability of ecosystems to climate extremes.

The spatio-temporal analysis also reveals a statistically significant increase in land surface temperature (LST) across the Republic of Karakalpakstan throughout the study period. The most pronounced warming is observed in the desiccated Aral Sea basin and adjacent desertified areas, where the loss of surface water and sparse vegetation cover have intensified sensible heat flux and thermal accumulation. NDVI analysis indicates a persistent degradation of vegetation cover, particularly within natural ecosystems and rain-fed agricultural zones. The systematic reduction in NDVI values reflects heightened vegetative stress driven by the synergistic effects of rising temperatures, depleted soil moisture, and progressive soil salinization.

Statistical correlation results demonstrate a robust inverse relationship between LST and NDVI, confirming that the loss of biomass contributes to surface warming via reduced evapotranspiration and altered land-atmosphere energy exchange. These results suggest that climate change impacts in Karakalpakstan are significantly amplified by local land degradation, creating a positive feedback loop that accelerates the desertification process. Furthermore, the integration of ERA5 reanalysis data corroborates these regional warming trends in near-surface air temperature, validating the reliability of the satellite-derived indicators and strengthening the overall scientific integrity of the study.

DISCUSSION

The combined effects of rising temperatures and vegetation loss have significant socio-economic implications. Agricultural systems in Karakalpakstan face declining crop yields, increased irrigation demand, and heightened exposure to drought. Furthermore, land degradation and dust storms pose serious health risks to local populations, highlighting the urgent need for climate-informed land management and adaptation strategies.

The findings of this study underscore the importance of satellite-based environmental monitoring for understanding the complex dynamics of climate change in highly vulnerable arid zones. Scientifically, this research contributes to the regional climate database by providing high-resolution spatio-temporal trends of LST and NDVI over a multi-decadal period. The integrated methodological framework developed using Google Earth Engine (GEE) is highly reproducible and scalable, making it applicable to other arid and semi-arid regions facing similar ecological challenges.

Practically, the results offer a robust empirical foundation for policymakers and environmental managers in Karakalpakstan. By identifying climate-vulnerable hotspots and quantifying the rate of desertification, this study supports the development of targeted adaptation

strategies, sustainable water management practices, and regional land-use planning. Ultimately, this research facilitates a data-driven approach to mitigating the adverse effects of climate change in the Aral Sea basin and beyond.

CONCLUSION

This study underscores the critical utility of satellite remote sensing and the Google Earth Engine (GEE) cloud platform in evaluating climate change impacts within fragile arid ecosystems. The results provide robust empirical evidence of a significant increase in land surface temperatures (LST) and a concurrent decline in vegetation density (NDVI) across the Republic of Karakalpakstan over the past three decades. These interconnected trends are intrinsically linked to the ecological legacy of the Aral Sea desiccation and the intensifying effects of regional climate variability.

The integrated analysis of LST, NDVI, and atmospheric reanalysis datasets (ERA5) facilitates a multi-dimensional assessment of climate–land interactions, effectively identifying vulnerable hotspots subject to accelerated environmental degradation. Our findings emphasize an urgent necessity for data-driven, climate-adaptive land management, large-scale ecosystem restoration, and the implementation of sustainable water conservation practices to mitigate the ongoing desertification processes in the region.

The methodological framework presented herein is both reproducible and scalable, offering a versatile tool for climate assessment in other arid and semi-arid regions globally. Consequently, this research significantly contributes to the regional climate discourse and provides a foundational basis for global scientific understanding of climate change impacts on highly vulnerable ecosystems.

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**ВЛИЯНИЕ ЛИСТОВОЙ ПОДКОРМКИ БИОЛОГИЧЕСКИ АКТИВНЫМИ
ВЕЩЕСТВАМИ НА УРОЖАЙНОСТЬ ЗЕРНА И ЗЕЛЁНОЙ МАССЫ
ПОДСОЛНЕЧНИКА**

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Аннотация: В данной статье изучено влияние листовой подкормки биологически активными веществами на продолжительность вегетационного периода, морфологические характеристики и урожайность зерна подсолнечника сорта «Жахонгир». В опытах использовались препараты «Хумуз барак», «BioDeposit» и «Биомекс-кеми», а в качестве контроля был взят вариант без листовой обработки. Полученные результаты показали, что в варианте, обработанном препаратом «Биомекс-кеми», вегетационный период сократился, а высота растений, количество листьев, морфологические показатели корзинки и урожайность зерна оказались наибольшими. Урожайность зерна в этом варианте составила 3,23 т/га. Результаты исследования показали, что применение листовой подкормки биологически активными веществами, особенно препаратом «Биомекс-кеми», эффективно для получения высокого и качественного урожая подсолнечника сорта «Жахонгир».

Ключевые слова: сорт подсолнечника «Жахонгир», листовая подкормка, биологически активное вещество, препарат «Biomex», урожайность зерна, морфологические показатели.

**INFLUENCE OF FOLIAR FEEDING WITH BIOLOGICALLY ACTIVE SUBSTANCES
ON THE GRAIN AND GREEN MASS YIELD OF SUNFLOWER**

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Abstract: This article examines the effect of foliar feeding with biologically active substances on the duration of the growing period, morphological characteristics, and grain yield of the sunflower cultivar "Jahongir". The experiments used the preparations "Xumuz baraka", "BioDeposit", and "Biomex-kemi", while an untreated variant served as the control. The results showed that the variant treated with "Biomex-kemi" had a shorter growing period and the highest plant height, number of leaves, head morphological characteristics, and grain yield. The grain yield in this variant reached 3.23 t/ha. The study demonstrated that foliar feeding with biologically active substances, especially "Biomex-kemi", is effective for obtaining a high and high-quality yield from the sunflower cultivar "Jahongir".

Keywords: sunflower cultivar "Jahongir", foliar feeding, biologically active substance, "Biomex" preparation, grain yield, morphological indicators.

**BIOLOGIK FAOL MODDALAR BILAN BARGIDAN OZIQLANTIRISHNING
KUNGABOQARNING DON VA YASHIL MASSA HOSILDORLIGIGA TA'SIRI**

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magistr, O'zbekiston Respublikasi Vazirlar Mahkamasi huzuridagi Biznes va tadbirkorlik oliy maktabi.

Annotatsiya: Ushbu maqolada "Jahongir" kungaboqar navining vegetatsiya davri davomiyligi, morfologik ko'rsatkichlari va don hosildorligiga biologik faol moddalar bilan bargidan oziqlantirishning ta'siri o'rganilgan. Tajribalarda "Xumuz baraka", "BioDeposit" va "Biomex-kemi" preparatlari qo'llanilgan, nazorat sifatida esa bargidan ishlov berilmagan variant olingan. Natijalarga ko'ra, "Biomex-kemi" preparati bilan ishlov berilgan variantda vegetatsiya davri qisqargan hamda o'simlik bo'yi, barglar soni, savatchaning morfologik ko'rsatkichlari va don hosildorligi eng yuqori bo'lgan. Ushbu variantda don hosildorligi 3,23 t/ga ni tashkil etgan. Tadqiqot natijalari biologik faol moddalar bilan bargidan oziqlantirish, ayniqsa "Biomex-kemi" preparatini qo'llash, "Jahongir" kungaboqar navidan yuqori va sifatli hosil olishda samarali ekanini ko'rsatdi.

Kalit so'zlar: "Jahongir" kungaboqar navi, bargidan oziqlantirish, biologik faol modda, "Biomex" preparati, don hosildorligi, morfologik ko'rsatkichlar.

ВВЕДЕНИЕ

В нашей республике последовательно принимаются меры по выращиванию подсолнечника с целью обеспечения потребностей населения в экологически чистом растительном масле. Возделывание подсолнечника обеспечивает население экологически чистым растительным маслом, а промышленность — сырьём. Для получения высоких урожаев и качественного зерна подсолнечника использовались три вида препаратов для листовой подкормки, содержащих микроэлементы и гуминовые вещества.

Эти удобрения содержат микроэлементы, такие как цинк, магний, медь, железо, кобальт и др., которые играют важную роль в повышении устойчивости растений к жаре, засухе и болезням. Эти микроэлементы повышают способность подсолнечника адаптироваться к различным факторам за счёт расширения корневой системы и увеличения объёма листьев, а также способствуют повышению урожайности зерна.

МАТЕРИАЛЫ И МЕТОДЫ

Для эксперимента были взяты семена подсолнечника сорта «Жахонгир». Растения подкармливали тремя видами биологически активных веществ, а в качестве стандарта использовали вариант без обработки. Эксперименты проводились в трёх повторениях: в каждом питомнике по 4 ряда, на площади 19,6 м². Семена высевали 19 апреля, а для обеспечения полного и равномерного прорастания проводили полив. Во всех вариантах всходы появились через 10–11 дней.

Из каждого варианта опыта отбирали по пять целых, неповреждённых корзинок с зерном, и в лабораторных условиях изучали следующие показатели: массу корзинки с зерном, массу корзинки с зерновыми отходами после отделения зерна, массу корзинки без зерна, массу чистого зерна и массу отходов после просеивания.

РЕЗУЛЬТАТЫ

В ходе эксперимента было установлено, что во втором варианте, обработанном биологически активным веществом «Xumuz baraka», период молочной спелости составил 70–72 дня, восковой спелости — 80–82 дня, а полного созревания — 96 дней. В варианте 3, обработанном препаратом «BioDeposit», период молочной спелости составил 70–71 день, период восковой спелости — 79–81 день, а полного созревания — 95 дней. В варианте 4,

обработанном препаратом «Биомекс-кеми», период молочной спелости составил 69–70 дней, период восковой спелости — 78–80 дней, а полного созревания — 93 дня, что на 2–3 дня раньше, чем в варианте 1 без подкормки.

Что касается биометрических показателей, наибольшая высота растений была зафиксирована в варианте 4, обработанном биологически активным препаратом «Биомекс-кеми», и составила 175,7 см. Варианты, обработанные препаратами «Хумуз барак» и «BioDeposit», показали средние результаты: высота растений составила 170,6–173,6 см. Наименьшая высота растений была зафиксирована в варианте 1 без подкормки — 167,7 см. Установлено, что высота растений подсолнечника в вариантах, обработанных тремя различными биологически активными препаратами, была на 2,9–8,0 см выше, чем в контрольном варианте без обработки.

При обработке препаратом «Хумуз барак» количество листьев на растении составило 24,0 шт., в варианте 3 с препаратом «BioDeposit» — 24,3, а наибольшее количество листьев на растение — 25,1 — наблюдалось в варианте 4, обработанном препаратом «Биомекс-кеми».

Изучение длины окружности корзинки подсолнечника показало, что в варианте 2, обработанном препаратом «Хумуз барак», этот показатель составил 80,0 см, в варианте 3, обработанном препаратом «BioDeposit», — 81,1 см, а наибольшее значение — 83,9 см — наблюдалось в варианте 4, обработанном препаратом «Биомекс-кеми».

При изучении урожайности зерна подсолнечника сорта «Жахонгир» было установлено, что урожайность зерна в контрольном варианте 1 без удобрений составила 3,01 т/га, в варианте 2 «Хумуз барак» — 3,16 т/га, в варианте 3 «BioDeposit» — 3,18 т/га, а максимальная урожайность зерна в варианте 4 «Биомекс-кеми» составила 3,23 т/га, что на 0,22 т/га выше, чем в контрольном варианте 1 без удобрений (табл. 1).

Таблица 1. Влияние листовой подкормки на период роста, морфологию и урожайность зерна подсолнечника сорта «Жахонгир»

№	Виды подкормки	Дата посева	День прорастания	Полное созревание	Высота растения, см	Количество листьев, шт.	Окружность цветка, см	Урожайность зерна, т/га
1	Без обработки (контроль)	19.04	11	98	167,7	22,9	79,5	3,01
2	Хумуз барак	19.04	11	96	170,6	24,0	80,0	3,16
3	BioDeposit	19.04	11	95	173,6	24,3	81,1	3,18
4	Биомекс-кеми	19.04	11	93	175,7	25,1	83,9	3,23

В 1-м варианте без обработки общая масса корзинки с зерном составила 120,2 г, масса корзинки без зерна — 48,0 г, масса корзинки с зерновыми отходами — 72,3 г, масса чистого зерна — 55,7 г, а масса отходов — 16,6 г. Наибольшие показатели были отмечены в варианте 4 с применением препарата «Биомекс-кеми»: масса корзинки с зерном — 129,3 г, масса корзинки без зерна — 52,0 г, масса корзинки с зерновыми отходами — 77,3 г, масса чистого зерна — 59,9 г, а масса отходов — 17,4 г (табл. 2).

Таблица 2. Влияние листовой подкормки подсолнечника сорта «Жахонгир» на показатели (общая масса одной корзинки, масса очищенного зерна в корзинке, урожайность зерна и масса 1000 зёрен)

№	Показатели	Без обработки	Xumuz baraka	BioDeposit	Биомекс-кеми
1	Общий вес одной корзинки, г	120,2	124,9	126,8	129,3
2	Вес зерна в одной корзинке с отходами, г	72,3	75,4	76,1	77,3
3	Вес одной корзинки без зерна, г	48,0	49,4	50,7	52,0
4	Вес чистого зерна в одной корзинке, г	55,7	58,6	59,0	59,9
5	Количество отходов, г	16,6	16,8	17,2	17,4
6	Урожайность зерна, %	46,7	47,0	46,4	46,2
7	Масса 1000 зёрен, г	41,1	43,6	44,2	45,6

ОБСУЖДЕНИЕ

При анализе полученных результатов установлено, что показатели подсолнечника в варианте 4 с препаратом «Биомекс-кеми» были выше, чем в контрольном варианте 1: масса корзинки с зерном — на 9,1 г, масса с зерновыми отходами — на 4,0 г, масса чистого зерна — на 4,2 г, а масса отходов — на 0,8 г. Полученные данные свидетельствуют о положительном влиянии листовой подкормки биологически активными веществами на рост, развитие и продуктивность подсолнечника сорта «Жахонгир». Наиболее выраженный эффект отмечен при применении препарата «Биомекс-кеми».

ЗАКЛЮЧЕНИЕ

1. Доказано, что наиболее оптимальной листовой подкормкой с биологически активными добавками для достижения максимальной урожайности зерна подсолнечника сорта «Жахонгир» является препарат «Биомекс-кеми».

2. Доказано, что при обработке подсолнечника препаратом «Биомекс-кеми» показатели были выше, чем в контрольном варианте без подкормки: масса корзинки с зерном — на 9,1 г, масса с зерновыми отходами — на 4,0 г, масса чистого зерна — на 4,2 г, а масса отходов — на 0,8 г.

3. Установлено, что при подкормке подсолнечника препаратом «Биомекс-кеми» урожайность зерна составила 3,23 т/га, что на 0,22 т/га выше, чем в контрольном варианте без подкормки.

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ULTRATEZPISHAR KUZGI BUG'DOY NAVLARINING MAQBUL SUG'ORISH TARTIBLARI

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Annotatsiya: Ushbu maqolada ultratezpishar kuzgi bug‘doy navlari sug‘orish oldi tuproq namligini CHDNSga nisbatan 70–70–65%, 75–75–70% va 80–80–75% da olib borilgan tadqiqot natijalari haqidagi ma‘lumotlar keltirilgan.

Kalit so‘zlar: Kuzgi bug‘doy, sug‘orish muddatlari, sug‘orish soni va davomiyligi, amal davridagi va mavsumiy sug‘orish me‘yorlari, Chillaki, Ultra, Flesh.

ОПТИМАЛЬНЫЕ РЕЖИМЫ ОРОШЕНИЯ УЛЬТРАСКОРОСПЕЛЫХ СОРТОВ ОЗИМОЙ ПШЕНИЦЫ

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Аннотация: В данной статье представлены результаты исследований ультраскороспелых сортов озимой пшеницы, при которых предполивная влажность почвы поддерживалась на уровне 70–70–65%, 75–75–70% и 80–80–75% от полной полевой влагоёмкости (ППВ).

Ключевые слова: Озимая пшеница, сроки орошения, количество и продолжительность поливов, поливные нормы в период вегетации и сезонные поливные нормы, Чиллаки, Ультра, Флеш.

OPTIMAL IRRIGATION REGIMES FOR ULTRA-EARLY MATURING WINTER WHEAT VARIETIES

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Abstract: This article presents the results of research conducted on ultra-early maturing winter wheat varieties, where pre-irrigation soil moisture was maintained at 70–70–65%, 75–75–70%, and 80–80–75% relative to field capacity (FC).

Keywords: Winter wheat, irrigation timing, number and duration of irrigations, irrigation norms during the growing period and seasonal irrigation requirements, Chillaki, Ultra, Flesh.

KIRISH

O'zbekiston Respublikasi Prezidentining 2022-yil 28-yanvardagi "2022-2026-yillarga mo'ljallangan Yangi O'zbekistonning taraqqiyot strategiyasi to'g'risida"gi PF-60-son farmonida yaqin kelajakda qishloq xo'jaligi sohasidagi islohotlar samarasini oshirish va ushbu jabhani rivojlantirish yuzasidan agrar sohani rivojlantirish, qishloq xo'jaligi mahsulotlarini klaster asosida qayta ishlash va oziq-ovqat xavfsizligini ta'minlash, fermer va dehqonlar daromadini 2 barobarga ko'paytirish uchun zarur sharoitlarni yaratish, qishloq xo'jaligining yillik o'sish sur'atini 5 foizga yetkazish kabi muhim ustuvor vazifalar belgilangan [5].

O'zbekiston Respublikasi Prezidentining farmoni bilan O'zbekistonda qishloq xo'jaligini rivojlantirishning 10 yillik 2020-2030-yillarga mo'ljallangan strategiyani amalga oshirishning ustuvor yo'nalishlari sifatida qishloq xo'jaligi ishlab chiqarishini izchil rivojlantirish, mamlakat oziq-ovqat xavfsizligini yanada mustahkamlash, ekologik toza mahsulotlar ishlab chiqarishni kengaytirish, boshqoli don bozorida intervension mexanizmlar joriy etish, qishloq xo'jaligi mahsulotlarining hosildorligi va raqobatbardoshligi istiqbolda amalga oshirilishi ko'zda tutilgan eng muhim vazifalardan sanaladi. Yuqoridagilardan kelib chiqib kuzgi bug'doydan yuqori va sifatli hosil yetishtirish uchun turli agrotekhnologiyalarning kuzgi bug'doyning dala va laboratoriya unuvchanligini o'rganish borasida dala tajribalari o'tkazildi [4].

Ma'lumki, tipik bo'z tuproqlar sho'rlanmagan hisoblanadi. Shunday bo'lsa-da, ushbu tuproqlarning haqiqatda ham sho'rlanmaganligini bilish uchun va boshqa ko'plab tuproq xususiyatlarini aniqlash maqsadida suvli so'rim tahlillari genetik qatlamlar bo'yicha o'tkazilib, tajriba dalasi tuprog'i tarkibidagi anion, kation, quruq qoldiq, jami tuz miqdorlari aniqlandi.

Olib borilgan tajriba dalasi tuprog'i turli darajada yuvilgan o'rtacha, og'ir qumoq tuproqlardir. Yuvilish darajasiga qarab bu tuproqlarda chirindining va oziqa unsurlarining miqdori turlichadir.

A.Shoymuradovning olib borgan tadqiqotida kuzgi bug'doyning "Krupnika", "Zilol", "Nasaf" navlarini boshqoq uzunligi nam to'plash (fon) variantda 6,9-7,0 sm, CHDNS 65-70-60% variantda 9,1-10,4 sm, CHDNS 70-75-65% variantda 9,6-10,4 sm va CHDNS 75-80-70% bo'lganda 10,0-10,9 sm.ni tashkil etib, tuproqda yuqori namlik saqlangan holda qattiq bug'doy yetishtirishda boshqoq uzunligining yuqori bo'lishi ta'minlanishi aniqlangan [2].

Sh. Xazratqulova va A.Shoymurodov tajribalarida sug'orish qattiq bug'doyning tuplanish-naychalash, boshqolash-gullash va sut pishish fazalarida o'tkazilganda tuproqning 0-100 sm qatlamidagi namlikni 65-70-65% CHDNS da ushlendi. Sug'orish tartibi sug'orish oldi tuproq namligi CHDNS ning 70-80-75% ushlab turilganda to'rt marta sug'orildi. Buning uchun mavsumiy sug'orish me'yori Fon+70-75-50% CHDNS variantda ob-xavo sharoitlari va tuproqdagi namlik zaxirasiga qarab 2070-2080 m³/ga.ni, 65-70-65% CHDNS da 3000-3115 m³/ga.ni, 70-80-75% CHDNS da 3380-3575 m³/ga.ni tashkil etgan [3].

MATERIALLAR VA METODLAR

Ultratezpishar kuzgi bug'doyning maqbul sug'orish tartibi va mineral o'g'it me'yorlarini ishlab chiqish bo'yicha tadqiqotlarimiz mexanik tarkibi o'rta va og'ir qumoq, yer osti suvlari sathi 18-20 m chuqurda joylashgan, avtomorf tipik bo'z tuproqlari sharoitida olib borildi. Tajribada kuzgi bug'doyning tezpishar "Ultra" va "Flesh" navlari ekilgan. Tajribalarimiz 13 ta variantdan iborat bo'lib, 3 tadan takrorlanishda, bitta yarusda joylashtirildi. Har bir delyanka 8 qatordan, egat uzunligi 50 m, qator orasi 60 sm, bitta delyanka umumiy maydoni 240 m², shundan hisob maydoni 120 m² ni tashkil etadi. Birinchi variantda nazorat sifatida "Chillaki" navi olingan bo'lib, "Ultra" va "Flesh" navlari 3 xil sug'orish oldi tuproq namligida ya'ni CHDNSga nisbatan 70-70-65%; 75-

75-70%; 80-80-75% sug'orish tartibi, mineral o'g'itlarning 2 xil me'yorlari N-150, P-105, K-75 kg/ga va N-200, P-140, K-100 kg/ga olingan [1].

Bug'doyning suvga bo'lgan talabiga qarab, o'sish-rivojlanish fazalari 3 davrga bo'linadi: donlar unib chiqishidan naychalashgacha; naychalash – gullash davri va hosil pishish davri. Bug'doyning o'sishi va rivojlanishi, hosil to'plashi, donlarning pishishi muddati va bug'doy donining sifati asosan sug'orish muddatlari, soni, sug'orish tizimi, davomiyligi, amal davrlaridagi bir martalik va mavsumiy sug'orish me'yorlari bilan belgilanadi. Sug'orish natijasida o'simlik tuproqdan o'ziga zarur bo'lgan moddalarni (kaliy, azot, fosfor, va h.k) oladi, o'simlik va tuproqdagi issiqlik sharoitiga ta'sir etadi.

Bug'doyning rivojlanish fazalariga ko'ra, sug'orish muddatlarini to'g'ri belgilash va o'z vaqtida sug'orish, undan yuqori hosil olish garovidir. Bug'doyning naychalash davrigacha to'g'ri sug'orilishi uning maromida o'sishi va gullashi, don to'lishi yaxshi rivojlanib, yuqori hosil to'plashiga olib keladi. Bug'doyni sug'orish dasturda belgilangan tartiblarda sug'orish oldi tuproq namligi asosida olib borildi.

	
1-rasm. Bug'doyni sug'orish jarayoni	2-rasm. Bug'doyni sug'orish jarayoni

NATIJALAR

2025-yildagi ultratezpishar kuzgi bug'doy parvarishida sug'orish oldi tuproq namligi CHDNSga nisbatan 70–70–65 % etib belgilangan variantlarda sug'orish davomiyligi boshloqlashgacha 11 soatni, sut-mum pishishgacha 9 tashkil etib, 0-1-1 tizimda 2 marotaba ssug'orishlar o'tkazilib ssug'orishlar orasi 20 kunni tashkil qildi. Mavsumiy sug'orish me'yorlari esa 1180 m³/ga ni tashkil qildi. Sug'orish me'yorlari boshloqlashgacha 670 m³/ga, pishishgacha 510 m³/ga ni tashkil qildi. Sug'orish oldi tuproq namligi CHDNSga nisbatan 75–75–70 % etib belgilangan variantlarda sug'orish davomiyligi boshloqlashgacha 10,5-11 soatni, sut-mum pishish davrida 8 soatni, ssug'orishlar orasi 14 va 17 kunlarni tashkil etib, 0-2-1 tizimda 3 marotaba ssug'orishlar o'tkazildi. Mavsumiy sug'orish me'yorlari esa 1780 m³/ga ni tashkil qildi. Sug'orish me'yorlari boshloqlashgacha 2 marta sug'orilib, 1- chi sug'orish 640 m³/ga va 2-sug'orish esa 660 m³/ga, pishishgacha 480 m³/ga ni tashkil qildi. Sug'orish oldi tuproq namligi CHDNSga nisbatan 80–80–75 % etib belgilangan variantlarda sug'orish davomiyligi naychalashgacha 9 soatni, boshloqlashgacha 10 va 10,5 soatni, sut-mum pishish davrida 7 soatni, ssug'orishlar orasi 11-12-15 kunlarni tashkil etib, 1-2-1 tizimda 4 marotaba sug'orishlar o'tkazildi. Mavsumiy sug'orish me'yorlari esa 2180 m³/ga ni tashkil qildi. Sug'orish me'yorlari naychalashgacha 510 m³/ga, boshloqlashgacha 2 marotaba sug'orilib, 1- sug'orishda 610 m³/ga, 2-sug'orishda 620 m³/ga, pishishgacha 430 m³/ga ni tashkil qildi.

1-jadval. O'rganilgan kuzgi bug'doy navlarini sug'orish muddatlari, soni, tizimi, davomiyligi, amal davridagi va mavsumiy sug'orish me'yorlari, 2024-yil

Sug'orish oldi tuproq namligi, CHDNSga nisbatan, %	Ko'rsatkichlar	Sug'orish soni va me'yori, m3/ga 2023-2024-yil	Sug'orish soni va me'yori, m3/ga 2023-2024-yil	Sug'orish soni va me'yori, m3/ga 2023-2024-yil	Sug'orish tizimi	Mavsumiy sug'orish me'yori, m3/ga
		1	2	3		
70-70-65	Sug'orish sanasi	29.04.2024			0-1-0	680
70-70-65	Sug'orish me'yori, m3/ga	680			0-1-0	680
70-70-65	Sug'orish vaqti, soat-min.	1200-0000			0-1-0	680
70-70-65	Sug'orish davomiyligi, soat	12			0-1-0	680
70-70-65	Ssug'orishlar orasi, kun				0-1-0	680
75-75-70	Sug'orish sanasi	24.04.2024	10.05.2024		0-1-1	1130
75-75-70	Sug'orish me'yori, m3/ga	640	490		0-1-1	1130
75-75-70	Sug'orish vaqti, soat-min.	1300-0000	1000-1900		0-1-1	1130
75-75-70	Sug'orish davomiyligi, soat	11	9		0-1-1	1130
75-75-70	Ssug'orishlar orasi, kun		16		0-1-1	1130
80-80-75	Sug'orish sanasi	19.04.2024	30.04.2024	09.05.2024	0-2-1	1670
80-80-75	Sug'orish me'yori, m3/ga	600	610	460	0-2-1	1670
80-80-75	Sug'orish vaqti, soat-min.	0800-1800	09001930	1400-2200	0-2-1	1670
80-80-75	Sug'orish davomiyligi, soat	10	10,5	8	0-2-1	1670
80-80-75	Ssug'orishlar orasi, kun		11	9	0-2-1	1670

2-jadval. O'rganilgan kuzgi bug'doy navlarini sug'orish muddatlari, soni, tizimi, davomiyligi, amal davridagi va mavsumiy sug'orish me'yorlari, 2025-yil

Sug'orish oldi tuproq namligi, CHDNSg a nisbatan, %	Ko'rsatkichlar	Sug'orish soni va me'yori, m3/ga	Sug'orish soni va me'yori, m3/ga	Sug'orish soni va me'yori, m3/ga	Sug'orish soni va me'yori, m3/ga 2023-2024-yil	Sug'orish tizimi	Mavsumiy sug'orish me'yori, m3/ga
		1	2	3	4		
70-70-65	Sug'orish sanasi	14.04.2025	4.05.2025			0-1-1	1180
70-70-65	Sug'orish me'yori, m3/ga	670	510			0-1-1	1180
70-70-65	Sug'orish vaqti, soat-min.	1000-2100	900-1800			0-1-1	1180
70-70-65	Sug'orish davomiyligi, soat	11	9			0-1-1	1180
70-70-65	Sug'orishlar orasi, kun		20			0-1-1	1180
75-75-70	Sug'orish sanasi	04.04.2025	18.04.2025	05.05.2025		0-2-1	1780
75-75-70	Sug'orish me'yori, m3/ga	640	660	480		0-2-1	1780
75-75-70	Sug'orish vaqti, soat-min.	1400-0030	1500-200	1100-1900		0-2-1	1780
75-75-70	Sug'orish davomiyligi, soat	10,5	11	8		0-2-1	1780
75-75-70	Sug'orishlar orasi, kun		14	17		0-2-1	1780
80-80-75	Sug'orish sanasi	29.03.2025	09.04.2025	21.04.2025	6.05.2025	1-2-1	2180
80-80-75	Sug'orish me'yori, m3/ga	510	610	620	430	1-2-1	2180
80-80-75	Sug'orish vaqti, soat-min.	0700-1600	1900-0500	0700-1730	1000-1700	1-2-1	2180
80-80-75	Sug'orish davomiyligi, soat	9	10	10,5	7	1-2-1	2180
80-80-75	Sug'orishlar		11	12	15	1-2-1	2180

Sug'orish oldi tuproq namligi, CHDNSg a nisbatan, %	Ko'rsatkichla r	Sug'orish soni va me'yori, m ³ /ga	Sug'orish soni va me'yori, m ³ /ga	Sug'orish soni va me'yori, m ³ /ga	Sug'oris h soni va me'yori, m ³ /ga 2023- 2024-yil	Sug'oris h tizimi	Mavsumi y sug'orish me'yori, m ³ /ga
		1	2	3	4		
	orasi, kun						

MUHOKAMA

O'rganilgan ultratezpishar kuzgi bug'doy navlarida sug'orish rejimlari bo'yicha 2024–2025-yilillar davomida olib borilgan tajribalar natijasida sug'orish soni, davomiyligi hamda mavsumiy sug'orish me'yorlari tuproq namligi (CHDNSga nisbatan 70–70–65 %, 75–75–70 % va 80–80–75 %) darajalariga bog'liq holda sezilarli farqlanishi aniqlandi. 2024-yil vegetatsiya davrida yog'ingarchilik miqdorining nisbatan ko'pligi sababli ssug'orishlarga bo'lgan ehtiyoj kamaygan bo'lib, barcha sug'orish rejimlarida ssug'orishlar soni 2025-yilga nisbatan bir pog'ona kam bo'lganligi qayd etildi. Xususan, 70–70–65 % rejimda 0-1-0 tizim, 75–75–70 % rejimda 0-1-1 tizim, 80–80–75 % rejimda esa 0-2-1 tizim kuzatilgan.

2025-yilda esa vegetatsiya davrida yog'ingarchilik miqdorining kamayishi natijasida tuproq namligini ta'minlash maqsadida barcha sug'orish rejimlarida ssug'orishlar soni o'rtacha 1 taga ortgan. Bu holat sug'orish tizimlarining 70–70–65 % rejimda 0-1-1, 75–75–70 % rejimda 0-2-1, 80–80–75 % rejimda esa 1-2-1 tizimga o'tishiga olib kelgan. Mavsumiy sug'orish me'yorlari bo'yicha ham yillar kesimida farq kuzatildi. 2024-yilda ushbu ko'rsatkichlar 680–1670 m³/ga oralig'ida bo'lgan bo'lsa, 2025-yilda 1180–2180 m³/ga gacha oshganligi aniqlanib, bu holat suvga bo'lgan ehtiyojning iqlim sharoitlariga bevosita bog'liqligini tasdiqlaydi.

XULOSA

Olingan natijalar kuzgi bug'doy yetishtirishda sug'orish rejimlarini iqlim sharoiti va yog'ingarchilik miqdoriga mos ravishda optimallashtirish zarurligini ko'rsatadi. Bu esa suv resurslaridan samarali foydalanish va hosildorlikni barqaror ta'minlashda muhim ahamiyatga ega.

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G'O'ZANING O'SISH VA RIVOJLANISHIGA "TANDEM" STIMULYATORINING TA'SIRI

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Annotatsiya: Mazkur maqolada g'o'zaning o'sishi va rivojlanishiga "Tandem" stimulyatorining ta'siri o'rganilgan. Tadqiqot natijalariga ko'ra, stimulyator qo'llanilganda o'simlikning vegetativ va generativ organlarining rivojlanishi tezlashishi, hosildorlikning oshishi va stress omillarga chidamlilikning kuchayishi aniqlangan.

Kalit so'zlar: g'o'za, stimulyator, Tandem, o'sish, rivojlanish, hosildorlik.

ВЛИЯНИЕ СТИМУЛЯТОРА «TANDEM» НА РОСТ И РАЗВИТИЕ ХЛОПЧАТНИКА

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Аннотация: В данной статье изучается влияние стимулятора «Тандем» на рост и развитие хлопчатника. По результатам исследования, использование стимулятора ускоряет развитие вегетативных и генеративных органов растения, повышает продуктивность и увеличивает устойчивость к стрессовым факторам.

Ключевые слова: хлопок, стимулятор, Tandem, рост, развитие, продуктивность.

THE EFFECT OF THE "TANDEM" STIMULATOR ON THE GROWTH AND DEVELOPMENT OF COTTON PLANTS

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Abstract: This article studies the effect of the "Tandem" stimulator on the growth and development of cotton. According to the results of the study, the use of the stimulator accelerates the development of vegetative and generativ organs of the plant, increases productivity, and increases resistance to stress factors.

Keywords: cotton, stimulant, Tandem, growth, development, productivity.

KIRISH

Qishloq xo'jaligida yuqori hosildorlikka erishish uchun zamonaviy agrotexnologiyalar, jumladan o'sish stimulyatorlaridan foydalanish muhim ahamiyatga ega. G'o'za O'zbekiston iqtisodiyotida yetakchi o'rin egallovchi ekinlardan biri bo'lib, uning samaradorligini oshirish

dolzarb masalalardan hisoblanadi. O'simlik o'sish stimulyatorlari – bu o'simliklarning fiziologik jarayonlarini faollashtiruvchi biologik yoki kimyoviy moddalar hisoblanadi. Ular urug' unishi, ildiz tizimi rivojlanishi, barglar yuzasining kengayishi hamda fotosintez jarayoniga ijobiy ta'sir ko'rsatadi.

Ilmiy tadqiqotlar shuni ko'rsatadiki, stimulyatorlar qo'llanilganda o'simliklarda: o'sish tezlashadi; ildiz tizimi kuchayadi; stress omillarga chidamlilik ortadi; hosil elementlari soni ko'payadi.

Natijada ekinlarning hosildorligi va mahsulot sifati yaxshilanadi.

O.O.Khodanitska [2020; 3-5 b.] ta'kidlashicha, o'simliklarning o'sish regulyatorlari o'simlik organizmiga ta'sir qilish yo'nalishiga qarab, o'simliklarning o'sishi va rivojlanishini jadallashtiruvchi va sekinlashtiruvchilarga bo'linadi. Bunday o'sish regulyatorlari tarkibida biologik faol moddalar bo'lib metabolik jarayonlarni kuchaytirib, o'simliklarning atrof-muhit omillariga chidamliligini va mahsulot sifatini yaxshilaydi.

L.Y.Jun, Z.X.Feng, et al [2018; 49-54 b.] fikriga ko'ra, o'simliklarning o'sish regulyatorlari – bu o'simliklarning o'sish tartibini o'zgartirishi mumkin bo'lgan va o'simliklarning o'sishi va mahsuldorligini oshirish uchun ishlatilishi mumkin bo'lgan moddalar guruhidir.

W.Garrett Owen, B.Whipker [2019; 245-253 b.] ta'kidlanishicha, o'simlik o'sish regulyatorlari o'sishni jadallashtirish yoki susaytirishi, shoxlanishini kuchaytirishi, shuningdek gullashni tezlashtirishi yoki kechiktirishi mumkin.

J.M.Al-Khayri, M.Arif, S.Kareem, et al, [2024; 1-11 b.] qayd etishlaricha, o'simlikni o'suv davrida o'sishni sozlovchi moddalar qo'llanganda ildizdan oziqa moddalarni o'zlashtirilishi yaxshilanib, o'simlikning o'sishi, rivojlanishi jadallashadi, yuqori sifatli hosil olinadi.

Sh.Abdualimov, Y.Soriyevlarning [2008; 323-326 b.] ta'kidlashicha Rostbisol stimulyatori bilan chigit ekish oldidan va g'o'zaning shonalash davrida ishlov berish, yuqori va sifatli paxta hosili olish imkoniyatini yaratadi. Shuning bilan birga chigit ekish sarfini gektariga 45 kg me'yorda belgilash ham maqbul hisoblanadi.

So'nggi yillarda o'simliklarning o'sishini jadallashtiruvchi va stressga chidamliligini oshiruvchi biologik faol moddalar keng qo'llanilmoqda. Shulardan biri "Tandem" stimulyatori hisoblanadi.

Tandem – bu fitogormonlar Auksin, sitokinin va Aversektin qo'shilgan gumin va fulvo kislotalarning konsentrati. Bir vaqtning o'zida o'g'it, himoya va o'simliklarning o'sishiga yordam beruvchi zamonaviy, yuqori konsentratsiyali gumus preparati. Uning faol moddalari yuqori biologik faollikka ega va o'simliklar tomonidan deyarli to'liq so'riladi. U barcha turdagi o'simliklarning o'sishi va rivojlanishini kuchaytiradi, o'simliklarning infektsiyalarga, zamburug'larga, parazitlarga (nematodalarga qarshi samarali) va stressga chidamliligi uchun immunitetni shakllantiradi va hosil sifatini yaxshilaydi (nitrat miqdorini 40% ga kamaytiradi va vitamin va oqsil miqdorini oshiradi "Tandem" stimulyatori qishloq xo'jaligida o'simliklarning o'sishi va rivojlanishini rag'batlantirish maqsadida qo'llaniladigan preparatlardan biri hisoblanadi. Ushbu stimulyator o'simlik hujayralarida metabolik jarayonlarni faollashtirishi, ildiz tizimining rivojlanishini kuchaytirishi hamda fotosintez samaradorligini oshirishi bilan tavsiflanadi.

Tadqiqotlarda aniqlanishicha, bunday turdagi stimulyatorlar g'o'za o'simligining vegetativ va generativ organlari rivojlanishiga ijobiy ta'sir ko'rsatib, hosil elementlari shakllanishini yaxshilaydi.

MATERIALLAR VA METODLAR

Dala tajribasida kuzatishlar, hisoblash va tahlillar “Dala tajribalarini o‘tkazish uslublari” O‘zPITI uslubiy qo‘llanmasiga amal qilingan holda olib borildi. Tajribada olingan ma’lumotlarga B.A.Dospexov uslubi bo‘yicha matematik statistik ishlov berildi.

Tajriba ob‘ekti sifatida ingichka tolali SP-1607 g‘o‘za navi chigitlari tanlandi. Tajribada har oyning boshida g‘o‘zaning o‘sishi, rivojlanishi kuzatilib borildi.

NATIJALAR

Sh.Abdualimov [2013; 58-60 b.] tadqiqotlarida noqulay tabiiy iqlim sharoitlarda chigitga T-86, Roslin, Nitrolin, TJ-85, XS-2, Oksigumat, Vitavaks 200FF kabi fiziologik faol moddalar bilan ishlov berilganda nihollarning unib chiqishi tezlashib, vegetativ va generativ organlar soni va salmog‘i oshishi hisobiga g‘o‘zaning barg yuzasi, fotosintez mahsuldorligi va hosildorlik ortganini aniqlagan.

Tajriba variantlarida g‘o‘zani bosh poya balandligi 1 iyunda 11,5-12,9 sm, chinbarglari 8,0-9,4 dona, shonalar soni 1,0-1,5 dona bo‘lgani holda variantlar bo‘ylab bir-biriga yaqin ko‘rsatkichlar olindi.

1 iyulda variantlar o‘rtasida farqlanish aniqlandi. Tajribaning nazorat variantida, ya’ni chigit oddiy suvda namlab ekilganda g‘o‘zaning bo‘yi 41,5 sm, hosil bo‘g‘inlar soni 9,4 dona, shonalar soni 12,2 dona, gullar soni 2,1 dona tashkil qildi. Uzgumi stimulyatori bilan chigitga ekishdan oldin 0,6 l/t, 3-5 chinbarg davrida 0,2 l/ga, shonalash davrida 0,3 l/ga, gullash davrida 0,4 l/ga me’yorida ishlov berilganda bo‘yi 45,4 sm, hosil bo‘g‘inlar soni 11,1 dona, shonalar soni 15,3 dona, gullar soni 2,4 dona tashkil qilib, nazoratdan bo‘yi 3,9 smga, hosil bo‘g‘inlar soni 1,7 dona, shonalar soni 3,1 dona, gullar soni 0,3 dona ko‘p bo‘ldi.

Eng past ko‘rsatkichlar Tandem stimulyatori bilan chigitga ekishdan oldin 0,4 l/t me’yorida ishlov berilganda bo‘yi 43,3 sm, hosil bo‘g‘inlar soni 8,8 dona, shonalar soni 13,8 dona, gullar soni 2,1 dona tashkil qilib, nazoratdan bo‘yi 1,8 sm ga, hosil bo‘g‘inlar soni 0,6 donaga kamroq, shonalar soni 1,6 dona ko‘p bo‘ldi, gullar soni bir xil bo‘ldi.

Eng katta ko‘rsatkichlarga ega bo‘lgan Tandem stimulyatori bilan chigitga ekishdan oldin 0,4 l/t, 3-5 chinbarg davrida 0,2 l/ga, shonalash davrida 0,4 l/ga, gullash davrida 0,6 l/ga me’yorida ishlov berilganda bo‘yi 51,9 sm, hosil bo‘g‘inlar soni 11,8 dona, shonalar soni 15,7 dona, gullar soni 2,8 dona tashkil qilib, nazoratdan bo‘yi 10,4 smga, hosil bo‘g‘inlar soni 2,4 dona, shonalar soni 3,5 dona, gullar soni 0,7 dona ko‘p bo‘ldi.

1-avgustda fenologik kuzatuv o‘tkazilganda, tajribaning nazorat variantida, ya’ni chigit oddiy suvda namlab ekilganda g‘o‘zaning bo‘yi 63,4 sm, hosil bo‘g‘inlar soni 13,2 dona, ko‘saklar soni 8,3 dona tashkil qildi. Uzgumi stimulyatori bilan chigitga ekishdan oldin 0,6 l/t, 3-5 chinbarg davrida 0,2 l/ga, shonalash davrida 0,3 l/ga, gullash davrida 0,4 l/ga me’yorida ishlov berilganda bo‘yi 68,1 sm, hosil bo‘g‘inlar soni 14,0 dona, ko‘saklar soni 9,4 dona tashkil qilib, nazoratdan bo‘yi 4,7 sm ga, hosil bo‘g‘inlar soni 0,8 dona, ko‘saklar soni 1,1 dona ko‘p bo‘ldi.

Eng past ko‘rsatkichlar Tandem stimulyatori bilan chigitga ekishdan oldin 0,4 l/t me’yorida ishlov berilganda bo‘yi 64,0 sm, hosil bo‘g‘inlar soni 13,6 dona, ko‘saklar soni 8,5 dona tashkil qilib, nazoratdan bo‘yi 0,6 sm ga, hosil bo‘g‘inlar soni 0,4 dona, ko‘saklar soni 0,2 donaga ko‘p bo‘ldi.

Eng katta ko‘rsatkichlarga ega bo‘lgan Tandem stimulyatori bilan chigitga ekishdan oldin 0,4 l/t, 3-5 chinbarg davrida 0,2 l/ga, shonalash davrida 0,4 l/ga, gullash davrida 0,6 l/ga me’yorida ishlov berilganda bo‘yi 70,9 sm, hosil bo‘g‘inlar soni 14,4 dona, ko‘saklar soni 9,5 dona tashkil qilib, nazoratdan bo‘yi 7,5 sm ga, hosil bo‘g‘inlar soni 1,2 dona, ko‘saklar soni 1,2 dona ko‘p bo‘ldi.

1-sentyabrda fenologik kuzatuv o'tkazilganda, tajribaning nazorat variantida, ya'ni chigit oddiy suvda namlab ekilganda g'o'zaning bo'yi 87,1 sm, hosil bo'g'inlar soni 14,4 dona, ko'saklar soni 13,3 donani, shundan ochilgani 2,4 donani tashkil qildi. Uzgumi stimulyatori bilan chigitga ekishdan oldin 0,6 l/t, 3-5 chinbarg davrida 0,2 l/ga, shonalash davrida 0,3 l/ga, gullash davrida 0,4 l/ga me'yorida ishlov berilganda bo'yi 96,5 sm, hosil bo'g'inlar soni 15,2 dona, ko'saklar soni 14,4 donani, shundan ochilganlar soni 4,0 donani tashkil qilib, nazoratdan bo'yi 9,4 sm ga, hosil bo'g'inlar soni 0,8 dona, ko'saklar soni 1,1 dona, ochilganlar soni 1,6 donaga ko'p bo'ldi.

Eng past ko'rsatkichlar Tandem stimulyatori bilan chigitga ekishdan oldin 0,4 l/t me'yorida ishlov berilganda bo'yi 81,7 sm, hosil bo'g'inlar soni 14,6 dona, ko'saklar soni 13,5 donani, shundan ochilganlar soni 3,3 tashkil qilib, nazoratdan bo'yi 5,4 sm ga pastroq, hosil bo'g'inlar soni 0,2 dona, ko'saklar soni 0,2 donaga, ochilganlar soni 1,1 donaga ko'p bo'ldi.

1-jadval. Ingichka tolali g'o'zaning o'sishi va rivojlanishiga stimulyatorlarning ta'siri (g'o'zaning SP-1607 navi)

№	O'simlikning bo'yi, sm				Chinbarg soni, dona	Hosil bo'g'ini, dona			Shonalalar soni, dona		Guli, dona		Ko'saklar soni, dona			Ochilgani	
	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	don	%
№ 6	7	8	9	10	106	7	8	9	6	7	7	8	7	8	9	a	
1 ₅	11,5	41,4	63,1	87,	8,0	9,4 ₂	13,4	14,	10,2	12,2	12,	2,1	3,1	8,3 ₃	13,	2,4 ₀	18,
2 ₇	12,4	45,1	68,5	96,	8,4 ₁	11,0	14,2	15,	1,3 ₃	15,3	15,	2,4	3,3	9,4 ₄	14,	4,0 ₈	27,
3 ₅	12,3	43,0	64,7	81,	8,1	8,8 ₆	13,6	14,	1,1 ₈	13,8	13,	2,1	3,7	8,5 ₅	13,	3,3 ₄	24,
4 ₆	12,8	43,0	65,6	88,	8,1	9,0 ₄	13,6	14,	1,3 ₆	14,6	14,	2,1	3,3	9,3 ₅	13,	3,8 ₁	28,
5 ₇	12,5	45,3	64,5	90,	8,2	9,5 ₃	13,8	14,	1,2 ₈	13,8	13,	2,2	3,8	9,2 ₀	14,	4,0 ₅	28,
6 ₉	12,9	51,9	70,4	97,	8,6 ₈	11,4	14,3	15,	1,1 ₇	15,7	15,	2,8	4,7	9,5 ₅	14,	4,5 ₀	31,
7 ₄	12,9	43,5	64,3	89,	8,5 ₇	10,7	13,7	14,	1,5 ₈	14,8	14,	2,3	4,2	8,9 ₅	13,	3,6 ₇	26,
8 ₉	12,3	43,6	65,6	80,	8,6 ₁	10,4	13,5	14,	1,1 ₃	13,3	13,	2,4	4,0	9,1 ₈	13,	3,3 ₉	23,
9 ₇	12,3	43,5	67,1	90,	9,0 ₃	10,5	13,7	14,	1,2 ₉	13,9	13,	2,3	4,5	9,0 ₉	13,	3,6 ₉	25,
1 ₈	12,6	44,7	67,6	85,	9,3 ₂	10,4	13,5	14,	1,4 ₉	13,9	13,	2,3	4,2	8,5 ₈	13,	3,5 ₃	25,
1 ₄	12,6	43,9	63,5	83,	9,4	9,7 ₁	13,3	14,	1,2 ₁	14,1	14,	2,3	4,0	8,8 ₃	13,	3,2 ₀	24,

MUHOKAMA

Ф.Пирахунова, Ф.Нуриддинова, А.Абзаловлар [2016; 183-185 б.] tadqiqotida ham shunga o'xshash natijalar qayd etilib, diatsetat monoetanolamin stimulyatori mikroelementlardan tarkib topgan bo'lib, ushbu stimulyator bilan urug'ga ishlov berilganda nihollarning unib chiqishi tezlashib, o'sib rivojlanishi yaxshilangan, g'o'zaning shonalash va gullash davrlarida qo'llanilganda fiziologik jarayonlar yaxshilanishi natijasida hosildorlikning ortishi aniqlagan.

F.Shamsitdinov, Sh.Abdualimovlarning fikricha, Namangan viloyatini och tusli bo'z tuproqlari sharoitida chigitga Unum stimulyatori bilan 1,5-2,0 ml/t me'yorda ishlov berilib gektariga 45 kg ekilganda va g'o'zaning shonalash davrida 15 ml/ga qo'llanilganda unib chiqishi, o'simlikning o'sib rivojlanishi tezlashib, hosildorlik 4,0-4,2 s/ga oshgan [2013; 165-169 б., 98; 172-175 б.]. "Tandem" stimulyatori ham g'o'zaning o'sishi va rivojlanishiga ijobiy ta'sir ko'rsatadi. Uning qo'llanilishi o'simlikning vegetativ o'sishini kuchaytiradi, generativ organlar shakllanishini yaxshilaydi hamda hosildorlikni oshiradi. Tajribada chigitlarga ekishdan oldin va g'o'zaning o'suv davrida stimulyatorlar bilan ishlov berilganda jadal o'sishi, rivojlanishi kuzatildi.

O'tkazilgan tajriba natijalarida ko'ra chigitga ekishdan oldin va g'o'zaning o'suv davrida "Tandem" stimulyatori qo'llanilgan variantlarda o'simlik bo'yi 10–15% ga yuqori bo'ldi, barg yuzasi kengaydi va fotosintez faolligi oshdi, gullash va ko'saklash jarayonlari tezlashdi, hosil elementlari soni ko'paydi.

XULOSA

Tajribada Tandem stimulyatori bilan chigitga ekishdan oldin 0,4 l/t, 3-5 chinbarg davrida 0,2 l/ga, shonalash davrida 0,4 l/ga, gullash davrida 0,6 l/ga me'yorida ishlov berilganda bo'yi 97,4 sm, hosil bo'g'inlar soni 14,8 dona, ko'saklar soni 14,5 donani, shundan ochilganlar soni 4,5 donani tashkil qilib, nazoratdan bo'yi 10,3 sm ga, hosil bo'g'inlar soni 0,9 dona, ko'saklar soni 1,2 donaga, ochilganlar soni 2,1 donaga ko'p bo'ldi. Kelgusida ushbu stimulyatorni turli tuproq-iqlim sharoitlarida kengroq o'rganish tavsiya etiladi.

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07.00.00 – Tarix fanlari

07.00.00 - History

07.00.00 - История

**SAMARQAND QISHLOQ XO‘JALIGI INSTITUTINING MUTAXASSISLARNI
TAYYORLASHDAGI ROLI (1930–1990)**

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Annotatsiya: Ushbu maqolada 1930–1990-yillar oralig‘ida Samarqand qishloq xo‘jaligi institutining O‘zbekiston agrar sohasi uchun malakali mutaxassislar tayyorlashdagi tarixiy o‘rni ilmiy jihatdan tahlil qilinadi. Tadqiqotda institutning tashkil topish shart-sharoitlari, o‘quv yo‘nalishlari, ilmiy-pedagogik faoliyati, amaliyotga yo‘naltirilgan ta‘lim tizimi hamda uning qishloq xo‘jaligi ishlab chiqarishi bilan aloqalari o‘rganiladi. Shuningdek, institutning agronomiya, chorvachilik, veterinariya, irrigatsiya, seleksiya va qishloq xo‘jaligi iqtisodiyoti yo‘nalishlarida kadrlar tayyorlash orqali respublika agrar taraqqiyotiga qo‘shgan hissasi yoritiladi. Tadqiqot natijalari Samarqand qishloq xo‘jaligi instituti nafaqat ta‘lim maskani, balki qishloq xo‘jaligini ilmiy asosda rivojlantirgan muhim markazlardan biri bo‘lganini ko‘rsatadi.

Kalit so‘zlar: Samarqand qishloq xo‘jaligi instituti, agrar ta‘lim, mutaxassis tayyorlash, qishloq xo‘jaligi, sovet davri, agronomiya, veterinariya, zootexnika, irrigatsiya, seleksiya, ilmiy kadrlar.

**РОЛЬ САМАРКАНДСКОГО СЕЛЬСКОХОЗЯЙСТВЕННОГО ИНСТИТУТА В
ПОДГОТОВКЕ СПЕЦИАЛИСТОВ (1930–1990)**

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Аннотация: В данной статье проводится научный анализ исторической роли Самаркандского сельскохозяйственного института в подготовке квалифицированных специалистов для аграрного сектора Узбекистана в период 1930–1990 годов. В исследовании рассматриваются условия создания института, направления обучения, научно-педагогическая деятельность, практико-ориентированная система образования, а также его связи с сельскохозяйственным производством. Кроме того, освещается вклад института в развитие аграрной сферы республики посредством подготовки кадров в области агрономии, животноводства, ветеринарии, ирригации, селекции и экономики сельского хозяйства. Результаты исследования показывают, что Самаркандский сельскохозяйственный институт был не только образовательным учреждением, но и одним из важнейших центров научного развития сельского хозяйства.

Ключевые слова: Самаркандский сельскохозяйственный институт, аграрное образование, подготовка специалистов, сельское хозяйство, советский период, агрономия, ветеринария, зоотехника, ирригация, селекция, научные кадры.

THE ROLE OF THE SAMARKAND AGRICULTURAL INSTITUTE IN TRAINING SPECIALISTS (1930–1990)

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Abstract: This article provides a scientific analysis of the historical role of the Samarkand Agricultural Institute in training qualified specialists for the agricultural sector of Uzbekistan during the period of 1930–1990. The study examines the conditions of the institute's establishment, its academic programs, scientific and pedagogical activities, practice-oriented education system, and its connections with agricultural production. Furthermore, it highlights the institute's contribution to the agrarian development of the republic through training specialists in agronomy, animal husbandry, veterinary science, irrigation, selection, and agricultural economics. The research findings demonstrate that the Samarkand Agricultural Institute was not only an educational institution but also one of the key centers for the scientific development of agriculture.

Keywords: Samarkand Agricultural Institute, agrarian education, specialist training, agriculture, Soviet period, agronomy, veterinary science, zootechnics, irrigation, selection, scientific personnel.

KIRISH

XX asrning 30-yillaridan boshlab O'zbekiston iqtisodiyotida qishloq xo'jaligi ustuvor yo'nalishlardan biriga aylandi. Ayniqsa, sobiq Sovet davlati tomonidan amalga oshirilgan kollektivlashtirish, yer-suv resurslaridan keng foydalanish, paxtachilikka ixtisoslashuv va agrar ishlab chiqarishni markazlashgan boshqaruv asosida rivojlantirish siyosati qishloq xo'jaligi uchun malakali mutaxassislar tayyorlash zaruratini keskin oshirdi. Shu tarixiy ehtiyoj natijasida respublikaning turli hududlarida agrar oliy ta'lim muassasalari shakllandi. Ular orasida Samarqand qishloq xo'jaligi instituti alohida o'rin tutadi.

Mazkur institut o'z faoliyati davomida nafaqat agronomlar, veterinariya mutaxassislari, zootekniklar, irrigatorlar, iqtisodchilar va yer tuzuvchilarni tayyorlagan, balki qishloq xo'jaligi sohasida ilmiy tadqiqotlar olib boruvchi va amaliyotga yo'naltirilgan kadrlar maktabini ham shakllantirgan. Institutning faoliyati O'zbekistonning markaziy hududlarida agrar islohotlar, ishlab chiqarish samaradorligini oshirish, hosildorlikni ko'paytirish va ilmiy yondashuvni qishloq xo'jaligiga joriy etish bilan chambarchas bog'liq bo'lgan.

1930–1990-yillar oralig'i tarixiy jihatdan agrar ta'lim va qishloq xo'jaligi mutaxassislarni tayyorlash tizimining shakllanish, rivojlanish va institutsional mustahkamlanish davri hisoblanadi. Bu davrda Samarqand qishloq xo'jaligi instituti respublika uchun minglab malakali mutaxassislarni yetkazib berdi. Shu bois institutning tarixiy faoliyatini o'rganish nafaqat agrar ta'lim tarixini, balki O'zbekistonning ijtimoiy-iqtisodiy taraqqiyotidagi oliy ta'lim muassasalari rolini yoritishda ham muhim ahamiyatga ega. Mazkur maqolaning maqsadi — 1930–1990-yillar davomida Samarqand qishloq xo'jaligi institutining mutaxassislarni tayyorlashdagi rolini tarixiy, ilmiy va amaliy jihatdan tahlil qilishdan iborat.

MATERIALLAR VA METODLAR

Mazkur tadqiqot tarixiy-pedagogik va tarixiy-institutsional yondashuvlar asosida olib borildi. Tadqiqot jarayonida bir qator ilmiy metodlardan foydalanildi. Avvalo, tarixiylik metodi

asosida Samarqand qishloq xo'jaligi institutining shakllanishi va rivojlanishi o'z davrining siyosiy, iqtisodiy va ijtimoiy sharoitlari bilan bog'liq holda tahlil qilindi. Bu usul institut faoliyatini alohida hodisa sifatida emas, balki sovet davri agrar siyosati va ta'lim tizimi kontekstida baholash imkonini berdi. Shuningdek, qiyosiy-tahliliy metod yordamida 1930–1940, 1950–1960, 1970–1980-yillardagi institut faoliyatidagi o'zgarishlar o'zaro solishtirildi. Bu usul institutning qaysi davrlarda qanday ustuvor vazifalarni bajargani, qaysi mutaxassisliklar rivojlanganligi va qaysi ilmiy yo'nalishlar kuchayganligini aniqlashga xizmat qildi.

Tadqiqotda tizimli yondashuv ham qo'llanildi. Unga ko'ra, institutning faoliyati bir butun tizim sifatida ko'rib chiqildi, ya'ni ta'lim jarayoni, ilmiy faoliyat, ishlab chiqarish bilan integratsiya, kadrlar tayyorlash va amaliyot o'rtasidagi bog'liqlik bir-biri bilan uzviy aloqada o'rganildi. Bundan tashqari, tarixiy manbalarni kontent-tahlil qilish usulidan foydalanildi. Institut tarixiga oid adabiyotlar, agrar ta'limga bag'ishlangan ilmiy ishlanmalar, sovet davri qishloq xo'jaligi siyosatini aks ettiruvchi tadqiqotlar, ilmiy-pedagogik materiallar va umumiy tarixiy ma'lumotlar mazmuniy jihatdan tahlil qilindi.

Tadqiqotning ilmiy yangiligi shundaki, Samarqand qishloq xo'jaligi institutining 1930–1990-yillardagi faoliyati faqat ta'lim maskani sifatida emas, balki agrar sohaning ilmiy-intellektual tayanchi sifatida baholandi. Institutning mutaxassis tayyorlashdagi roli o'quv jarayoni, ilmiy tadqiqotlar va ishlab chiqarish bilan hamkorlik nuqtai nazaridan kompleks tarzda tahlil qilindi.

NATIJALAR

Tadqiqot natijalari Samarqand qishloq xo'jaligi instituti 1930–1990-yillar oralig'ida O'zbekiston qishloq xo'jaligi uchun strategik ahamiyatga ega bo'lgan oliy ta'lim va ilmiy markazlardan biri bo'lganini ko'rsatdi.

Birinchidan, institutning tashkil topishi bevosita qishloq xo'jaligi uchun professional kadrlar tayyorlash zarurati bilan bog'liq bo'lgan. 1930-yillarda kollektivlashtirish, yer-suv resurslarini o'zlashtirish, paxtachilikni kengaytirish va agrar ishlab chiqarishni markazlashgan holda boshqarish jarayonlari tufayli mutaxassislarga talab kuchaydi. Ana shu ehtiyoj asosida institut agronomiya, tuproqshunoslik, chorvachilik va irrigatsiya kabi yo'nalishlarda kadrlar tayyorlashni boshladi.

Ikkinchidan, institut ta'lim tizimi amaliyotga yo'naltirilgan bo'lgan. Talabalar auditoriyadagi nazariy bilimlarni kolxozlar, sovxozlar, tajriba uchastkalari va ilmiy-amaliy xo'jaliklarda mustahkamlashgan. Bu esa bitiruvchilarning ishlab chiqarish jarayoniga tez moslashishiga xizmat qilgan. Natijada institut bitiruvchilari qishloq xo'jaligida nafaqat nazariy bilimga ega, balki amaliy qaror qabul qila oladigan mutaxassislar sifatida shakllangan.

Uchinchidan, urush yillarida institutning faoliyati murakkablashgan bo'lsa-da, mutaxassis tayyorlash jarayoni to'xtamagan. Ikkinchi jahon urushi davrida agrar ishlab chiqarish front va orqa frontni oziq-ovqat bilan ta'minlashda muhim ahamiyat kasb etgani sababli institut qisqa muddatli tayyorlov kurslari va tezlashtirilgan ta'lim dasturlari orqali qishloq xo'jaligi sohasiga zarur kadrlar yetkazib berishda davom etgan.

To'rtinchidan, 1950–1970-yillar institut rivojlanishining muhim bosqichi bo'lib, bu davrda yangi fakultetlar va kafedralar tashkil etildi, laboratoriyalar, tajriba maydonlari, o'quv xo'jaliklari va ilmiy bo'linmalar faoliyati kengaydi. Shu davrda institutda agronomiya, zootexnika, veterinariya, seleksiya, o'simliklarni himoya qilish, agrokimyo, melioratsiya va qishloq xo'jaligi iqtisodiyoti kabi yo'nalishlar kuchaydi.

Beshinchidan, institut faqat mutaxassislar tayyorlash bilan cheklanmay, qishloq xo'jaligi ishlab chiqarishiga ilmiy tavsiyalar beruvchi markazga ham aylandi. Uning olimlari va professor-

o'qituvchilari tomonidan paxtachilik, g'allachilik, bog'dorchilik, uzumchilik, yem-xashak bazasini yaxshilash, chorvachilik mahsuldorligini oshirish, tuproq unumdorligini saqlash va sug'orish samaradorligini oshirish bo'yicha ilmiy izlanishlar olib borilgan.

Oltinchidan, institut qoshida ilmiy-pedagogik kadrlar tayyorlash tizimi ham shakllandi. Aspirantura, ilmiy to'garaklar va kafedralar huzuridagi ilmiy izlanishlar natijasida yosh tadqiqotchilar, fan nomzodlari va keyinchalik fan doktorlari yetishib chiqdi. Bu esa institutning ta'lim maskanidan ilmiy maktabga aylanganini ko'rsatadi.

Yettinchidan, institut bitiruvchilari Samarqand viloyati bilan cheklanib qolmay, O'zbekistonning boshqa hududlarida ham faoliyat yuritgan. Ular kolxoz va sovxozlarda bosh agronom, bosh veterinariya mutaxassisi, bosh zootexnik, tuman qishloq xo'jaligi bo'limlari mutaxassisi, ilmiy xodim, seleksioner va rahbar lavozimlarida ishlaganlar. Shu tariqa institut respublika agrar taraqqiyotining inson kapitali bazasini shakllantirgan.

Sakkizinchidan, 1970–1990-yillarga kelib institut faoliyatida yangi yo'nalishlar paydo bo'ldi. Endilikda u nafaqat ishlab chiqarishga bevosita xizmat qiluvchi mutaxassislarni, balki qishloq xo'jaligini iqtisodiy tahlil qilish, boshqarish, rejalashtirish va samaradorlikni oshirishga qodir mutaxassislarni ham tayyorlay boshladi. Bu esa institutning sovet davri agrar modernizatsiyasidagi rolini yanada kuchaytirdi.

MUHOKAMA

Tadqiqot natijalari shuni ko'rsatadiki, Samarqand qishloq xo'jaligi institutining tarixiy ahamiyatini faqat u tayyorlagan bitiruvchilar soni bilan baholash yetarli emas. Uning asosiy roli — agrar sohada ilmiy tafakkur, amaliy ko'nikma va boshqaruv madaniyatini shakllantirganida namoyon bo'ladi.

Birinchi navbatda, institut sovet davri qishloq xo'jaligi siyosatining mahalliy darajadagi intellektual tayanchiga aylandi. O'zbekiston qishloq xo'jaligi, ayniqsa paxtachilikka ixtisoslashtirilgan bir sharoitda, institut bu tizim uchun zarur bo'lgan professional kadrlarni tayyorladi. Biroq uning faoliyati faqat paxtachilik bilan cheklanmagan, balki bog'dorchilik, uzumchilik, chorvachilik, yem-xashak ishlab chiqarish, veterinariya va irrigatsiya kabi ko'plab tarmoqlarni ham qamrab olgan.

Ikkinchidan, institutning o'ziga xos xususiyati uning ishlab chiqarish bilan uzviy aloqadorligida edi. Zamonaviy ta'lim nazariyasida "dual ta'lim" yoki "amaliyotga yo'naltirilgan ta'lim" tushunchalari keng qo'llanadi. Samarqand qishloq xo'jaligi institutida bu yondashuv sovet davridayoq mavjud bo'lgan. Talabalar dalada, fermalarda, tajriba maydonlarida va ishlab chiqarish obyektlarida o'qitilgan. Bu holat institut bitiruvchilarining mehnat bozorida yuqori talabga ega bo'lishini ta'minlagan.

Uchinchidan, institut milliy kadrlar tayyorlashda muhim rol o'ynadi. Dastlabki yillarda agrar sohada yuqori malakali mahalliy mutaxassislarni yetishmas edi. Samarqand qishloq xo'jaligi instituti esa qishloq joylardan chiqqan yoshlarni oliy ta'limga jalb etib, mahalliy agronomlar, veterinariya mutaxassislari, zootexniklar va iqtisodchilar avlodini shakllantirdi. Bu holat O'zbekiston qishloq xo'jaligida milliy kadrlar qatlamining yuzaga kelishida katta ahamiyat kasb etdi.

To'rtinchidan, institut ilmiy salohiyatni shakllantirishda ham muhim o'rin egalladi. Qishloq xo'jaligi faqat tajriba va an'anaga asoslangan faoliyat bo'lib qolmasdan, ilmiy asosga tayanadigan sohaga aylanishida institut kabi oliy ta'lim muassasalari hal qiluvchi ahamiyatga ega bo'ldi. Ayniqsa, seleksiya, tuproqshunoslik, o'simliklarni himoya qilish, zooveterinariya va

irrigatsiya sohalaridagi ilmiy izlanishlar agrar ishlab chiqarish samaradorligini oshirishga xizmat qildi.

Beshinchidan, institutning tarixiy tajribasi bugungi agrar ta'lim tizimi uchun ham dolzarbdir. Hozirgi kunda qishloq xo'jaligi raqamlashtirish, biotexnologiya, ekologik barqarorlik, suv tejovchi texnologiyalar va aqlli dehqonchilik kabi yangi yo'nalishlarga o'tmoqda. Ammo mutaxassis tayyorlashning asosi — nazariya, amaliyot va ilmiy izlanishning uyg'unligi — o'sha tarixiy tajribadan kelib chiqadi. Shu ma'noda, Samarqand qishloq xo'jaligi institutining faoliyati bugungi agrar ta'lim islohotlari uchun ham muhim metodik va tarixiy asos bo'lib xizmat qiladi.

Shu bilan birga, muhokama natijasida shuni ham ta'kidlash lozimki, sovet davridagi agrar ta'limning ma'lum darajada markazlashgan va ideologik xarakteri mavjud bo'lgan. Institutning faoliyati davlat buyurtmasi va rejalashtirilgan iqtisodiyot talablariga mos ravishda yo'naltirilgan edi. Bu esa ayrim hollarda ilmiy erkinlik yoki mahalliy ehtiyojlarning to'liq aks etmasligiga olib kelgan bo'lishi mumkin. Biroq shunga qaramay, institutning kadrlar tayyorlashdagi amaliy natijalari uning tarixiy ahamiyatini pasaytirmaydi.

XULOSA

Xulosa qilib aytganda, Samarqand qishloq xo'jaligi instituti 1930–1990-yillar davomida O'zbekiston qishloq xo'jaligi sohasining kadrlar bazasini shakllantirishda hal qiluvchi rol o'ynagan oliy ta'lim muassasalaridan biri bo'ldi. Institutning faoliyati agrar ta'limni rivojlantirish, mutaxassislarni amaliyotga tayyorlash, ilmiy izlanishlarni ishlab chiqarish bilan uyg'unlashtirish va qishloq xo'jaligi taraqqiyotini inson kapitali bilan ta'minlashga qaratilgan edi.

Mazkur institut agronomiya, veterinariya, zootexnika, irrigatsiya, seleksiya, melioratsiya va iqtisodiyot yo'nalishlarida minglab malakali mutaxassislar tayyorladi. Ularning faoliyati natijasida respublika qishloq xo'jaligida hosildorlikni oshirish, chorvachilikni rivojlantirish, suv va yer resurslaridan oqilona foydalanish, ilmiy yondashuvni ishlab chiqarishga tatbiq etish kabi jarayonlar kuchaydi. Shuningdek, institutning ilmiy-pedagogik salohiyati qishloq xo'jaligi fanlari rivojiga ham katta hissa qo'shdi. U ta'lim, ilm-fan va ishlab chiqarish integratsiyasini yo'lga qo'ygan holda agrar sohada yetuk mutaxassislar va ilmiy kadrlar tayyorlash markaziga aylandi.

Demak, Samarqand qishloq xo'jaligi institutining 1930–1990-yillardagi faoliyati O'zbekiston agrar ta'limi va qishloq xo'jaligi tarixida alohida o'rin tutadi. Uning tajribasi bugungi kunda ham agrar oliy ta'limni takomillashtirish, amaliyotga yo'naltirilgan mutaxassis tayyorlash va qishloq xo'jaligini ilmiy asosda rivojlantirishda muhim tarixiy manba sifatida xizmat qilishi mumkin.

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11. Sovet davrida O'zbekistonda agrar siyosat, kollektivlashtirish va qishloq xo'jaligi modernizatsiyasiga oid tarixiy tadqiqotlar.
12. O'zbekistonda agrar ta'lim muassasalari shakllanishi va rivojlanishiga oid ilmiy-pedagogik adabiyotlar.

10.00.00 – Filologiya fanlari

10.00.00 – Philology

10.00.00 – Филология

ЛИНГВОКУЛЬТУРОЛОГИЧЕСКИЙ ПОТЕНЦИАЛ КОНЦЕПТА «ХЛЕБ» В ПРАКТИКЕ ОБУЧЕНИЯ РУССКОМУ ЯЗЫКУ КАК ИНОСТРАННОМУ

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Аннотация: Данное исследование посвящено сопоставительному анализу концепта «хлеб» в русской и узбекской лингвокультурах. В работе рассматриваются особенности его лингвокультурологического значения, отражение в языковой картине мира, а также роль в формировании ценностных представлений носителей двух культур. Особое внимание уделяется анализу номинаций, пословиц и фразеологических единиц, связанных с концептом «хлеб», которые демонстрируют его значимость в повседневной и духовной жизни народов. Актуальность исследования обусловлена необходимостью углубленного изучения национально-культурной специфики языков в условиях межкультурной коммуникации и обучения иностранным языкам. Сопоставительный подход позволяет выявить как общие, так и специфические черты восприятия концепта «хлеб» в русской и узбекской культурах.

Ключевые слова: концепт «хлеб», лингвокультурология, языковая картина мира, сопоставительный анализ.

THE LINGUOCULTURAL POTENTIAL OF THE CONCEPT OF “BREAD” IN THE PRACTICE OF TEACHING RUSSIAN AS A FOREIGN LANGUAGE

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Abstract: This study is devoted to a comparative analysis of the concept of “bread” in Russian and Uzbek linguocultures. The article examines the features of its linguocultural significance, its reflection in the linguistic worldview, and its role in shaping the value systems of the representatives of the two cultures. Particular attention is paid to the analysis of nominations, proverbs, and phraseological units associated with the concept of “bread,” which demonstrate its importance in both the everyday and spiritual life of the peoples. The relevance of the study is determined by the need for an in-depth examination of the national and cultural specificity of languages in the context of intercultural communication and foreign language teaching. The comparative approach makes it possible to identify both common and culture-specific features in the perception of the concept of “bread” in Russian and Uzbek cultures.

Keywords: concept “bread”, linguoculturology, linguistic worldview, comparative analysis.

“NON” KONSEPTINING LINGVOMADANIY SALOHIIYATI RUS TILINI CHET TILI SIFATIDA O‘QITISH AMALIYOTIDA

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Annotatsiya: Mazkur tadqiqot rus va o‘zbek lingvomadaniyatlarida “non” konseptining qiyosiy tahliliga bag‘ishlangan. Ishda uning lingvomadaniy ahamiyati, til manzarasidagi aks etishi,

shuningdek, ikki xalq vakillarining qadriyatlar tizimini shakllantirishdagi roli ko'rib chiqiladi. "Non" konsepti bilan bog'liq nominatsiyalar, maqollar va frazeologik birliklar tahliliga alohida e'tibor qaratilib, ular ushbu konseptning xalqlarning kundalik va ma'naviy hayotidagi muhim o'rnini namoyon etadi. Tadqiqotning dolzarbligi madaniyatlararo muloqot va xorijiy tillarni o'qitish sharoitida tillarning milliy-madaniy o'ziga xosligini chuqur o'rganish zarurati bilan belgilanadi. Qiyosiy yondashuv rus va o'zbek madaniyatlarida "non" konseptining qabul qilinishidagi umumiy hamda o'ziga xos jihatlarni aniqlash imkonini beradi.

Kalit so'zlar: "non" konsepti, lingvokulturologiya, til manzarasi, qiyosiy tahlil.

ВВЕДЕНИЕ

Раскрытие культурного и лингвистического значения какого-либо концепта и его сопоставление на разных языках может проложить путь к успешной межкультурной коммуникации, обеспечить качественное обучение языку и помочь достичь взаимопонимания представителей разных культур.

Через раскрытие значения концепта раскрывается также часть языковой картины мира (ЯКМ) и то, как она встроена в мировосприятие человека. Выявив значение концепта, можно обнаружить связи с другими концептами, увидеть, как в зависимости от них складывается ценностная система человека, а также определить его влияние на категоризацию в повседневной жизни.

Концепт «хлеб» является одним из важнейших в языковом сознании русского народа. Об этом свидетельствуют изобилие номинаций, связанных с данным концептом, а также наличие множества пословиц и фразеологических сочетаний, отражающих самые разные стороны жизни народа, в основе которых в качестве основного компонента выступает хлеб.

Актуальность работы состоит в сопоставительном рассмотрении концепта «хлеб» в русской и узбекской культурах с целью дальнейшего ознакомления узбекских студентов с особенностями лингвокультурологического значения указанного концепта в двух сопоставляемых языках.

Объект данного исследования — лингвокультурологическое значение концепта «хлеб» в языковой картине мира русского и узбекского народов.

МАТЕРИАЛЫ И МЕТОДЫ

Материалами исследования послужили номинации, пословицы, поговорки и фразеологические единицы русского и узбекского языков, связанные с концептом «хлеб». В качестве теоретической базы использованы труды С. А. Аскольдова, Ю. С. Степанова, З. Д. Поповой, И. А. Стернина, а также данные толковых и частотных словарей.

В работе применены описательный, сопоставительный и лингвокультурологический методы анализа. Сопоставительный подход позволил выявить сходные и специфические черты концепта «хлеб» в русской и узбекской языковых картинах мира, а лингвокультурологический анализ — определить его ценностное содержание в сознании носителей двух культур.

В современной лингвистике большое внимание уделяется понятию «концепт», а именно определению его природы и своеобразия. Термин «концепт» возник в научной литературе только в середине XX века, однако его употребление отмечено ещё в 1928 году в статье С. А. Аскольдова «Концепт и слово». По мнению С. А. Аскольдова, концепт — это

«мысленное образование, которое замещает нам в процессе мысли неопределенное множество предметов одного и того же рода» [Аскольдов, 1997: 30].

Рассматривая сущность концепта, исследователи особо отмечают его принадлежность к этнокультурному миру человека. Его семантическое содержание при этом интерпретируется в контексте форм мысли носителя языка как этнокультурная репрезентация. Следовательно, познание концепта способствует воссозданию этнокультурного образа и индивидуальности менталитета носителя языка.

В лингвокультурологии концепт рассматривается как «глобальная мыслительная единица, идеальная сущность, которая формируется в сознании человека из его непосредственных операций с предметами; предметной деятельности; из мыслительных операций человека с другими, уже существующими концептами» [Попова, Стернин, 2002: 59]. Концепт является основной ячейкой культуры в ментальном мире человека. Он формируется не только на базе словарных значений слов, но и на основе собственного и народного культурно-исторического опыта.

РЕЗУЛЬТАТЫ

Лексему «хлеб» можно назвать своеобразным национальным концептом, занимающим значительную роль в концептосфере русского человека. Концепт «хлеб», ассоциированный с одной из древнейших пищевых традиций русского народа, широко употребляется в русских идиомах, пословицах, поговорках и живой русской речи.

Имея многовековую историю, концепт «хлеб» не случайно относится Ю. С. Степановым к константам русской культуры. Учёный писал: «Хлеб у русских — больше, чем пропитание, он — символ пропитания. Сейчас часто говорят: “Картошка — наш второй хлеб”. Во Франции, в Испании нищие просят “на чашечку кофе”, в России — “на кусок хлеба”» [Степанов, 1997: 285].

«Хлеб» вбирает в себя языческие и христианские представления. Испокон веков хлебные изделия были жизненно важными продуктами в рационе славян. Их называли основой не только питания, но и самой русской жизни. Считалось, что они являются главным источником жизненных сил. Хлеб был показателем благополучия и богатства. Он участвовал в большом числе ритуалов и обрядов, и ни одно торжественное событие не обходилось без специальной обрядовой выпечки. Сегодня во многих случаях подносят «хлеб-соль» как символ гостеприимства и благополучия.

Хлеб является важнейшей ценностью в жизни русских, поэтому считается, что «хлеб всему голова». С хлебом связываются пища, вода, урожай, жизнь, дом, труд и Бог, благодаря чему он занимает значительное место в традиционной и современной российской общественной жизни.

Значимость хлеба обусловила большое количество лексем для обозначения его видов. Основной стала лексема хлеб, являющаяся одной из наиболее часто употребляемых в русском языке. В «Частотном словаре русского языка» под редакцией Л. Н. Засориной частота употребления этой лексемы равна 184 в 48 текстах разных жанров [Частотный словарь русского языка, с. 789].

Лексема хлеб с основным значением «пищевой продукт, выпекаемый из муки» воспринимается также как символ жизни. Следовательно, содержание концепта может сужаться до обозначения теста или расширяться за счёт других лексем, сочетающихся со словом «хлеб».

В русском языке существует много пословиц и поговорок, связанных с хлебом: «хлеб на стол, и стол — престол», «хлеб ногами топтать — народу голодать», «без хлеба и мёдом сыт не будешь», «хлеб — всему голова», «без соли невкусно, без хлеба несытно», «горька работа, зато сладок хлеб», «худ обед, когда хлеба нет», «хлеб-соль кушай, а добрых людей слушай», «хлеб-соль ешь, а правду режь», «хлеб везде хорош — и у нас, и за морем», «родись человек — и краюшка хлеба готова», «работай до поту, поешь хлеба в охоту», «лучше хлеб с водой, чем пирог с бедой», «кто трудиться рад, тот будет хлебом богат», «деньги любят счёт, а хлеб — меру» и др.

В узбекском языке концепт «хлеб» выражает древнейшую, величайшую, священную пищу, напрямую определяющую целую совокупность связанных с ней ценностей и понятий. В концепте хлеб отражены такие человеческие качества, присущие узбекскому народу, как гостеприимство, трудолюбие, щедрость и простота, что также имеет лингвокультурное значение.

Концепт хлеб является священным, как Родина, дорогим, как мать, великим и высоким понятием. Жилище, где есть тандыр, воспринимается как малая Родина. Слово хлеб произносится с таким же чувством гордости, как Мать и Родина, потому что нон (хлеб) — одно из первых слов, которое произносит маленький ребёнок. Насколько дорога и священна мать, настолько же дорог и священен хлеб.

Хлеб — это пища, которая есть в каждом узбекском доме, самое великое благо, защищающее людей от невзгод. Представление о хлебе передаётся узбекам от предков. Хлеб является древней, традиционной и вечной ценностью.

Корни национальных узбекских традиций, связанных с уважением к хлебу, восходят к глубокой древности. Как и у многих других народов, у узбекского народа хлеб является традиционным национальным концептом: хлеб — символ гостеприимства, уважения, пропитания, жизни, изобилия и мира.

Как свидетельствуют древнегреческие источники, за тысячу лет до нашей эры в Мараканде (Самарканде) было 24 вида хлеба. В частности, самым употребляемым и известным был хлеб Самидамита, который приготавливался из самой качественной пшеницы.

Во время войн между народами хлеб также был посланием мира и дружбы. Это нашло отражение в источниках. В целях установления мира с местным населением Александр Македонский заключал браки с дочерьми местных повелителей. Во время церемонии бракосочетания по македонскому обычаю приближённые подносили Александру хлеб Самидамита, завернутый в белый платок. Он разрубал этот хлеб на две части и передавал половину невесте.

С тех времён у узбекского народа существует обычай «нон синдириш» (преломление лепёшки), который связан со свадебной церемонией и означает согласие семей жениха и невесты на брак. Также до сих пор существует обычай «нон тишлатиш» (прикусывание хлеба), который обозначает мир и благополучие. По этому обычаю хлеб подаётся перед длительным путешествием, отправкой юношей в дорогу, например на военную службу, учёбу за рубежом и др.

Хлеб играет важную роль в традиционных узбекских обрядах и праздниках. Например, на Навруз — узбекский национальный праздник, который отмечается весной, — готовятся особые виды хлеба и мучных изделий, символизирующие обновление и возрождение природы после зимы.

ОБСУЖДЕНИЕ

В формировании национальных ценностей, связанных с хлебом, важную роль играют семейные и национальные традиции и обычаи. В каждой семье ребёнку с детства внушается бережное отношение к хлебу, к каждой его крошке. В соответствии с обычаями, унаследованными от предков, хлеб не ставится на дастархан перевёрнутым, сверху на него ничего не кладётся, через хлеб не перешагивают. Если хлеб упал на землю, его тут же поднимают и, трижды поцеловав, подносят ко лбу. Если на дастархане есть крошки, их подбирают и съедают. Таким образом, узбекский народ издревле привык беречь хлеб до последней крошки и относиться к нему с почтением.

Хлеб прославляется в стихах и поэмах народного творчества. В узбекском языке существует много пословиц и поговорок, связанных с хлебом: «имя хлеба велико, больше, чем имя», «дома есть хлеб — есть и веселье», «цену хлебу знает голодный, цену одежде — голый», «в запахе хлеба заключена жизнь», «не знающий цену хлебу не знает цену и себе», «хлебом не пренебрегай — будешь крошки выпрашивать», «будешь почитать хлеб — люди будут уважать», «внимание к хлебу — внимание к людям», «честно добыл хлеб — сам честен», «без хлеба твой дастархан некрасив», «без хлеба не проживёшь, словами не насытишься», «хлеб — и в крошках хлеб» и др.

Для узбеков хлеб — это лучший подарок. Если человек идёт в гости с хлебом в руках, это означает, что он пришёл с хорошими, благими намерениями и желает этому дому благополучия. Сегодня стало доброй традицией, что гости и туристы Узбекистана берут с собой образцы знаменитого узбекского хлеба.

Сопоставление показывает, что концепт «хлеб» и в русском, и в узбекском языковом сознании имеет высокую ценностную значимость. В обеих культурах хлеб связан с жизнью, трудом, гостеприимством, достатком и духовным благополучием. Вместе с тем узбекская традиция особенно подчёркивает сакральное отношение к хлебу в семейно-бытовой и обрядовой сфере, тогда как русская языковая картина мира широко отражает хлеб как символ пропитания, труда и жизненной основы.

Анализ основных академических словарей русского языка С. И. Ожегова, В. И. Даля демонстрирует 13 значений слова хлеб, а в пятитомном словаре узбекского языка под редакцией А. Мадвалиева представлены только два прямых и три переносных значения данной лексемы.

Уважительное отношение к хлебу породило ряд фразеологизмов с этим словом. Некоторые фразеологизмы совпадают по значениям в обоих языках. Например: нонни туя қилмоқ — отбивать хлеб; чужой хлеб есть — бировнинг нонини емоқ. Вместе с тем следует отметить, что в русском языке число фразеологизмов со словом хлеб больше, чем в узбекском языке.

ЗАКЛЮЧЕНИЕ

Концепт «хлеб» является одним из важных концептов и в русской, и в узбекской ментальностях. Для двух народов хлеб является древней, традиционной и вечной ценностью. Концепт «хлеб» отражает гостеприимство, трудолюбие, великодушие и простоту, в силу чего приобретает особое лингвокультурологическое значение.

Хлеб прославляется в стихах и поэмах народного творчества. И в русском, и в узбекском языках существует много пословиц и поговорок, связанных с хлебом. Сопоставительный анализ показывает, что данный концепт занимает важное место в языковой картине мира обоих народов и может эффективно использоваться в практике обучения русскому языку как иностранному.

Использование материалов, связанных с концептом «хлеб», способствует формированию межкультурной компетенции, расширяет представления обучающихся о национально-культурной специфике русского и узбекского языков и помогает глубже понять ценностные ориентиры двух культур.

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ОАВ БИЛАН АЛОҚАЛАР – КОММУНИКАЦИОН СТРАТЕГИЯНИНГ АЖРАЛМАС ҚИСМИ СИФАТИДА

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Аннотация: Мазкур мақолада ташкилот ва компанияларнинг ОАВ билан самарали алоқалар ўрнатиши коммуникацион стратегиянинг муҳим таркибий қисми сифатида таҳлил қилинади. Мақолада медиа ҳамкорлик стратегиясини ишлаб чиқиш, журналистлар билан муносабатларни йўлга қўйиш, қимматли ахборот тақдим этиш, медиа тадбирлар ташкил қилиш, ижтимоий тармоқлардан фойдаланиш, нуфузни бошқариш ҳамда натижаларни таҳлил қилиш масалалари ёритилади.

Калит сўзлар: ОАВ, коммуникацион стратегия, медиа ҳамкорлик, журналистлар, имидж, ижтимоий тармоқлар, мониторинг.

СВЯЗИ СО СМИ КАК НЕОТЪЕМЛЕМАЯ ЧАСТЬ КОММУНИКАЦИОННОЙ СТРАТЕГИИ

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Аннотация: В данной статье анализируется установление эффективных связей организаций и компаний со СМИ как важной составляющей коммуникационной стратегии. Рассматриваются разработка стратегии медиавзаимодействия, выстраивание отношений с журналистами, предоставление ценной информации, организация медиамероприятий, использование социальных сетей, управление репутацией и анализ результатов.

Ключевые слова: СМИ, коммуникационная стратегия, медиасотрудничество, журналисты, имидж, социальные сети, мониторинг.

MEDIA RELATIONS AS AN INTEGRAL PART OF COMMUNICATION STRATEGY

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Abstract: This article analyzes effective media relations of organizations and companies as an important component of communication strategy. It discusses the development of media cooperation strategies, building relationships with journalists, providing valuable information, organizing media events, using social networks, managing reputation, and analyzing results.

Keywords: mass media, communication strategy, media cooperation, journalists, image, social networks, monitoring.

КИРИШ

Исталган компания ёки ташкилот ўз соҳасида муваффақиятга эришишни, жамоатчилик кўз ўнгида ўзига хос имидж ва обрўга эга бўлишни истар экан, албатта, ОАВ билан самарали алоқа ўрнатишга эҳтиёж сезади. Журналистлардан, ахборот воситаларидан йироқ бўлишни афзал кўрадиган ташкилотлар ўз фаолиятида кўпгина тушунмовчиликлар, жамоатчилик эътирозига дучор бўлишлари мумкин. ОАВ билан ўрнатилган муносабатлар брендга эътиборни жалб қилади, аудиторияни кенгайтиради ва имиджни мустаҳкамлайди.

ОАВ имкониятларидан фойдаланиш ва журналистлар билан коммуникациянинг самарали усуллари ҳақида ҳар бир компания ўз йўналиши ва стратегиясига эга бўлиши зарур. Коммуникациянинг бир неча усуллари мавжуд.

МАТЕРИАЛЛАР ВА МЕТОДЛАР

Мақолада ОАВ билан алоқаларни ташкил этишда қўлланиладиган коммуникацион ёндашувлар, медиа ҳамкорлик усуллари, журналистлар билан муносабатни йўлга қўйиш, ижтимоий тармоқлардан фойдаланиш ва медиа мониторинг натижаларини таҳлил қилиш масалалари кўриб чиқилди.

Муваффақиятли медиа ҳамкорликнинг биринчи усули – стратегия ишлаб чиқиш. Компания ўз ишининг мақсад ва вазифаларини аниқлаштириши ва ҳаракатлар режасини тузиб олиши керак. Бу аниқ ҳаракатлар кетма-кетлигини белгилашга ёрдам беради ва кутиладиган хатоларнинг олдини олади. Тижорат, давлат ёки нотижорат ташкилот бўлишидан қатъи назар, ишлаб чиқилмаган коммуникацион стратегиясиз мақсадли аудиториянинг ишончини қозониш ва зарур реакцияларни олиш мураккаб [1].

Иккинчи самарали усул – журналистлар билан яхши муносабат қуриш. Бу келгуси ҳамкорлик учун ҳам фойдали бўлади. Доимий мулоқот, ахборотни тақдим этиш ва медиа тадбирларда иштирок компаниянинг журналистлар билан муносабатда янги босқичга чиқишига ёрдам беради. ОАВ билан доимий муносабатларга алоҳида эътибор берадиган ташкилотда, албатта, ҳамкорлик қилувчи журналистлар ва таҳририятлар рўйхати шакллантирилади. Бу эса шошилиш вазиятларда вақтни тежайди.

Қимматли ахборотларни бериш ОАВ билан алоқаларда муҳим усул ҳисобланади. Журналистлар доим ўз нашрлари учун қизиқарли материал қидиришади. Компания долзарб, фойдали ва текширилган маълумотларни тақдим этиши керак. Бу компанияга нисбатан ишончни уйғотади.

Тўртинчи усул – медиа тадбирлар ташкил қилиш. Пресс-конференциялар, брифинглар ёки мавзули бошқа тадбирлар ахборотни мустақил бошқаришга, шунингдек, ОАВ билан муносабатларда қайта алоқа ўрнатилишига сабаб бўлади. Муҳими, ушбу тадбирларни тўғри режалаштириш ва ташкил этишдир.

Бунда коммуникациянинг интерактив шакллари яхши самара беради: онлайн-конференциялар, флеш-моблар аудиториянинг қизиқишини максимал даражада жалб қилишга қаратилади [2].

НАТИЖАЛАР

Кейинги усул – ижтимоий тармоқлардан фаол фойдаланиш. Бугунги кунда ижтимоий тармоқлар ахборот тарқатишда катта кучга айланиб улгурган. Мижозлар, ҳамкорлар ва ОАВ билан коммуникацияда турли платформаларни фаол қўллаш яхши самара беради.

Олтинчи усул – нуфузни бошқариш. Бу компания ҳақида жамоатчилик фикри устидан доимий назоратни юритиб боришни англатади. ОАВда неча марта ва қандай ҳолатда тилга олинганликни кузатиб бориш ҳамда кузатиладиган салбий ҳолатларга тезкор реакция қилиш ижобий имиджни сақлашга ёрдам беради.

Навбатдаги усул – ихтисослашган нашрлар билан ишлаш. Ўз соҳаси ва йўналишидаги етакчи нашрлар билан фаол ҳамкорлик яхши натижа беради. Бу мақсадли аудитория билан янги алоқа каналларини яратади. Потенциал мижозлар кўзида компаниянинг экспертлик даражаси ошиши муҳим натижалардан бири ҳисобланади.

Саккизинчи усул – натижаларни мунтазам таҳлил қилиб бориш. Медиа ҳамкорликда муҳим босқич қилинган ишларни баҳолаш ҳисобланади. Ташкил қилинган тадбирларнинг самарали бўлган-бўлмаганлигини таҳлил қилишга кўпчилик унча эътибор қаратмайди,

аммо бу муҳим жиҳатлардан бири саналади. ОАВда тилга олинганлик миқдорини ҳисоблаш ва кўзланган мақсадларга эришилганлик даражасини аниқлаш стратегияни тўғирлаш ва инструментларнинг самарадорлигини ошириш имконини беради.

ОАВда тилга олинганлик статистикасини тақдим этишда Медиалогия, Интегрум, Scan, Factiva компаниялари ҳозирда фаол. Олинган статистика вақт интервали, медиа тури, хабарларнинг таркибий характеристикаси, масалан, позитив, нейтрал ёки негатив хабарлар каби қисмларга бўлиниб ўрганилади [3].

ОАВ билан алоқалар ўрнатишдан олдин қуйидаги тайёргарликларни амалга ошириш керак:

Мақсад ва вазифаларни аниқлаш: брендни таниш даражасини ошириш, янги миқдорларни жалб қилиш ёки мавжуд аудитория билан алоқаларни мустаҳкамлаш. Шу каби аниқ мақсадларни қўйиб олиш ОАВ билан алоқаларни ўрнатишда ёрдам беради.

Ҳар бир медиаресурснинг мақсадли аудиториясини таҳлил қилиш самарали ҳамкорликка олиб келади. Географик қамров, демографик хусусиятлар ва ҳар бир нашр аудиториясининг қизиқишларини ўрганиб чиқиш керак. Шунда компания учун қайси ОАВ кўпроқ мос келишини аниқлаб олиш мумкин.

Муҳим хабарлар аниқ, лўнда ва компаниянинг асосий афзалликлари ҳамда қимматини кўрсатиб туриши керак. Бунда ҳар бир медиаресурснинг мақсадли аудиторияси қизиқишлари ҳисобга олиниши лозим.

Ўз расмий сайт ва блогида контент яратишга эътибор бериш лозим. Муҳим мавзулар юзасидан экспертлар шарҳини бериш ёки компаниянинг етакчи ходимлари билан интервьюларни жойлаб бориш мумкин. Контент журналистлар ва аудитория кўзида компаниянинг нуфузи ва экспертлик даражасини ўрнатишга ёрдам беради.

Журналистлар ва турли медиаресурслар муҳарририятларининг контакт рўйхати тузилган ва текширилган бўлиши керак. У доимий янгиланиб ва тўлдириб борилиши лозим.

Пресс-конференция ва медиа тадбирлар ОАВнинг компанияга эътиборини ошириш учун самарали инструментлардир. Бундай тадбирларда журналистлар компания ҳақида биринчи қўлдан ахборот олиш, экспертларга савол бериш ва эксклюзив контент эгасига айланиш имконини қўлга киритади.

МУҲОКАМА

Ушбу усул ва тайёргарликлар ҳар қандай ташкилот ёки компания истиқболи учун муҳим аҳамиятга эга. Ташкилот журналистлар билан мулоқотга очиқлиги, ахборот беришдан қочмаслиги ва медиа билан мунтазам алоқада эканини намоён этса, бу унинг жамоатчилик олдидаги нуфузини оширади.

Бугунги кунда ОАВнинг бир қанча турлари мавжудлигини инобатга оладиган бўлсак, муайян ташкилот ўз йўналишига мос, мақсадли аудиторияси тўпланадиган турини танлаши мақсадга мувофиқ. Айрим фикрларга кўра, ОАВнинг интернетдан бошқа турлари самарасиз деб ҳисобланади. Сабаб сифатида анъанавий ОАВ турларини инсонлар ўқимай, тингламай ёки томоша қилмай қўйишгани кўрсатилади. Ваҳоланки, компания ёки ташкилотнинг фаолият тури, ишлаб чиқарадиган маҳсулоти, тақдим этаётган хизмат йўналишига қараб, мақсадли аудитория телевидение, радио ёки матбуотда ҳам тўпланиши мумкин.

Интернет бугунги кунда асосий ахборот воситасига айланиб улгурганига қарамаздан, аудиториянинг ёши, жинси, фаолият соҳаси ва қизиқишлари турлича бўлгани ҳисобига у ёки бу ОАВ тури билан алоқа самарали деб топилади. Бу жуда муҳим кўрсаткич ҳисобланиб, ҳар қандай ахборот каналида тилга олиниш эмас, айнан самарали канал орқали мақсад ва вазифаларни амалга ошириш мақсадга мувофиқ. Бу ортиқча маблағ ва вақт сарфининг олдини олади.

ХУЛОСА

Хулоса қилиб айтганда, ОАВ билан алоқалар ташкилот ёки компаниянинг коммуникацион стратегиясида муҳим ўрин тутди. Журналистлар билан тизимли муносабатлар ўрнатиш, текширилган ахборот тақдим этиш, медиа тадбирлар ташкил қилиш, ижтимоий тармоқлардан мақсадли фойдаланиш ва натижаларни доимий таҳлил қилиш жамоатчилик ишончини мустаҳкамлайди.

ОАВ билан самарали ишлашда ҳар бир медиаресурснинг аудиторияси, компания мақсадлари ва коммуникацион вазифаларини ҳисобга олиш зарур. Самарали канални танлаш, тайёрланган хабарларни аниқ ва лўнда етказиш ҳамда медиа мониторинг натижаларидан фойдаланиш ташкилот имиджини сақлаш ва ривожлантиришда муҳим аҳамият касб этади.

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12.00.00 – Yuridik fanlar

12.00.00 – Juridical sciences

12.00 – Юридические науки.

DASTLABKI TERGOV BOSQICHIDA DALILLARNI TO‘PLASHNING PROTSESSUAL XUSUSIYATLARI

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Annotatsiya: Mazkur maqolada jinoyat-protsessual huquqning muhim bosqichi hisoblangan dastlabki tergov jarayonida dalillarni to‘plashning nazariy va amaliy jihatlari yoritiladi. Dalillarni to‘plashning protsessual tartibi, uning qonuniy asoslari, ishtirokchilarining huquq va majburiyatlari hamda ushbu jarayonning jinoyat ishini adolatli hal etishdagi o‘rni tahlil qilinadi.

Kalit so‘zlar: dastlabki tergov, dalil, protsessual tartib, jinoyat ishi, isbotlash, tergov harakatlari, baholash.

ПРОЦЕССУАЛЬНЫЕ ОСОБЕННОСТИ СОБИРАНИЯ ДОКАЗАТЕЛЬСТВ НА СТАДИИ ПРЕДВАРИТЕЛЬНОГО СЛЕДСТВИЯ

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Аннотация: В данной статье рассматриваются теоретические и практические аспекты сбора доказательств на стадии предварительного следствия, которая является важным этапом уголовно-процессуального права. Анализируются процессуальный порядок сбора доказательств, его правовые основы, права и обязанности участников, а также значение данного процесса для справедливого разрешения уголовного дела.

Ключевые слова: предварительное следствие, доказательство, процессуальный порядок, уголовное дело, доказывание, следственные действия, оценка.

PROCEDURAL FEATURES OF EVIDENCE COLLECTION AT THE STAGE OF PRELIMINARY INVESTIGATION

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Abstract: This article examines the theoretical and practical aspects of evidence collection at the stage of preliminary investigation, which is considered an important phase of criminal procedural law. The procedural framework for collecting evidence, its legal foundations, the rights and obligations of participants, and the role of this process in ensuring a fair resolution of a criminal case are analyzed.

Keywords: preliminary investigation, evidence, procedural procedure, criminal case, proof, investigative actions, evaluation.

KIRISH

Maqsad: Mazkur tadqiqotning maqsadi dastlabki tergov bosqichida dalillarni to'plashning nazariy va amaliy asoslarini chuqur tahlil qilish, uning protsessual xususiyatlarini aniqlash hamda jinoyat ishlarini adolatli hal etishda tutgan o'rnini ilmiy asoslashdan iborat.

Vazifalar: dalil tushunchasi va uning jinoyat protsessidagi o'rnini tahlil qilish; dastlabki tergov bosqichida dalillarni to'plashning protsessual tartibini o'rganish; tergov harakatlarining turlari va ularning o'ziga xos xususiyatlarini aniqlash; dalillarni tekshirish va baholash mezonlarini ilmiy asoslash; amaliy muammolarni aniqlash va ularni bartaraf etish bo'yicha takliflar ishlab chiqish.

MATERIALLAR VA METODLAR

Mazkur tadqiqotda bir qator ilmiy-uslubiy metodlardan foydalanildi. Jumladan, tizimli tahlil usuli orqali dastlabki tergov jarayonining tarkibiy qismlari o'rganildi. Qiyosiy-huquqiy usul yordamida milliy va xorijiy jinoyat-protsessual normalar solishtirildi. Mantiqiy tahlil usuli dalillarni to'plash, tekshirish va baholash jarayonlarini izchil tahlil qilishda qo'llanildi. Statistik usul orqali amaliy tergov natijalari umumlashtirildi va baholandi. Shuningdek, hujjatlarni tahlil qilish usuli asosida normativ-huquqiy hujjatlar va ilmiy adabiyotlar o'rganildi.

1-jadval. Tadqiqot usullari va ularning qo'llanilish maqsadi

T/r	Usul nomi	Mazmuni	Qo'llanilish maqsadi	Kutilayotgan natija
1	Tizimli tahlil usuli	Dastlabki tergov bosqichining tarkibiy qismlarini kompleks o'rganish	Jarayonni yaxlit tizim sifatida tahlil qilish	Tergov bosqichining tuzilmasini aniqlash
2	Qiyosiy-huquqiy usul	Milliy va xorijiy qonunchilikni solishtirish	Qonunchilikdagi farq va o'xshashliklarni aniqlash	Ilg'or tajribalarni aniqlash
3	Mantiqiy tahlil usuli	Dalillarni to'plash, tekshirish va baholashni izchil o'rganish	Jarayonning ichki mantiqini ochib berish	Ilmiy xulosalar chiqarish
4	Statistik usul	Amaliy tergov natijalarini raqamlar	Ma'lumotlarni umumlashtirish va	Ob'ektiv natijalar olish

		asosida tahlil qilish	baholash	
5	Hujjatlarni tahlil qilish usuli	Normativ-huquqiy hujjatlar va ilmiy manbalarni o'rganish	Nazariy asoslarni mustahkamlash	Ilmiy asoslangan yondashuv ishlab chiqish

Mazkur jadvalda tadqiqot jarayonida qo'llanilgan asosiy ilmiy usullar tizimli ravishda keltirilgan bo'lib, ularning mazmuni, qo'llanilish maqsadi hamda kutilayotgan natijalari yoritilgan. Jadvaldan ko'rinadiki, tadqiqotda bir-birini to'ldiruvchi metodlar majmuasi qo'llanilib, ular orqali dastlabki tergov bosqichida dalillarni to'plash jarayoni har tomonlama tahlil qilindi. Xususan, tizimli tahlil usuli jarayonni yaxlit tizim sifatida o'rganishga xizmat qilgan bo'lsa, qiyosiy-huquqiy usul orqali milliy va xorijiy tajribalar o'rtasidagi farqlar aniqlangan. Mantiqiy tahlil dalillarni baholash jarayonining ichki bog'liqligini ochib berishda muhim ahamiyat kasb etgan. Statistik usul amaliy ma'lumotlarni umumlashtirishga yordam bergan bo'lsa, hujjatlarni tahlil qilish usuli nazariy asoslarni mustahkamlashga xizmat qilgan. Natijada tadqiqotning ilmiy ishonchliligi va amaliy ahamiyati ta'minlangan.

2-jadval. Tadqiqot usullarining tahliliy tavsifi

T/r	Usul nomi	Tahliliy tavsif	Afzalliklari	Cheklovlari	Ilmiy ahamiyati
1	Tizimli tahlil usuli	Dastlabki tergov jarayonini yagona tizim sifatida ko'rib chiqadi	Jarayonni kompleks yoritadi, o'zaro bog'liqlikni ochadi	Subyektiv talqin ehtimoli mavjud	Tergov bosqichining nazariy modelini yaratadi
2	Qiyosiy-huquqiy usul	Turli davlatlar qonunchiligini solishtiradi	Ilg'or tajribalarni aniqlash imkonini beradi	Har bir tizimni to'liq moslashtirish qiyin	Qonunchilikni takomillashtirishga xizmat qiladi
3	Mantiqiy tahlil usuli	Dalillarni to'plash va baholash jarayonini izchil o'rganadi	Jarayonning ichki mantiqini ochadi	Amaliy faktlar bilan doimiy bog'lash talab etiladi	Ilmiy xulosalar chiqarishda muhim
4	Statistik usul	Amaliy ma'lumotlarni raqamlar asosida tahlil qiladi	Ob'ektivlikni oshiradi, natijalarni aniq ko'rsatadi	Ma'lumotlar bazasi yetarli bo'lishi kerak	Amaliy samaradorlikni baholaydi
5	Hujjatlarni tahlil qilish usuli	Qonunlar va ilmiy manbalarni o'rganadi	Nazariy asosni mustahkamlaydi	Eskirgan manbalar ta'siri bo'lishi mumkin	Tadqiqotning ilmiy poydevorini yaratadi

Jadvaldan ko'rinadiki, tadqiqotda qo'llanilgan usullar bir-birini to'ldiruvchi xarakterga ega bo'lib, ular orqali dastlabki tergov bosqichida dalillarni to'plash jarayoni har tomonlama

yoritilgan. Ayniqsa, tizimli va mantiqiy tahlil usullari nazariy asosni shakllantirgan bo'lsa, statistik va qiyosiy-huquqiy usullar amaliy natijalarni mustahkamlashga xizmat qilgan. Natijada tadqiqotning ilmiy ishonchliligi va amaliy qiymati oshgan.

1-rasm. Dastlabki tergov bosqichida dalillarni to'plashning protsessual xususiyatlari



Quyidagi rasm dastlabki tergov bosqichida dalillarni to'plashning protsessual xususiyatlarini sxematik tarzda ifodalaydi.

Unga ko'ra, tadqiqotning maqsadi dastlabki tergov jarayonida dalillarni to'plashning nazariy va amaliy jihatlarini o'rganish, uning protsessual xususiyatlarini aniqlash hamda jinoyat ishini adolatli hal etishdagi o'rnini asoslashdan iborat.

Rasmning markaziy qismida dalillarni to'plash jarayoni 5 bosqichda ko'rsatilgan. Birinchi bosqichda jinoyat haqidagi xabar, ariza, shikoyat va boshqa manbalar asosida axborot manbalari aniqlanadi. Ikkinchi bosqichda tergov harakatlari o'tkaziladi, ya'ni so'roq, ko'zdan kechirish, tintuv, olib qo'yish, ekspertiza kabi protsessual amallar bajariladi. Uchinchi bosqichda dalillar rasmiylashtiriladi, ya'ni har bir tergov harakati bayonnoma orqali hujjatlashtiriladi. To'rtinchi bosqichda dalillar tekshiriladi, bunda ularning haqiqiyliigi, ishonchliligi va qonuniyligi aniqlanadi. Beshinchi bosqichda esa dalillar baholanadi, ya'ni ularning ish uchun ahamiyati va o'zaro bog'liqligi tahlil qilinadi.

Rasmning quyi qismida tergov jarayonining asosiy tarkibiy qismlari alohida bloklarda berilgan. Tergov harakatlari tarkibiga so'roq qilish, ko'zdan kechirish, tintuv va olib qo'yish, ekspertiza tayinlash, tanishuv uchun ko'rsatish hamda eksperiment o'tkazish kiradi. Protsessual xususiyatlar sifatida qonuniylik tamoyili, protsessual shaklga rioya qilish, vakolatli subyektlar tomonidan amalga oshirilishi, majburiy hujjatlashtirish hamda shaxs huquq va erkinliklarini ta'minlash ko'rsatilgan. Dalillar turlari esa gumon qilinuvchi, ayblanuvchi, jabrlanuvchi va

guvohlarning ko'rsatmalari, ekspert xulosalari, ashyoviy dalillar hamda hujjatlar va boshqa ma'lumotlardan iborat.

NATIJALAR

Tadqiqot natijalari shuni ko'rsatdiki, dastlabki tergov bosqichida dalillarni to'plash jarayoni jinoyat ishining adolatli hal etilishida hal qiluvchi ahamiyatga ega. O'rganishlar natijasida aniqlanishicha, dalillarni to'plashning protsessual tartibiga qat'iy rioya qilinishi dalillarning haqiqiyliги va ishonchliligini ta'minlaydi.

Shuningdek, tizimli va mantiqiy tahlil natijasida tergov harakatlarining o'zaro bog'liqligi aniqlanib, dalillarni tekshirish va baholash jarayonining izchilligi ilmiy jihatdan asoslandi. Statistik tahlillar esa amaliyotda ayrim kamchiliklar, xususan, hujjatlashtirishdagi xatolar va protsessual talablarning buzilishi mavjudligini ko'rsatdi.

Natijada dalillarni to'plash jarayonini takomillashtirish zarurligi hamda zamonaviy texnologiyalarni keng joriy etish muhimligi asoslab berildi.

MUHOKAMA

Olingan natijalar ilmiy adabiyotlar va amaliy tajriba bilan solishtirilganda, dastlabki tergov bosqichida dalillarni to'plash jarayoni ko'p jihatdan qonunchilik normalariga mos ravishda amalga oshirilayotganini ko'rsatadi. Biroq ayrim hollarda protsessual talablarning buzilishi dalillarning yuridik kuchini pasaytirishi mumkin. Xorijiy tajribalar bilan qiyoslash shuni ko'rsatdiki, rivojlangan davlatlarda dalillarni to'plash jarayonida raqamli texnologiyalar va avtomatlashtirilgan tizimlardan keng foydalaniladi. Bu esa inson omilini kamaytirish va xatolarni minimallashtirishga xizmat qiladi. Shu nuqtai nazardan, milliy amaliyotda ham tergov jarayonini raqamlashtirish, tergovchilar malakasini oshirish hamda protsessual nazoratni kuchaytirish zarur deb hisoblanadi.

XULOSA

Dastlabki tergov bosqichida dalillarni to'plash jinoyat protsessining eng muhim tarkibiy qismi hisoblanadi. Tadqiqot natijalari shuni ko'rsatdiki, ushbu jarayonning samaradorligi bevosita qonuniylik, xolislik va aniqlik tamoyillariga rioya etilishiga bog'liq.

Dalillarni to'plash, tekshirish va baholash jarayonlarini takomillashtirish orqali jinoyat ishlarini adolatli hal etish imkoniyati oshadi. Shu bois tergov faoliyatida zamonaviy yondashuvlarni joriy etish, ilmiy asoslangan metodlardan foydalanish va protsessual intizomni kuchaytirish muhim ahamiyat kasb etadi.

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13.00.00 – Pedagogika fanlari

13.00.00 – Pedagogical sciences

13.00.00 – Педагогические науки

TEACHING ENGLISH FOR OIL AND GAS ENGINEERING STUDENTS: A PRACTITIONER'S PERSPECTIVE

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Abstract: English for Specific Purposes (ESP) in the oil and gas sector demands far more than a standard language syllabus; it requires a deeply contextualized pedagogy rooted in professional practice, safety culture, and authentic communication. This article offers a reflective account of teaching English to undergraduate petroleum, drilling, and downstream process engineers. It argues that effective instruction begins with a rigorous needs analysis and continues through the deliberate teaching of polysemous technical vocabulary, the design of simulation-based activities, and the cultivation of assertiveness in hierarchical, multilingual work environments. By treating language not as an abstract system, but as a safety-critical professional tool, the teacher can transform passive engineering knowledge into active communicative competence. The discussion covers materials development from real drilling reports and incident investigations, task-based assessment aligned with industry procedures, and practical strategies for bridging the gap between high-level reading comprehension and productive speaking skills. The article concludes that teaching English to future oil and gas professionals is fundamentally an act of professional respect—one that equips students to think, speak, and act safely in the environments that power the world.

Keywords: English for Specific Purposes (ESP), oil and gas engineering, needs analysis, technical vocabulary, safety communication, simulation-based learning, authentic materials

NEFT VA GAZ MUHANDISLIGI TALABALARIGA INGLIZ TILINI O'QITISH: AMALIYOTCHI NUQTAI NAZARI

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Annotatsiya: Neft va gaz sohasida maxsus maqsadlar uchun ingliz tili (ESP) oddiy til o'quv dasturidan ancha ko'proq narsani talab qiladi; u kasbiy amaliyot, xavfsizlik madaniyati va haqiqiy kommunikatsiyaga tayangan chuqur kontekstlashtirilgan pedagogik yondashuvni zarur qiladi. Ushbu maqolada neft, burg'ilash va quyi oqim texnologik jarayonlari muhandisligi yo'nalishida tahsil olayotgan bakalavriat talabalariga ingliz tilini o'qitish bo'yicha amaliy kuzatishlar yoritiladi. Maqolada samarali ta'lim ehtiyojlarni puxta tahlil qilishdan boshlanishi, ko'p ma'noli texnik leksikani maqsadli o'rgatish, simulyatsiyaga asoslangan mashg'ulotlar yaratish hamda ierarxik va ko'p tilli ish muhitida qat'iy, ammo madaniyatli muloqot ko'nikmalarini shakllantirish orqali davom etishi ta'kidlanadi. Tilga mavhum tizim sifatida emas, balki xavfsizlik uchun muhim kasbiy vosita sifatida qarash o'qituvchiga passiv muhandislik bilimlarini faol kommunikativ kompetensiyaga aylantirish imkonini beradi. Muhokamada real burg'ilash hisobotlari va hodisalar tahlili asosida materiallar ishlab chiqish, sanoat tartib-qoidalariga mos vazifaga asoslangan baholash hamda yuqori darajadagi o'qib tushunish ko'nikmalari bilan og'zaki nutq ko'nikmalari o'rtasidagi tafovutni bartaraf etish strategiyalari ko'rib chiqiladi. Maqola kelajakdagi neft va gaz mutaxassislariga ingliz tilini o'qitish kasbiy

hurmat ifodasi bo'lib, ularni dunyoni energiya bilan ta'minlaydigan muhitlarda xavfsiz fikrlash, gapirish va harakat qilishga tayyorlaydi, degan xulosa bilan yakunlanadi.

Kalit so'zlar: maxsus maqsadlar uchun ingliz tili (ESP), neft va gaz muhandisligi, ehtiyojlar tahlili, texnik leksika, xavfsizlik kommunikatsiyasi, simulyatsiyaga asoslangan o'qitish, autentik materiallar

ПРЕПОДАВАНИЕ АНГЛИЙСКОГО ЯЗЫКА СТУДЕНТАМ НЕФТЕГАЗОВОГО ИНЖИНИРИНГА: ВЗГЛЯД ПРАКТИКА

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Аннотация: Английский язык для специальных целей (ESP) в нефтегазовой отрасли требует гораздо большего, чем стандартная языковая программа; он предполагает глубоко контекстуализированную педагогику, основанную на профессиональной практике, культуре безопасности и аутентичной коммуникации. В данной статье представлен рефлексивный опыт преподавания английского языка студентам бакалавриата, обучающимся по направлениям нефтяной инженерии, бурения и перерабатывающих технологических процессов. Подчеркивается, что эффективное обучение начинается с тщательного анализа потребностей и продолжается целенаправленным обучением многозначной технической лексики, разработкой симуляционных заданий и формированием уверенной коммуникативной позиции в иерархической и многоязычной рабочей среде. Рассмотрение языка не как абстрактной системы, а как профессионального инструмента, критически важного для безопасности, позволяет преподавателю преобразовать пассивные инженерные знания в активную коммуникативную компетенцию. В статье рассматриваются разработка материалов на основе реальных буровых отчетов и расследований инцидентов, оценивание, основанное на задачах и согласованное с отраслевыми процедурами, а также практические стратегии преодоления разрыва между высоким уровнем понимания прочитанного и продуктивными навыками говорения. В заключение отмечается, что преподавание английского языка будущим нефтегазовым специалистам является актом профессионального уважения, который помогает студентам мыслить, говорить и действовать безопасно и эффективно в среде, обеспечивающей энергией современный мир.

Ключевые слова: английский язык для специальных целей (ESP), нефтегазовая инженерия, анализ потребностей, техническая лексика, коммуникация в сфере безопасности, симуляционное обучение, аутентичные материалы

INTRODUCTION

Teaching English to oil and gas engineering students is not a job one stumbles into by accident. A teacher does not simply wake up one morning and decide to explain the difference between blowout preventers and Christmas trees to a room full of twenty-year-olds who can already describe fluid dynamics in their mother tongue but freeze when asked to introduce themselves in English. One arrives there deliberately, often after years of general English teaching, drawn by the peculiar gravity of a world that runs on jargon, risk, and precision. I remember my first class vividly. I had prepared a carefully organized lesson on modal verbs—polite requests, possibility, and obligation—and within ten minutes a student raised his hand and asked, “Teacher,

why do we say ‘the well is kicking’? It is not a baby.” I never finished that modal verbs worksheet. That question changed everything.

To teach English to future petroleum engineers, drilling supervisors, and refinery process operators, one must first accept that one is not merely a language instructor. The teacher becomes, temporarily, a student of their world. It is necessary to understand that hydrocarbons are not just a topic in a textbook but the physical substance that will shape learners’ careers, the reason they may wake up at 4 a.m. on a rig in the North Sea or spend months in the desert near Basra. If the teacher does not grasp why a wellbore stability report matters, it is impossible to design a reading comprehension task that holds students’ attention. The language being taught must be connected directly to their sense of identity, professional ambition, and awareness of the risk of making a mistake that could cost millions or cause a safety incident. This article explores the practical journey of developing such a course, grounded in established ESP principles while responding to the unique demands of the hydrocarbon industry.

MATERIALS AND METHODS

Needs Analysis: The foundation of any successful course lies in a rigorous needs analysis (Dudley-Evans & St John, 1998). This phrase is often repeated at conferences until it nearly loses its meaning, but in the oil and gas context it remains brutally practical. A teacher cannot rely on a generic engineering English textbook. It is necessary to sit down with subject-matter experts, or better yet, with the students themselves, and map out what communication actually occurs in their daily work.

An upstream drilling engineer needs functional language for pre-spud meetings, daily drilling reports, and discussions about mud weight and rate of penetration. A petrophysicist preparing log interpretations needs to present uncertainty appropriately: “The formation appears to have good porosity, but the water saturation estimate carries a significant margin of error.” A downstream process engineer needs to write clear operating procedures, incident reports, and shift handover notes, where ambiguity about valve status can have cascading consequences.

Even within the same department, communicative competencies differ. A team leader managing a well test needs to chair a safety briefing, delegate tasks, and challenge an unsafe act with firmness and diplomacy, while a junior laboratory technician analyzing crude samples needs to read ASTM standards and compose concise emails summarizing test results. This targeted analysis transforms a broad language course into a professional development tool.

Materials and Simulations: Materials selection and development are a constant creative challenge. Published textbooks for oil and gas English exist, and some are excellent, but they cannot always keep pace with the sector or the specific context of a particular national oil company or university. Drawing on the principle that authentic materials increase learner motivation and transfer (Hutchinson & Waters, 1987), I eventually learned to curate real-world sources: excerpts from the IADC Drilling Manual (International Association of Drilling Contractors, 2015), SPE paper abstracts, sections of safety management system documents, and real daily drilling reports with identifying details anonymized.

A single drilling report can provide a week’s worth of language work. Students can scan it for verb forms, noting how the simple past reports completed actions (“ran in hole to 3,500 m”), while the present continuous describes ongoing operations (“currently circulating bottoms up”), and modal verbs express obligations and recommendations (“casing shall be pressure tested to 5,000 psi before drilling out the shoe”). Reading skills can be practised by having students extract key data into a morning report template, and speaking practice can then be generated by role-

playing the handover between night and day shifts based on that template. The material becomes alive because it is real.

Simulations take this further. In a classroom without a drilling simulator, a low-fidelity tabletop exercise can be created. I once built a well control simulation using nothing but a whiteboard, paper markers, and a few laminated cards representing the drill string, annulus, and BOP rams. Students had to call out pressures, make decisions, and record events on an IADC kill sheet, all in English. The language that emerged was intense, authentic, and memorable. They remembered the phrase “circulate and weight up mud to XXX pcf” because they had used it to solve a problem, not because they had memorized it.

Later, I integrated listening exercises from safety meeting recordings and incident investigation videos. The students—many of them visual learners with strong analytical intelligence—were initially uncomfortable with listening tasks that did not follow a neat textbook script. They struggled with the Glaswegian drilling supervisor’s accent, hesitations, and overlapping turns. After several weeks, however, they started catching the gist and then the nuance. They learned to distinguish a casual remark from a safety-critical instruction, and that ability is worth far more than a perfect score on a grammar test.

Task-Based Assessment: Assessment also requires careful redesign. Traditional language tests that isolate grammar points or vocabulary recall fail to capture whether a student can actually function in an engineering environment. In line with task-based assessment principles (Norris, 2009), I moved toward professional simulations. For a midterm, I might give a group an equipment-related incident description—such as a packer failure during a well test—and ask them to role-play an incident investigation meeting, then individually write the report.

Evaluation criteria include clarity, accuracy of technical vocabulary, appropriate use of hedging when speculating (“The elastomer may have been damaged during run-in-hole”), and communication strategies such as confirming understanding. The marking rubric is shared with students in advance and partly co-created with engineering professors, so that assessment is perceived not as a language hurdle but as a realistic rehearsal of future job responsibilities.

RESULTS

Once the needs are mapped, the teacher confronts the challenge that terrifies every new ESP practitioner: technical vocabulary. Oil and gas engineering vocabulary is a dense thicket of polysemous terms, metaphors, and acronyms that can quickly overwhelm learners. The word “spud,” for instance, means to begin drilling a well, but it may also exist in students’ minds as a potato until clarified. “Kick” means an influx of formation fluids into the wellbore—a warning sign of a potential blowout—not a football movement. A “fish” is not something one eats, but a piece of equipment lost downhole that needs to be retrieved.

There are also acronyms that build upon one another: BOP (blowout preventer), BHA (bottom hole assembly), LOT (leak-off test), ROP (rate of penetration), H₂S (hydrogen sulfide), and many others. Teaching them as a list to be memorized is a recipe for fatigue and failure. Vocabulary instruction must instead be embedded in the narratives and processes that give these terms meaning. A teacher does not simply define “BOP stack”; the teacher tells the story of the Deepwater Horizon (National Commission, 2011), not to frighten students, but to make tangible the weight of what this equipment means.

In a simulated well control scenario, one student acts as the driller, another as the toolpusher, and a third as the mud engineer. At that point, terms such as “shut-in casing pressure” and “kill mud weight” stop being abstract glossary entries and become demands that must be

communicated under pressure. This shift from passive recognition to active use is one of the most important practical results of the course design.

The use of authentic materials and simulation-based tasks helped students connect their engineering knowledge with communicative performance. Students who could initially recognize technical terms in written materials began to use them in spoken exchanges, handover reports, safety briefings, and short professional presentations. Their productive language remained imperfect, but it became more functional, contextually appropriate, and professionally meaningful.

DISCUSSION

Communication Beyond Jargon: Effective teaching leads naturally to communication beyond jargon. Oil and gas technical professionals do not work in isolation. They coordinate with multidisciplinary teams, often multinational, across time zones and cultures. A graduate joining an international service company might have to explain a stuck pipe incident to a Scottish rig manager on a Monday, submit a written report to an American office by Friday, and participate in a videoconference with Nigerian partners the following week.

English here serves as a lingua franca, but not the pristine English of grammar books. It is a messy, accented, functional English in which clarity and intelligibility matter far more than native-like accuracy. Therefore, pragmatic strategies must be taught: how to ask for repetition without losing face, how to clarify likely misunderstanding (“Let me rephrase: are you saying that the mud weight is too low to control formation pressure?”), and how to signal an emergency clearly while controlling tone so that panic does not escalate.

Role-plays in this setting must move beyond transactional coffee-shop dialogues. They take the form of toolbox talks before a hazardous task, pre-job safety meetings, or after-action reviews, where a serious near-miss must be analyzed without blame but with absolute honesty. Research on safety-critical communication emphasizes that such interactions depend heavily on a shared linguistic repertoire and clear protocols (Dekker, 2014).

The Teacher’s Role and Cultural Mediation: The role of the teacher shifts from knowledge dispenser to facilitator, materials architect, and sometimes cultural mediator. The teacher needs to understand, or at least seriously respect, the safety culture of the industry. For most engineering students, especially those with internship experience on rigs or in plants, the concept of “stop-work authority” is sacrosanct. If an activity is designed in which a student must communicate a safety concern and the other student ignores it, that is not merely a language breakdown; it is a violation of a deeply held professional value. Communication tasks should therefore be framed within the industry’s own ethical framework: clear and direct language is practised because lives may depend on it. This framing dissolves resistance. A student who is reluctant to speak English in front of peers may find his voice when the scenario positions him as the person responsible for calling a drilling break and alerting the team. The teacher is not forcing him to perform language for language’s sake; the teacher is giving him tools to uphold his professional duty. This also involves cultural nuance. In hierarchical settings, students must learn forms of respectful assertiveness, for example how to tell a senior supervisor, “I’d like to flag a concern...” using language that is polite but never vague.

Challenges and Sustaining Progress: Challenges are plentiful. There is typically a wide gap between students’ receptive academic reading skills and their productive speaking and writing abilities. Many have studied English through grammar-translation for years, so they can decipher an SPE paper but cannot fluently describe what they understood in their own words. Transforming passive competence into active skill requires time and psychological safety.

Error correction must be strategic. If a student haltingly explains that “the pressure increased sudden,” it is not always useful to stop the flow and insert an adverb lesson. It is better to wait, respond to the content, and later use the sentence as an example in a focused mini-session on describing trends and using adjectives versus adverbs. Humor helps enormously. When a student once said, “We need to change the bit because it is tired,” the class laughed, but we then discussed that “worn” or “dull” would be more precise, while acknowledging that “tired” is a beautifully human metaphor and communicates the idea perfectly in an informal toolbox talk.

Technology is another challenge. In many oil-producing nations, students may have intermittent internet access but excellent mobile phones. The teacher adapts. WhatsApp can be used for micro-learning: a daily photo of equipment with the caption, “What is this? Describe its function in one voice message.” Short instructional videos can be created and shared. Offline-capable flashcard applications can be used for core vocabulary. These are not compromises but opportunities to embed learning into the rhythm of students’ real lives. A student who listens to a voice message explaining what happens during a leak-off test while commuting to university is experiencing learning situated in his real world, not confined to a classroom.

CONCLUSION

Teaching English for oil and gas engineering students is, at its core, an act of professional respect. The teacher respects the gravity of the work students will do, the environments they will inhabit—offshore platforms, remote drilling camps, and sprawling gas plants—and the multilingual crews they will join. The teacher respects the fact that a misplaced decimal point or a misunderstood instruction about choke position can have consequences far beyond a red mark on a paper. Therefore, every activity, vocabulary set, and communication task must be tailored to the real-world cognitive and linguistic demands of the industry. The teaching of English is blended with genuine curiosity about students’ discipline, and in that mutual exchange, the classroom becomes a workshop where language is forged in the context of blowout preventers, reservoir models, and separator pressures, rather than studied only in abstraction.

Over time, the transformation goes beyond linguistic improvement. A student who once stared silently at a subsea wellhead diagram may stand in front of the whiteboard and explain the casing hanger landing procedure in English that is not grammatically flawless but is entirely comprehensible, logically sequenced, and rich with exact terminology. That moment is the reason the teacher does the job. It also demonstrates that the real subject being taught is not English alone, but the ability to think, speak, and act safely and effectively in a world that powers civilization.

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DIFFICULTIES IN OVERCOMING VOCABULARY LEARNING PROBLEMS IN 7TH GRADE STUDENTS

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Abstract: In recent years, learning new vocabulary has become important because it plays a key role in improving students' language skills. However, there is limited research on the specific difficulties faced by 7th-grade students in learning new words. The study employed a qualitative design. The participants were 15 seventh-grade students from a secondary school. Data were collected through questionnaires and classroom observations and analyzed using thematic analysis. The findings indicate that students struggle with memorizing and using new words in context. The results also show that a lack of practice and motivation affects their vocabulary learning. The study suggests that interactive methods, different kinds of flashcards, and regular practice can improve vocabulary learning. These findings have implications for teachers and students in enhancing effective vocabulary teaching strategies.

Keywords: vocabulary learning, vocabulary acquisition, vocabulary learning difficulties, 7th-grade students, language development, memorization strategies, contextual usage, student motivation, classroom interaction, flashcards, qualitative research, teaching strategies.

7-SINF O'QUVCHILARIDA LUG'AT O'RGANISHDAGI MUAMMOLARNI BARTARAF ETISH QIYINCHILIKLARI

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Annotatsiya: So'nggi yillarda yangi lug'at birliklarini o'rganish muhim ahamiyat kasb etmoqda, chunki u o'quvchilarning til ko'nikmalarini rivojlantirishda asosiy o'rin tutadi. Biroq 7-sinf o'quvchilarining yangi so'zlarni o'rganishda duch keladigan aniq qiyinchiliklari bo'yicha tadqiqotlar cheklangan. Ushbu tadqiqot sifatli tadqiqot dizayni asosida olib borildi. Tadqiqot ishtirokchilari umumta'lim maktabining 7-sinfida tahsil olayotgan 15 nafar o'quvchidan iborat bo'ldi. Ma'lumotlar so'rovnomalar va sinf kuzatuvlari orqali to'plandi hamda tematik tahlil asosida tahlil qilindi. Natijalar o'quvchilar yangi so'zlarni yodlab qolish va ularni kontekstda qo'llashda qiynalishini ko'rsatdi. Shuningdek, amaliy mashqlarning yetishmasligi va motivatsiya pastligi lug'at o'rganishga ta'sir qilishi aniqlandi. Tadqiqot interaktiv metodlar, turli xil fleshkartalar va muntazam mashqlar lug'at o'rganishni yaxshilashi mumkinligini ko'rsatadi.

Kalit so'zlar: lug'at o'rganish, lug'atni o'zlashtirish, lug'at o'rganishdagi qiyinchiliklar, 7-sinf o'quvchilari, til rivojlanishi, yodlash strategiyalari, kontekstda qo'llash, o'quvchi motivatsiyasi, sinfdagi o'zaro muloqot, fleshkartalar, sifatli tadqiqot, o'qitish strategiyalari.

ТРУДНОСТИ ПРЕОДОЛЕНИЯ ПРОБЛЕМ ИЗУЧЕНИЯ ЛЕКСИКИ У УЧАЩИХСЯ 7-ГО КЛАССА

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Аннотация: В последние годы изучение новой лексики приобрело важное значение, поскольку оно играет ключевую роль в развитии языковых навыков учащихся. Однако исследования, посвященные конкретным трудностям, с которыми сталкиваются учащиеся 7-го класса при изучении новых слов, остаются ограниченными. В исследовании использован качественный дизайн. Участниками стали 15 учащихся 7-го класса средней школы. Данные были собраны с помощью анкетирования и наблюдения в классе и проанализированы методом тематического анализа. Результаты показывают, что учащиеся испытывают трудности при запоминании новых слов и их использовании в контексте. Также установлено, что недостаток практики и мотивации влияет на процесс усвоения лексики. Исследование показывает, что интерактивные методы, различные виды флеш-карт и регулярная практика могут улучшить изучение словарного запаса.

Ключевые слова: изучение лексики, усвоение словарного запаса, трудности изучения лексики, учащиеся 7-го класса, развитие языка, стратегии запоминания, использование в контексте, мотивация учащихся, взаимодействие в классе, флеш-карты, качественное исследование, стратегии обучения.

INTRODUCTION

In recent years, the rapid growth of digital and communication technologies has transformed the educational landscape by expanding the scope, nature, and opportunities available for out-of-classroom learning (García Botero et al., 2021; Nunan & Richards, 2015).

Defined broadly, mobile learning is one of the most recent developments in the application of educational technology. It emphasizes the affordances, experiences, and opportunities provided by portable devices for learning at any time and in any place (McQuiggan et al., 2015). Such learning goes beyond the physical devices themselves; tablet PCs, smartphones, laptops, and personal media players can all be used to support mobile-assisted language learning.

Moreover, previous research indicates that in many EFL contexts, vocabulary instruction is neither effective nor efficient, and many learners fail to learn the 2,000 most frequent word families (Webb & Chang, 2012; Webb & Nation, 2017). Vocabulary is an essential requirement in English language learning. According to Rainkamol (2008), vocabulary use is a necessary component of learning English. Aisyah et al. (2020) note that flashcards are one type of visual aid that can be provided to pupils. Small cards containing pictures, text, or symbols are used to help students recall or learn various topics related to visuals.

However, a significant number of students have difficulty learning new words and lack speaking practice.

The objectives of this study are to identify why some 7th-grade students have difficulty learning new words, to examine students' memory in learning new words, and to determine which types of activities make the lesson more enjoyable.

The research questions are as follows:

1. Why do my students have difficulty learning new words?
2. Do they have good memory?
3. Do I use interesting activities to make the lesson more enjoyable?

Classroom-based research is needed to explore seventh-grade students' difficulties in learning new vocabulary and to provide practical guidance for teachers. This study aims to identify the key challenges students face in acquiring and remembering new English words and to examine their attitudes toward vocabulary learning activities. Based on the findings, the study proposes

effective instructional strategies to enhance students' vocabulary acquisition and engagement in the classroom.

METHODOLOGY

The participants of the study were 15 seventh-grade students from School No. 1 in Naryn district. The instructional strategies used to improve vocabulary learning served as the independent variable, while students' vocabulary performance was the dependent variable.

Data were collected through three main instruments. First, a paper-based student questionnaire was conducted to identify learners' attitudes and difficulties in learning new words. All 15 students participated, and the survey was anonymous to ensure honest responses. Second, a teacher questionnaire via Google Forms was used to gather experienced teachers' opinions about common vocabulary learning problems. Third, a reflective journal was maintained by the teacher to record classroom observations over several lessons.

The procedure began with identifying students' initial vocabulary level. Then surveys were administered to determine key challenges. After that, several strategies were implemented, including clear explanation of new words, the use of visual aids, repetition, interactive activities, and continuous feedback. Finally, students' progress was observed and compared with their initial performance.

Before analysis, all collected data were checked for completeness. Quantitative data from the questionnaires were analyzed using percentages, while qualitative data from the journal were examined thematically to identify common patterns. To ensure reliability and validity, data from different sources were compared. This triangulation increased the accuracy and trustworthiness of the results.

A paper-based questionnaire was selected as the primary data collection tool due to practical considerations. Not all seventh-grade students had access to mobile phones or stable internet connections, which made it difficult to conduct an online survey. Therefore, using a paper-based format ensured equal participation opportunities for all students and increased the reliability of the collected data. Moreover, this method allowed students to complete the questionnaire in a controlled classroom environment, reducing distractions and improving the accuracy of their responses.

The questionnaire was designed to identify students' attitudes, difficulties, and learning behaviors related to vocabulary acquisition. Overall, the questionnaire helped provide a clearer understanding of the key challenges students face and guided the selection of appropriate instructional strategies.

Student questionnaire items: Do you like learning new English words? (a) Yes; (b) No; (c) Sometimes. Do you find it difficult to learn new words? (a) Yes; (b) No; (c) Sometimes. What is the most difficult for you when learning new words? (a) Understanding meaning; (b) Remembering words; (c) Pronunciation; (d) Spelling; (e) Using words in sentences. Do you forget new words quickly? (a) Yes; (b) No; (c) Sometimes. How often do you practice new vocabulary? (a) Always; (b) Sometimes; (c) Never. What helps you learn new words better? (a) Pictures; (b) Repetition; (c) Teacher explanation; (d) Games/activities. Do you use new words in speaking or writing? (a) Yes; (b) No; (c) Sometimes. Do you feel motivated to learn new words? (a) Yes; (b) No; (c) Sometimes.

Questions 1 and 2 aimed to explore students' general attitudes toward learning new words and their perceived level of difficulty. Question 3 focused on identifying specific problem areas such as meaning, pronunciation, spelling, and usage. Question 4 examined students' ability to

retain vocabulary over time. Question 5 investigated how frequently students practice new words, reflecting their learning habits. Question 6 aimed to determine which teaching strategies or supports are most effective for students. Question 7 explored whether students actively use new vocabulary in speaking or writing. Question 8 was designed to assess students' level of motivation in learning new words.

Teacher questionnaire items:

1. How many years of teaching experience do you have?
2. Have you ever faced difficulties in teaching students new vocabulary?
3. Have you ever used flashcards when teaching vocabulary?
4. If yes, did they work effectively?
5. Which method do you usually use to teach new words?
6. Do you give vocabulary as homework or organize peer work during lessons?
7. Do games help students remember new words better?
8. Do your students revise new words outside the classroom?
9. How often do your students forget newly learned words?
10. In your opinion, what is the best way to help students learn new vocabulary?

The teacher questionnaire was used to identify the level of professional experience, common vocabulary teaching difficulties, the use and effectiveness of flashcards, the most commonly used instructional methods, teachers' use of homework or peer work, the role of games in vocabulary retention, students' revision habits, the frequency of forgetting new words, and teachers' practical recommendations for vocabulary learning.

Before conducting the survey and implementing the research, initial classroom observations revealed that many students experienced difficulties in speaking tasks. In particular, several learners were unable to understand instructions or express their ideas clearly, which indicated a lack of vocabulary knowledge. Based on these observations, the research topic "difficulties in learning new words" was selected.

Prior to this study, teaching practices mainly focused on more active and high-achieving students, especially those who attended extra classes. Lessons were conducted without the use of specific instructional strategies for vocabulary development. As a result, the presence of passive learners was not clearly noticed, since stronger students tended to dominate classroom participation.

Recognizing this limitation, the teacher aimed to create a more inclusive and engaging learning environment in which all students could actively participate. The focus shifted toward improving vocabulary learning through interactive and student-centered methods.

To address the identified problem, the use of flashcards was introduced as a key instructional strategy. Students were actively involved in the learning process by creating their own vocabulary cards. They were provided with paper, glue, scissors, and markers. Each student wrote a new word on one side of the card and drew a corresponding picture on the other side to illustrate its meaning.

This activity increased students' interest and engagement, as it resembled a game-like process. In addition, it promoted teamwork and collaboration among students. Over time, preparing vocabulary flashcards became a regular classroom practice, and students developed a positive attitude toward this activity. To reinforce learning, flashcard revision was consistently integrated into lessons as both a warm-up and a wrap-up activity. This helped students review previously learned vocabulary in an interactive way.

RESULTS

After four weeks of implementing this strategy, noticeable improvements were observed, particularly among previously passive students. Their level of motivation increased, and they demonstrated better vocabulary knowledge. As a result, they became more confident and active during speaking activities.

Overall, the use of interactive techniques, especially flashcards, proved to be effective in enhancing students' vocabulary learning and encouraging equal participation in the classroom.

Before implementing the new strategy, vocabulary teaching was conducted using more traditional methods. Typically, new words were written on the board, and students were asked to copy them into their notebooks. They were then expected to memorize these words at home. During the lesson, the teacher checked students' knowledge by asking several learners to recall the meanings of the words, depending on the available time. After this brief checking stage, the lesson moved on to a new topic.

However, this approach had several limitations. Not all students were equally involved in the process, as only a small number of learners were asked to respond during class. Those who were not questioned often remained passive and unprepared. Over time, this method became repetitive and monotonous, leading to a decrease in students' interest and motivation. Many students appeared disengaged, often listening without active participation or pretending to understand the material.

Through these observations, it became clear that the root of the problem was related to insufficient vocabulary knowledge. The traditional method of simply presenting and memorizing word lists proved to be ineffective and outdated, as it did not support long-term retention or active language use.

In response to these challenges, flashcards were selected as an alternative and more interactive instructional tool. Small cards were prepared from thick paper and designed in a convenient size so that students could easily carry them in their school bags or pencil cases. This portability allowed learners to review vocabulary anytime and anywhere, increasing opportunities for repetition and practice.

Each flashcard contained a new word on one side, while the other side included either a drawing representing the meaning of the word or its translation. Students were actively involved in creating their own flashcards, which made the learning process more personalized and meaningful.

This method significantly increased students' engagement. Many learners showed enthusiasm in collecting and creating more flashcards, and over time, this activity became a regular habit. The process also encouraged collaboration, as students often worked together, shared ideas, and supported each other.

Importantly, this strategy helped address differences in students' proficiency levels. Previously, more advanced learners—especially those attending extra classes—tended to dominate classroom activities. However, through the use of flashcards and group-based tasks, more active students began to support less active ones. This created a more inclusive learning environment where all students could participate and learn together.

To further strengthen vocabulary retention, flashcards were incorporated into lessons as both warm-up and wrap-up activities. These short revision sessions helped reinforce previously learned vocabulary in an engaging and interactive way.

The results show that students made significant progress in vocabulary acquisition after the intervention. In particular, the use of flashcards as a method for memorizing new words proved to

be highly effective. This technique facilitated better retention and understanding of lexical items, enabling students to expand their vocabulary more efficiently.

In addition, the findings indicate that learners developed positive attitudes toward teamwork and collaborative learning. Most participants reported that group activities were engaging and motivating, and they appreciated the opportunity to interact with their peers. The collaborative environment also allowed students to exchange knowledge and support each other throughout the learning process.

Furthermore, students became more confident and active during classroom activities. Passive learners, in particular, showed noticeable improvement, as they were supported and encouraged by more active students during group work. This peer support contributed to creating a more inclusive and interactive classroom atmosphere.

Moreover, the participants acquired new learning strategies and skills, which helped them become more independent learners. By the end of the study, students demonstrated higher engagement and improved participation. Overall, the main finding of this research is that the use of flashcards as a vocabulary learning method was effective and had a positive impact on students' performance, engagement, and overall learning experience.

1. How many years of teaching experience do you have? (Multiple choice)

26 responses

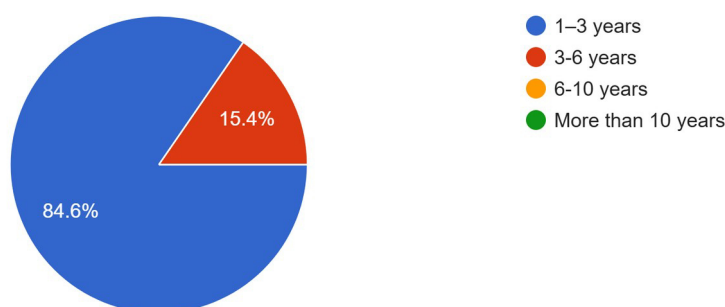


Figure 1. Teachers' years of teaching experience.

2. Have you ever faced problems with students when teaching new vocabulary? (Multiple choice)

25 responses

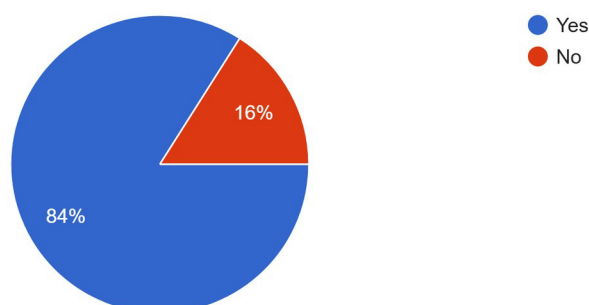


Figure 2. Teachers' difficulties in teaching new vocabulary.

3. Have you ever used flashcards to teach vocabulary to your students? (Multiple choice)

24 responses

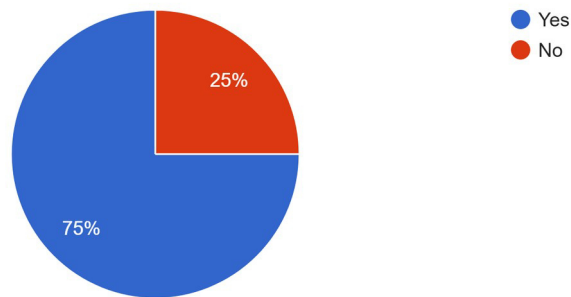


Figure 3. Use of flashcards in teaching vocabulary.

4. If yes, did this method work well? (Multiple choice)

24 responses

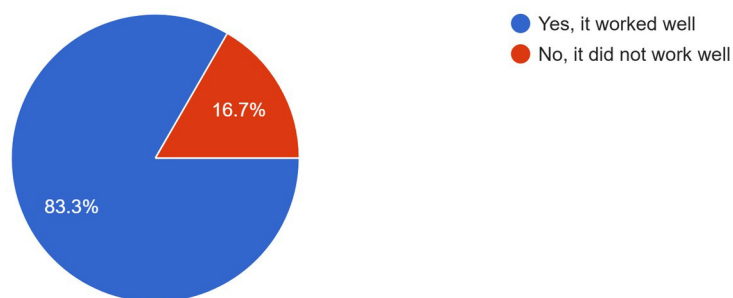


Figure 4. Teachers' evaluation of the effectiveness of flashcards.

5. Which method do you usually use to help students learn new words? (Multiple choice)

25 responses

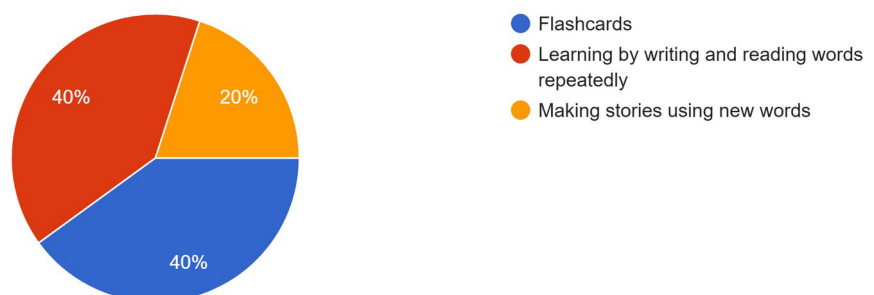


Figure 5. Methods used by teachers to help students learn new words.

6. How do you usually help students learn new words? (Multiple choice)

25 responses

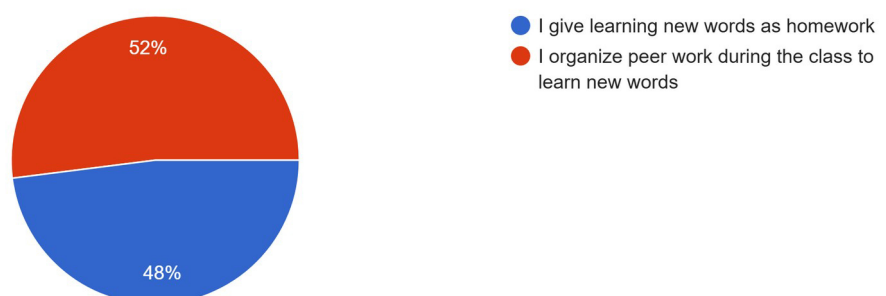


Figure 6. Teachers' use of vocabulary homework and peer work.

7. Do games help students remember new words better? (Multiple choice)

25 responses

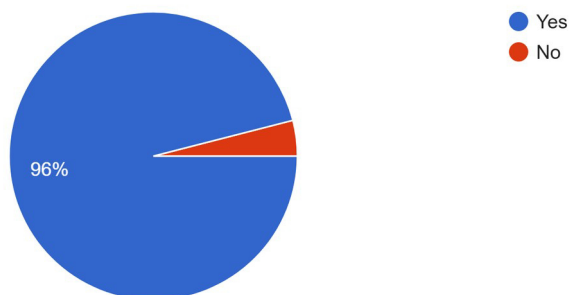


Figure 7. Teachers' views on the role of games in remembering new words.

8. Do your students revise new words outside the classroom? (Multiple choice)

24 responses

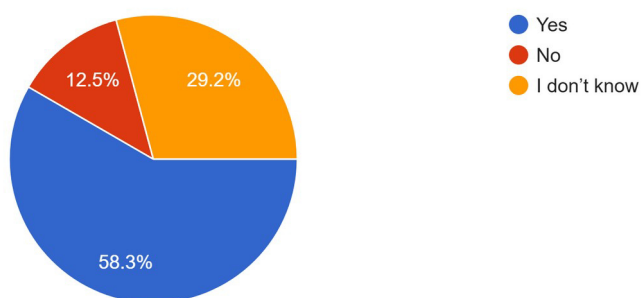


Figure 8. Students' revision of new words outside the classroom.

9. How often do students forget newly learned words? (Multiple choice)

25 responses

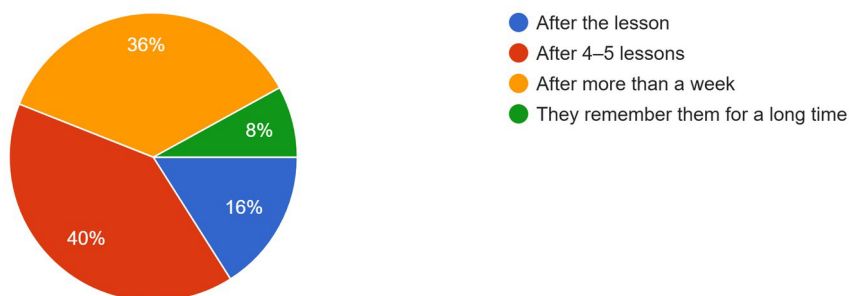


Figure 9. Frequency of students forgetting newly learned words.

The survey results provide important insights into teachers' experience and challenges in teaching vocabulary. According to Figure 1, the majority of respondents (84%) have between 1 and 3 years of teaching experience, while only 16% have 3 to 6 years of experience. This indicates that most participants are relatively early-career teachers, which may influence their choice of teaching methods and their openness to innovative techniques.

Figure 2 shows that a significant proportion of teachers (83.3%) have faced difficulties when teaching new vocabulary, whereas only 16.7% reported no such problems. This finding highlights that vocabulary instruction remains a challenging aspect of language teaching, particularly for less experienced educators. It also suggests the need for more effective and practical teaching strategies to address these difficulties.

The survey results in Figure 3 show that the majority of respondents (73.9%) have used flashcards to teach vocabulary, while 26.1% have not. This indicates that flashcards are a widely

used method among teachers. The high percentage suggests that educators consider this tool practical and accessible for classroom use. However, the presence of respondents who do not use flashcards also implies that some teachers still rely on alternative teaching strategies.

The findings in Figure 4 reveal that most respondents (87%) believe that using flashcards is an effective method for teaching vocabulary, whereas only 13% think it is not effective. This demonstrates a strong positive perception of flashcards among teachers. Such a high level of agreement highlights the method's potential in improving students' vocabulary acquisition and supports its continued use in language teaching.

The data in Figure 5 indicate that teachers use a variety of methods to help students learn new words. The most common approach is learning through writing and repeated reading (41.7%), followed by flashcards (37.5%) and making stories using new words (20.8%). This suggests that traditional repetition-based methods remain dominant, while more creative approaches are less frequently applied. It can be inferred that incorporating a wider range of techniques may enhance students' engagement and learning outcomes.

The findings in Figure 6 indicate that 54.2% of respondents prefer organizing peer work during the lesson to help students learn new words, while 45.8% assign vocabulary learning as homework. This suggests that slightly more teachers favor interactive and collaborative in-class activities over independent learning. The use of peer work may enhance communication, increase student engagement, and provide immediate feedback, which are essential factors in effective vocabulary acquisition.

Figure 7 shows that an overwhelming majority of respondents (95.8%) believe that games help students remember new words better, while only a small minority (4.2%) disagree. This strong consensus highlights the perceived importance of game-based learning as a powerful pedagogical tool. Games likely contribute to better retention by making learning more enjoyable, reducing anxiety, and encouraging active participation.

The survey results reveal important trends in students' vocabulary learning. According to Figure 8, most respondents (56.5%) stated that students revise new words outside the classroom, although some are unsure (30.4%) and a small percentage (13%) reported that students do not revise at all. This shows that independent practice exists but is not consistent among all learners.

Results from Figure 9 indicate that vocabulary retention remains a challenge. Only 8.3% believe students remember words for a long time, while the majority reported forgetting after 4–5 lessons (37.5%) or after more than a week (37.5%). Some students (16.7%) forget words immediately after the lesson.

The last closed survey results show that students mainly prefer simple and practical methods for learning new vocabulary. The most common answers were flashcards, spaced repetition, repetition by the teacher, and making stories with new words. Overall, learners believe that repetition helps them remember words better, while flashcards and spaced repetition support long-term memorization. Some also mentioned that using new words in stories makes learning more interesting and easier to understand in context. In general, the responses suggest that students learn vocabulary more effectively through a combination of repetition, visual tools, and contextual practice.

DISCUSSION

The effectiveness of the implemented method may be explained by several key factors. First, this may be explained by the integration of pair work activities, in which active and passive learners were intentionally paired. This approach allowed less active students to receive peer

support, encouragement, and guidance, which contributed to their increased participation and engagement.

In addition, this result may be due to the structured use of flashcards during both the warm-up and wrap-up stages of the lesson. Regular exposure to and repetition of vocabulary items at different stages of the lesson helped reinforce students' memory and improved the retention of new words. This suggests that the systematic recycling of vocabulary plays a crucial role in effective language learning.

Furthermore, one possible reason is that students were actively involved in the creation of their own flashcards. This can be attributed to the fact that learner-generated materials increase personal involvement and make the learning process more meaningful and enjoyable. As a result, students demonstrated higher motivation and interest during the activities.

Overall, these findings suggest that combining collaborative learning, especially pair work, with interactive tools such as flashcards creates a supportive and engaging learning environment. This, in turn, enhances vocabulary acquisition and ensures more effective learning outcomes.

These findings are in line with previous research showing that student-centered and interactive teaching methods significantly enhance vocabulary acquisition and learner engagement. This result supports the idea that collaborative learning, particularly through pair work, facilitates deeper understanding and active participation among students.

Furthermore, the findings confirm that the use of visual and repetitive tools such as flashcards improves memory retention and long-term vocabulary recall. These results are also consistent with earlier research on active learning strategies, which emphasizes the importance of learner involvement in the learning process.

In comparison with previous studies, a noticeable improvement was observed not only in students' performance but also in the teacher's professional development. The study contributed to enhancing my teaching skills and helped identify specific areas that still require further improvement. This supports the view that reflective practice plays a crucial role in continuous teacher development.

These findings suggest that effective vocabulary teaching methods should be an essential component of language instruction. The results highlight the importance of integrating interactive techniques such as flashcards and collaborative activities into the classroom.

This has important implications for both teachers and learners. Vocabulary is considered the foundation of any language, and without sufficient lexical knowledge, it is difficult to develop other language skills. This means that implementing effective vocabulary learning strategies can significantly improve overall language proficiency.

The study also demonstrates the value of combining methodological innovation with reflective teaching practice, as it not only benefits students but also contributes to the teacher's professional growth.

Overall, the findings demonstrate that the implemented method was effective in improving students' vocabulary acquisition, engagement, and participation. In summary, the study confirms that the integration of collaborative learning and flashcard-based activities leads to more meaningful and successful learning outcomes.

CONCLUSION

The study showed that seventh-grade students experience several difficulties in vocabulary learning, especially in memorizing new words, using them in context, and maintaining motivation. Initial classroom observations revealed that traditional vocabulary teaching methods were not

sufficiently effective for all learners, particularly passive students. Therefore, interactive methods were introduced to make the learning process more engaging and inclusive.

The use of flashcards, pair work, repetition, and regular classroom revision helped improve students' vocabulary acquisition and classroom participation. Students became more motivated, more active, and more confident in using new words. The findings also showed that learner-generated flashcards and collaborative tasks supported long-term retention and encouraged equal participation among students.

In conclusion, the integration of visual, interactive, and student-centered methods is an effective way to overcome vocabulary learning difficulties among 7th-grade students. These strategies can be recommended for English language teachers who aim to improve vocabulary teaching and increase students' interest in learning new words.

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MASOFAVIY TA'LIM SHAROITIDA INGLIZ TILINI SAMARALI O'QITISH: YETAKCHI TAMOYILLAR VA AMALIY KO'NIKMALAR

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Annotatsiya: Ushbu maqolada masofaviy ta'lim sharoitida ingliz tilini samarali o'qitish metodlari, zamonaviy pedagogik yondashuvlar hamda raqamli texnologiyalarning o'rni tahlil qilinadi. Shuningdek, talabalarning til o'rganish motivatsiyasini oshirish va interaktiv muhit yaratish usullari yoritiladi.

Kalit so'zlar: masofaviy ta'lim, ingliz tili, interaktiv metodlar, raqamli texnologiyalar, kommunikativ yondashuv, blended learning

ЭФФЕКТИВНОЕ ПРЕПОДАВАНИЕ АНГЛИЙСКОГО ЯЗЫКА В УСЛОВИЯХ ДИСТАНЦИОННОГО ОБУЧЕНИЯ: ВЕДУЩИЕ ПРИНЦИПЫ И ПРАКТИЧЕСКИЕ НАВЫКИ

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Аннотация: В статье анализируются эффективные методы преподавания английского языка в условиях дистанционного обучения, роль современных педагогических подходов и цифровых технологий. Также освещаются способы повышения мотивации студентов к изучению языка и создания интерактивной образовательной среды.

Ключевые слова: дистанционное обучение, английский язык, интерактивные методы, цифровые технологии, коммуникативный подход, смешанное обучение

EFFECTIVE TEACHING OF ENGLISH IN DISTANCE LEARNING CONDITIONS: LEADING PRINCIPLES AND PRACTICAL SKILLS

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Abstract: This article analyzes effective methods of teaching English in a distance learning environment, as well as the role of modern pedagogical approaches and digital technologies. It also highlights ways to enhance students' motivation in language learning and to create an interactive learning environment.

Keywords: distance learning, English language, interactive methods, digital technologies, communicative approach, blended learning

KIRISH

Dunyo miqyosida axborot-kommunikatsiya texnologiyalarining misli ko'rilmagan sur'atlarda rivoj topishi ta'lim sohasining deyarli barcha jabhalarida tub siljishlarni yuzaga keltirdi. Raqamli inqilob nafaqat o'quv materiallarining shaklini o'zgartirdi, balki butun pedagogik jarayonning tuzilishi va o'qituvchi-talaba munosabatlarining mohiyatiga ta'sir ko'rsatdi. Mazkur o'zgarishlarning eng yorqin ko'rinishlaridan biri bu – masofaviy ta'lim modelining misli ko'rilmagan darajada ommalashuvidir. Ilgari yordamchi yoki qo'shimcha vosita sifatida qaralgan

ushbu format endilikda to'laqonli, mustaqil ta'lim muhiti darajasiga ko'tarildi. Ayniqsa, xorijiy tillarni, xususan, xalqaro muloqot tili bo'lgan ingliz tilini o'rgatish jarayonida masofaviy ta'lim o'ziga xos imkoniyatlar va shu bilan birga murakkab muammolarni yuzaga keltirdi. Masofaviy muloqot tabiatiga ko'ra, o'qituvchi va o'quvchi bir makonda emas, balki ekran orqali bog'lanadi. Bu holat an'anaviy sinfda odatiy bo'lgan spontan muloqot, imo-ishoralarning to'laqonli uzatilishi va tezkor hissiy qayta aloqaga ma'lum cheklovlar qo'yadi. Binobarin, ingliz tilini masofadan samarali o'qitish an'anaviy metodlarni ko'r-ko'rona nusxalash orqali emas, balki innovatsion, interfaol va aynan raqamli muhitga moslashtirilgan metodik yondashuvlarni talab etadi. Ushbu maqolada ana shu zaruriyatdan kelib chiqib, ingliz tili o'qitish amaliyotida eng yuqori natija berayotgan zamonaviy metod va strategiyalar tahlil qilinadi.

MATERIALLAR VA METODLAR

Kommunikativ yondashuvning ahamiyati: Masofaviy ta'lim sharoitida ingliz tilini o'qitishda kommunikativ yondashuv eng samarali metodologik asoslardan biri sifatida e'tirof etilmoqda. Ushbu yondashuvning asosiy maqsadi – talabalarda faqat grammatik jihatdan to'g'ri gap tuzish ko'nikmasini emas, balki real hayotiy vaziyatlarda tildan erkin va o'rinli foydalana olish qobiliyatini, ya'ni kommunikativ kompetensiyani shakllantirishdir. Bu kompetensiya o'z ichiga grammatik, sotsiolingvistik, diskursiv va strategik komponentlarni oladi (Canale & Swain, 1980). Boshqacha aytganda, talaba nafaqat nima deyishni, balki qanday, qachon va kimga aytishni ham o'zlashtirishi lozim. Masofaviy formatda bu maqsadga erishish uchun onlayn platformalar orqali tashkil etilgan interfaol muhokamalar, video konferensiyalar va guruhli suhbatlar muhim ahamiyat kasb etadi. Chunki aynan shu formatdagi mashg'ulotlar talabalarining og'zaki nutqini rivojlantirishga, ularni spontan muloqotga jalb qilishga va tilga bo'lgan ishonchni mustahkamlashga xizmat qiladi.

Masofaviy ta'limning interfaollik darajasi past bo'lgan bir tomonlama ma'ruza shakli ko'pincha talabalarining passiv tinglovchiga aylanib qolishiga olib keladi. Kommunikativ yondashuv esa bu muammoni sinxron muloqot imkoniyatlaridan faol foydalanish orqali hal etadi. Xususan, Zoom, Microsoft Teams yoki Google Meet kabi platformalarda mavjud bo'lgan "kichik guruh xonalari" (breakout rooms) funksiyasi bu borada beqiyos amaliy ahamiyatga ega. Ushbu texnologik yechim o'qituvchiga butun sinfni 3-4 kishidan iborat kichik jamoalarga avtomatik tarzda bo'lib yuborish imkonini beradi. Natijada, an'anaviy katta sinfda ko'pincha chetda qolib ketadigan yoki uyatchanligi sababli kam gapiradigan talabalar kichik guruh ichida ancha erkin muloqotga kirisha boshlaydi. Har bir talabaga navbatma-navbat so'zlash, o'z fikrini himoya qilish, sherigining argumentiga qarshi javob qaytarish yoki birgalikda biror muammo yechimi ustida ishlash imkoniyati yaratiladi. Bu esa til o'rganishning "muloqot orqali o'rganish" (learning through interaction) tamoyilini amalda to'liq ro'yobga chiqaradi. Tadqiqotlar shuni ko'rsatmoqdaki, masofaviy muhitda kichik guruhlarda ishlash talabalarining nafaqat til ko'nikmalarini, balki ularning o'quv motivatsiyasini ham sezilarli darajada oshiradi. Masalan, Vurdien (2019) tomonidan olib borilgan tadqiqot natijalariga ko'ra, "breakout rooms" orqali muntazam tashkil etilgan kommunikativ topshiriqlar talabalarining gapirishga bo'lgan xavotirini kamaytirgan va ularning ravon so'zlash darajasiga ijobiy ta'sir ko'rsatgan. Shuningdek, ushbu guruhlarda o'qituvchi bir xonadan ikkinchisiga o'tib, har bir guruhning muhokamasini kuzatishi va kerak bo'lganda yo'naltiruvchi fikr berishi mumkin. Bu esa individual yondashuvni ta'minlash bilan birga, o'qituvchining sinfdagi nazorat funksiyasini ham saqlab qoladi. Kommunikativ mashg'ulotlar davomida talabalar ma'lumot almashish (information gap), fikr almashish (opinion gap) yoki muammoli vaziyatlarni hal qilish (problem-solving tasks) kabi aniq kommunikativ

maqsadga ega topshiriqlarni bajaradilar. Bunday topshiriqlar tilni mexanik tarzda takrorlashdan ko'ra, uni ongli va ijodiy qo'llashni taqozo etadi, bu esa o'zlashtirilgan bilimlarning uzoq muddatli xotirada mustahkam o'rnatishiga zamin yaratadi. Masofaviy ta'limda talabalarni darsga jalb qilish eng katta muammolardan biridir. Shu sababli interaktiv metodlardan foydalanish muhim ahamiyatga ega. Quyidagi metodlar ayniqsa samarali hisoblanadi: Quiz va testlar – bilimni mustahkamlash va nazorat qilish uchun; Gamification (o'yinlashtirish) – darsni qiziqarli qilish uchun; Role-play (rol o'ynash) – real vaziyatlarni modelashtirish uchun. Masalan, talabalar turli rollarni bajarib, ingliz tilida muloqot qilish orqali o'z nutqini tabiiy ravishda rivojlantiradi.

NATIJALAR

Blended learning (aralash ta'lim) yondashuvi: Blended learning, ya'ni aralash ta'lim modeli – bu an'anaviy sinf darslari va masofaviy ta'lim elementlarini yagona pedagogik tizimga birlashtirgan integrativ yondashuvdir. Ushbu metodning asosiy afzalligi shundaki, u har ikki formatning eng kuchli tomonlarini o'zida jamlaydi. An'anaviy ta'limning bevosita shaxsiy muloqot imkoniyatlari, o'qituvchi nazorati va ijtimoiylashuv kabi jihatlari masofaviy ta'limning moslashuvchanligi, resurslarga boyligi va talabaga mustaqil o'rganish erkinligini beruvchi xususiyatlari bilan uyg'unlashadi. Mazkur yondashuv ayniqsa so'nggi yillarda, raqamli texnologiyalarning ta'lim tizimiga chuqur kirib borishi natijasida keng ommalashdi va tadqiqotchilar tomonidan XXI asr ta'limining eng istiqbolli modellaridan biri sifatida baholanmoqda (Garrison & Vaughan, 2008).

Blended learning modelining samaradorligi uning moslashuvchan tuzilishi bilan izohlanadi. Ushbu yondashuv talabalarga nazariy materialni mustaqil o'zlashtirish hamda o'qituvchi bilan real vaqt rejimida interfaol ishlash imkoniyatini bir vaqtning o'zida taqdim etadi. Amaliyotda bu jarayon quyidagicha kechadi: talabalar darsliklar, oldindan yozib qo'yilgan video-ma'ruzalar, elektron resurslar va interfaol modullar orqali yangi mavzuning nazariy asoslarini mustaqil o'rganadilar. Bu bosqich ularning o'z tezligida, istalgan vaqtda va qulay sharoitda bilim olishlariga imkon beradi. So'ngra, onlayn yoki an'anaviy sinf darslarida ular bevosita o'qituvchi rahbarligida amaliy mashg'ulotlar, muhokamalar, guruhli loyihalar va rolli o'yinlar bilan shug'ullanadilar. Bu ikki bosqichning uyg'unligi o'quv vaqtini sezilarli darajada samarali taqsimlash imkonini yaratadi. Masalan, dars vaqti passiv ma'ruza tinglashga emas, balki eng qimmatli manba bo'lgan o'qituvchi bilan jonli muloqot va bilimlarni amaliyotda qo'llashga sarflanadi. Ta'lim nazariyasida bu qarash "teskari sinf" (flipped classroom) nomi bilan mashhur bo'lib, blended learningning eng ko'p qo'llaniladigan shakllaridan biri hisoblanadi.

Tadqiqotlar blended learningning an'anaviy yoki butunlay onlayn ta'lim modellariga nisbatan qator ustunliklarga ega ekanligini ko'rsatmoqda. Masalan, AQSh Ta'lim Departamenti tomonidan moliyalashtirilgan keng ko'lamli meta-tahlil natijalariga ko'ra, aralash ta'lim modelida tahsil olgan talabalar an'anaviy sinfda o'qigan tengdoshlariga qaraganda yuqoriroq o'quv natijalarini qayd etgan (Means et al., 2010). Ayniqsa, xorijiy tillarni o'qitishda bu modelning samarasi yaqqol namoyon bo'ladi, chunki u talabalarga mustaqil holda lug'at va grammatikani o'zlashtirish, dars vaqtida esa tilni amaliy muloqot sharoitida qo'llash imkonini beradi. Shuningdek, blended learning talabalarining o'z o'quv jarayoni ustidan nazoratini kuchaytiradi, bu esa mas'uliyat hissi va ichki motivatsiyaning oshishiga olib keladi. Shu bilan birga, bu model o'qituvchiga har bir talabaning individual rivojlanish trayektoriyasini kuzatish va zarur hollarda o'z vaqtida qo'shimcha qayta aloqa berish imkonini taqdim etadi. Blended learningni muvaffaqiyatli amalga oshirish uchun aniq pedagogik strategiya va sifatli raqamli kontent zarur. O'qituvchi shunchaki materiallarni onlayn platformaga yuklab qo'yish bilan cheklanmasligi, balki

sinxron va asinxron mashg'ulotlar o'rtasidagi mantiqiy bog'liqlikni ta'minlashi lozim. Har bir mustaqil topshiriq keyingi sinf muhokamasi uchun zamin yaratishi, har bir amaliy mashg'ulot esa oldingi mustaqil o'rganish natijalarini mustahkamlashi kerak. LMS (Learning Management System) platformalari, xususan Moodle, Canvas yoki Google Classroom kabi tizimlar bu jarayonni markazlashtirilgan holda boshqarish uchun zarur texnologik infratuzilmani taqdim etadi. Xulosa qilib aytganda, blended learning – bu shunchaki ikki xil formatning mexanik aralashmasi emas, balki ehtiyotkorlik bilan loyihalashtirilgan, o'quvchi ehtiyojlariga moslashtirilgan va yuqori natijadorlikka ega bo'lgan zamonaviy ta'lim konsepsiyasidir. Uning muvaffaqiyati esa texnologiyalar bilan pedagogikaning mutanosib uyg'unligiga bevosita bog'liqdir.

MUHOKAMA

Talabalarning motivatsiyasini oshirish: Masofaviy ta'lim sharoitida talabalar motivatsiyasining pasayishi keng tarqalgan muammo bo'lib, bu holat ayniqsa uzoq muddatli onlayn kurslarda yaqqol namoyon bo'ladi. Buning asosiy sabablari qatoriga ijtimoiy izolyatsiya hissi, bevosita nazoratning sustlashuvi, ekran ortida diqqatni jamlashdagi qiyinchiliklar hamda an'anaviy sinfdagi raqobat va hamkorlik muhitining yetishmasligi kiradi. Shu sababli, masofaviy ingliz tili mashg'ulotlarida o'qituvchi motivatsiyani sun'iy ravishda qo'llab-quvvatlovchi maxsus strategiyalardan foydalanishi zarur.

Birinci navbatda, puxta o'ylangan rag'batlantirish tizimini joriy etish talab etiladi. Bu tizim shunchaki baho qo'yishdan iborat bo'lmay, balki yutuqlarni e'tirof etish, rivojlanish dinamikasini ko'rsatib borish va virtual nishonlar (badges), ball to'plash yoki reyting jadvallari kabi o'yinlashtirish elementlarini o'z ichiga olishi lozim. Tadqiqotlar ko'rsatadiki, bunday tashqi rag'batlantirish vositalari, ayniqsa, ichki motivatsiyasi hali shakllanib ulgurmagan talabalar uchun kuchli turtki bo'lib xizmat qiladi va ularning muntazam shug'ullanish ehtimolini oshiradi.

Ikkinchi muhim omil – bu individual yondashuvni qo'llashdir. Masofaviy ta'lim platformalari har bir talabaning o'zlashtirish sur'ati, qiyinchilik tug'dirayotgan mavzulari va afzal ko'rgan ta'lim uslubi haqida boy ma'lumotlar to'plash imkonini beradi. O'qituvchi ushbu ma'lumotlarga tayanib, topshiriqlarni moslashtirishi, qo'shimcha materiallarni manzilli tavsiya etishi va shaxsiylashtirilgan qayta aloqa berishi orqali talabaning o'quv jarayoniga bo'lgan daxldorlik hissini kuchaytiradi. O'z ehtiyojlariga moslashtirilgan ta'lim olayotgan talaba esa o'ziga nisbatan befarq emasligini his qilib, mas'uliyati va qiziqishi ortadi.

Uchinchi, o'quv materiallarining mazmuni motivatsiyada hal qiluvchi rol o'ynaydi. O'qituvchi qiziqarli va dolzarb mavzularni tanlashga alohida e'tibor qaratishi kerak. Talabalarning yoshi, kasbiy qiziqishlari va hayotiy maqsadlariga mos mavzular – masalan, zamonaviy texnologiyalar, ijtimoiy muammolar, madaniyatlararo muloqot yoki kasbiy o'sish kabi yo'nalishtirishlar – ularning til o'rganishga bo'lgan ishtiyoqini oshiradi. Mazmunan boy va shaxsan ahamiyatli bo'lgan materiallar bilan ishlash jarayonida talaba tilni shunchaki o'rganish obyekti sifatida emas, balki o'ziga kerakli ma'lumotlarga erishish vositasi sifatida qabul qila boshlaydi.

Yuqoridagi usullarning uyg'un qo'llanishi natijasida motivatsiyasi yuqori bo'lgan talabalar shakllanadi. Motivatsion darajasi baland talabalar esa til materialini nafaqat tezroq, balki ancha samaraliroq o'zlashtiradi. Chunki motivatsiya diqqatni jamlashni yaxshilaydi, qiyinchiliklarga qarshi bardoshni oshiradi va til ko'nikmalarini real muloqot sharoitlariga ko'chirish jarayonini jadallashtiradi. Shu sababli, masofaviy ta'limda motivatsion omillarni e'tibordan chetda qoldirmaslik – pedagogik muvaffaqiyatning garovi hisoblanadi.

XULOSA

Yuqorida tahlil qilingan jihatlar shuni yaqqol ko'rsatadiki, masofaviy sharoitda ingliz tilini samarali o'qitish bir-biri bilan chambarchas bog'liq bo'lgan uch asosiy omilga tayanadi: kommunikativ yondashuv, blended learning modeli va maqsadli motivatsion strategiyalar. Kommunikativ yondashuv talabalarning real hayotiy muloqotga tayyor bo'lishini ta'minlasa, blended learning bu muloqotni mustaqil nazariy tayyorgarlik bilan mustahkamlab, o'quv vaqtdan unumli foydalanish imkonini yaratadi. Biroq bu ikki omilning o'zi yetarli emas – talabalarning masofaviy muhitda pasayishi mumkin bo'lgan motivatsiyasini rag'batlantirish tizimlari, shaxsiylashtirilgan yondashuv va dolzarb mavzular orqali qo'llab-quvvatlash lozim. Aynan shu uch omil – kommunikativ faollik, moslashuvchan o'quv muhiti va barqaror ichki turtki – o'zaro uyg'unlashganda masofaviy ingliz tili ta'limining yuqori samaradorligi ta'minlanadi. Shu bois, zamonaviy pedagoglar ushbu yo'nalishlarni alohida emas, balki yaxlit tizim sifatida qo'llashlari orqali talabalarning til o'zlashtirish sifatini yangi bosqichga ko'tarishlari mumkin bo'ladi.

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MASOFAVIY TA'LIMDA SAMARALI PEDAGOGIK METODLAR: ZAMONAVIY YONDASHUVLAR TAHLILI

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Annotatsiya: Ushbu maqola masofaviy ta'lim sharoitida qo'llaniladigan eng samarali pedagogik metodlarni tahlil qilishga bag'ishlangan. Unda an'anaviy yondashuvlarning raqamli muhitga moslashtirilishi, interfaollikni ta'minlash mexanizmlari hamda tinglovchilarning bilim olishga bo'lgan motivatsiyasini oshirish usullari ko'rib chiqilgan. Xususan, sinxron va asinxron ta'lim uyg'unligi, mikrolim, gamifikatsiya va loyihaga asoslangan ta'lim metodlarining samaradorlik ko'rsatkichlari ochib berilgan. Tadqiqot natijasida masofaviy ta'limda muvaffaqiyatga erishish uchun texnologik vositalardan ko'ra pedagogik dizayn va inson omili birlamchi ahamiyat kasb etishi asoslab berilgan.

Kalit so'zlar: masofaviy ta'lim, interfaol metodlar, raqamli pedagogika, gamifikatsiya, aralash ta'lim, sinxron muloqot, o'quv motivatsiyasi.

ЭФФЕКТИВНЫЕ ПЕДАГОГИЧЕСКИЕ МЕТОДЫ В ДИСТАНЦИОННОМ ОБУЧЕНИИ: АНАЛИЗ СОВРЕМЕННЫХ ПОДХОДОВ

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Аннотация: Данная статья посвящена анализу наиболее эффективных педагогических методов, применяемых в условиях дистанционного обучения. В ней рассматриваются адаптация традиционных подходов к цифровой среде, механизмы обеспечения интерактивности, а также способы повышения мотивации обучающихся к получению знаний. В частности, раскрываются показатели эффективности сочетания синхронного и асинхронного обучения, микрообучения, геймификации и проектного обучения. По результатам исследования обосновано, что для достижения успеха в дистанционном обучении педагогический дизайн и человеческий фактор имеют более первостепенное значение, чем сами технологические средства.

Ключевые слова: дистанционное обучение, интерактивные методы, цифровая педагогика, геймификация, смешанное обучение, синхронная коммуникация, учебная мотивация

EFFECTIVE PEDAGOGICAL METHODS IN DISTANCE EDUCATION: AN ANALYSIS OF MODERN APPROACHES

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Abstract: This article is devoted to analyzing the most effective pedagogical methods used in distance learning environments. It examines how traditional approaches can be adapted to digital settings, explores mechanisms for ensuring interactivity, and discusses ways to enhance learners' motivation. In particular, the study highlights the effectiveness of combining synchronous and asynchronous learning, as well as the use of microlearning, gamification, and project-based

learning methods. The findings suggest that, in achieving success in distance education, pedagogical design and the human factor play a more crucial role than technological tools alone.

Keywords: distance learning, interactive methods, digital pedagogy, gamification, blended learning, synchronous communication, learner motivation

KIRISH

So‘nggi yillarda global miqyosda yuz bergan transformatsion jarayonlar, xususan, raqamli iqtisodiyotga o‘tish, sun‘iy intellektning jadal rivojlanishi va pandemiya kabi fors-major holatlar ta‘lim tizimini tubdan isloh qilishga kuchli turtki bo‘ldi. An‘anaviy sinf doskasi va qog‘oz darslik bilan cheklangan o‘qitish modeli endilikda o‘zining yakuniy nuqtasiga yetayotgani hech kimga sir emas. Masofaviy ta‘lim shunchaki yordamchi vosita yoki vaqtinchalik alternativa maqomidan chiqib, to‘laqonli, mustaqil hamda qonuniy o‘quv muhiti darajasiga ko‘tarildi. Bugungi kunda dunyoning yetakchi universitetlari tomonidan taqdim etilayotgan MOOC (Massive Open Online Courses) platformalari, korporativ o‘quv dasturlari va hatto maktabgacha ta‘lim muassasalarida ham onlayn formatdan keng foydalanilayotgani bu jarayonning qay darajada chuqur ildiz otganini ko‘rsatadi. Biroq amaliyot shuni qat‘iy isbotlamoqdaki, ta‘lim mazmunini raqamli muhitga shunchaki ko‘chirishning o‘zi kutilgan natijani bermaydi. An‘anaviy ma‘ruza matnlarini oddiygina PDF formatga transkripsiya qilish, slaydlar to‘plamini yuklab olish imkoniyati yoki videokonferensiya orqali bir tomonlama monoton nutq o‘qish zamonaviy tinglovchining ehtiyojlarini qondirishga qodir emas. Bunday yondashuv ta‘limning asosiy funksiyasini – bilimlarni faol o‘zlashtirish va chuqur anglashni – deyarli barbod qiladi. Axborot-kommunikatsiya texnologiyalari bilan o‘sgan bugungi kun talabasi interfaollik, tezkor qayta aloqa, moslashuvchanlik va shaxsiylashtirilgan yondashuvni talab qilmoqda. Ular o‘quv jarayonining faol ishtirokchisi bo‘lishni, o‘z fikrlarini erkin bayon qilishni, real vaqt rejimida muhokamalarga kirishishni va o‘quv materialini o‘z ehtiyojlariga moslashtirishni istaydi. Shu boisdan ham, oddiy translatсион modeldan voz kechib, masofaviy ta‘limda samaradorlikni ta‘minlash uchun metodologik bazani tubdan qayta ko‘rib chiqish eng dolzarb vazifalardan biriga aylanmoqda. Aynan mana shu muammoning ilmiy asoslangan yechimi sifatida xizmat qiluvchi ilg‘or pedagogik yondashuvlar, xususan, kommunikativ metod, aralash ta‘lim (blended learning) va o‘yinlashtirish (gamification) kabi zamonaviy strategiyalarni tahlil qilish mazkur maqolaning bosh maqsadi etib belgilandi.

MATERIALLAR VA METODLAR

Maqola masofaviy ta‘lim sharoitida qo‘llaniladigan zamonaviy pedagogik metodlarni nazariy-tahliliy yondashuv asosida o‘rganishga qaratildi. Tahlilda an‘anaviy yondashuvlarning raqamli muhitga moslashtirilishi, interfaollikni ta‘minlash mexanizmlari, sinxron va asinxron ta‘lim uyg‘unligi, mikrota‘lim, gamifikatsiya, loyihaga asoslangan ta‘lim hamda moslashuvchan ta‘lim texnologiyalari ko‘rib chiqildi. Shuningdek, pedagogik dizayn, inson omili va o‘quv motivatsiyasini qo‘llab-quvvatlashga xizmat qiluvchi metodik yondashuvlar umumlashtirildi.

NATIJALAR

1. Interfaollikni ta‘minlovchi raqamli vositalar va o‘yinlashtirish: Masofaviy ta‘limda kuzatiladigan asosiy pedagogik-psixologik muammolardan biri – bu o‘quvchilar diqqatining tez chalg‘ishi va ularning o‘quv materialiga bo‘lgan qiziqishining izchil pasayib borishidir. An‘anaviy sinfda o‘qituvchi sinf muhitini, ko‘z bilan kontakt va imo-ishoralar orqali nazorat qila olsa, virtual muhitda bu omillar deyarli ishlamaydi. Talabalar ko‘pincha parallel ravishda ijtimoiy tarmoqlarni kuzatish, xabarlariga javob yozish yoki boshqa ko‘ngilochar kontentni iste‘mol qilishga moyil

bo'ladilar. Aynan shuning uchun ham masofaviy ta'limning samaradorligini oshirishda "o'yinlashtirish" (gamification) elementlarini o'quv jarayoniga ongli va tizimli tarzda singdirish nihoyatda samarali strategiya hisoblanadi. Shuni alohida ta'kidlash kerakki, o'yinlashtirish degani – bu dars vaqtida oddiy o'yinlar o'ynash yoki o'quv mashg'ulotlarini ko'ngilochar shouga aylantirish degani emas. Mazkur tushuncha ancha chuqur va murakkab pedagogik yondashuv bo'lib, u o'yin mexanikasi, estetikasi va o'yin tafakkuridan foydalanib, odamlarni jalb qilish, harakatga undash, o'quv muammolarini yechishga ko'maklashish va natijada bilim olish jarayonini yanada samarali shaklga keltirishni nazarda tutadi (Kapp, 2012). Boshqacha aytganda, o'quv jarayoniga musobaqa ruhi, ball to'plash imkoniyati, murakkablik darajalari (level), yutuq nishonlari (badges), yetakchilar reyting jadvali (leaderboard) va virtual mukofotlar kabi rag'batlantiruvchi mexanizmlarni puxta o'ylangan holda integratsiya qilish orqali talabalarning ichki va tashqi motivatsiyasini uyg'otish va mustahkamlash ko'zda tutiladi. Xulq-atvor psixologiyasi nuqtai nazaridan qaraganda, bu kabi mexanizmlar darhol qayta aloqa (instant feedback) va erishilgan taraqqiyotning vizual ifodasi orqali ta'lim oluvchining miyasidagi dopamin tizimini faollashtiradi, bu esa o'quv faoliyatiga nisbatan ijobiy hissiy munosabat shakllanishiga olib keladi. Amaliyotda bu metodni qo'llashning bir qancha samarali vositalari mavjud. Jumladan, "Kahoot!" yoki "Quizizz" kabi interaktiv platformalar orqali mavzuning nazariy qismi yakunlangach, darhol tezkor viktorina yoki bilim bellashuvi o'tkazish keng tarqalgan va o'ta samarali usuldir. Bu kabi raqamli vositalar taqdim etadigan imkoniyatlar oddiy og'zaki so'rov yoki yozma testdan ancha ustundir. Ular shunchaki bilimni tekshirish vositasi emas, balki o'quv jarayoniga musobaqa ruhini olib kiruvchi, adrenalin va ishtiyoqni oshiruvchi pedagogik hodisadir. Talabalar real vaqt rejimida o'z kursdoshlari bilan bilim borasida raqobatlashadi, o'z natijalarini umumiy reyting jadvalida ko'rib boradi va bu ularni mavzuni yanada chuqurroq o'zlashtirishga undaydi. Tadqiqotlar ko'rsatadiki, bunday formatdagi takrorlash va mustahkamlash mashg'ulotlari talabalarning materialni uzoq muddatli xotirada saqlash ko'rsatkichini sezilarli darajada oshiradi (Hamari va boshq., 2014). Bundan tashqari, o'qituvchi platforma taqdim etgan tahliliy hisobotlar orqali har bir talabaning yoki butun guruhning qaysi savollarda qiynalganini zudlik bilan aniqlab, keyingi dars shaklini shunga mos ravishda korreksiya qilishi mumkin. Interfaollikning yana bir yuqori cho'qqisi – bu virtual hamkorlik doskalari vositasida guruhli ishlarni tashkil etishdir. "Miro", "Jamboard", "Padlet" yoki "Mural" kabi platformalar talabalarga bir vaqtning o'zida yagona raqamli makonda hamkorlik qilish imkonini taqdim etadi. Bu metodning mohiyati shundaki, talabalar o'zlarining shaxsiy qurilmalari orqali umumiy virtual doskaga ulanib, turli rangdagi raqamli stikerlar yopishtirish, matn yozish, sxema chizish, rasm va fayllar qo'shish orqali o'z fikrlarini vizuallashtiradilar va guruh bo'lib yagona intellektual mahsulot yaratadilar. Bu jarayon an'anaviy sinfdagi flipchart yoki doska bilan ishlashdan tubdan farq qiladi, chunki bunda vaqt va makon chegaralari butunlay yo'qoladi. Har bir ishtirokchi o'z fikrini bir vaqtning o'zida, bir-biriga xalaqit bermasdan ifodalay oladi.

2. Loyihaga asoslangan ta'lim (Project-Based Learning): Masofaviy ta'lim formatida loyiha metodi (Project-Based Learning – PBL) alohida strategik ahamiyat kasb etadi. Buning asosiy sababi shundaki, ushbu metod talabaning o'quv jarayonidagi an'anaviy rolini tubdan o'zgartiradi – uni passiv axborot qabul qiluvchi tinglovchidan faol izlanuvchi, mustaqil tadqiqotchi va bilim yaratuvchi subyektga aylantiradi. An'anaviy ma'ruza modelida o'qituvchi bilim manbai, talaba esa shunchaki qabul qiluvchi idish bo'lsa, loyiha metodida bilimga bo'lgan ehtiyoj loyiha vazifalaridan kelib chiqadi va talaba bu bilimni mustaqil izlab topishga, tanqidiy baholashga va amaliyotda sinab ko'rishga majbur bo'ladi. Masofaviy sharoitda bu jarayon yanada muhim

ahamiyat kasb etadi, chunki ekran ortida o'tirgan talabaning diqqatini faqatgina uning shaxsiy daxldorligini ta'minlagan holdagina ushlab turish mumkin. Loyiha metodining samarasi bevosita tanlangan loyiha mavzusining real hayot bilan bog'liqlik darajasiga mutanosibdir. Agar topshiriq sun'iy, kitobiy va talabaning kundalik hayoti yoki kelajakdagi kasbiy faoliyatidan yiroq bo'lsa, u eng yaxshi holatda navbatdagi bajarilishi shart bo'lgan vazifa sifatida qabul qilinadi, xolos. Aksincha, loyiha talabaning shaxsiy qiziqishlari yoki real dunyo muammolari bilan kesishganda, unda ichki motivatsiya uyg'onadi va o'quv jarayoni shunchaki baho olish uchun emas, balki haqiqiy maqsad sari intilish tusini oladi. Ingliz tili o'qitish kontekstida bu tamoyil turli kasbiy yo'nalishlarga moslashtirilishi mumkin. Masalan, iqtisodiyot yoki biznes yo'nalishidagi talabalar uchun "O'z startup loyihamning biznes modelini yaratish" yoki "Xalqaro kompaniya uchun ingliz tilida marketing strategiyasini ishlab chiqish" kabi topshiriqlar ularni nazariy bilimlarni – iqtisodiy terminologiya, taqdimot ko'nikmalari, ish yozishmalari madaniyati – bevosita amaliyotda sinab ko'rishga va shu orqali mustahkamlashga undaydi. Tibbiyot yo'nalishidagi talabalar uchun esa "Xalqaro tibbiy konferensiya uchun ingliz tilida poster taqdimot tayyorlash" yoki "Bemor bilan ingliz tilida muloqot ssenariysini yozish va sahnalashtirish" kabi loyihalar xuddi shunday samarali bo'ladi. Bu tarzda autentik topshiriqlar til o'rganishni sun'iy mashqlar yig'indisidan chiqarib, haqiqiy kommunikativ ehtiyoj bilan bog'laydi. Masofaviy sharoitda loyiha ishini samarali tashkil etishning asosiy kaliti – bu puxta o'ylangan va oldindan e'lon qilingan aniq "yo'l xaritasi" (roadmap) hamda muntazam "oraliq nazorat" (milestone) nuqtalarining mavjudligidir. An'anaviy sinfda o'qituvchi dars davomida talabalarning loyiha ustida ishlash jarayonini bevosita kuzatishi, koridorda yoki tanaffusda tezkor maslahat berishi mumkin. Onlayn formatda esa bunday spontan muloqot imkoniyati cheklangan. Shuning uchun o'qituvchi loyiha boshidanoq har bir bosqichning aniq muddatlarini, kutilayotgan natijalarni va baholash mezonlarini (rubric) ochiq-oydin e'lon qilishi kerak. Masalan, birinchi hafta – mavzuni tanlash va guruh rollarini taqsimlash, ikkinchi hafta – adabiyotlar sharhi va dastlabki qoralama, uchinchi hafta – oraliq taqdimot va guruhlararo muhokama, to'rtinchi hafta – yakuniy mahsulotni topshirish va himoya qilish kabi bosqichli tuzilma talabalarga o'z vaqtini samarali boshqarish imkonini beradi.

4. Moslashuvchan ta'lim texnologiyalari (Adaptive Learning): Sun'iy intellekt (SI) asosidagi moslashuvchan ta'lim tizimlari (Adaptive Learning Systems) masofaviy ta'limda individual yondashuvni mutlaqo yangi bosqichga olib chiqmoqda. An'anaviy ta'lim modelida o'qituvchi bir sinfdagi yigirma-o'ttiz nafar talabaning barchasiga bir xil material, bir xil sur'at va bir xil metodika bilan dars o'tishga majbur. Bu yondashuvda o'rtacha talaba mezon sifatida olinadi, natijada esa na bilim darajasi pastroq, na yuqoriroq talabalarning ehtiyojlari to'liq qondirilmaydi. Moslashuvchan ta'lim tizimlari aynan mana shu muammoni hal qilish uchun mo'ljallangan. Ushbu metodning mohiyati shundan iboratki, tizim har bir talabaning bilim darajasi, o'zlashtirish tezligi, o'quv uslubi (vizual, audial, kinestetik) va hatto xatolarining xarakterini doimiy ravishda tahlil qilib boradi va shu asosda o'quv kontentini avtomatik tarzda moslashtiradi. Bu jarayon "aqlli repetitor" (Intelligent Tutoring System) tamoyiliga asoslangan bo'lib, u inson o'qituvchining individual dars berishdagi sezgirligini sun'iy yo'l bilan modellashtirishga harakat qiladi. Amaliyotda bu quyidagicha ishlaydi. Talaba platformadagi modul yoki darsni boshlaganida, tizim unga dastlab diagnostik test yoki qisqa savollar to'plamini taqdim etadi. Ushbu dastlabki baholash natijasida talabaning mavzu bo'yicha joriy bilim darajasi aniqlanadi va unga mos boshlang'ich kontent tavsiya etiladi. Keyingi bosqichlarda tizim talabaning har bir javobini, har bir topshiriqni bajarish uchun sarflagan vaqtini va yo'l qo'ygan xatolarining tipologiyasini muntazam kuzatib boradi. Agar tizim talabaning ma'lum bir mavzuda,

masalan, ingliz tilidagi "Present Perfect" zamoni yoki shart ergash gaplarda muntazam qiyalayotganini aniqlasa, unga avtomatik tarzda qo'shimcha tushuntirish materiallari, soddaroq misollar, qo'shimcha amaliy mashqlar yoki hatto qisqa video-qo'llanmalar taklif qiladi. Muhimi shundaki, tizim talabani keyingi murakkab mavzuga o'tkazishdan oldin uning joriy materialni yetarlicha o'zlashtirganiga ishonch hosil qiladi, ya'ni "o'zlashtirishga asoslangan ta'lim" (mastery-based learning) tamoyiliga amal qiladi. Aksincha, yuqori natija ko'rsatgan yoki mavzuni tez o'zlashtirayotgan talabaga tizim avtomatik ravishda chuqurlashtirilgan, murakkabroq topshiriqlar yoki qo'shimcha ilmiy manbalarni tavsiya etadi. Masalan, oddiy talaba asosiy grammatik qoidani mustahkamlovchi standart mashqlar bilan shug'ullanayotgan bir paytda, ilg'or talaba shu grammatik konstruksiyani akademik insho yozishda qo'llashni talab qiladigan murakkab keys yoki autentik matn bilan ishlash imkoniyatiga ega bo'ladi. Bu ikki xil trayektoriya bir vaqtning o'zida, bir o'quv kursi doirasida, inson aralashuviz sodir bo'laveradi. Talaba o'zining kuchli va kuchsiz tomonlari haqida doimiy analitik hisobotlarni ko'rib boradi, bu esa unda o'z o'quv jarayoni ustidan nazorat hissini kuchaytiradi.

MUHOKAMA

3. Emotsional intellekt va ijtimoiy mavjudlikni saqlash: Texnologiyalar va raqamli innovatsiyalar haqida gapirganda, ko'pincha ta'limning eng muhim jihati – uning psixologik va emotsional asoslari e'tibordan chetda qoladi. Ayniqsa, masofaviy ta'lim sharoitida bu omil tanqidiy ahamiyat kasb etadi. Virtual sinf muhitida yuzaga keladigan eng jiddiy muammolardan biri – bu o'quvchilarda shakllanadigan izolyatsiya hissi va ijtimoiy mavjudlik (social presence) ning susayishidir. An'anaviy sinfda talabalar o'z kursdoshlari va o'qituvchisi bilan bir fizik makonda bo'lish orqali beixtiyor ijtimoiy bog'lanishni his qilsa, onlayn formatda bu tabiiy aloqa uziladi. Ekran ortida yolg'iz qolgan talaba o'zini katta, ammo ko'rinmas guruhning bir qismi sifatida his qilishda qiynaladi, bu esa o'quv motivatsiyasining susayishi, darslardan chetlanish va hatto ruhiy tushkunlik kabi salbiy oqibatlarga olib kelishi mumkin. Short va boshqalar (1976) tomonidan ilgari surilgan "Ijtimoiy mavjudlik nazariyasi" (Social Presence Theory) ga ko'ra, muloqot vositasi qanchalik ko'p ijtimoiy-emotsional signallarni uzata olsa, ishtirokchilar o'rtasidagi psixologik yaqinlik hissi shunchalik yuqori bo'ladi. Matnli chat yoki ovozli xabarlar bu signallarni to'liq yetkaza olmaydi, shu sababli videokonferensiya formatida ham qo'shimcha harakatsiz haqiqiy insoniy bog'liqlikni yaratish mushkul. Aynan mana shu muammoni bartaraf etish uchun "Virtual doira" (Virtual Circle) metodi nihoyatda samarali vosita hisoblanadi. Bu metodning mohiyati shundaki, darsning dastlabki uch-besh daqiqasi faqatgina davomatni aniqlash yoki texnik muammolarni hal qilishga emas, balki jonli, norasmiy insoniy muloqotga bag'ishlanadi. O'qituvchi bu vaqt ichida talabalarning kayfiyatini so'rashi, kunlarining qanday o'tayotgani haqida qisqacha suhbatlashishi yoki ularni o'ylantiruvchi biror ochiq savol tashlashi mumkin. Masalan, "Bugun o'zingizni qanday his qilyapsiz – quyoshlimi yoki bulutlimi?", "Shu hafta sizni eng ko'p ilhomlantirgan narsa nima bo'ldi?" yoki "Agar bir kunlik ko'rinmas bo'lib qolsangiz, nima qilardingiz?" kabi ijodiy va shaxsiy savollar muzni tezda eritadi. Ushbu amaliyot o'quvchilarga shunchaki ekrandagi tasvir emas, balki tirik inson sifatida ko'rilyotganligini his qildiradi. Bundan tashqari, o'qituvchining kamerani doimo yoqilgan holda jonli mimika va imo-ishoralar bilan muloqot qilishi, vizual ifodalar – thumbs-up, qarsak chalish yoki tegishli emoji'lardan faol foydalanishi virtual muhitda yetishmaydigan "inson" omilini ma'lum darajada qoplashga xizmat qiladi. Bu kabi kichik, ammo doimiy harakatlar orqali o'qituvchi sinfda ishonch va psixologik xavfsizlik muhitini shakllantiradi, bu esa samarali ta'limning negizidir. Interfaollikning emotsional jihatini yanada chuqurlashtirish va o'quv materialini uzoq muddatli

xotirada mustahkamlash uchun "Raqamli hikoya" (Digital Storytelling) metodikasi benazir imkoniyatlar yaratadi. Ushbu yondashuv murakkab tushunchalar yoki quruq faktlarni an'anaviy slaydlar ketma-ketligi orqali emas, balki hayotiy voqealar, shaxsiy kechinmalar yoki ishonarli rivoyatlar timsolida, boy vizual va audio effektlar bilan uyg'un holda yetkazishga asoslanadi. Inson miyasi hikoya formatidagi axborotga nisbatan alohida sezgirlikka ega. Neyrobiologik tadqiqotlar shuni ko'rsatadiki, oddiy faktlar ro'yxati eshitilganda miyaning faqat tilni qayta ishlash markazlari (Broka va Vernike sohalari) faollashadi. Holbuki, jonli va hissiy hikoya tinglanganda, miyaning eshitish, ko'rish, hissiyot va hatto harakat bilan bog'liq ko'plab sohalari bir vaqtning o'zida ishga tushadi. Bu holat "neyron juftlashuvi" (neural coupling) deb atalib, tinglovchi va hikoyachi o'rtasida chuqur empatik bog'lanish o'rnatilishiga olib keladi (Stephens va boshq., 2010). Natijada, hikoya orqali taqdim etilgan axborot miyada ancha boy assotsiativ tarmoqlar bilan o'raladi va shu sababli xotirada mustahkamroq o'rinishadi.

XULOSA

Yuqorida batafsil tahlil qilingan uchta zamonaviy pedagogik yondashuv – loyiha metodi, psixologik jihatlariga asoslangan virtual doira va raqamli hikoya metodikasi hamda sun'iy intellekt asosidagi moslashuvchan ta'lim tizimlari – masofaviy ingliz tili ta'limining samaradorligini ta'minlashda bir-birini to'ldiruvchi va o'zaro chambarchas bog'liq strategiyalar ekanligini yaqqol namoyon etadi. Loyiha metodi talabani passiv tinglovchidan faol tadqiqotchi va ijodkorga aylantirib, uning amaliy til ko'nikmalarini real kontekstda rivojlantirsa, virtual doira va raqamli hikoya kabi metodlar izolyatsiya hissini bartaraf etib, ta'lim jarayoniga jonli insoniy muloqot va emotsional bog'liqlikni olib kiradi. Sun'iy intellekt asosidagi moslashuvchan platformalar esa har bir talabaning individual bilim darajasi va o'zlashtirish sur'atiga qarab o'quv kontentini avtomatik shaxsiylashtirish orqali ommaviy onlayn kurslarda ham yuqori sifatli individual yondashuvni ta'minlaydi. Biroq ushbu metodlarning birortasi alohida holda to'liq muvaffaqiyat kafolatini bera olmaydi. Masofaviy ta'limning asl qudrati aynan mana shu uch omil – faol amaliyot, insonparvarlik va aqlli texnologiyalar – uyg'unligida namoyon bo'ladi. Shu bois, zamonaviy o'qituvchi oldida turgan eng muhim vazifa bu usullarni o'zaro mutanosib va tizimli tarzda qo'llab, talabalar uchun nafaqat bilim beruvchi, balki ularni fikrlashga, his qilishga va mustaqil o'sishga undovchi yaxlit o'quv muhitini yaratishdan iboratdir.

Adabiyotlar

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BOSHLANG'ICH SINIF O'QUVCHILARINING DARS MASHG'ULOTLARIDA HARAKATLI O'YINLAR ORQALI JISMONIY SIFATLARINI TARBIYALASH

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Annotatsiya: Ushbu maqolada boshlang'ich sinf o'quvchilarining jismoniy sifatlarini tarbiyalashga xos o'yinlar hamda ularning ahamiyati haqida ma'lumotlar berilgan.

Kalit so'zlar: tezkorlik, kuch, xalq o'yinlari, milliy o'yinlar, egiluvchanlik.

ВОСПИТАНИЕ ФИЗИЧЕСКИХ КАЧЕСТВ У УЧАЩИХСЯ НАЧАЛЬНЫХ КЛАССОВ ПОСРЕДСТВОМ ПОДВИЖНЫХ ИГР НА УРОЧНЫХ ЗАНЯТИЯХ

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Аннотация: В данной статье приведены сведения об играх, характерных для воспитания физических качеств учащихся начальных классов, а также об их значении.

Ключевые слова: быстрота, сила, народные игры, национальные игры, гибкость.

DEVELOPING PHYSICAL QUALITIES OF PRIMARY SCHOOL STUDENTS THROUGH ACTIVE GAMES IN LESSONS

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Abstract: This article provides information about games specific to the development of physical qualities of primary school students and their importance.

Keywords: speed, strength, folk games, national games, flexibility.

KIRISH

Bolaning o'sishi va rivojlanishi bilan o'yinlarning mazmuni ham o'zgarib boradi: o'yin faoliyati dastlabki bosqichlarda oddiy xarakterda bo'lsa, keyinchalik u boyib boradi. Masalan, har bir o'yin oldiga aniq maqsadlar qo'yilishi, o'tkazilayotgan o'yin qatnashuvchilarning kuch va qobiliyatlariga mos kelishi, o'yin shug'ullanuvchiga ijobiy ta'sir ko'rsatishi lozimligi, ularni tizimli hamda muntazam o'tkazish, o'quvchilarning faolligi va mustaqilligini oshirishga harakat qilish zarurligi ta'kidlanadi.

Boshlang'ich sinf o'quvchilariga mos o'yinlarni jismoniy sifatlarni rivojlantirishiga ko'ra quyidagi guruhlariga ajratish mumkin: tezkorlikni tarbiyalovchi o'yinlar; kuchni oshiruvchi o'yinlar; chaqqonlikni rivojlantiruvchi o'yinlar; chidamlilikni rivojlantiruvchi o'yinlar; egiluvchanlikni tarbiyalovchi o'yinlar.

Ayrim o'yin turlari bolalarning barcha bo'g'inlariga mos kelishi mumkin, ya'ni jismoniy sifatlarni yaxlit holda tarbiyalashga qaratilgan o'yinlar ko'pchilikni tashkil etadi. Ularda turli jismoniy sifatlarni ketma-ket rivojlanishi mumkin. O'yinlardagi bunday izchillik bolaning bilim saviyasi, turmush tajribasi kengayishi, katta yoshdagi odamlar turmushiga chuqurroq kirib borishi bilan bog'liqdir. Darhaqiqat, o'yinlarning oddiydan murakkabga tomon o'sishi turmushning tobora yangi qirralarini aks ettirish bilan cheklanib qolmay, muayyan o'yinning o'ziga xos boshqa ko'rinishlari bilan boyishi sababli amalga oshadi.

MATERIALLAR VA METODLAR

Tezkorlikni tarbiyalovchi o'yinlar. Tezkorlikni tarbiyalash uchun mashqlar maksimal sur'atda bajarilishi lozim. Signalga binoan tez javob berilishini, muayyan vaqt birligi ichida ko'p harakatlar bajarilishini hamda butun tana yoki uning bir qismini fazoda tezlik bilan harakat qilishini talab qiladigan o'yinlar o'quvchida tezkorlik sifatini rivojlantiradi. Bunda ko'proq ikki guruhning faol musobaqalashishiga olib keladigan o'yinlar o'tkazishga e'tibor qaratiladi. Harakatdagi obyektga nisbatan reaksiyani tarbiyalovchi o'yinlar bu o'rinda yaxshi natija beradi. Bunday o'yinlarga "Do'ppi kiyishda kim g'olib?", "To'rt muyush", "Bo'sh joy", "Kim tez o'ynaydi?" kabilarni kiritish mumkin.

Kuchni rivojlantiruvchi o'yinlar. Bunda o'qituvchi kerakli mushak guruhlarining rivojlanishiga ijobiy ta'sir ko'rsatadigan o'yinlarni tanlashi lozim. Kuchni rivojlantiruvchi o'yinlarda o'quvchi o'z tana og'irligini, biror tashqi og'irlikni yoki raqib og'irligini (qarshiligini) yengadi. Kuchni rivojlantirish uchun "Xo'roz-xo'roz", "Uloq", "Otdan ag'darish", "Oqsoq bo'ri va qo'ylar", "Chuqurga tushir" kabi o'yinlar tavsiya etiladi.

Chaqqonlikni tarbiyalovchi o'yinlar. Aniq harakat qilish zarur bo'lgan, bajarish sharoitlari o'zgaruvchan milliy o'yinlarda chaqqonlik yaxshi rivojlangan bo'lishi kerak. Shunga tayangan holda chaqqonlikni tarbiyalash uchun "Almash qadamlar", "Tiriltirishma", "Urdu-qochdi", "Olacha tovuq", "Kim chaqqon?" kabi o'yinlarni tavsiya etish mumkin.

Chidamlilikni tarbiyalovchi o'yinlar. Ko'pchilik milliy xalq harakatli o'yinlarida nihoyatda jadal bajariladigan mashqlar tufayli tezkorlik va chidamlilik kabi jismoniy sifatlar tarbiyalanadi. Bunday o'yinlarda jismoniy yuklama ham asta-sekin oshirib boriladi. Masalan, maydonni kattalashtirish, maydonni kichraytirmay turib o'yinchilar sonini kamaytirish, o'yin jihozlari sonini ko'paytirish (tayoqcha, ro'molcha, do'ppi, chopon, to'p va hokazo), yugurish masofasini uzaytirish, to'siqlar sonini oshirish, murakkab mashqlarni qo'llash va ularning sonini ko'paytirish mumkin.

Ko'rsatilgan usullar izchillik bilan qo'llanilganda maqsadga tezroq erishiladi. Mazkur jismoniy sifatni tarbiyalovchi o'yinlarga "Oqsoq qarg'a", "Lanka", "Podachi" kabilarni misol qilib ko'rsatish mumkin.

Egiluvchanlikni tarbiyalash. Boshlang'ich sinf o'quvchilarida egiluvchanlikni tarbiyalashga alohida e'tibor qaratish lozim, chunki bu yoshdagi bolalarda egiluvchanlik sifatining o'sishi sekinlashadi. Egiluvchanlikni tarbiyalash maqsadida ayrim mushak guruhleri va bo'g'inlariga ta'sir ko'rsatuvchi o'yinlar tanlab olinadi. Bu o'yinlar asosan maxsus sport jihozlari yordamida o'tkaziladi. Og'irliklar o'rnida shug'ullanuvchilarning o'zlari ham qatnashishlari mumkin.

Faol egiluvchanlik mushaklarning kuchiga bog'liq. Mushaklarning cho'ziluvchanlik xususiyatlari esa markaziy nerv tizimining ta'sirida o'zgaradi. Shuning uchun bu o'yinlarda o'quvchilar zavq-shavq bilan qatnashganda egiluvchanlik yuqori bo'ladi. Egiluvchanlikni talab qiladigan o'yinlardan oldin tegishli yengil jismoniy mashqlar bajarilishi lozim.

Egiluvchanlikni tarbiyalash uchun "Tizza ostida ro'molcha", "Tayoqni davraga irg'itish", "To'siqdan sakrab o'tish", "Tosh o'yin" kabi o'yinlar tavsiya etiladi. Masalan, boshlang'ich sinf o'quvchilari uchun qiziqarli va egiluvchanlik sifatini samarali ravishda oshiradigan "Tosh o'yin" o'yini tavsiya etiladi.

Xalq milliy o'yinlarini bolalar jinsiga qarab tasnif etishning o'ziga xos sabablari mavjud. Chunki kichik maktab yoshidagi o'g'il va qiz bolalar jismoniy rivojlanishida ayrim farqlar kuzatiladi. O'g'il bolalarning bo'yi va og'irligi o'rtacha olganda ortiqroq, ko'krak qafasi kengroq

va o'pkaning faoliyat hajmi kattaroq bo'ladi. O'g'il bolalarda mushak kuchi yaxshiroq rivojlanadi. Shunga bog'liq ravishda ularning harakat qobiliyatlari farqlanadi. O'g'il bolalar tezroq yugurishadi, uzoqroq va balandroqqa sakrashadi, yaxshiroq uloqtirishadi, ular kuchliroq va chidamliroq bo'ladilar.

Jismoniy rivojlanishning qonuniy xususiyatlari 1- va 2-sinflardagi o'g'il hamda qiz bolalarni jismoniy tarbiyalash vositalarini tanlashda aks etmaydi. 3-sinfdan boshlab o'g'il bolalarga nisbatan qiz bolalarga ko'proq mashqlar berish mumkin. Ularga yukni ko'tarish va bir joydan ikkinchi joyga ko'chirish, qarshilikni yengish, uzoqroq muddat yugurish, sakrash balandligini oshirish, shuningdek, uloqtirishda nishon orasidagi masofani uzaytirishdan iborat mashqlar beriladi. Qizlarga mayin, ritmik raqs harakatlariga asoslangan xalq harakatli o'yinlarini o'g'il bolalarga qaraganda ko'proq o'rgatish kerak. Xalq harakatli o'yinlarini mana shu xususiyatlarga qarab tanlash lozim.

Shu jihatdan qaraganda, milliy xalq harakatli o'yinlarini uch guruhga bo'lib o'rganish mumkin: o'g'il bolalarga mo'ljallangan o'yinlar — o'g'illar o'yini; qiz bolalarga mo'ljallangan o'yinlar — qizlar o'yini; ham o'g'il bolalar, ham qizlar o'ynaydigan o'yinlar — qo'shma o'yinlar.

O'g'il bolalarning fiziologik va jismoniy xususiyatlaridan kelib chiqib, ularga "Xo'roz-xo'roz", "Chopon ko'l", "Otdan ag'darish", "Tayoqni davraga irg'itish", "Lanka", "Qilichbozlar" kabi o'yinlarni tavsiya etish mumkin.

Qiz bolalarning o'yinlari nisbatan kamchilikni tashkil etadi, shunday bo'lsa-da, ularga "Tosh terish", "Chumchuqcha", "Kim chaqqon?", "Doira ichida raqs" va hokazolarni tavsiya etish mumkin.

Qo'shma o'yinlarga "Almash qadamlar", "Ona tovuq va hakka", "Tiriltirishma", "Urdu-qochdi", "Do'ppi kiyishda kim g'olib?", "To'rt muyush", "Yulduz", "Kunduz-kecha", "Olomon poyga", "Tizza ostida ro'molcha", "Uloq", "Oqsoq qarg'a", "Oqsoq bo'ri va qo'ylar", "Qopqon", "Qarmoqcha", "Podachi" kabi ko'plab o'yinlarni tavsiya etish mumkin.

NATIJALAR

1-jadval. 7 yoshli o'quvchilarning jismoniy tayyorgarlik ko'rsatkichlari

No	Testlar	Jinsi	n	Tajriba	Nazorat	t	P
1	Yuqori startdan 30 m ga yugurish	O'	19	7,5 ± 0,10	8,0 ± 0,08	1,92	>0,05
		Q	13	7,8 ± 0,11	8,2 ± 0,09	1,37	>0,05
2	3×10 m ga mokisimon yugurish	O'	19	9,6 ± 0,10	10,4 ± 0,08	1,59	>0,05
		Q	13	10,1 ± 0,09	10,7 ± 0,11	1,33	>0,05
3	Arg'amchidan sakrash (30 soniyada)	O'	19	19,2 ± 0,40	16,6 ± 0,59	1,43	>0,05
		Q	13	23,2 ± 0,70	19,6 ± 0,42	1,04	>0,05
4	Turgan joydan uzunlikka sakrash (sm)	O'	19	123,1 ± 0,64	118,2 ± 0,69	2,76	<0,05
		Q	13	119,2 ± 1,28	116,2 ± 1,87	2,65	<0,05
5	Nishonga urish (5 imkoniyat, 8 m masofa)	O'	19	1,5 ± 0,25	1,3 ± 0,10	1,76	>0,05
		Q	13	1,5 ± 0,18	1,2 ± 0,22	1,24	>0,05
6	150 g koptokni uloqtirish (sm)	O'	19	18,5 ± 0,46	16,6 ± 0,41	1,56	>0,05
		Q	13	14,2 ± 0,25	12,9 ± 0,45	1,35	>0,05

MUHOKAMA

Harakatli o'yinlar tasnifidan ko'rinadiki, ko'pchilik o'yinlar qo'shma o'yinlar hisoblanadi. Shuning uchun ularni o'g'il va qiz bolalar birgalikda bajaradilar. Kurash elementini o'z ichiga

olgan mashqlar bajarilayotganda qizlar sherigi — dugonalari bilan birgalikda birmuncha osonroq o'yinlarni bajaradilar yoki o'qituvchining topshirig'iga binoan boshqa guruhda shug'ullanadilar.

Jismoniy tarbiya darslaridagi harakatli o'yinlarda aqliy va jismoniy tarbiya jarayonlari qo'shib olib borilishi, ularning tarbiyaviy jihatlari ko'zda tutilishi lozim. Buning uchun o'qituvchilar va mutaxassis xodimlar harakatli o'yinlarning mazmuniga jiddiy e'tibor berishlari, o'tiladigan joy va kerakli asbob-uskunalaridan ehtiyotkorlik bilan, maqsadli foydalanishlari zarur.

Qo'shma o'yinlarga "Almash qadamlar", "Ona tovuq va hakka", "Tiriltirishma", "Urduqochdi", "Do'ppi kiyishda kim g'olib?", "To'rt muyush", "Yulduz", "Kunduz-kecha", "Olomon poyga", "Tizza ostida ro'molcha", "Uloq", "Oqsoq qarg'a", "Oqsoq bo'ri va qo'ylar", "Qopqon", "Qarmoqcha", "Podachi" kabi ko'plab o'yinlarni tavsiya etish mumkin. Bu o'yinlarning mazmunida mehnat turlari ifoda etilib, shug'ullanuvchilarning jismoniy rivojlanishidagi eng muhim sifat belgilari namoyon bo'ladi.

XULOSA

Shu asosda o'quvchi-yoshlarning salomatligi, qiziqishi va jinsiga qarab o'yinlarni tanlash lozim. Kasb-hunar yo'lidagi o'quvchilarga moslashtirib, ixtisoslikka qaratilgan harakatli o'yinlarni ham saralash maqsadga muvofiqdir. Harakatli o'yinlarni tizimli tashkil etish boshlang'ich sinf o'quvchilarida tezkorlik, kuch, chaqqonlik, chidamlilik va egiluvchanlik kabi jismoniy sifatlarni tarbiyalashda samarali vosita bo'lib xizmat qiladi.

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SCROLLING OR STUDYING? HOW SOCIAL MEDIA AFFECTS THE ACADEMIC PERFORMANCE OF 11–12-YEAR-OLD LEARNERS

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Abstract: This study explores how social media affects the academic behavior of 11–12-year-old students. The findings show that students use their phones in a mostly balanced way for communication, entertainment, and sometimes learning. However, using phones during homework can reduce concentration, even if students do not always notice it. Overall, social media is neither fully harmful nor fully beneficial; its impact depends on how consciously students use it.

Keywords: social media, academic performance, young learners, attention, phone use, learning habits, distraction.

VARAQLASHMI YOKI O'QISHMI? IJTIMOIIY TARMOQLAR 11–12 YOSHLI O'QUVCHILARNING AKADEMIK NATIJALARIGA QANDAY TA'SIR QILADI?

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Annotatsiya: Ushbu tadqiqot ijtimoiy tarmoqlarning 11–12 yoshli o'quvchilarning o'quv faoliyatiga qanday ta'sir ko'rsatishini o'rganadi. Natijalar shuni ko'rsatadiki, o'quvchilar telefonlardan asosan muvozanatli tarzda — muloqot, ko'ngilochar faoliyat va ba'zan ta'limiy maqsadlarda foydalanadilar. Biroq uy vazifalarini bajarish jarayonida telefondan foydalanish diqqatning pasayishiga olib kelishi mumkin, hatto o'quvchilar buni har doim ham anglab yetmasalar ham. Umuman olganda, ijtimoiy tarmoqlar na to'liq zararli, na to'liq foydali hisoblanadi; ularning ta'siri o'quvchilarning ulardan qay darajada ongli foydalanishiga bog'liq.

Kalit so'zlar: ijtimoiy tarmoq, akademik samaradorlik, yosh o'quvchilar, diqqat, telefondan foydalanish, o'rganish odatlari, fikrni chalg'ituvchi vosita.

ЛИСТАТЬ ИЛИ УЧИТЬСЯ? КАК СОЦИАЛЬНЫЕ СЕТИ ВЛИЯЮТ НА АКАДЕМИЧЕСКУЮ УСПЕВАЕМОСТЬ УЧАЩИХСЯ 11–12 ЛЕТ?

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Аннотация: В данном исследовании рассматривается влияние социальных сетей на учебное поведение учащихся 11–12 лет. Результаты показывают, что учащиеся в основном используют телефоны сбалансированно: для общения, развлечения и иногда для обучения. Однако использование телефона во время выполнения домашнего задания может снижать

концентрацию, даже если учащиеся не всегда это осознают. В целом социальные сети не являются полностью вредными или полностью полезными; их влияние зависит от того, насколько осознанно учащиеся ими пользуются.

Ключевые слова: социальные сети, академическая успеваемость, младшие школьники, внимание, использование телефона, учебные привычки, отвлекающий фактор.

INTRODUCTION

In today's digital age, social media has become a fundamental part of young learners' everyday lives. For children aged 11–12, who are at a critical stage of academic and cognitive growth, these platforms significantly influence education by shaping how they access information, study, stay motivated, focus, and interact with peers. Although social media can foster collaboration and creativity, it can also distract learners and reduce concentration.

Background: Electronic media has long been discussed for its influence on children's cognitive and academic development. One of the early concerns in this area comes from Kirkorian, Wartella, and Anderson (2008), who argue that early, uncontrolled exposure to media can negatively affect children's cognitive development and academic achievement. Their review highlights that children's learning processes are especially sensitive during early developmental stages, underscoring the importance of the quality and control of media exposure.

In educational settings, similar concerns are also observed with the use of digital devices. McCoy (2016) states that students may miss instruction, lose attention, or distract others when using digital devices for non-class-related purposes. This shows that even when technology is part of everyday learning environments, it can still distract learners if it is not used in a focused and purposeful way.

Recent research on social media use also supports the idea that not only access, but also patterns of usage matter. Kee, Tai, Ng, Jia, and Parameswaran (2025) found that habitual or impulsive engagement with social media significantly reduces sleep quality, attention span, and academic performance. This suggests that automatic and uncontrolled usage patterns can negatively affect students' ability to maintain focus and perform well academically.

At the same time, some studies show that social media does not always lead to negative outcomes. Kirschner and Karpinski (2010) found that frequent Facebook use is associated with lower academic performance and reduced study time among university students, indicating a negative relationship between heavy use and academic success. However, Hou, Qin, and Xu (2024) report that social media can also have positive effects on academic performance when it supports online learning behavior and prosocial interaction, especially among children and adolescents.

These findings suggest that the impact of social media on academic performance is complex and multifaceted. It depends on how often it is used, how it is used, and whether it supports or interrupts learning processes. Most previous studies have focused on older students, while younger learners remain less explored. Students aged 11–12 are still in a critical stage of developing self-discipline, concentration, and independent learning habits. At this stage, social media use may have a stronger influence on their study routines, attention span, and task completion.

Therefore, this study aims to investigate how social media influences the learning experiences of 11–12-year-old students. It specifically examines whether social media acts more as a supportive educational tool or whether its distracting effects are more dominant. In addition, the

study seeks to identify the patterns of social media use that contribute to learning, the ways it may interfere with academic focus, and practical strategies that can help both teachers and students maintain a balanced use of digital technologies.

OBJECTIVES

This paper provides a detailed look at the following objectives:

1. Identify how social media influences the academic performance of 11–12-year-old learners

2. Determine why 5th–6th-grade students become distracted by social media while studying

3. Explore practical strategies for balancing scrolling and studying without negative effects

Figure 1. Research objectives of the study

Fifth- and sixth-grade students at School No. 9 in Andijan were selected as the participants of this study. Previous research by Kirschner and Karpinski (2010) shows that heavy social media use can negatively affect study habits and academic performance, while Hou, Qin, and Xu (2024) explain that social media can also support learning when used for educational interaction. McCoy (2016) further highlights that digital device use in classrooms can reduce attention and interrupt learning processes. In addition, Kee et al. (2025) report that habitual or impulsive social media engagement can reduce sleep quality, attention span, and academic performance.

Usually, students' academic performance is measured through grades, homework, and classroom participation. However, social media changes how students manage their time and attention outside the classroom, especially at the fifth- and sixth-grade level, where learners are still developing self-discipline and independent study habits. This underscores the importance of understanding how digital behavior influences attention, motivation, and task completion in early learning stages. Based on this idea, the study examines whether social media serves primarily as a supportive learning tool or as a distraction for young learners, particularly in terms of academic focus and classroom behavior.

MATERIALS AND METHODS

The research was designed as a mixed-method study, combining quantitative and qualitative approaches to understand students' social media use and its impact on learning. Data were collected through surveys, interviews, and classroom observations in order to gain both numerical results and real classroom insights. The study was conducted at School No. 9 in Andijan during regular English and subject lessons to observe students' natural behavior in learning environments.

The participants were 11–12-year-old fifth-grade students, consisting of six learners: three girls and three boys. They were selected based on their age, grade level, and access to mobile devices. This allowed the study to capture early patterns of social media influence on academic engagement in a realistic school context.

This study used a survey-based approach, but the data were not collected in a single day. Instead, the process took place over two weeks, which helped obtain more honest and reliable answers from students. Before giving the final questionnaire, the researcher spent time preparing the students step by step.

During regular lessons, students were asked oral questions similar to those in the survey. These questions were about their phone usage, study habits, and social media behavior. At first, this created a very active classroom environment, and sometimes it was difficult to fully control the class, as students were excited and wanted to share their opinions.

In the beginning, many students were not ready to admit their real habits. Similar to how people often do not notice their own mistakes, students also did not clearly recognize how much time they spent on their phones or how it affected their learning. However, over time, the researcher created a safe and supportive atmosphere. Students were encouraged to answer honestly, not to feel afraid of giving “wrong” answers, and to understand that their habits would be respected rather than judged.

The researcher also made it clear that even if students used their phones a lot or depended on them for homework, they would not be criticized. Instead, the purpose was to understand their habits and help them improve their learning. After building this trust over two weeks, the final 25-question multiple-choice survey was conducted. Because of this preparation stage, students were more open and honest in their responses.

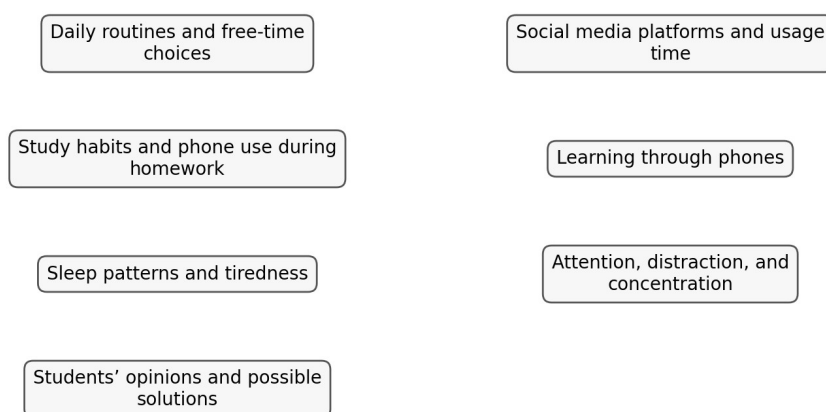


Figure 2. Key areas covered in the questionnaire

The data were collected in a familiar classroom environment, which helped students feel comfortable. Overall, this two-week preparation, combined with the final survey, allowed the researcher to collect more realistic and meaningful data rather than surface-level answers.



Figure 3. Learners' reading and phone-use behavior during study time



Figure 4. Students' use of smartphones and social media communication



Figure 5. Phone use as a potential distraction during study



Figure 6. Social media and digital communication among learners



Figure 7. Students' reading and phone-use practices in the classroom

Results

The results show that social media has a moderate influence on students' academic behavior. Most learners use their phones regularly, but their usage is generally balanced with other activities such as reading and resting. This indicates that traditional habits persist alongside digital engagement.

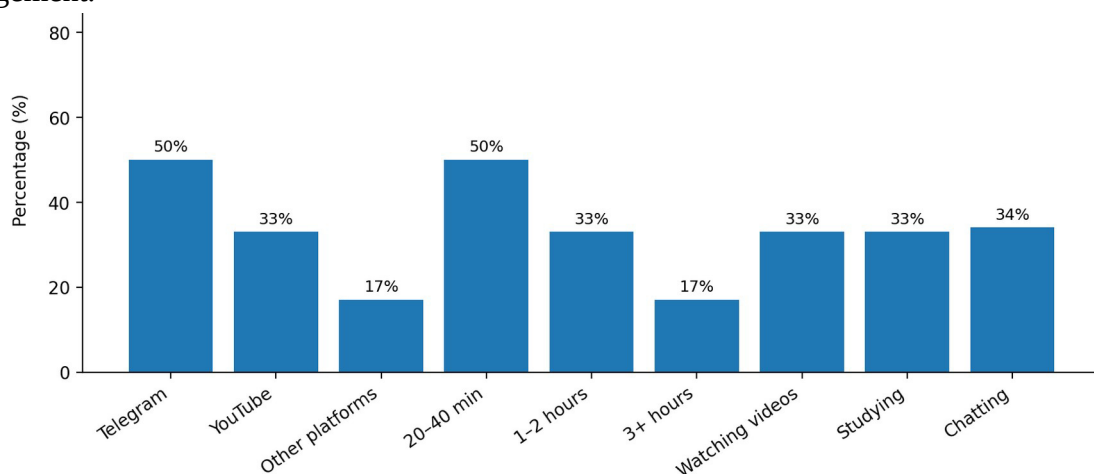


Figure 8. Questionnaire results on phone usage patterns

The data in this chart show how students use their phones in daily life. First, regarding platforms, most students prefer Telegram, while YouTube is also widely used. Only a small

number of students use other platforms such as TikTok or Instagram. This suggests that students mainly use applications that are either practical for communication or useful for watching videos.

Looking at daily phone usage, most students spend a moderate amount of time on their phones, usually between 20 and 40 minutes or up to one to two hours per day. Only a small percentage of students use their phones for more than three hours. This shows that, in general, phone use is neither excessive nor uncontrolled.

When it comes to activities, students use their phones almost equally for watching videos, chatting with friends, and studying. This is an important finding because it shows that phones are not used only for entertainment. In real life, students often watch videos to relax, chat to stay connected with friends, and sometimes use their phones to search for information or complete homework tasks. The chart suggests that phones play a mixed role in students' lives. They are used both for fun and for learning, which means their impact depends on how and when they are used.

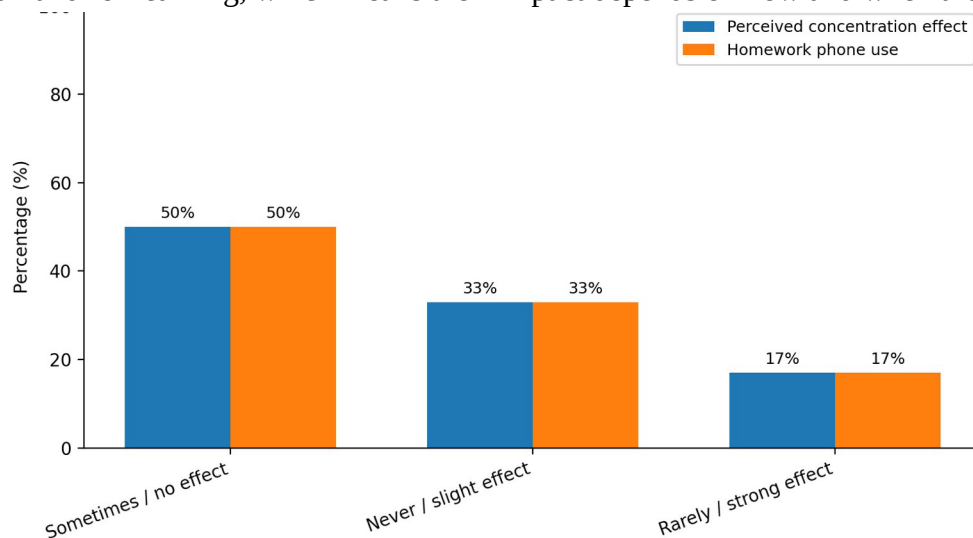


Figure 9. Phone use and its impact on concentration

The data show a clear connection between students' phone use and their study habits. In everyday life, many students use their phones while doing homework, though not all do so regularly. About half of the students admitted that they sometimes check their phones during study time, while others said they do this rarely or not at all. This suggests that using a phone while studying is quite common, even if it is not a constant habit for everyone.

When it comes to concentration, students' opinions are mixed. Some of them believe that phones do not affect their focus at all. However, others admitted feeling slightly distracted, and a smaller group reported a strong negative effect. This difference shows that students are not always fully aware of how their phone use influences their attention. In real life, it is common for students to think they can do several things at once, for example, studying while replying to messages or watching short videos. Although this feels easy, it often reduces their ability to concentrate without them noticing it immediately.

The results highlight a clear pattern: even when students do not feel distracted, phone use during homework can disrupt their focus and make studying less effective. This reflects a typical modern situation in which phones are always nearby, and students need self-control to use them more productively.

The results give a clearer picture of how phone use fits into students' daily routines beyond just studying. When looking at sleep habits, most students seem to follow a relatively stable schedule. Half of them go to bed before 10 p.m., while others sleep slightly later. Only a small

group stays up after 11 p.m. This suggests that, for now, phone use is not significantly disrupting their sleep patterns, which is often a concern at this age.

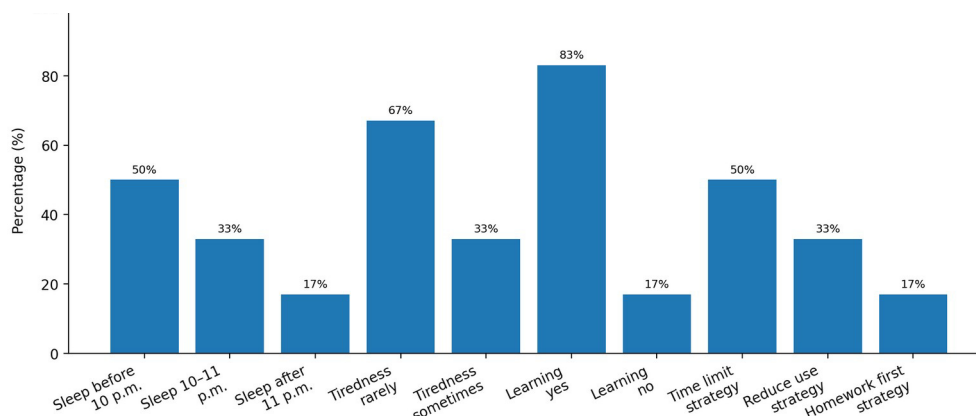


Figure 10. Lifestyle and learning outcomes of phone use

In terms of physical condition, most students reported rarely feeling tired after using their phones. Only some of them mentioned occasional tiredness. In real life, this may mean students do not immediately notice the physical effects of screen time, especially if their use is brief or occurs earlier in the day.

One of the most interesting findings concerns learning. A large majority of students said that they have learned something through their phones. This shows that digital devices are not only used for entertainment, but also as a source of information. For example, students may watch short educational videos, search for explanations, or check answers while doing homework. This reflects how naturally technology has become part of their learning process.

At the same time, students demonstrated awareness of the need to manage their habits. Most students suggested setting time limits, while others suggested reducing phone use or finishing homework before using their devices. These responses show that students are not completely dependent on their phones and are already considering ways to control their use.

The findings suggest that phone use is already a normal part of students' daily lives, but it is not yet causing serious negative effects on sleep or physical well-being. At the same time, it plays a noticeable role in learning and information access. This highlights the importance of guiding students to use their phones more consciously, so that the positive aspects can be strengthened while avoiding possible problems in the future.

Overall, the results show that students use their phones in a balanced way for communication, entertainment, and, at times, learning. Their use is mostly moderate, not excessive. However, phones can still affect study habits, especially when students use them during homework, which can reduce focus even if they do not always notice it. At the same time, phones also have positive sides, such as helping students learn new things and not strongly affecting sleep or health at this stage. In general, phones are neither fully helpful nor harmful; their effect depends on how students use them.

DISCUSSION

The results are closely connected to the two-week observation period. At the beginning, students were not fully aware of their phone habits. When they were first asked questions, many gave general or "safe" answers instead of real ones. However, over time, students started to think more about their behavior. During the survey, some students were surprised by their own answers.

A few even said they did not realize how much time they spent on their phones. This shows that the survey helped them become more aware.

At first, it was not easy to involve students in these discussions. Some were not interested, and others were not ready to be honest. Also, classroom control was sometimes difficult because students became too active. Another challenge was that students did not want to admit their habits. Like many people, they did not see their own mistakes. This changed when they felt safe and understood that they would not be judged.

After some time, students became more open and honest. They understood that the goal was to help, not to criticize. As a result, the survey itself became a learning experience. Students started to notice how their phone use affects their attention and study habits. This process also had a small positive effect.

During these two weeks, students became a bit more careful with their phone use. However, there were some limitations. The process required time and patience, and the number of participants was small. Even so, the results still give useful insights. Overall, this study shows that social media affects students and that they can learn to control it. With the right support, students can develop better habits. This also supports previous research showing that awareness can improve learning behavior.

CONCLUSION

This study showed that social media has both positive and negative effects on young learners. It is neither completely harmful nor completely helpful. Students use their phones not only for fun but also to learn new things. Many of them watch educational videos and get useful information. This shows that social media can support learning when used effectively.

At the same time, phones can distract students, especially during homework. Even if students think phones do not affect them, their habits show that phone use can reduce focus and make studying harder. One of the most important results is that students became more aware of their behavior. During the study, they began to notice their own habits and consider how to improve them.

In the end, the problem is not the phone itself, but how it is used. If students learn to manage their time and attention, they can use social media effectively.

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BOSHLANG'ICH SINIF O'QUVCHILARIDA QADDI-QOMAT HOLATI VA UNGA TA'SIR ETUVCHI OMILLAR BO'YICHA O'TKAZILGAN SO'ROVNOMA NATIJALARI TAHLILI

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Annotatsiya: Ushbu maqolada boshlang'ich sinf o'quvchilarida qaddi-qomat holati va unga ta'sir etuvchi asosiy omillar o'rganilgan. Tadqiqot doirasida 40 nafar respondent ishtirokida so'rovnoma o'tkazilib, ularning kundalik faoliyati, jismoniy faollik darajasi, gigiyenik odatlari hamda o'quv jarayonidagi holati tahlil qilindi. Olingan natijalar o'quvchilar orasida kamharakatlilik, noto'g'ri o'tirish odatlari, og'ir maktab sumkasi, mos bo'lmagan o'quv mebellari hamda jismoniy faollikning yetarli emasligi kabi omillar qaddi-qomat buzilishlariga ta'sir ko'rsatayotganini ko'rsatdi. Shuningdek, ayrim o'quvchilarda tez charchash, bel va orqa mushaklarida og'riq kabi belgilar aniqlangan. Tadqiqot natijalari boshlang'ich sinf o'quvchilarida qaddi-qomatni to'g'ri shakllantirish va profilaktik choralarni kuchaytirish zarurligini ilmiy asosda ko'rsatadi.

Kalit so'zlar: boshlang'ich sinf o'quvchilari, qaddi-qomat, jismoniy faollik, kamharakatlilik, so'rovnoma, gigiyenik odatlar, profilaktika, sog'lom turmush tarzi, jismoniy tarbiya.

АНАЛИЗ РЕЗУЛЬТАТОВ ОПРОСА О СОСТОЯНИИ ОСАНКИ У УЧАЩИХСЯ НАЧАЛЬНЫХ КЛАССОВ И ФАКТОРАХ, ВЛИЯЮЩИХ НА НЕЁ

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Аннотация: В данной статье изучаются состояние осанки и основные факторы, влияющие на него у учащихся начальной школы. В рамках исследования был проведён опрос с участием 40 респондентов, в ходе которого были проанализированы их повседневная деятельность, уровень физической активности, гигиенические привычки и положение в учебном процессе. Результаты показали, что такие факторы, как малоподвижный образ жизни, неправильные привычки сидения, тяжёлые школьные сумки, неподходящая школьная мебель и недостаточная физическая активность, влияют на состояние осанки учащихся. Также у некоторых учащихся наблюдались такие симптомы, как усталость, боли в мышцах спины и поясницы. Результаты исследования научно доказывают необходимость правильного формирования осанки и усиления профилактических мер у учащихся начальной школы.

Ключевые слова: учащиеся начальной школы, осанка, физическая активность, малоподвижный образ жизни, опросник, гигиенические привычки, профилактика, здоровый образ жизни, физическое воспитание.

ANALYSIS OF QUESTIONNAIRE RESULTS ON POSTURE STATUS IN PRIMARY SCHOOL STUDENTS AND THE FACTORS AFFECTING IT

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Abstract: This article examines posture status in primary school students and the main factors affecting it. As part of the study, a questionnaire was conducted with the participation of 40 respondents, and their daily activities, level of physical activity, hygienic habits, and status in the educational process were analyzed. The results showed that factors such as inactivity, incorrect sitting habits, heavy school bags, unsuitable school furniture, and insufficient physical activity affect students' posture status. Some students also reported symptoms such as fatigue and pain in the back and lower back muscles. The results of the study scientifically demonstrate the need to properly form posture and strengthen preventive measures in primary school students.

Keywords: primary school students, posture, physical activity, inactivity, questionnaire, hygienic habits, prevention, healthy lifestyle, physical education.

KIRISH

Ushbu tadqiqot boshlang'ich sinf o'quvchilarining qaddi-qomat holatini, ularning kundalik faoliyati, jismoniy faolligi hamda gigiyenik odatlari bilan bog'liq jihatlarni aniqlashga qaratildi.

TADQIQOT METODLARI

Tadqiqot doirasida 40 nafar respondent o'rtasida so'rovnoma o'tkazildi hamda ularning kundalik faoliyati, jismoniy faolligi va gigiyenik odatlari bilan bog'liq jihatlarni tahlil qilindi.

1-jadval. Respondentlarning fikrini o'rganish bo'yicha so'rovnoma natijalari

T/r	So'rovnoma savoli.	Murabbiylar soni (n=40)	Ko'rsatkichlar. % da
1	Uzoq vaqt o'tirganingizda belingiz og'riydimi?		
	a) Ha	31nafar o'quvchi(respondent) javob berdi.	77,5%
	b) Yo'q	9 nafar o'quvchi(respondent) javob berdi.	22,5 %
2	Siz dars paytida doimo tik o'tirishga harakat qilasizmi?		
	a) Ha	21 nafar o'quvchi(respondent) javob berdi.	52,5 %
	b) Yo'q	19 nafar o'quvchi(respondent) javob berdi.	47,5 %
3	Sizning qaddingizni o'qituvchi yoki ota-onangiz noto'g'ri deb aytganmi?		
	a) Ha	5 nafar o'quvchi(respondent) javob berdi.	12,5%
	b) Yo'q	35 nafar o'quvchi(respondent) javob berdi.	87,5 %
4	Bir yelkangiz boshqasiga qaraganda pastroq ko'rinadimi?		
	a) Ha	7 nafar o'quvchi(respondent) javob berdi.	17,5%
	b) Yo'q	33 nafar o'quvchi(respondent) javob berdi.	82,5%
5	O'zingizni tez charchagan holatda his qilasizmi?		
	a) Ha	39 nafar o'quvchi(respondent) javob berdi.	97,5%
	b) Yo'q	1 nafar o'quvchi(respondent) javob berdi.	2,5%
6	Uzoq o'tirgandan keyin gavgangizni tiklashga qiynalasizmi?		
	a) Ha	6 nafar o'quvchi(respondent) javob berdi.	15%
	b) yo'q	34 nafar o'quvchi(respondent) javob berdi..	85%

7	Sizning sumkangiz og'ir deb o'ylaysizmi?		
	a) Ha	25 nafar o'quvchi(respondent) javob berdi.	62,5 %
	b) Yo'q	15 nafar o'quvchi(respondent) javob berdi.	37,5 %
8	Siz kun davomida ko'p vaqtни o'tirib o'tkazasizmi?		
	a) Ha	30 nafar o'quvchi(respondent) javob berdi.	75%
	b) Yo'q	10 nafar o'quvchi(respondent) javob berdi.	25%
9	Siz sport bilan muntazam shug'ullanasizmi?		
	a) Ha	8 nafar o'quvchi(respondent) javob berdi.	20%
	b) Yo'q	32 nafar o'quvchi(respondent) javob berdi.	80%
10	Siz ertalabki badantarbiya qilasizmi?		
	a) Ha	7 nafar o'quvchi(respondent) javob berdi.	17,5%
	b) Yo'q	33 nafar o'quvchi(respondent) javob berdi.	82,5%
11	Stol va stul balandligi sizga mos deb o'ylaysizmi?		
	a) Ha	23 nafar o'quvchi(respondent) javob berdi.	57,5%
	b) Yo'q	17 nafar o'quvchi(respondent) javob berdi.	42,5%
12	Siz jismoniy tarbiya darslarida faol qatnashasizmi?		
	a) Ha	30 nafar o'quvchi(respondent) javob berdi.	75%
	b) Yo'q	10 nafar o'quvchi(respondent) javob berdi.	25%
13	Siz yumshoq o'rinda uxlashni afzal ko'rasizmi?		
	a) Ha	32 nafar o'quvchi(respondent) javob berdi.	80%
	b) Yo'q	8 nafar o'quvchi(respondent) javob berdi.	20%
14	Maktab sumkangizni doimo ikki yelkangizga taqasizmi?		
	a) Ha	28 nafar o'quvchi(respondent) javob berdi.	70%
	b) Yo'q	12 nafar o'quvchi(respondent) javob berdi.	30%
15	Sizda tez-tez bel yoki orqa mushaklarida charchoq og'riq seziladimi?		
	a) Ha	6 nafar o'quvchi(respondent) javob berdi.	15%
	b) Yo'q	34 nafar o'quvchi(respondent) javob berdi.	85%

NATIJALAR

Birinchi savol natijalariga ko'ra, respondentlarning mutlaq ko'pchiligi, ya'ni 77,5% (31 nafar) uzoq vaqt o'tirganda bel qismida og'riq sezishini bildirgan. Ushbu holat o'quvchilarning kundalik faoliyatida uzoq muddat davomida statik holatda qolishi, noto'g'ri o'tirish odatlarining shakllanganligi hamda mushaklar tizimining yetarlicha rivojlanmaganligi bilan izohlanadi. Shu bilan birga, 22,5% respondentlarda bunday muammo kuzatilmaligi individual jismoniy tayyorgarlik darajasi yoki turmush tarzidagi farqlar bilan bog'liq bo'lishi mumkin.

Ikkinchi savol orqali o'quvchilarning dars jarayonida o'tirish madaniyati o'rganildi. Natijalarga ko'ra, 52,5% o'quvchilar tik o'tirishga harakat qilishlarini bildirgan bo'lsa, deyarli

shuncha — 47,5% respondentlar bu talabga muntazam amal qilmasliklarini ta’kidlagan. Bu esa o’quvchilarda to’g’ri o’tirish ko’nikmalari yetarli darajada shakllanmaganligini ko’rsatadi.

Uchinchi savol natijalari o’quvchilarning qaddi-qomatidagi muammolarni tashqi kuzatuv orqali baholash imkonini berdi. Faqatgina 12,5% o’quvchilarga o’qituvchi yoki ota-onalari tomonidan qomatida nuqson borligi aytilgan. Biroq, 87,5% respondentlarda bunday ogohlantirishlar bo’lmaganligi qaddi-qomat muammolari mavjud emasligini emas, balki ularning hali aniqlanmagan yoki e’tibordan chetda qolayotganini anglatishi mumkin.

To’rtinchi savolda 17,5% o’quvchilarda yelka assimetriyasi mavjudligi aniqlangan. Bu ko’rsatkich kichik bo’lib ko’rinsada, u qaddi-qomat buzilishlarining boshlang’ich bosqichlari mavjudligini bildiradi va o’z vaqtida choralari ko’rilmasa, bu holat yanada chuqurlashishi mumkin.

So’rovnoma natijalarining eng e’tiborga molik jihatlaridan biri — o’quvchilarning 97,5% o’zlarini tez charchashini bildirganidir. Bu juda yuqori ko’rsatkich bo’lib, organizmning umumiy funksional holati, mushaklarning chidamliligi hamda jismoniy faollik darajasi pastligini yaqqol ifodalaydi.

Oltinchi savol natijalari esa o’quvchilarning 15% ida uzoq o’tirgandan so’ng gavgani tiklashda qiyinchiliklar mavjudligini ko’rsatdi. Bu mushaklar tonusining pasayganligi va qomatni ushlab turuvchi mushak guruhlarining yetarlicha rivojlanmaganligidan dalolat beradi.

Yettinchi savolga berilgan javoblar asosida respondentlarning 62,5% maktab sumkasi og’irligini muammo sifatida baholagan. Bu esa umurtqa pog’onasiga ortiqcha yuk tushishiga sabab bo’lib, qaddi-qomat buzilishlari rivojlanishiga zamin yaratadi.

Sakkizinchi savolda 75% o’quvchilar kun davomida ko’p vaqtni o’tirib o’tkazishini bildirgan. Bu esa gipodinamiya — ya’ni harakat faolligining yetishmasligi keng tarqalganligini ko’rsatadi. Bu omil esa qaddi-qomat buzilishlarining asosiy sabablaridan biri hisoblanadi.

To’qqizinchi va o’ninchi savollar natijalari jismoniy faollik darajasining past ekanligini tasdiqlaydi. Faqat 20% o’quvchilar muntazam sport bilan shug’ullanishini, 17,5% esa ertalabki badantarbiya bilan shug’ullanishini bildirgan. Bu esa jismoniy tarbiya madaniyatining yetarli darajada shakllanmaganligini ko’rsatadi.

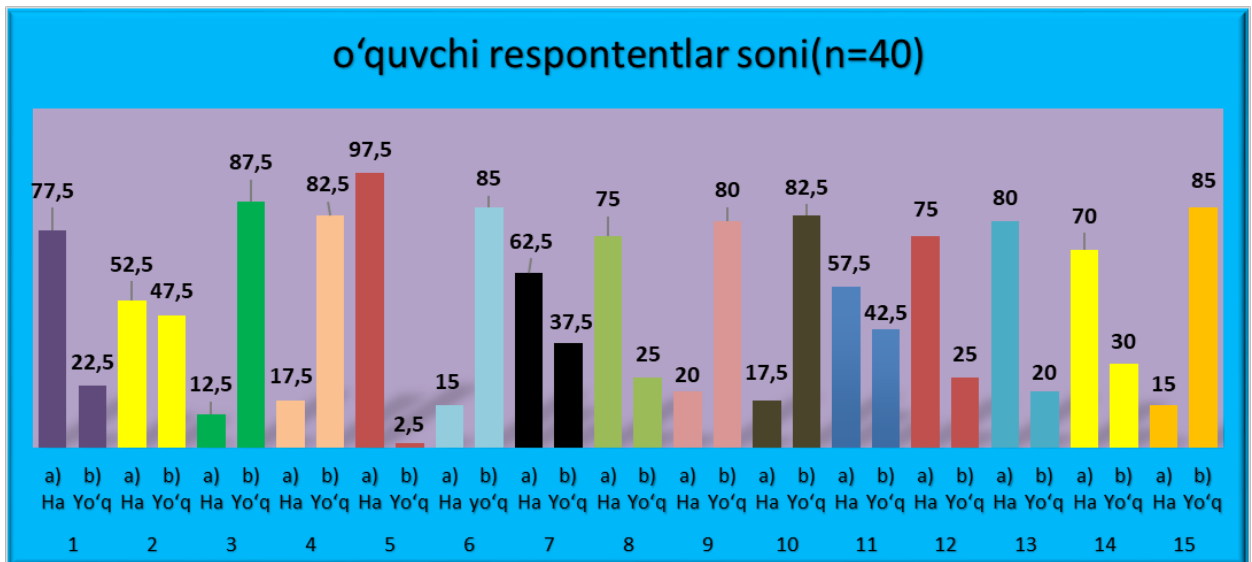
O’n birinchi savolda respondentlarning 42,5% o’quv mebellari o’zlariga mos emasligini bildirgan. Bu esa ergonomik sharoitlar yetarli darajada ta’minlanmaganligini ko’rsatadi va qaddi-qomatga salbiy ta’sir etuvchi muhim omil sifatida baholanadi.

Shu bilan birga, 75% o’quvchilar jismoniy tarbiya darslarida faol qatnashayotganligini bildirgan bo’lsa-da, qolgan 25% o’quvchilarning passivligi pedagogik yondashuvlarni takomillashtirish zarurligini ko’rsatadi.

Yana bir muhim jihat — 80% o’quvchilar yumshoq o’rinda uxlashni afzal ko’rishi aniqlangan. Bu esa umurtqa pog’onasining tabiiy holatini buzib, qaddi-qomat shakllanishiga salbiy ta’sir ko’rsatadi.

Sumkani to’g’ri taqish odatlari ham yetarli darajada shakllanmagan: 30% o’quvchilar sumkani noto’g’ri, ya’ni bir yelkada olib yurishini bildirgan. Bu esa yelka assimetriyasining rivojlanishiga olib keluvchi omillardan biridir.

Oxirgi savol natijalariga ko’ra, 15% o’quvchilarda bel va orqa mushaklarida og’riq kuzatiladi. Bu esa qaddi-qomat bilan bog’liq muammolar allaqachon shakllana boshlaganligini ko’rsatadi.



1-rasm. Boshlang'ich sinf o'quvchilarida qaddi-qomat holati va unga ta'sir etuvchi omillar

Ushbu diagramma “Boshlang'ich sinf o'quvchilarida qaddi-qomat holati va unga ta'sir etuvchi omillar” mavzusida o'tkazilgan so'rovnoma natijalarini ifodalaydi. Tadqiqotda jami $n = 40$ nafar o'quvchi respondent ishtirok etib, 15 ta savol asosida ularning qaddi-qomat holati, kundalik faoliyati hamda unga ta'sir etuvchi omillar bo'yicha fikrlari o'rganilgan.

Diagramma natijalariga ko'ra, aksariyat savollarda “Ha” javoblari ustunlik qilgan bo'lib, bu boshlang'ich sinf o'quvchilarida qaddi-qomatni to'g'ri shakllantirishga ijobiy ta'sir etuvchi omillar mavjudligini ko'rsatadi. Jumladan, ayrim savollarda yuqori darajadagi ijobiy ko'rsatkichlar (82,5%, 85%, 87,5% va hatto 97,5%) qayd etilgan bo'lib, bu o'quvchilarning jismoniy mashg'ulotlarga jalb etilishi, dars jarayonida to'g'ri o'tirish odatlarining shakllanib borishi hamda ota-onalar nazoratining mavjudligini anglatadi.

Shu bilan birga, ayrim savollarda “Yo'q” javoblari ustunlik qilgan holatlar ham kuzatiladi. Xususan, 3-, 6-, 9- va 11-savollarda salbiy ko'rsatkichlar yuqori bo'lib, bu o'quvchilarning kundalik hayotida qaddi-qomatga salbiy ta'sir etuvchi omillar ham mavjud ekanligini bildiradi. Bunga uzoq vaqt noto'g'ri holatda o'tirish, harakat faolligining yetarli emasligi, telefon yoki televizor oldida ko'p vaqt o'tkazish kabi omillar sabab bo'lishi mumkin.

MUHOKAMA

Umumiy tahlil shuni ko'rsatadiki, respondentlarning katta qismi qaddi-qomatni shakllantirishga doir ijobiy odatlarga ega bo'lsa-da, ayrim yo'nalishlarda muammolar saqlanib qolgan. Bu esa boshlang'ich sinf o'quvchilarida qaddi-qomat nuqsonlarining oldini olish maqsadida jismoniy tarbiya mashg'ulotlarini yanada tizimli tashkil etish, profilaktik mashqlarni ko'paytirish hamda ota-onalar va o'qituvchilarning hamkorligini kuchaytirish zarurligini ko'rsatadi.

XULOSA

Umumlashtirilgan xulosa sifatida aytish mumkinki, tadqiqot natijalari boshlang'ich sinf o'quvchilari orasida qaddi-qomat buzilishlariga olib keluvchi omillar — kamharakatlilik, noto'g'ri o'tirish odatlari, jismoniy faollikning pastligi, og'ir sumka, mos kelmaydigan mebellar va noto'g'ri turmush tarzi kabi omillar keng tarqalganligini ko'rsatdi.

Mazkur holat esa o'quvchilarning sog'lom jismoniy rivojlanishini ta'minlash maqsadida gimnastika mashg'ulotlari asosida maxsus tuzilgan metodik yondashuvlarni ishlab chiqish va amaliyotga joriy etish zarurligini ilmiy jihatdan asoslab beradi. Ayniqsa, qomatni to'g'rilashga

qaratilgan mashqlar, mushaklarni mustahkamlovchi komplekslar hamda profilaktik gimnastika mashg'ulotlari bu borada samarali vosita bo'lib xizmat qiladi.

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MOTIVATING PRIMARY PUPILS TO SUBMIT THEIR HOMEWORK ON TIME

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Abstract: In recent years, submitting homework on time has become both crucial and a problematic area in teaching as many students struggle to complete their assignments. Although there is considerable research related to this topic, some teachers still cannot find suitable ways to motivate their students. The main goal of this study is to investigate the reasons behind students' excuses and to identify effective ways to motivate them. The study used a classroom-based research design. In this research, there were 30 participants from 4th grade students studying in the same class at school N2 in Kasansay town, Namangan region. Data were collected through student survey, Reflective Journaling and Teacher-survey. After gathering the data related to this study, all information was analyzed thoroughly. The results from all three sources were cross-referenced to ensure the validity and reliability of the findings. The findings revealed that initially only 40% of students submitted their homework on time. However, after applying motivational strategies, this number increased to around 70–80% within six lessons. Survey results also showed that factors such as motivation, clear instructions, communication with parents, peer-work activities, simplifying tasks and teacher support influenced students' performance. This study can be useful to some of the teachers who face similar obstacles with homework submission as findings showed the effective motivational strategies to improve their intrinsic willingness to do their assignments. In conclusion, examining students' and teachers' opinions about homework helped to solve the problem in a short period of time as assigned tasks became more suitable for most students.

Keywords: homework submission, student motivation, classroom-based research, primary education, teacher support, peer-work activities, intrinsic motivation, assignment completion, student engagement, educational strategies

BOSHLANG'ICH SINF O'QUVCHILARINI UY VAZIFALARINI O'Z VAQTIDA TOPSHIRISHGA RAG'BATLANTIRISH

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Annotatsiya: So'nggi yillarda uy vazifasini o'z vaqtida topshirish ta'limda muhim, ammo muammo tug'diruvchi sohalardan biriga aylangan, chunki ko'plab talabalar vazifalarni bajarishda qiynaladi. Bu mavzu bilan bog'liq katta miqdorda tadqiqotlar mavjud bo'lsa-da, ba'zi o'qituvchilar talabalarning motivatsiyasini oshirishning mos usullarini topa olmayapti. Ushbu tadqiqotning asosiy maqsadi – talabalarning uy vazifasini bajarmaslik sabablarini aniqlash va ularni motivatsiya qilishning samarali usullarini belgilashdir. Tadqiqot sinfga asoslangan tadqiqot dizayni bo'yicha olib borildi. Tadqiqotda Namangan viloyat Kosonsoy tumandagi 2- sonli maktabning bir sinfida o'qiydigan 4-sinf o'quvchilaridan 30 nafar ishtirokchi qatnashdi. Ma'lumotlar Talaba-so'rovnomalari, Reflektiv jurnal yozish va O'qituvchi-so'rovnomalari orqali to'plandi. Ma'lumotlar to'plangach, ular batafsil tahlil qilindi. Uchta manbadan olingan natijalar o'zaro solishtirilib, topilmalar ishonchliligi va haqiqatligi ta'minlandi. Natijalar shuni ko'rsatdiki, dastlab faqat 40% talabalar uy vazifasini o'z vaqtida

topshirgan. Ammo motivatsion strategiyalar qo'llanilgandan so'ng, bu ko'rsatkich olti dars davomida taxminan 70–80% ga oshdi. So'rov natijalari shuningdek shuni ko'rsatdiki, motivatsiya, aniq ko'rsatmalar, ota-onalar bilan muloqot, jamoaviy ish faoliyati, vazifalarni soddalashtirish va o'qituvchi yordami talabalarning muvaffaqiyatiga ta'sir qiladi. Ushbu tadqiqot uy vazifasini topshirishda shunday muammolar bilan duch kelayotgan ba'zi o'qituvchilar uchun foydali bo'lishi mumkin, chunki topilmalar ularning vazifalarni bajarishga bo'lgan ichki xohlashlarini oshirish uchun samarali strategiyalarni ko'rsatdi. Xulosa qilib aytganda, talabalarning va o'qituvchilarning uy vazifasi haqidagi fikrlarini o'rganish muammoni qisqa muddat ichida hal qilishga yordam berdi, chunki topshiriqlar ko'pchilik talabalargamos bo'ldi.

Kalit so'zlar: uy vazifasini topshirish, talaba motivatsiyasi, sinfga asoslangan tadqiqot, boshlang'ich ta'lim, o'qituvchi yordami, jamoaviy ish faoliyati, ichki motivatsiya, vazifalarni bajarish, talaba faoliyati, ta'lim strategiyalari.

МОТИВАЦИЯ УЧАЩИХСЯ НАЧАЛЬНЫХ КЛАССОВ СВОЕВРЕМЕННО СДАВАТЬ ДОМАШНИЕ ЗАДАНИЯ

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Аннотация: В последние годы своевременная сдача домашнего задания стала как важной, так и проблемной сферой в обучении, так как многие учащиеся испытывают трудности с выполнением заданий. Хотя существует значительное количество исследований по данной теме, некоторые учителя всё ещё не могут найти подходящие способы мотивировать своих учеников. Основная цель данного исследования — изучить причины оправданий учащихся и определить эффективные способы их мотивации. Исследование проводилось с использованием дизайна исследования на базе класса. В исследовании приняли участие 30 учеников 4-го класса одного класса школы N2 в Касансойский район, Наманганская область. Данные собирались с помощью опроса учеников, рефлексивного ведения дневника и опроса учителей. После сбора данных вся информация была тщательно проанализирована. Результаты из всех трёх источников сопоставлялись для обеспечения достоверности и надёжности выводов. Результаты показали, что первоначально только 40% учеников сдавали домашнее задание вовремя. Однако после применения мотивационных стратегий этот показатель увеличился до примерно 70–80% в течение шести уроков. Результаты опроса также показали, что такие факторы, как мотивация, чёткие инструкции, общение с родителями, групповые задания, упрощение задач и поддержка учителя, влияют на успеваемость учащихся. Это исследование может быть полезным для учителей, сталкивающихся с аналогичными проблемами со сдачей домашних заданий, так как выводы показали эффективные стратегии мотивации для повышения внутренней готовности учеников выполнять задания. В заключение, изучение мнений учеников и учителей о домашнем задании помогло решить проблему в короткие сроки, так как задания стали более подходящими для большинства учащихся.

Ключевые слова: сдача домашнего задания, мотивация учащихся, исследование на базе класса, начальное образование, поддержка учителя, групповая работа, внутренняя мотивация, выполнение заданий, вовлеченность учащихся, образовательные стратегии

INTRODUCTION

In the modern educational context, homework is an essential part of learning environment as it enhances both students' responsibility and stability. Extended Learning: Homework provides an opportunity for students to explore topics not covered in class and utilize resources like the library and the internet. Homework is commonly assigned as a one-size-fits-all task, disregarding students' readiness and learning styles. This is clearly undesired because such extrinsic motivation has been associated with low persistence, learning, and achievement and with a greater risk for dropping out of school. By making homework relevant, integrating gamification and technology, promoting project-based learning, and encouraging collaboration, we can overcome the problem of low motivation and compliance. These innovative strategies empower students to take ownership of their learning, deepen their understanding of the subject matter, and develop essential skills for success in high school and beyond. The findings of our study highlight the potential change that teachers' behavior that supports students' needs can have in students' motivation for homework. "Because homework is often a sore issue in teacher–student interactions, including this insight as part of teacher training may alleviate some distress on both teachers and students". Nevertheless, teachers face challenges with timely homework submission. This problem has become increasingly common, especially among youngsters due to competing activities. As a consequence, paying attention to homework submission time and avoiding any excuses remain an important concern in classroom management and student achievement. Completing homework on time goes beyond achieving good grades. Homework submission is vital for academic success and developing discipline. It also enhances independent learning skills as students complete it at home. If they continually skip submitting homework, there will not be only a huge gap between understanding and using learned skills in life but also overall performance will be damaged which then cannot be filled easily. Thus, identifying factors that prevent homework completion is essential. Teachers must find effective solutions Although different studies have explored students' motivation and homework submission mentioned above, applying practical strategies in the classroom may not be easy for some of the teachers. Therefore, the study seeks to answer the following research question:

RESEARCH QUESTIONS:

1. What are the primary socio-academic barriers to timely homework submission among 4th grade students?
2. To what extent does the clarity of teacher instructions correlate with students' homework?
3. How do students' engagement levels vary across different teachers' homework assignments?

Particularly, there is a need for classroom-based research that solely focuses on teaching contexts and provides acceptable solutions for primary class teachers. The main goal of this study is to find the reasons behind homework avoidance and to examine experienced teachers' opinions. Based on the findings, coming up with the most effective student motivation strategies that can improve homework completion rates. The findings of the study provide useful insights into how motivation, teacher support, and classroom strategies can significantly improve students' responsibility and engagement in completing homework.

METHODOLOGY

Research Design

Following the procedures, a mixed-method design was selected to provide a more complete understanding of the research problem than either quantitative or qualitative data alone. To better understand the reasons behind students' failure to submit homework on time and to identify effective

motivational strategies, both qualitative and quantitative data were collected. Empirical studies in ELT primary education have shown that young learners often struggle with homework completion due to a lack of clear instructions and low intrinsic motivation. Consistent with these findings, this study aims to explore similar challenges in a local context. The participants of this study were 30 fourth-grade (both male and female) students from one class at School No.2 in Kasansay town, Namangan region. The study was conducted in a typical primary classroom setting during regular English lessons. A major advantage of using a mixed-method design is that it provides triangulation, ensuring that the numerical data from surveys are supported by deep qualitative insights from reflective journals. Additionally, more than 50 teachers participated in a teacher survey to explore this topic in depth.

Before conducting surveys among teachers and students, I have been giving homework at the end of the lesson. Also, I usually gave several tasks to do however I couldn't give clear instructions because of time constraints. Usually, at the end of the lesson, students want to go outside and have a break, and this is why they did not submit their homework on time as they easily forget about assignments. Homework submission rates were not more than 14 or 15 out of 30. This type of homework giving was ritual habit for teacher as it started in September 2026 (from the first lesson). Duration was 6 months. They continually said sorry and had a lot of excuses. Thus, this study was chosen to identify core reasons and apply the new strategies among 4th graders.

Procedure and Tools

In this research, the innovative teaching strategies served as the independent variable, while the students' homework submission rate was the dependent variable. Data were collected using three main tools:

Student survey: This tool was used to identify students' attitudes and motivation. According to their age, questions were asked in a paper-based version. Overall, 30 students completed the survey. After the students' lessons had finished, papers were given to fill to 3 students from this class to make others feel comfortable with survey. It was anonymously taken, which means they could answer all the questions truly without any shyness.

- The first question was chosen because the time of doing homework is important. According to their daily habit, homework submission may differ.
- The second one was chosen because knowing what makes homework submission difficult is part of solving the problem.
- As understanding instructions is vital, this third question was preferred.
- In fourth question, students were asked to express how they feel when they look at given homework because it is crucial to know their opinion about it.
- The following question was given to know which is the easiest subject for students as they complete it very quick.
- In this 6th question, the teacher intended to find the reason why students complete their homework on time.
- The last one is about collecting their ideas about homework. They were asked to write different games or strategies they prefer.

Teacher survey: This was used to gather teachers' opinions on homework challenges. Especially, most of the teachers have more than 15 years of experience filled the Google Forms survey. This would be more helpful because of their teaching experience.

- First question is about the teaching experience. Depending on teachers' working period, their teaching experience can be helpful
- In this question, teachers chose the reason of not completing homework on time

- This one is about knowing how they reward their students if they do their homework
- In this one also, the teacher intended to know how teachers reward students who complete homework all the time without missing any of them
- In 5th question, parents' role was asked from teachers.
- It is important to know about teachers' attitudes while giving homework so this question was mainly about this side.
- In this question, teachers were asked to choose the most effective strategy which makes students more interested in doing homework
- Checking homework time and period is also vital so this type of question was given in 8th one
- Understanding the importance of online tools, apps and technology is one of the main parts of today's world. So this type of question was included in the survey
- The last question identifies the most effective strategies chosen by experienced teachers. In the following lessons, teacher could use these methods during class time.

Reflective journaling: The teacher kept a self-made journal to write down observation results. Six lessons were observed over three weeks to ensure enough time for behavioral changes to manifest.

- Firstly, submission rate should be completed because it would be easy to compare progress. Also, common excuses were written in this part as well as students' mood was chosen. Because these all aspects are very important to solve the problem
- Secondly, instruction clarity was given (rating system). Then, teacher would write what went smooth and what is the main problem in that day. These could be helpful to understand core reason of problem.
- Lastly, choosing one strategy for the next lesson, what data should teacher collect and identifying students' opinion about homework. These were asked in this part because these plans were chosen to have a solution.

After conducting surveys and completing reflective Journal during 3 weeks interval, there were various alters according to results. Teacher changed giving homework time, she mentioned it in the middle of the lesson. This change made students understand how to do tasks and this increased the rate of submission. Additionally, tasks were divided into chunks to make them easier to complete. Students started enjoying homework because they did it fast and teacher gave different types of tasks in every lesson such as peer work, group work, drawing pictures, completing workbook, memorizing words or making sentences relevant to topic to strengthen their knowledge. To know their opinion about the new strategies, teacher asked oral questions and checked submission rate each time. In oral questioning, most of the students mentioned that they felt confident and joyful while doing their homework because they liked new methods. Submission rates went up from 15 to 24 out of 30 during 6 lessons. However, some students still have problems with submitting homework, but it would probably need individual help by teacher. Overall performance varied from previous lessons as students showed great change in lessons.

Initially, homework submission rates were recorded to establish a baseline. Subsequently, surveys were conducted. The next stage involved applying innovative strategies: Giving clear instructions; Simplifying tasks; Using more peer-work activities; Building communication blocks with parents; Providing teacher support and motivation

Finally, after six lessons, progress was observed and cross-referenced with initial results.

Data Analysis

Before analysis, the collected data were screened for completeness. Quantitative data were analyzed using descriptive statistics (pie charts) to show percentages. Journal entries were analyzed thematically to identify common patterns. To ensure the validity and reliability of the study, data from different sources were cross-checked. This triangulation helped to increase the accuracy and trustworthiness of the findings.

RESULTS

This part presents the findings related to students' homework submission rates before and after the intervention: Before applying the strategies, only 40% of students submitted homework on time. After implementing the strategies, the rate increased to **70/80%** within **6 lessons 3 weeks**.

Student Survey Results			
Tr	Question	Answer	%
1	when do you start doing your homework?	after school	7%
		after having fun	36%
		in the evening	40%
		in the morning	17%
2	what is the problem when it comes to submitting homework	homework is difficult	65%
		homework is a lot	16%
		I forget my books	6%
		I feel tired	3%
		there is no peaceful space	10%
3	do you understand teacher's instructions	I understand all	60%
		most of them not all	17%
		sometimes	23%
		I don't understand	0%
4	how do you feel while doing homework	easy	40%
		if I try I can do	53%
		very difficult	7%
5	from which subject, you complete homework fast	mother tongue	67%
		english	10%
		math	23%
6	why do you submit homework on time	interesting	0%
		with rewards and stickers	7%
		short and easy	10%
		I afraid of taking low marks	83%
7	what kind of change helps you to do your homework well	having more games	7%
		I choose myself	13%
		doing pairwork	80%

- Pie charts are given in appendix part of the article to show more specific answers.

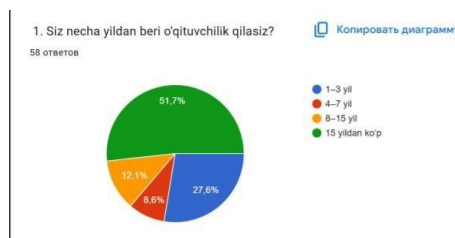
The student survey revealed several key factors affecting homework completion. Student survey consists of 7 study related questions. 30 students filled the paper-based version of

questionnaire. In first question they were asked to mention a period of time they prefer to do homework. Results show that, 40% students prefer doing homework in the evening while other 36% pupils play first and then complete homework. The second chart was about the reasons why students skip doing homework. 65% of students found homework difficult, so they could not submit homework. The next one is about the instructions of teacher. More than half of the students (60%) understand instructions well all the time however other students have problems with understanding them. In fourth chart, 53% students do their homework if they try. Also, 40% of them see the assignments as easy task. The next one is about the favorite subject of students as they finish doing this subject's homework very fast. Mother tongue was chosen by 67% of students. Sixth pie chart shows the reason why students do their homework. Surprisingly, 83% of the students complete their homework as compulsory because they don't want to take low marks. The last one indicates strategies chosen by students which is motivating for them. 80% students preferred peer-work activities. Overall, the results indicate that simplifying tasks, applying more peer works, paying attention to students' effort not mistakes they made and changing their opinion about homework are important strategies that teacher could use while giving homework.

Teacher Survey Results

In this survey, nearly 58 teachers from different schools and educational centers filled Google Forms survey to share their teaching strategies with others. According to the teacher survey:

1. 51,7% teachers have more than 15 years of experience which is necessary to understand the problem better
2. 68,4% teachers thought that the reason behind skipping homework was because of less parental control



how long have you been working?)

(1. What is the reason of not doing homework on time, what do you think?)

3. 47,4% teachers reward their students when they do their homework with motivation and applause while other 40,4% of them give good marks for students

4. If students complete their homework all the time, 43,9% teachers allocate their students



in front of class. Other teachers use stickers or gifts to motivate them.

How do you reward your students if they complete homework?)

- (2. How do you reward your students if they complete homework all the time?)

5. When it comes to parental control, 79,3% teachers thought that parents play an important role in students' homework submission.



60,3% teachers usually pay attention to revise the topic learned during lesson when they are choosing homework.

- (3. How about parents' role on doing homework?)

- (4. What aspect do you pay attention while giving homework?)

6. Working with parents 32,8%, rewarding system 24,1%, giving interesting homework 31% and 12,1% controlling strategy were chosen by teachers depending on their teaching experience.

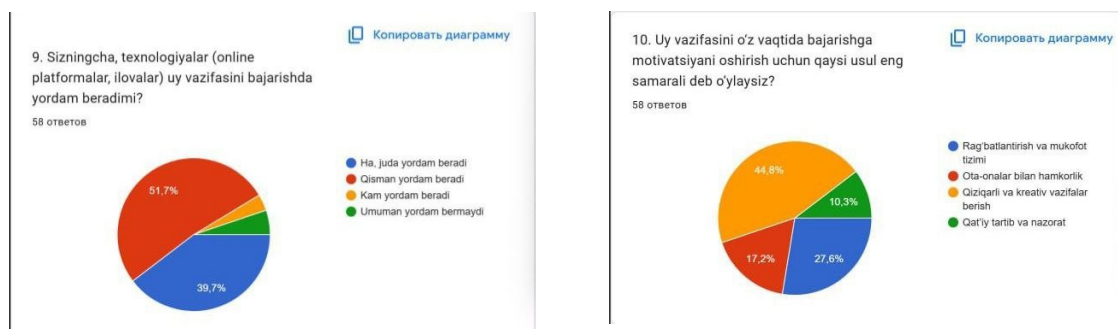
7. 79,3% of teachers check homework in every lesson. This is also important strategy to improve homework submission rate



- (5. What is the best strategy to improve homework submission rate?)

8. How do you usually check homework)

9. 51,7% teachers find innovative technologies as very helpful tools for students while doing their homework



(6. The last chart indicates the most effective strategies teachers chose. Giving creative and interesting tasks are found important by 44,8% teachers. Additionally, 27,6% teachers chose rewarding system as a strategy they usually use.

(7. How about technologies' role in homework?)

(8. How do you motivate your students, choose the strategy you use.)

These findings suggest that homework completion depends on several key factors, especially parental involvement, as most teachers emphasized its importance. In addition, motivational strategies such as rewards and praise, along with giving creative and interesting tasks, play a significant role. Regular homework checking and the use of innovative technologies also help improve students' engagement and submission rates. Overall, a combination of these approaches is considered the most effective.

Reflective Journal Findings

Based on classroom observations: Students became more engaged when clear instructions were given, tasks were simplified, and teacher support and motivation were provided. Peer activities helped students collaborate more effectively and encouraged them to complete homework together. Simplified tasks resulted in better understanding of homework and increased completion rates. Communication with parents helped improve students' responsibility and consistency in submitting homework.

Overall, student behavior changed by becoming more active, motivated, and responsible, which led to a noticeable increase in homework submission rates.

DISCUSSION

The findings of this classroom-based research are consistent with and supported by previous studies in the field of primary education and student motivation. By linking the results with earlier research, a deeper understanding of homework completion behavior can be achieved. Firstly, the issue of **task difficulty and one-size-fits-all homework** observed in this study aligns with the arguments of Dueck (2014) and Eisner (2003/2004), who criticized standardized homework practices that ignore students' individual readiness and learning styles. In this research, 65% of students reported that homework was difficult, which negatively affected submission rates. However, when tasks were simplified and divided into smaller parts, students became more engaged and willing to complete them. This supports the idea that differentiated and accessible tasks are essential for effective learning. Secondly, the importance of **clear instructions** strongly supports findings by Hattie (2012), who emphasized that students' success largely depends on how well they understand what is expected of them. In the present study, although many students reported understanding instructions, improvements in clarity—such as giving homework during the lesson instead of at the end—resulted in a noticeable

increase in submission rates. This demonstrates a direct relationship between instructional clarity and student performance. The study also highlights the shift from **extrinsic to intrinsic motivation**, which is consistent with the work of Vallerand, Fortier, and Guay (1997). Initially, 83% of students reported completing homework mainly due to fear of low grades, indicating reliance on extrinsic motivation. According to these researchers, such motivation often leads to low persistence and engagement. However, after implementing strategies like peer-work, creative tasks, and supportive feedback, students began to show more interest and enjoyment in homework. This reflects the development of intrinsic motivation, which is more sustainable and effective in the long term. Furthermore, the effectiveness of **engaging and innovative strategies**, such as gamification, collaboration, and varied task types, supports the ideas presented by Reese Everett (2016) and Zilola Ochilova (2024). These researchers suggested that homework should extend learning beyond the classroom and involve interactive and meaningful activities. In this study, incorporating peer-work and creative assignments significantly increased student participation and improved submission rates, confirming their claims. Another important finding relates to **teacher support and classroom environment**, which is strongly connected to the research by Idit Katz, Avi Kaplan, and Gila Gueta (2010). They emphasized that teacher behavior and support can positively influence students' motivation toward homework. Similarly, in this study, regular encouragement, feedback, and checking homework consistently helped students become more responsible and engaged. In addition, the role of **parental involvement** identified in this study corresponds with the teacher survey results, where the majority of educators highlighted its importance. This finding is also widely supported in educational research, suggesting that collaboration between school and home enhances students' academic responsibility and consistency. Overall, the findings of this study confirm that homework completion is a multifaceted issue influenced by instructional practices, motivation, task design, and social support. By connecting these results with previous literature, it becomes clear that effective homework strategies require a balanced approach that considers both academic and psychological needs of students.

CONCLUSION

In conclusion, this study successfully identified the main reasons behind 4th grade students' failure to submit homework on time and provided practical strategies to address the issue. The findings revealed that factors such as task difficulty, lack of motivation, unclear instructions, and limited parental involvement negatively affected homework completion. After applying targeted strategies—including simplifying tasks, giving clear instructions, incorporating peer-work activities, improving teacher support, and strengthening communication with parents—the homework submission rate increased significantly from 40% to approximately 70–80% within six lessons. This demonstrates that structured and student-centered approaches can quickly improve learners' behavior and responsibility. Importantly, the study highlights that motivation should not rely only on external factors like grades or rewards. Instead, creating engaging, understandable, and meaningful tasks helps develop students' intrinsic motivation and positive attitudes toward homework. This research is especially useful for primary school teachers who face similar challenges. It shows that small but thoughtful changes in teaching practice can lead to noticeable improvements in student performance. Future research could focus on long-term effects of these strategies or explore individual support methods for students who still struggle. Overall, understanding students' needs and adapting teaching strategies accordingly is key to improving homework submission and fostering independent, responsible learners.

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THE INFLUENCE OF AFFECTIVE FACTORS ON LISTENING COMPREHENSION: ANXIETY AND DISTRACTION IN EFL CONTEXTS

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Abstract: This study investigates the effects of anxiety and distraction on students' listening comprehension in an EFL context. The data were collected through questionnaires, observations, and interviews with third-year students. The results show that most students experience nervousness and lose concentration during listening tasks, which negatively affects their performance. To solve this problem, the "Double Listening with Focus" method was applied, and it helped students become more confident and focused and improved their listening comprehension.

Keywords: listening comprehension, anxiety, distraction, EFL students, concentration, pre-teaching vocabulary, repetition, listening strategies, student confidence.

AFFEKTIV OMILLARNING TINGLAB TUSHUNISHGA TA'SIRI: EFL KONTEKSTIDA XAVOTIR VA CHALG'ISH

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Annotatsiya: Ushbu tadqiqot EFL sharoitida talabalarning tinglab tushunishga xavotir va chalg'ish omillarining ta'sirini o'rganadi. Ma'lumotlar uchinchi bosqich talabalari ishtirokida so'rovnoma, kuzatuv va intervyular orqali to'plandi. Natijalar shuni ko'rsatdiki, aksariyat talabalar tinglash jarayonida hayajonlanadi va diqqatini yo'qotadi, bu esa ularning natijalariga salbiy ta'sir qiladi. Ushbu muammoni hal qilish maqsadida "Diqqat bilan ikki martalik tinglash" metodi qo'llanildi va u talabalarning o'ziga bo'lgan ishonchini oshirishga, diqqatini jamlashga hamda tinglab tushunish ko'nikmalarini yaxshilashga yordam berdi.

Kalit so'zlar: tinglab tushunish, xavotir, chalg'ish, EFL talabalari, diqqat, oldindan lug'atni o'rgatish, takrorlash, tinglash strategiyalari, talaba ishonchi.

ВЛИЯНИЕ АФФЕКТИВНЫХ ФАКТОРОВ НА ПОНИМАНИЕ ПРИ АУДИРОВАНИИ: ТРЕВОЖНОСТЬ И ОТВЛЕЧЕНИЕ ВНИМАНИЯ В КОНТЕКСТЕ EFL

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Аннотация: В данном исследовании изучается влияние тревожности и отвращения внимания на понимание студентами аудирования в условиях EFL. Данные были собраны

посредством анкетирования, наблюдений и интервью со студентами третьего курса. Результаты показали, что большинство студентов испытывают волнение и теряют концентрацию во время заданий на аудирование, что отрицательно влияет на их результаты. Для решения этой проблемы был применён метод «Двойное аудирование с фокусом», который помог студентам стать более уверенными и сосредоточенными, а также улучшить навыки понимания на слух.

Ключевые слова: понимание на слух, тревожность, отвлечение внимания, студенты EFL, концентрация, предварительное изучение лексики, повторение, стратегии аудирования, уверенность студентов.

INTRODUCTION

For most EFL (English as a Foreign Language) learners, listening is considered the most difficult among the four language skills. This difficulty raises an important question: why do many students struggle to understand even simple audio during listening tasks? Surprisingly, the problem is often not what students know, but how anxiety and distraction silently break their concentration at the very moment they need it most.

In recent decades, researchers have increasingly emphasized the role of affective factors in foreign language learning. Among these, anxiety has been widely recognized as a significant barrier that interferes with students' cognitive performance. According to Fang, anxiety is associated with negative emotions such as uneasiness, frustration, self-doubt, apprehension, and tension, all of which can obstruct the learning process and reduce learners' effectiveness. Furthermore, Gardner and MacIntyre point out that anxiety is one of the most influential negative factors affecting language performance. In the context of listening comprehension, anxiety becomes particularly problematic because listening requires real-time processing of spoken input. Unlike reading, learners cannot pause or revisit the information, which increases psychological pressure. According to Horwitz and colleagues, listening anxiety is the negative emotional response experienced by foreign language learners when performing listening tasks, especially when they are worried about not understanding the content or achieving poor results. This emotional reaction not only affects learners' comprehension but also weakens their motivation and overall learning effectiveness.

Similarly, MacIntyre and Gardner argue that anxiety limits concentration and reduces the efficiency of cognitive processing, which directly affects comprehension and learning outcomes. Eysenck explains that anxiety creates feelings of fear and nervousness, which lead to poor performance and, as a result, even higher levels of anxiety. This creates a negative cycle. He also emphasizes that worry, as a cognitive aspect of anxiety, consumes mental energy that should be used for memory and information processing, making it harder for learners to focus on the task. Furthermore, according to Scarcella and Oxford, listening anxiety often arises when students perceive tasks as too difficult or unfamiliar. This situation becomes even worse due to unrealistic beliefs, such as the idea that learners must understand every word in order to succeed. According to Joiner, such beliefs lead to a negative "listening self-concept," where learners lack confidence in their listening abilities. As a result, anxiety and distraction become powerful barriers that prevent students from concentrating, processing spoken information effectively, and performing successfully in listening tasks.

This research explores the impact of anxiety and distraction on students' listening comprehension in English as a Foreign Language (EFL) contexts. Specifically, the study seeks to

understand how these emotional and psychological factors interfere with learners' ability to concentrate, process spoken information, and achieve accurate comprehension during listening tasks. By examining the sources and effects of listening anxiety and distraction, the research also aims to provide insights for developing practical strategies that can help students manage these hidden barriers. Ultimately, the study aims to highlight the importance of addressing both cognitive and affective aspects of listening in order to enhance overall language learning effectiveness and support students' confidence and resilience in EFL classrooms. This research effort aims to discover the following issues and answer these questions.



Fig. 1. Research objectives

Third-year students at Namangan State Institute of Foreign Languages (NamSIFL), aged 20–21 and from the Davlatobod district of Namangan region, were chosen as research participants. This paper first discusses several studies about listening anxiety and distraction and how they influence students' understanding in EFL classes. Then, it focuses on the psychological factors that make students lose concentration during listening tasks. Finally, it suggests some practical ways to help students manage anxiety and stay focused while listening.

MATERIALS AND METHODS

This study was prepared based on previous research on the effect of anxiety on students' listening comprehension. In this type of research, listening tests and questionnaires are often used to understand both students' performance and their feelings during listening tasks. Usually, listening is tested through answering questions after audio tasks. However, in many cases, students cannot perform well not because they lack language knowledge, but because they feel anxious or distracted. These emotional factors make it difficult for them to concentrate and understand the audio clearly. The main purpose of this study is to find out how anxiety and distraction affect students' listening comprehension. For this reason, questionnaires, observations, and interviews were used among third-year students. The study also tries to find ways to reduce these problems and help students improve their listening skills. The research used a mixed-method approach, which includes both tests and questionnaires (quantitative) and interviews and observations (qualitative). This helps to understand not only the results but also students' feelings and experiences.

Observations and data collection were conducted at Namangan State Institute of Foreign Languages (NamSIFL) during regular EFL classes. The participants were third-year students aged 20–21 from the Davlatobod district. Around 16 students were selected randomly from the class, including approximately 14 girls and 2 boys. The advantage of this method is that it shows both students' real performance and their emotional condition. It helps to understand hidden problems like anxiety and distraction. Also, using strategies like pre-teaching vocabulary and giving listening tips can help students feel more confident and focused.

Listening is one of the most important skills in language learning, but it is often difficult for students because it requires attention, fast processing, and understanding at the same time. Many students face problems not only because of their language level, but also because of anxiety and distraction during listening tasks. Therefore, it is important to study these factors and find ways to reduce them. The research participants were third-year students from Namangan State Institute of Foreign Languages. Around 16 students, both male and female, took part in the study. They were selected randomly from one group and had upper-intermediate and advanced levels of English. The data were collected through questionnaires, classroom observations, and short interviews. The questionnaire was given to students to understand their feelings before and during listening tasks and to identify what makes listening difficult for them. In addition, some students were interviewed to get deeper information about their experiences. Classroom observation was also used to see students' behavior, such as losing concentration or showing signs of nervousness during listening activities.



Fig. 2. Anxiety and distraction during listening tasks

The results of the questionnaire showed that many students feel anxious before listening tasks, especially when they think they might not understand everything. The main difficulties included fast speech, unknown vocabulary, and losing concentration. Some students also mentioned that if they miss one word, they panic and cannot continue listening properly. During interviews, students explained that they often compare themselves with others and feel less confident. Teachers also mentioned that students easily lose focus and become nervous during listening tasks. They suggested that students need more practice and a supportive classroom atmosphere. Listening difficulties can be connected to both internal and external factors. Internal factors include anxiety, low confidence, and overthinking. External factors include noise, technical problems, and the fast speed of audio materials. The independent variable in this study was the use of strategies such as pre-teaching vocabulary and giving listening guidance, while the dependent variable was students' listening comprehension and level of anxiety. This method helped to understand both students' performance and their emotional difficulties. It also showed that reducing anxiety and distraction can improve students' listening skills and confidence.

According to the results of the survey, the researcher noticed that students mostly struggle with losing concentration and feeling nervous during listening tasks. Based on this idea, repetition was combined with a simple focus strategy. Considering the students' level and needs, a method called "Double Listening with Focus" was created. However, at the beginning, a usual listening method was used to see students' real performance. For the research, a short listening audio suitable for the students' level was selected. During the first week, a traditional method was used, where students listened only once and answered the questions. Many students felt nervous and had

difficulty understanding the audio. In the second week, based on the survey results, the “Double Listening with Focus” method was applied. In this method, students listened to the audio twice. During the first listening, they focused only on the main idea and were told not to worry about unknown words. During the second listening, they tried to understand more details and answer the questions. Before listening, a few key words were also given to make students feel more prepared. During the activity, students were reminded not to panic if they missed something and to continue listening. After that, students discussed their answers in small groups. This helped them feel more relaxed and confident. This method was called “Double Listening with Focus” because it helps students reduce anxiety and stay focused by listening step by step.

RESULTS

The data were collected from 16 students through a questionnaire about listening anxiety and distraction. Most students (68.8%) reported that they feel a little nervous before a listening task, while 25% feel relaxed and only 6.3% feel very anxious. This shows that a certain level of anxiety is common among students and it can influence their performance even before listening starts. It also suggests that students are not fully confident in their listening abilities and may already expect difficulties before the task begins.

How do students feel before a listening task?

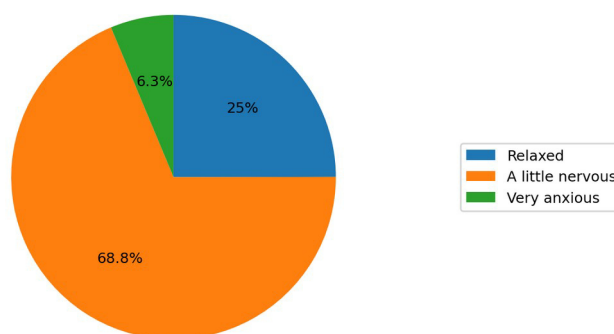


Diagram 1. Listening anxiety and distraction pattern

The main difficulty for students is losing concentration (43.8%), followed by fast speech (37.5%). A smaller number of students mentioned new vocabulary (12.5%) and noise or environment (6.3%). This means that attention and processing spoken language quickly are more serious problems than simply not knowing words. Even if students understand vocabulary, they may still fail to follow the audio because they cannot keep their focus or process information at the speed of the speaker. This highlights that listening is not only a language problem but also a cognitive one.

What usually makes listening tasks difficult?

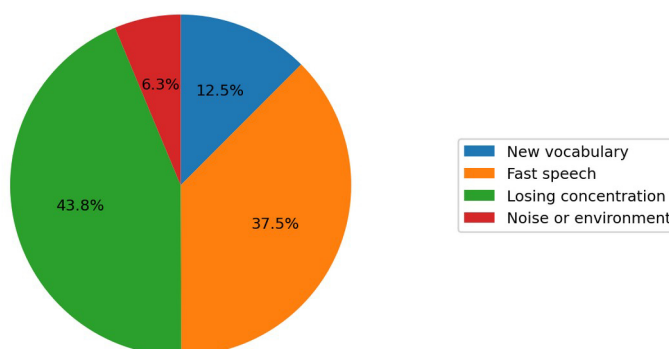


Diagram 2. Main affective factors for students

When students do not understand one word, 62.5% sometimes feel nervous and 25% always feel nervous, while only 12.5% do not feel nervous. This indicates that many students are sensitive to small difficulties during listening. Missing one word can make them panic, lose confidence, and stop following the rest of the audio. As a result, they may miss important information and their overall comprehension becomes weaker. This also shows that students tend to focus too much on individual words instead of the general meaning.

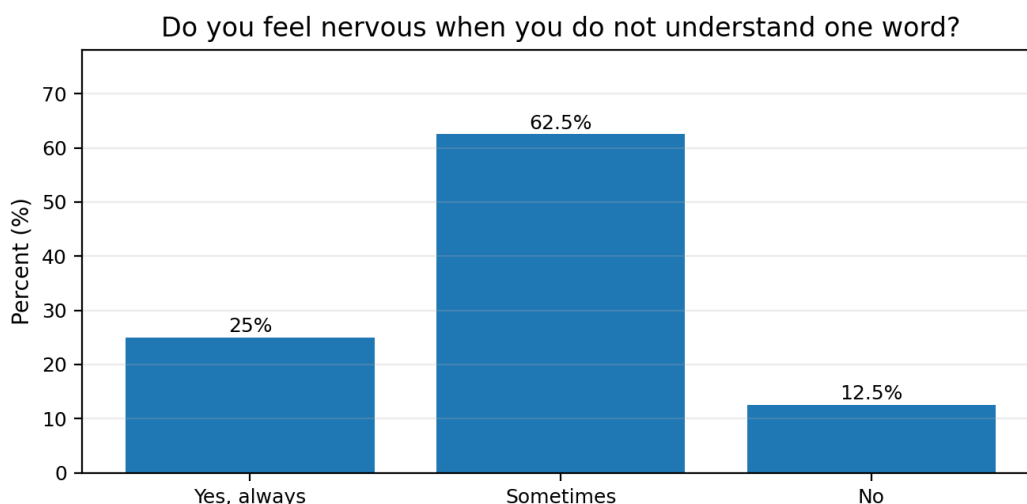


Diagram 3. How missing words can affect students' performance

The biggest distraction for students is their own thoughts (56.3%), compared to difficult words (25%), class noise (12.5%), and technical problems (6.3%). This clearly shows that internal distraction is more serious than external factors. Students may start thinking about previous mistakes, worrying about understanding, or comparing themselves with others, which prevents them from focusing on the listening task. This kind of overthinking reduces their ability to stay present and follow the audio step by step.

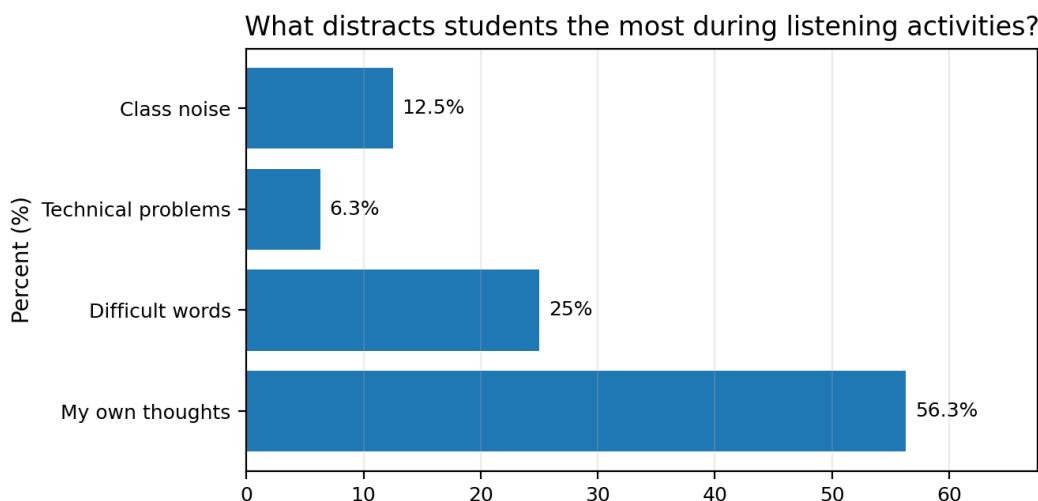


Diagram 4. What distracts students the most?

Most students (56.3%) said that listening more than once helps them understand better. This shows that repetition is very important for improving comprehension and reducing stress. Pre-teaching vocabulary was chosen by 25% of students, which means that preparation before listening can also support understanding and increase confidence. A smaller number of students preferred practice outside class (12.5%) and teacher explanation (6.3%), showing that independent practice and clear guidance are helpful but not used by many students regularly. In addition, the results

suggest that students rely more on in-class support than on independent strategies. They feel more comfortable when tasks are guided and repeated, which helps reduce their anxiety. This also means that teachers play an important role in creating a supportive environment and organizing listening tasks in a way that reduces pressure.

What helps students understand listening better?

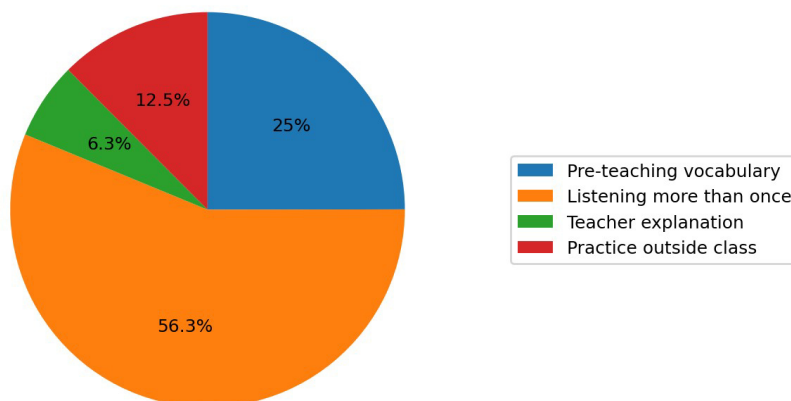


Diagram 5. Certain strategies help listening understanding

Overall, the results show that listening difficulties are mainly caused by anxiety and loss of concentration rather than only a lack of vocabulary knowledge. Internal factors such as nervousness, overthinking, and lack of confidence play a bigger role than external problems like noise or technical issues. These findings suggest that teachers should not only focus on teaching listening content, but also help students feel more relaxed, confident, and focused. Using strategies such as repeated listening, pre-teaching vocabulary, and creating a supportive classroom environment can help reduce anxiety and improve students' listening performance.

DISCUSSION

When students followed the "Double Listening with Focus" method, they became more relaxed and focused during listening tasks. It helped them understand the general idea first instead of worrying about every single word. This reduced their anxiety and made listening easier for them compared to the traditional method. Listening more than once allowed students to process information step by step. They did not panic when they missed something and were able to recover their attention during the second listening. This shows that repetition plays an important role in improving listening comprehension.

The method also helped students develop better listening habits. Instead of translating word by word, they started focusing on the overall meaning. This improved their confidence and made them more active during the lesson. Group discussions also supported their learning, as students could share ideas and correct each other. This research shows that simple strategies like repetition, pre-teaching vocabulary, and giving clear instructions can reduce anxiety and improve students' performance. It proves that emotional factors are as important as language knowledge in listening. However, the study was conducted with a small group of students and only for a short period of time. Because of this, it may not fully show long-term improvement in listening skills. More time and a larger group of participants could give more reliable results.

CONCLUSION

This study demonstrates that listening anxiety and distraction significantly affect EFL students' comprehension. Applying strategies such as the "Double Listening with Focus" method, pre-teaching vocabulary, and structured repetition can help reduce these emotional barriers and

improve students' understanding. Students became more confident, attentive, and capable of processing spoken information without excessive worry about missing individual words. Although the study was limited by its small sample size and short duration, the findings highlight the importance of addressing both cognitive and affective factors in listening instruction. Future research with larger groups and longer interventions could further validate these methods and support the development of more effective strategies to enhance listening skills in EFL classrooms.

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**SAMARQAND DAVLAT TIBBIYOT INSTITUTIDA TALABALAR ILMIY
JAMIYATLARI VA YOSH OLIMLAR JAMIYATI (1960–1990-YILLAR)**

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Annotatsiya: Ushbu maqolada 1960–1990-yillar oralig‘ida Samarqand davlat tibbiyot institutida faoliyat yuritgan talabalar ilmiy jamiyatlari va yosh olimlar jamiyatining shakllanishi, rivojlanishi va ilmiy-pedagogik tizimdagi o‘rni tarixiy va ilmiy jihatdan tahlil qilinadi. Tadqiqotda talabalar ilmiy to‘garaklari, ilmiy konferensiyalar, seminarlar hamda yosh tadqiqotchilarni tayyorlash mexanizmlari o‘rganiladi. Shuningdek, ushbu jamiyatlarning tibbiyot sohasida ilmiy tafakkur, tadqiqotchilik ko‘nikmalari va kasbiy kompetensiyalarni shakllantirishdagi roli yoritiladi. Tadqiqot natijalari mazkur ilmiy jamiyatlar institutda ilmiy maktablarning shakllanishiga, ilmiy kadrlar tayyorlashga hamda tibbiyot fanining rivojiga muhim hissa qo‘shganini ko‘rsatadi.

Kalit so‘zlar: talabalar ilmiy jamiyati, yosh olimlar jamiyati, tibbiyot ta‘limi, ilmiy faoliyat, sovet davri, ilmiy to‘garaklar, konferensiyalar, ilmiy kadrlar

**СТУДЕНЧЕСКИЕ НАУЧНЫЕ ОБЩЕСТВА И ОБЩЕСТВО МОЛОДЫХ
УЧЕНЫХ В САМАРКАНДСКОМ ГОСУДАРСТВЕННОМ МЕДИЦИНСКОМ
ИНСТИТУТЕ (1960–1990-Е ГОДЫ)**

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Аннотация: В данной статье анализируются процессы формирования, развития и роли студенческих научных обществ и общества молодых ученых в Самаркандском государственном медицинском институте в 1960–1990-е годы. В исследовании рассматриваются студенческие научные кружки, конференции, семинары, а также механизмы подготовки молодых исследователей. Особое внимание уделяется их роли в формировании научного мышления, исследовательских навыков и профессиональных компетенций в области медицины. Результаты исследования показывают, что данные научные сообщества сыграли важную роль в формировании научных школ, подготовке научных кадров и развитии медицинской науки.

Ключевые слова: студенческое научное общество, молодые ученые, медицинское образование, научная деятельность, советский период, научные кружки, конференции

**STUDENT SCIENTIFIC SOCIETIES AND THE YOUNG SCIENTISTS’
ASSOCIATION AT THE SAMARKAND STATE MEDICAL INSTITUTE (1960–1990)**

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Abstract: This article analyzes the formation, development, and role of student scientific societies and the Young Scientists' Association at the Samarkand State Medical Institute during 1960–1990. The study examines student research circles, scientific conferences, seminars, and mechanisms for training young researchers. It also highlights the contribution of these organizations to the development of scientific thinking, research skills, and professional competencies in the field of medicine. The findings show that these scientific communities played a crucial role in the formation of scientific schools, the training of academic personnel, and the advancement of medical science within the institute.

Keywords: student scientific society, young scientists, medical education, research activity, Soviet period, scientific circles, conferences, academic staff

KIRISH

XX asrning ikkinchi yarmi, xususan 1960–1990-yillar oralig'i sobiq Sovet Ittifoqida oliy ta'lim tizimi va ilmiy-tadqiqot faoliyatining o'zaro integratsiyalashuvi bilan ajralib turadi. Bu davrda oliy ta'lim muassasalari nafaqat mutaxassislar tayyorlovchi markaz, balki ilmiy bilimlar yaratiladigan va rivojlantiriladigan muhim akademik muhit sifatida faoliyat yuritgan. Ayniqsa, tibbiyot oliy ta'lim muassasalarida ilmiy izlanishlar, klinik amaliyot va pedagogik jarayonning uyg'unligi kasbiy tayyorgarlikning asosiy omillaridan biri hisoblangan [11].

Samarqand davlat tibbiyot instituti ham mazkur tarixiy jarayonning faol ishtirokchisi sifatida talabalar va yosh mutaxassislarning ilmiy faoliyatini rivojlantirishga alohida e'tibor qaratgan. Institutda tashkil etilgan talabalar ilmiy jamiyatlari va yosh olimlar jamiyati bu borada muhim institutsional mexanizm sifatida shakllanib, ilmiy kadrlar tayyorlash tizimining muhim bo'g'iniga aylangan. Ushbu jamiyatlar orqali talabalar ilmiy tadqiqot faoliyatiga jalb etilib, ularda mustaqil fikrlash, ilmiy muammo qo'yish va uni hal etish ko'nikmalari shakllantirilgan.

Talabalar ilmiy jamiyatlari odatda kafedralar huzurida faoliyat yuritib, nazariy va klinik bilimlarni chuqurlashtirish, ilmiy kuzatuvlar olib borish va eksperimental tadqiqotlarda ishtirok etish imkonini bergan. Shu bilan birga, yosh olimlar jamiyati ilmiy faoliyatning keyingi bosqichi sifatida aspirantlar, yosh o'qituvchilar va ilmiy xodimlarni birlashtirib, ilmiy izlanishlarning tizimlilikini ta'minlagan. Natijada institutda ilmiy maktablar shakllanib, ilmiy-pedagogik salohiyat mustahkamlangan.

Mazkur mavzuning dolzarbligi shundaki, bugungi kunda tibbiyot ta'limida ilmiy faoliyatni rivojlantirish, yosh tadqiqotchilarni qo'llab-quvvatlash va innovatsion fikrlashni shakllantirish muhim vazifalardan biri hisoblanadi. Shu nuqtai nazardan, 1960–1990-yillarda Samarqand davlat tibbiyot institutida shakllangan talabalar ilmiy jamiyatlari va yosh olimlar harakati tajribasini o'rganish zamonaviy ta'lim tizimi uchun ham muhim ilmiy-amaliy ahamiyatga ega [3].

Mazkur maqolaning maqsadi Samarqand davlat tibbiyot institutida 1960–1990-yillar davomida faoliyat yuritgan talabalar ilmiy jamiyatlari va yosh olimlar jamiyatining shakllanishi, rivojlanishi hamda tibbiyot ta'limi va ilmiy tizimdagi o'rnini tarixiy-pedagogik nuqtai nazardan tahlil qilishdan iborat.

MATERIALLAR VA METODLAR

Mazkur tadqiqot Samarqand davlat tibbiyot institutida 1960–1990-yillarda faoliyat yuritgan talabalar ilmiy jamiyatlari va yosh olimlar jamiyatining shakllanishi hamda rivojlanish xususiyatlarini yoritishga qaratilib, tarixiy-pedagogik va tizimli yondashuvlar asosida olib borildi.

Tadqiqotning metodologik asosini oliy tibbiy ta'lim tizimi, ilmiy faoliyatni tashkil etish va yosh tadqiqotchilarni tayyorlashga oid nazariy qarashlar tashkil etdi.

Tadqiqot jarayonida tarixiylik metodi muhim o'rin tutdi. Ushbu metod yordamida institutda ilmiy jamiyatlarning shakllanishi va rivojlanishi o'z davrining ijtimoiy, siyosiy hamda ilmiy sharoitlari bilan bog'liq holda tahlil qilindi. Bu yondashuv ilmiy faoliyatni alohida hodisa sifatida emas, balki sovet davri oliy ta'lim tizimi va tibbiyot fanining umumiy rivoji kontekstida o'rganish imkonini berdi.

Qiyosiy-tahliliy metod orqali 1960–1970, 1970–1980 va 1980–1990-yillar oralig'ida talabalar ilmiy jamiyatlari va yosh olimlar faoliyatidagi o'zgarishlar o'zaro solishtirildi. Bu usul ilmiy faoliyatning bosqichma-bosqich rivojlanishini, ustuvor yo'nalishlarning o'zgarishini hamda ilmiy ishlarning mazmun va shaklidagi transformatsiyalarni aniqlashga xizmat qildi [3].

Tizimli yondashuv asosida esa talabalar ilmiy jamiyatlari, yosh olimlar jamiyati, ta'lim jarayoni va ilmiy tadqiqot faoliyati bir butun tizim sifatida ko'rib chiqildi. Bu orqali mazkur komponentlar o'rtasidagi o'zaro bog'liqlik, ularning ilmiy kadrlar tayyorlash tizimidagi o'rni va funksional ahamiyati ochib berildi.

Shuningdek, tadqiqotda kontent-tahlil metodi qo'llanilib, ilmiy konferensiyalar materiallari, talabalar ilmiy to'garaklari faoliyatiga oid ma'lumotlar, metodik tavsiyalar hamda tibbiyot ta'limiga oid ilmiy-pedagogik adabiyotlar mazmuniy jihatdan tahlil qilindi. Ushbu metod ilmiy faoliyatning real ko'rinishlari, asosiy yo'nalishlari va natijalarini aniqlashda muhim ahamiyat kasb etdi.

Bundan tashqari, funksional tahlil yordamida talabalar ilmiy jamiyatlari va yosh olimlar jamiyatining asosiy vazifalari — ilmiy tafakkurni shakllantirish, tadqiqotchilik ko'nikmalarini rivojlantirish, ilmiy kadrlar tayyorlash va tibbiyot fanini rivojlantirishdagi roli aniqlashtirildi.

Umuman olganda, qo'llanilgan metodlar mazkur mavzuni kompleks tarzda o'rganish, ilmiy jamiyatlarning tarixiy rivojlanish jarayonini ochib berish hamda ularning tibbiyot ta'limi tizimidagi ahamiyatini ilmiy asosda baholash imkonini berdi.

NATIJALAR

Tadqiqot natijalari shuni ko'rsatdiki, 1960–1990-yillar oralig'ida Samarqand davlat tibbiyot institutida talabalar ilmiy jamiyatlari va yosh olimlar jamiyati tizimli ravishda shakllanib, tibbiyot ta'limi va ilmiy faoliyatning muhim tarkibiy qismiga aylangan.

Birinchidan, talabalar ilmiy jamiyatlari institutning deyarli barcha nazariy va klinik kafedralari huzurida tashkil etilgan bo'lib, ular talabalarning ilmiy faoliyatga keng jalb etilishiga xizmat qilgan. Ushbu jamiyatlar doirasida talabalar ilmiy rahbarlar boshchiligida klinik kuzatuvlar, laboratoriya tajribalari va nazariy izlanishlar olib borganlar. Natijada talabalarda ilmiy fikrlash, muammo qo'yish va ilmiy yechim topish ko'nikmalari shakllangan [5].

Ikkinchidan, institutda muntazam ravishda talabalar ilmiy konferensiyalari, seminarlar va muhokama yig'ilishlari tashkil etilgan. Ushbu tadbirlar yosh tadqiqotchilar uchun ilmiy natijalarni taqdim etish, bahs-munozara yuritish va ilmiy tajriba almashish maydoni vazifasini bajargan. Bu esa ilmiy kommunikatsiya madaniyatining shakllanishiga va talabalar orasida ilmiy faollikning oshishiga olib kelgan.

Uchinchidan, yosh olimlar jamiyati ilmiy faoliyatning keyingi bosqichi sifatida aspirantlar, yosh o'qituvchilar va ilmiy xodimlarni birlashtirgan. Ushbu jamiyat orqali ilmiy seminarlar, metodik mashg'ulotlar va tadqiqot loyihalari amalga oshirilgan. Natijada yosh mutaxassislarining ilmiy salohiyati rivojlanib, ular mustaqil tadqiqotchilar sifatida shakllangan.

To'rtinchidan, talabalar ilmiy jamiyatlari va yosh olimlar jamiyati faoliyati natijasida institutda ilmiy kadrlar tayyorlashning uzluksiz tizimi vujudga kelgan. Talabalar ilmiy to'garaklardan boshlab, keyinchalik aspirantura va ilmiy faoliyatga o'tish imkoniyatiga ega bo'lganlar. Bu jarayon ilmiy maktablarning shakllanishiga va ularning barqaror rivojlanishiga zamin yaratgan.

Beshinchidan, 1980-yillarga kelib ilmiy faoliyat yanada chuqurlashib, klinik va eksperimental tadqiqotlar kengaydi. Talabalar va yosh olimlarning ilmiy ishlari tibbiyotning turli yo'nalishlari bilan integratsiyalashib, ularning natijalari amaliy sog'liqni saqlash tizimida qo'llanila boshlagan.

Oltinchidan, ilmiy jamiyatlar faoliyati talabalarning kasbiy kompetensiyalarini rivojlantirishda muhim rol o'ynagan. Talabalar nazariy bilimlarini amaliyot bilan bog'lash, klinik vaziyatlarni ilmiy asosda tahlil qilish va mustaqil qaror qabul qilish ko'nikmalariga ega bo'lganlar.

Umuman olganda, tadqiqot natijalari Samarqand davlat tibbiyot institutida talabalar ilmiy jamiyatlari va yosh olimlar jamiyati nafaqat ilmiy faoliyatni rivojlantiruvchi tuzilma, balki tibbiyot sohasida yuqori malakali mutaxassislar va ilmiy kadrlar tayyorlashning samarali mexanizmi bo'lganini ko'rsatadi.

MUHOKAMA

Tadqiqot natijalari Samarqand davlat tibbiyot institutida 1960–1990-yillar davomida faoliyat yuritgan talabalar ilmiy jamiyatlari va yosh olimlar jamiyati oliy tibbiy ta'lim tizimining ajralmas va funksional jihatdan muhim tarkibiy qismi bo'lganini ko'rsatadi. Ushbu tuzilmalar orqali ilmiy faoliyat faqat qo'shimcha mashg'ulot sifatida emas, balki kasbiy tayyorgarlikning muhim elementi sifatida shakllangan.

Avvalo, talabalar ilmiy jamiyatlarining faoliyati tibbiyot ta'limida nazariya va amaliyot integratsiyasini ta'minlashda muhim rol o'ynaganini ta'kidlash lozim. Talabalar ilmiy to'garaklar doirasida nafaqat o'quv materiallarini chuqurlashtirgan, balki klinik kuzatuvlar va eksperimental tadqiqotlar orqali real tibbiy muammolarni tahlil qilish imkoniyatiga ega bo'lganlar. Bu esa ularning kasbiy kompetensiyalarini shakllantirishda muhim omil bo'lib xizmat qilgan.

Shuningdek, ilmiy konferensiyalar va seminarlarning muntazam o'tkazilishi ilmiy kommunikatsiya madaniyatining rivojlanishiga sezilarli ta'sir ko'rsatgan. Talabalar o'z ilmiy ishlari bilan chiqish qilish, bahs-munozaralarda qatnashish va ilmiy fikr almashish orqali akademik muhitga moslashganlar. Bu jarayon ilmiy tafakkur va tanqidiy fikrlashni rivojlantirishda samarali vosita bo'lgan [9].

Yosh olimlar jamiyati esa ilmiy faoliyatning keyingi bosqichini tashkil etib, ilmiy kadrlar tayyorlashning uzluksizligini ta'minlagan. Talabadan yosh tadqiqotchiga, undan esa mustaqil ilmiy xodimga o'tish jarayoni aynan shu tizim orqali amalga oshirilgan. Bu esa institutda ilmiy maktablarning shakllanishiga va ularning barqaror faoliyat yuritishiga zamin yaratgan.

Muhokama natijalari shuni ham ko'rsatadiki, mazkur ilmiy jamiyatlar tibbiyot fanining rivojlanishida amaliy ahamiyatga ega bo'lgan ilmiy natijalar berishga xizmat qilgan. Talabalar va yosh olimlar tomonidan olib borilgan tadqiqotlar ko'pincha klinik muammolarni hal etishga yo'naltirilgan bo'lib, ularning natijalari sog'liqni saqlash amaliyotida qo'llanilgan.

Biroq ushbu jarayonni baholashda sovet davri oliy ta'lim tizimining o'ziga xos xususiyatlarini ham inobatga olish zarur. Ilmiy faoliyat ma'lum darajada markazlashgan boshqaruv tizimi va ideologik yo'nalishlar ta'sirida bo'lgan. Bu esa ayrim hollarda ilmiy izlanishlarning erkinligini cheklagan bo'lishi mumkin. Shunga qaramay, mavjud tizim doirasida

talabalar ilmiy jamiyatlari va yosh olimlar faoliyati yuqori samaradorlikka ega bo'lganini inkor etib bo'lmaydi.

Umuman olganda, muhokama natijalari Samarqand davlat tibbiyot institutida shakllangan ilmiy jamiyatlar modeli nafaqat tarixiy ahamiyatga ega, balki bugungi tibbiyot ta'limi uchun ham muhim metodik asos bo'lib xizmat qilishi mumkinligini ko'rsatadi. Ayniqsa, talabalarni ilmiy faoliyatga erta jalb etish, ilmiy kadrlar tayyorlashning uzluksiz tizimini yaratish va nazariya bilan amaliyotni uyg'unlashtirish kabi tamoyillar zamonaviy ta'lim tizimi uchun ham dolzarb hisoblanadi.

XULOSA

Xulosa qilib aytganda, 1960–1990-yillar oralig'ida Samarqand davlat tibbiyot institutida faoliyat yuritgan talabalar ilmiy jamiyatlari va yosh olimlar jamiyati tibbiyot ta'limi va ilmiy faoliyat tizimining muhim tarkibiy qismi sifatida shakllangan. Ushbu tuzilmalar orqali talabalar va yosh mutaxassislar ilmiy izlanishlarga jalb etilib, ularda tadqiqotchilik ko'nikmalari, tanqidiy fikrlash va kasbiy kompetensiyalar izchil rivojlantirilgan.

Talabalar ilmiy jamiyatlari talabalarining nazariy bilimlarini amaliyot bilan uyg'unlashtirish, klinik va eksperimental tadqiqotlarda ishtirok etish hamda ilmiy muammolarni mustaqil hal etish qobiliyatini shakllantirishga xizmat qilgan. Yosh olimlar jamiyati esa ushbu jarayonning mantiqiy davomi sifatida ilmiy kadrlar tayyorlash tizimining uzluksizligini ta'minlab, institutda ilmiy maktablarning shakllanishiga zamin yaratgan.

Mazkur davrda shakllangan ilmiy faoliyat tizimi natijasida institutda yuqori malakali mutaxassislar va ilmiy kadrlar yetishib chiqqan, ularning ilmiy ishlari esa tibbiyot fanining rivojlanishi va sog'liqni saqlash amaliyotiga sezilarli hissa qo'shgan. Shu bilan birga, ilmiy jamiyatlar faoliyati tibbiyot ta'limida ilmiy yondashuvni mustahkamlash, akademik muhitni rivojlantirish va innovatsion fikrlashni shakllantirishda muhim omil bo'lgan.

Shunday qilib, Samarqand davlat tibbiyot institutidagi talabalar ilmiy jamiyatlari va yosh olimlar jamiyati tajribasi nafaqat tarixiy ahamiyatga ega, balki bugungi kunda ham tibbiyot ta'limini takomillashtirish, yosh tadqiqotchilarni qo'llab-quvvatlash va ilmiy faoliyatni rivojlantirishda muhim metodologik asos sifatida xizmat qilishi mumkin.

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MILLIY VA XALQ O'YINLARINING TARBIYAVIY VA JISMONIY TARBIYADAGI AHAMIYATI

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Annotatsiya: Ushbu maqolada o'zbek xalq o'yinlarining asosiy vazifasi o'z mazmuni va usuliyati bilan bolalarning jamiyatimiz talablariga muvofiq yo'sinda tarbiyalanishini ta'minlash, ularda axloqiy, irodaviy sifatlarni rivojlantirish, ijodkor va bunyodkorlarga xos ko'nikma hamda malakalarni, vatanparvar fuqarolarga xos fazilatlarni shakllantirishdan iborat masalalar yoritilgan.

Kalit so'zlar: milliy urf-odat, milliy qadriyat, milliy o'yinlar, harakatli o'yinlar, ko'nikma, malaka, vatanparvar, axloq, idrok, aql, tarbiya, tizim, mehnat.

ЗНАЧЕНИЕ НАЦИОНАЛЬНЫХ И НАРОДНЫХ ИГР В ВОСПИТАНИИ И ФИЗИЧЕСКОМ ВОСПИТАНИИ

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Аннотация: В данной статье рассматриваются вопросы обеспечения того, чтобы главной задачей узбекских народных игр, их содержанием и методами было воспитание детей в соответствии с требованиями нашего общества, развитие у них нравственных и волевых качеств, формирование навыков и квалификаций, свойственных творческим и созидательным людям, а также качеств, присущих патриотически настроенным гражданам.

Ключевые слова: национальные обычаи, национальные ценности, национальные игры, подвижные игры, навыки, квалификация, патриотизм, мораль, восприятие, интеллект, воспитание, система, труд.

THE IMPORTANCE OF NATIONAL AND FOLK GAMES IN EDUCATION AND PHYSICAL EDUCATION

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Abstract: This article discusses the issues of ensuring that the main task of Uzbek folk games, through their content and methods, is to educate children in accordance with the requirements of society, to develop moral and volitional qualities in them, to form the skills and qualifications characteristic of creative and constructive people, and to develop qualities typical of patriotic citizens.

Keywords: national customs, national values, national games, action games, skills, qualifications, patriotism, morality, perception, intelligence, education, system, labor.

KIRISH

Kichik maktab yoshi bilim, ko'nikma va malakalar tarkib topishining, tasavvur hamda tushunchalar hosil bo'lishining boshlang'ich darajasidir. Xuddi mana shu davrda o'g'il va qizlarni muntazam hamda izchil tarbiyalash uchun katta imkoniyatlar vujudga keladi. Kichik maktab yoshidagi bolalarni tarbiyalash tizimida o'yinlar katta ahamiyat kasb etadi. Har xil o'yinlarda topqirlik va mehnatga munosabat hamda bolalarning xarakter va qobiliyatlari dars usuliyati nuqtai nazaridan, hatto eng ma'qul bo'lgan bir xil sharoitdagiga nisbatan ancha yaqqol ko'rinadi.

To'g'ri o'tkazilgan o'yin ko'p narsani o'rgatishga yordam beradi. Bolalarning barcha yosh bosqichlarida ularga ishonch va haqiqat sifatida xizmat qilgan, ularning zehni va bilimga intilishini rivojlantirishi lozim bo'lgan o'yinlarga qiziqish susayib bormoqda. Vaholanki, bolalarni kuch-

quvvat va kulgu baxsh etadigan xilma-xil, jo'shqin va erkin vaziyatlarga olib kirish hamda jafokash pedagogning asosiy savollariga tegishli javoblarni ana shu vaziyatda izlash kerak.

V.A. Suxomlinskiy o'yinlarda bolalar dunyoni ko'rishini, shaxsning ijodiy qobiliyatlari aks etishini, o'yinlarsiz haqiqiy barkamollik ham bo'lmasligini uqtirgan edi.

Hozirgi sharoitda o'zbek xalq o'yinlarining asosiy vazifasi o'z mazmuni va usuliyati bilan bolalarning jamiyatimiz talablariga muvofiq yo'sinda tarbiyalanishini ta'minlash, ularda axloqiy, irodaviy sifatlarni rivojlantirish, ijodkor va bunyodkorlarga xos ko'nikma hamda malakalarni, vatanparvar fuqarolarga xos fazilatlarni shakllantirishdan iborat.

MATERIALLAR VA METODLAR

Tadqiqotda xalq o'yinlarining tarbiyaviy va jismoniy tarbiyadagi ahamiyatini yoritish maqsadida pedagogik manbalar, tarixiy qarashlar hamda jismoniy tarbiya amaliyotiga doir ilmiy-nazariy tahlil usullaridan foydalanildi.

Qadimgi tarbiya tizimida o'yinlardan shaxsni shakllantirish vositasi sifatida keng foydalanilgan.

Qadimgi faylasuflardan Arastu ham bolalarning bo'sh vaqtini xushnud o'tkazish uchun o'yinlardan foydalanish zarurligini, chunki o'yinlar dilxushlikdan iborat bo'lib, hordiq chiqarishga yordam berishini uqtirgan. O'rta asrlardagi pedagoglar bolalarni jismoniy kamol toptirish uchun katta g'amxo'rlik ko'rsatganlaridek, jismoniy tarbiya usuliyatini ishlab chiqib, unda o'yinlarga katta o'rin berganlar.

Rossiyada tarbiyaviy maqsadlarda xalq o'yinlaridan foydalanish haqidagi g'oyalarni V.G. Belinskiy, N.A. Dobrolyubov, N.G. Chernishevskiy olg'a surganlar. Ular xalq o'yinlarini ta'lim va tarbiyaning muhim vositasi deb hisoblaganlar hamda yuqori baholaganlar.

E.A. Pokrovskiyning maxsus kitobi («Детские игры, преимущественно русские») Rossiyadagi va boshqa xalqlardagi o'yinlarning mohiyatini yoritishga bag'ishlangan edi.

S.A. Shmakov o'yinlarning tarbiyaviy imkoniyatlarini ifodalab, shunday deb yozgan edi: o'yin go'yo soyadek, bola bilan birga tug'ilgan, uning hamrohi, ishonchli do'stiga aylangan. Lekin bu uning uzoq yil davom etishi uchun yaxshi deb hisoblanadi. O'yin juda katta, ba'zan ko'z ilg'amas tarbiyaviy tomoni, g'oyat keng pedagogik imkoniyatlari tufayli insonlar e'tiborini tortadi.

NATIJALAR

O'zbek xalq o'yinlarining tarbiyaviy ahamiyati haqida gap borar ekan, shuni alohida ta'kidlash lozimki, ular eng avvalo o'quvchilarda o'z qishlog'i, shahri, Vatani va u yerda yashovchi barcha xalqlarga muhabbat, hurmat hamda ehtirom hislarini, milliy g'ururni tarbiyalaydi. Eng muhimi, o'zbek xalqining milliy madaniyatiga, o'tmishdagi va hozirgi turmushidagi milliy an'analar hamda san'atiga muhabbat uyg'otadi. Shuningdek, o'quvchilarni halollikka, saxovatli bo'lishga o'rgatadi, kattalar tajribasini bolalar va yoshlarga o'tkazish vositasi sifatida xizmat qiladi. Qizlarda mehnatga ongli munosabatni shakllantiradi, ularning kuchli, chaqqon, serharakat, ziyrak, topqir, o'zaro hamkor bo'lishlariga yordam beradi.

O'zbek xalq o'yinlari orasida g'oyaviy-siyosiy, aqliy, axloqiy, mehnat, estetik va jismoniy tarbiya bilan bog'liq o'yinlar bor. Xalq milliy o'yinlari tarkibida harakatli o'yinlarning tarbiyaviy ahamiyati juda kattadir. Bu to'g'risida mutaxassis va taniqli olimlar T.S. Usmonxo'jayev, F.N. Nasriddinov, A.K. Atayev, T. Xoldorov, R. Abdumalikov va boshqalar mufassal bayon etganlar.

O'zbek xalq o'yinlari jarayonida o'quvchilarning mehnat ko'nikmalarini egallashi ularda kishilarning mehnatdagi qahramonligi va go'zalligini tarbiyalashning dastlabki kurtaklari hisoblanadi.

O'yin jarayonida kichik maktab yoshidagi o'quvchilarda ijod, moddiy va ma'naviy boyliklar yaratish vositasi, nihoyat, quvonchli va zavq-shavq manbai bo'lgan mehnat xususiyatlariga doir tushunchalar shakllanadi, ular jamoa mehnatining mohiyatini bilib oladilar. O'zbek xalq o'yinlari kichik maktab yoshidagi o'quvchilarda bilish imkoniyatlari va tafakkurni

rivojlantirish, ular xotirasini buyumlar hamda tabiiy-ijtimoiy hayot voqealari to'g'risidagi turli ma'lumotlar bilan boyitish, ma'naviy qiziqish va ehtiyojlarini tarbiyalashning ajoyib manbai hisoblanadi.

O'zbek xalq o'yinlarining juda katta tarbiyaviy imkoniyatlarini o'quvchilarda qat'iylik va dadillik kabi iroda sifatleri shakllanishida ko'rish mumkin. Shuningdek, o'quvchilarda sezgi, diqqat, idrok, xotira, xayol singari psixik jarayonlar amalga oshirishining ayrim xususiyatlarini tahlil qilishda ham o'zbek xalq o'yinlarining tarbiyaviy imkoniyatlari yaqqolroq anglanadi. O'yin jarayonida idrok kichik maktab yoshidagi o'quvchilarda kuzatuvchanlikni tarbiyalaydi. Jismoniy mashqlar bilan shug'ullanish jarayonida bolada harakat xotirasi ham rivojlanadi. Kichik maktab yoshidagi o'quvchilar jismoniy tarbiya darslarida tahlil, sintez va taqqoslash usullarini egallab oladilar. 8–12 yosh bolalar bilan eng oddiy harakatlar — yurish, yugurish va uloqtirishni tahlil qilib turishni P.F. Lesgaft ham qayd qilgan edi.

Jismoniy tarbiya darslari kichik maktab yoshidagi o'quvchilar nutqining rivojlanishiga ancha ta'sir ko'rsatadi. Kuy va so'zlar aytib o'ynaladigan o'yinlarda bolalar ma'lum bir so'zlarni («G'ozlar-oqqushlar», «Biz quvnoq bolalarmiz») yoki hamma so'zlarni bir ritmda birgalashib, aniq, quvnoqlik bilan talaffuz qilishlari, so'z bilan harakatni birga qo'shish, o'z so'zlariga muayyan ma'no berishlari («Qopqoq», «Kimning ovozi, top», «Ayyor tulki») kerak.

Kichik maktab yoshidagi bolalarda irodaning tarkib topishi munosabati bilan ixtiyoriy xulq-atvor rivojlanadi. Bunga maktab va uydagi mehnat faoliyati, jismoniy mashqlar va o'yinlar yordam beradi. Kichik maktab yoshidagi o'quvchilarning jismoniy, axloqiy, estetik rivojlanishida o'yinlar katta ahamiyatga ega. A.S. Makarenkoning fikricha, aynan o'yinda bolalarning kuch-g'ayrati namoyon bo'ladi, faolligi rivojlanadi, quvonch tuyg'usi paydo bo'ladi.

O'yin epchillik, chamalash, mo'ljallash kabi sifatlarni rivojlantiradi. Ularni jismoniy tarbiya darslarida qo'llash quyidagi xulosaga olib keladi: qadimgi xalq o'yinlarini jismoniy tarbiya darslarida qo'llash o'quvchilarda juda katta qiziqish uyg'otadi, natijada ularning jismoniy, aqliy, irodaviy xislatlarini rivojlantirishga ijobiy ta'sir etadi.

O'yin davomida bolalar yuradilar, sakraydilar, yuguradilar, o'rmaydilar, biror bir buyumni irg'itadilar, natijada ularning mushaklari va sezgi organlari rivojlanadi, organizmning hayot faoliyati yanada oshadi. O'yinda bolalarning irodasi, o'z harakatlarini o'yin qoidalariga bo'ysundira olish ko'nikmasi shakllanadi; u o'zini qo'pol xatti-harakatlardan tiyadi, zarur bo'lganda chaqqon harakat qilishga — yashirinish, yugurish, tutib olish, tez fikrlash, og'ir ahvoldan qutulib ketish chorasini topishga — o'rgatadi.

O'yinlar shug'ullanuvchilar aniq psixologik stereotipining shakllanishidagi o'ziga xos model bo'lib, harakat malakalari shakllanishiga, harakat tayyorgarlik darajasi va harakat sifatlari rivojlanishining ko'tarilishiga imkon beradi.

MUHOKAMA

O'yin tushunchasi juda keng bo'lib, yosh bolaning oddiy harakatidan tortib sport faoliyati harakati takomillashigacha bo'lgan har xil hodisalarni qamrab oladi. O'yinlar insoniyatning eng birinchi rivojlanish bosqichida hayot malakalari, harakat sifatlari va harakat malakalarining eng muhim vositasi sifatida rivojlangan. O'yinlarning birinchi rivojlanish bosqichi insoniyat mehnati, bolalarning tarbiyaviy va sog'lomlashtirish masalalari bilan bog'liq. Ular har xil maqsad bilan o'tkaziladi: elementar harakat malakalarini shakllantirish, maktabgacha bo'lgan bolalarda qiyin jismoniy mashqni o'zlashtirishga bo'lgan qobiliyatni tarbiyalash, o'quvchilar, talabalar hamda sportchilarning jismoniy tayyorgarligini oshirish.

O'yinning besh asosiy vazifasi ko'rsatilgan: ijtimoiy, tarbiyaviy, sog'lomlashtiruvchi, o'rgatuvchi, mashg'ulotli va sportdagi pedagogik jarayon bilan o'zaro bog'liqligi hamda ahamiyati shubhasizdir.

O'yinlar jismoniy tarbiya tizimida foydali vosita hisoblanadi, ularning aniq tavsiflanishini talab qiladi. Lekin ularning hajmi va o'ynalishi har xilligi tasnifni aniq bir shaklga keltirishga yo'l qo'ymaydi. Mavjud o'yinlarni tizimga solish tashkiliy va pedagogik belgilari bo'yicha ko'rib chiqilmoqda. Harakatli o'yinlarni tanlash yo'nalishiga ko'ra harakat sifatlarini tarbiyalash xususiyatlarini hisobga olgan holda amalga oshiriladi.

Kichik maktab yoshidagilarga chaqqonlik, tezkorlik, harakat aniqligi, muvozanat yuzaga chiqishining kuzatilishi xosdir.

XULOSA

Xulosa qilganda, xalq milliy o'yinlari tobora ravnaq topmoqda. Shunday bo'lsa-da, o'quvchi yoshlar faoliyatida ulardan maqsadli foydalanishning yagona tizimini talab darajasida qo'yish mumkin. Bu jihatlarni o'rganish, ilmiy-nazariy tahlil qilish va amaliy takliflar asosida o'quv-uslubiy qo'llanmalarni ishlab chiqarish davr taqozosidir.

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PARADZYUDOKHILARDA JISMONIY SIFATLARNING RIVOJLANGANLIK DARAJASINI TAHLIL QILISH

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Annotatsiya: Ushbu maqolada paradzyudochilar jismoniy sifatlarining rivojlanganlik darajasi tahlil qilinadi. Tadqiqot davomida kuch, chidamlilik, tezkorlik, chaqqonlik va egiluvchanlik kabi asosiy jismoniy sifatlar o'rganildi. Olingan natijalar asosida paradzyudochilar tayyorgarligini takomillashtirish bo'yicha ilmiy-amaliy tavsiyalar ishlab chiqildi.

Kalit so'zlar: paradzyudo, jismoniy sifatlar, kuch, chidamlilik, tezkorlik, egiluvchanlik, chaqqonlik, adaptiv sport, individual yondashuv, ko'zi ojiz va zaif ko'ruvchi sportchilar, klassifikatsiya.

АНАЛИЗ УРОВНЯ РАЗВИТИЯ ФИЗИЧЕСКИХ КАЧЕСТВ У ПАРАДЗЮДОИСТОВ

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Аннотация: В данной статье проводится анализ уровня развития физических качеств у парадзюдоистов. В ходе исследования были изучены основные физические качества, такие как сила, выносливость, быстрота, ловкость и гибкость. На основе полученных результатов разработаны научно-практические рекомендации по совершенствованию подготовки парадзюдоистов.

Ключевые слова: парадзюдо, физические качества, сила, выносливость, быстрота, гибкость, ловкость, адаптивный спорт, индивидуальный подход, слабовидящие и незрячие спортсмены, классификация.

ANALYSIS OF THE LEVEL OF DEVELOPMENT OF PHYSICAL QUALITIES IN PARA JUDO ATHLETES

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Abstract: This article analyzes the level of development of physical qualities in para judo athletes. The study examined key physical qualities such as strength, endurance, speed, agility, and flexibility. Based on the obtained results, scientific and practical recommendations were developed to improve the training process of para judo athletes.

Keywords: para judo, physical qualities, strength, endurance, speed, flexibility, agility, adaptive sport, individual approach, visually impaired and blind athletes, classification.

KIRISH

Respublikamizda sog'lom sportchilardan tashqari, parasport turi bilan shug'ullanish istagidagi, ko'rish qobiliyati zaif va umuman ko'rmaydigan shaxslarni sportga jalb qilish, mashg'ulot va musobaqa ko'rsatkichlarini yaxshilash uchun ko'plab ilmiy tadqiqot markazlarida

ilmiy ishlar olib borilmoqda. Shu jumladan, paradyudochilarning jismoniy harakatlari, reaksiya harakat tezligini oshirish, jismoniy tayyorgarligini asosiy musobaqalarda oshirish bo'yicha texnik usullarga o'rgatish uslubiyatini takomillashtirishga qaratilgan ishlar keng olib borilmoqda. Paradyudochilarning musobaqa oldi mashg'ulot jarayoni va musobaqalarni rejalashtirish, klassifikatsiyasi, yoshi va malakasiga qarab yuklamalar hajmi, ularning shiddatini tabaqalashtirish, yuklamalar ta'sirida yuzaga keladigan toliqish alomatlarini o'z vaqtida bartaraf etish va ish qobiliyatini qaytadan tezkorlikda tiklash masalalari yuzasidan ko'plab ilmiy tadqiqot manbalari ishlab chiqilmoqda.

Parasportchilarimizdan aynan paradyudochilarimizning xalqaro musobaqalardagi muvaffaqiyatli ishtiroki fikrimizning yaqqol dalilidir. "Paradyudo bo'yicha qobiliyatli yoshlarni aholi orasida aniqlash hamda ular orasida xalqaro va jahon sport maydonlarida munosib qatnashish imkoniyatiga ega bo'lgan professional parasportchilarni tayyorlash metodikalari, mahorat va ko'nikma malakalarini rivojlantirishga yo'naltirilgan zamonaviy jismoniy tayyorgarlik dasturlari va usullarini amaliyotga joriy etish" borasida izchil chora-tadbirlar amalga oshirilmoqda. Hozirgi kunda ko'zi ojiz va zaif ko'ruvchi shaxslarni sog'lomlashtirishga, kam harakatli mushak faoliyatini faollashtirishga qaratilgan metodikalar ham turlicha ko'rinish olmoqda. Ko'rish qobiliyatida nuqsoni bor shaxslarni paradyudo sport turiga ommaviy jalb qilish, jismoniy harakatlarga o'rgatish, musobaqa oldi saralash bosqichidan o'tkazish hamda musobaqalarga tayyorlashni amalga oshirish sport sohasi xodimlari oldiga qo'yilgan muhim vazifalardan biri hisoblanadi. Paradyudochilarning o'quv mashg'ulot jarayoniga maxsus mashqlar, kompleks nazorat me'yorlari va ularning me'yorlashgan hajmini kiritish hamda klassifikatsiyaga ajratilgan paradyudochilarning jismoniy harakat va jismoniy sifatlarini yanada rivojlantirishga qaratilgan yillik mashg'ulotlar dasturini ishlab chiqish bo'yicha ko'zi ojiz va zaif ko'ruvchi shaxslarning yosh xususiyatlarini, klassifikatsiyasini hisobga olgan holda paradyudochilarni har tomonlama jahon sport musobaqalariga tayyorlash hozirgi kunda eng dolzarb ahamiyat kasb etmoqda.

Mazkur maqola tadqiqoti O'zbekiston Respublikasi Prezidentining 2020-yil 24-yanvardagi PF-5924-son "O'zbekiston Respublikasida jismoniy tarbiya va sportni yanada takomillashtirish va ommalashtirish chora-tadbirlari to'g'risida"gi Farmoni, 2021-yil 18-maydagi PF-5114-son "Paralimpiya harakatini rivojlantirishga doir qo'shimcha chora-tadbirlar to'g'risida"gi, O'zbekiston Respublikasi Prezidentining 2022-yil 14-fevraldagi PQ-127-son "O'zbekiston sportchilarining navbatdagi yozgi va qishki Olimpiya va Paralimpiya o'yinlarida muvaffaqiyatli ishtirok etishi uchun tayyorgarlik ishlarini jadallashtirish to'g'risida"gi qarori ijrosini ta'minlash, shuningdek, aholi o'rtasida dzyudoning olimpiya sport turi sifatida ommaviyligini oshirish, aholi orasidan sportga qiziqqan iqtidorli shaxslarni tanlab olish, sportning paradyudo turiga saralash tizimini takomillashtirish, milliy terma jamoalarimizning nufuzli sport musobaqalarida yuqori natijalarga erishishini ta'minlash maqsadida, 2022-yil 20-iyundagi PQ-286-son "Dzyudo sport turini yanada rivojlantirish chora-tadbirlari to'g'risida"gi, 2025-yil 8-iyuldagi PQ-221-son "2028-yil Los-Anjeles shahrida (AQSH) bo'lib o'tadigan XXXIV yozgi Olimpiya va XVIII Paralimpiya o'yinlariga O'zbekiston sportchilarini kompleks tayyorlash to'g'risida"gi qarorlari, olimpiya va paralimpiya sport turlarini ularning amaldagi natijalaridan kelib chiqib, toifalarga ajratgan holda (ustuvor, istiqbolli va rivojlanayotgan) qisqa va uzoq muddatli strategiyalarni belgilash orqali differensial yondashuv asosida rivojlantirish, sportning boks, dzyudo, taekvondo, erkin kurash, og'ir atletika turlari bo'yicha medallar sonini oshirish hamda dzyudoning olimpiya sport turi sifatida aholi orasida ommaviyligini oshirish, yoshlar o'rtasida iqtidorli, sport bilan shug'ullanish istagidagi yoshlarni tanlab olish, sportga yo'naltirish tizimini takomillashtirish hamda sohadagi bir

qator me'yoriy-huquqiy hujjatlarda belgilangan vazifalarni amalga oshirishda ushbu ilmiy maqola muayyan darajada xizmat qiladi deb hisoblaymiz. Bugungi kunda adaptiv sport turlari, xususan paradyudo, jismoniy imkoniyati cheklangan shaxslarning jismoniy rivojlanishi va ijtimoiy faolligini oshirishda muhim ahamiyat kasb etmoqda. Paradyudo ko'zi ojiz va zaif ko'ruvchi sportchilar o'rtasida keng rivojlanib borayotgan sport turi bo'lib, yuqori darajadagi jismoniy tayyorgarlikni talab etadi. Shu maqsadda mazkur sport turida muvaffaqiyatga erishish ko'p jihatdan sportchilarning jismoniy sifatlari rivojlanganlik darajasiga bog'liq. Shu bois ushbu sifatlarni ilmiy asosda o'rganish dolzarb hisoblanadi.

MATERIALLAR VA METODLAR

Tadqiqot maqsadi: paradyudochilarda asosiy jismoniy sifatlarning rivojlanganlik darajasini aniqlash va ularni rivojlantirishga qaratilgan ilmiy asoslangan tavsiyalar ishlab chiqish.

Tadqiqot vazifalari quyidagilardan iborat:

1. Paradyudochilarda jismoniy sifatlarning ahamiyatini aniqlash;
2. Asosiy jismoniy sifatlarni baholash;
3. Natijalarni tahlil qilish;
4. Samarali mashg'ulot metodikasini ishlab chiqish.

Tadqiqot metodlari: tadqiqot jarayonida pedagogik kuzatuv, test sinovlari (maksimal kuch, 1000 m yugurish, tezkorlik testlari), matematik-statistik tahlil, ilmiy adabiyotlarni o'rganish va tahlil qilish metodlaridan foydalanildi.

NATIJALAR

Paradyudochilarning jismoniy sifatlarni rivojlantirish musobaqalarda sport natijadorligini oshirishning eng muhim omillaridan biri hisoblanadi. Mazkur jismoniy sifatlarni rivojlantirish jarayoni parasportchilarning individual xususiyatlari, funksional imkoniyatlari hamda klassifikatsiyasini inobatga olgan holda tashkil etilishi maqsadga muvofiq. Quyida jismoniy sifatlarning rivojlanganligi bo'yicha tadqiqot natijalari va ularning tahlili jadval asosida berilgan.

1-jadval. Jismoniy sifatlarning rivojlanganligi bo'yicha tadqiqot natijalari va ularning tahlili

No	Jismoniy sifatlari	Rivojlanishi	Mashg'ulotda qo'llash (%)	Musobaqalardagi samarasi (%)
1	Kuch jismoniy sifati	Paradyudochilarda nisbatan yuqori darajada rivojlangan bo'lib, bu ushlab va yelkadan oshirib tashlash texnikasining ustunligi bilan izohlanadi.	80	75
2	Chidamlilik jismoniy sifati	O'rtacha darajada bo'lib, ayrim parasportchilarda tez charchash holatlari kuzatildi.	45	35
3	Tezkorlik jismoniy sifati	Tezkorlik va reaksiya tezligi paradyudochilarda pastroq darajada ekanligi aniqlandi, bu ko'rish analizatorining cheklanganligi bilan bog'liqligi	25	20

		bilan izohlanadi.		
4	Chidamkorlik	Jismoniy va texnik tayyorgarlik bilan uzviy bog'liq holda rivojlanadi	65	60
5	Egiluvchanlik	Muntazam gimnastik mashqlarni mashg'ulotlarda qo'llash orqali yaxshilanishi kuzatildi.	50	45

Izoh: Paradzyudochilarda kuch va chidamkorlik ko'rsatkichlari nisbatan yuqori darajada rivojlanganligi kuzatildi. Chaqqonlik va egiluvchanlik o'rtacha darajada bo'lsa, tezkorlik ko'rsatkichi past darajada ekanligi aniqlandi.

2-jadval. Paradzyudochilarning jismoniy sifatlari rivojlanganlik darajasi ko'rsatkichlari

№	Jismoniy sifatlari	Test turi	O'rtacha natija (n=15)	Baholash darajasi
1	Kuch	Turnikda tortilish (marta)	12,4 ± 1,2	Yaxshi
2	Chidamlilik	1000 m yugurish (daqika)	4,05 ± 0,3	O'rtacha
3	Tezkorlik	30 m yugurish (soniya)	4,8 ± 0,2	Past
4	Chaqqonlik	"Ilon izi" yugurish (soniya)	10,2 ± 0,4	O'rtacha
5	Egiluvchanlik	Bir oyoqda turish (soniya)	18,6 ± 2,1	Yaxshi

Izoh: Jadval natijalariga ko'ra, paradzyudochilarda kuch va chidamkorlik ko'rsatkichlari nisbatan yuqori darajada rivojlanganligi kuzatildi. Chaqqonlik va egiluvchanlik o'rtacha darajada bo'lsa, tezkorlik ko'rsatkichi past darajada ekanligi aniqlandi. Bu esa mashg'ulot jarayonida aynan tezkorlik va reaksiya tezligini rivojlantirishga alohida e'tibor qaratish lozimligini ko'rsatadi.

MUHOKAMA

Tadqiqot natijalari va ularning tahlili shuni ko'rsatdiki, o'tkazilgan tadqiqot jarayonida paradzyudochilarning asosiy jismoniy sifatlari maxsus testlar orqali baholandi va olingan natijalar tahlil qilindi. Tadqiqotda ishtirok etgan sportchilarning ko'rsatkichlari umumlashtirilib, o'rtacha qiymatlar asosida ilmiy xulosalar chiqarildi. Tahlil natijalariga ko'ra, kuch jismoniy sifati paradzyudochilarda nisbatan yuqori darajada rivojlanganligi aniqlandi. Bu holat mazkur sport turining o'ziga xos xususiyatlari, ya'ni ushlar, tortish va uloqtirish harakatlarining ustunligi bilan izohlanadi. Ayniqsa, yuqori tana mushaklari kuchining rivojlanganligi sportchilarning texnik harakatlarni samarali bajarishida muhim ahamiyat kasb etadi.

Chidamlilik jismoniy ko'rsatkichlari o'rtacha darajada ekanligi kuzatildi. 1000 metr ga yugurish sinovi natijalari ayrim sportchilarda tez charchash holatlari mavjudligini ko'rsatdi. Bu esa umumiy jismoniy tayyorgarlik darajasini yanada oshirish zarurligini bildiradi. Tezkorlik va reaksiya tezligi ko'rsatkichlari nisbatan past darajada ekanligi aniqlandi. Mazkur holat ko'rish analizatorining cheklanganligi bilan bog'liq bo'lib, paradzyudochilarda tashqi signallarga javob berish asosan eshitish va taktil sezgilar orqali amalga oshiriladi. Shu sababli tezkorlikni rivojlantirish uchun maxsus mashg'ulot usullarini qo'llash talab etiladi.

Chidamkorlik jismoniy sifati o'rtacha darajada rivojlangan bo'lib, texnik-taktik tayyorgarlik bilan uzviy bog'liq holda shakllanadi. Murakkab harakatlarni bajarishda koordinatsiya darajasi muhim rol o'ynashi kuzatildi. Egiluvchanlik jismoniy sifati ko'rsatkichlari esa nisbatan yaxshi rivojlanganligi bilan ajralib turadi. Bu esa muntazam ravishda olib

borilayotgan maxsus mashg'ulotlar natijasi sifatida baholanadi. Ko'rish imkoniyati cheklangan sportchilar uchun muvozanatni saqlash qobiliyati alohida ahamiyatga ega.

Umuman olganda, tadqiqot natijalari shuni ko'rsatdiki, paradzyudochilarda kuch va chidamlilik yetarli darajada rivojlangan bo'lsa-da, tezkorlik va chaqqonlik ko'rsatkichlarini yanada oshirish zarur deb hisoblaymiz. Shu asosda mashg'ulot jarayoniga yo'naltirilgan, jismoniy sifatlarni rivojlantirish bo'yicha individual va ilmiy asoslangan yondashuvni joriy etish maqsadga muvofiqdir.

XULOSA

O'tkazilgan tadqiqot natijalari shuni ko'rsatdiki, beshta jismoniy sifatlarning rivojlanganlik darajasini o'rganib tahlil qilish davomida paradzyudochilarda jismoniy sifatlarning rivojlanishi o'ziga xos xususiyatlarga ega ekanligi aniqlandi. Ayniqsa, nufuzli musobaqalarda kombinatsiyalar qilishda jismoniy sifatlarning rivojlanganlik darajasi musobaqa jarayonlarida muhim rol o'ynaydi. Mashg'ulotlar jarayonida individual yondashuvni aynan jismoniy sifatlarning rivojlanishiga qo'llash mashg'ulot samaradorligini oshiradi.

Paradzyudochilarda jismoniy sifatlarning rivojlanganlik darajasi sport natijalariga sezilarli ta'sir ko'rsatadi. Tadqiqot natijalariga ko'ra, kuch va muvozanat yaxshi rivojlangan bo'lsa-da, tezkorlik va chidamlilikni yanada takomillashtirish zarur. Ilmiy asoslangan mashg'ulot metodikasini qo'llash yuqori natijalarga erishishga xizmat qiladi. Paradzyudochilarda kuch va chidamkorlik ko'rsatkichlari nisbatan yuqori darajada rivojlanganligi kuzatildi. Chaqqonlik va egiluvchanlik o'rtacha darajada bo'lsa, tezkorlik ko'rsatkichi past darajada ekanligi aniqlandi. Bu esa mashg'ulot jarayonida aynan tezkorlik va reaksiya tezligini rivojlantirishga alohida e'tibor qaratish lozimligini ko'rsatadi.

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HOW DOES CHANGING SEATING ARRANGEMENTS AFFECT STUDENTS' ATTENTION AND PARTICIPATION?

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Abstract: In recent years, classroom seating arrangements have become an important factor in improving students' learning and engagement. However, students who sit in the back rows often tend to talk to each other and lose attention during lessons, which reduces their participation in classroom activities. This study aims to examine the relationship between seating arrangements and students' attention and participation, as well as to identify the most suitable seating arrangement for primary school learners. To explore this, different seating arrangements, including U-shaped seating and other classroom layouts, were implemented. The research employed a survey-based approach and was conducted with 15 fourth-grade students at School No. 20 in the Fergana region. Data were collected through student questionnaires to identify their opinions about the current seating arrangement, as well as through classroom observations to better understand how different seating styles affect students' attention and participation. The findings indicate that changing seating arrangements can significantly increase students' activity and attentiveness during lessons. These results suggest that flexible seating arrangements may help teachers create a more interactive and effective learning environment, ultimately improving students' attention and participation.

Keywords: seating arrangement, student engagement, classroom interaction, learning environment

SINFDA O'TIRISH TARTIBINI O'ZGARTIRISH O'QUVCHILARNING DIQQATI VA ISHTIROKIGA QANDAY TA'SIR QILADI?

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Annotatsiya: So'nggi yillarda sinfdagi o'tirish tartibi o'quvchilarning o'rganishi va faolligini oshirishda muhim omilga aylandi. Biroq, orqa qatorlarda o'tiradigan o'quvchilar ko'pincha bir-biri bilan gaplashib, dars davomida diqqatini yo'qotadi, bu esa ularning sinf faoliyatidagi ishtirokini kamaytiradi. Ushbu tadqiqot o'tirish tartibi bilan o'quvchilarning diqqati va ishtiroki o'rtasidagi bog'liqlikni o'rganish, shuningdek, boshlang'ich sinf o'quvchilari uchun eng mos o'tirish tartibini aniqlashni maqsad qiladi. Buni o'rganish uchun U-shaklidagi o'tirish tartibi va boshqa sinf joylashuvlari qo'llanildi. Tadqiqot so'rovnoma asosida olib borildi va Farg'ona viloyatidagi 20-maktabning 4-sinfida tahsil olayotgan 15 nafar o'quvchi ishtirok etdi. Ma'lumotlar o'quvchilarning mavjud o'tirish tartibi haqidagi fikrlarini aniqlash uchun so'rovnoma orqali, shuningdek, turli o'tirish shakllarining o'quvchilarning diqqati va ishtirokiga ta'sirini tushunish uchun sinf kuzatuvlari orqali to'plandi. Natijalar shuni ko'rsatdiki, o'tirish tartibini o'zgartirish o'quvchilarning darsdagi faolligi va diqqatini sezilarli darajada oshiradi. Ushbu natijalar moslashuvchan o'tirish tartiblari o'qituvchilarga yanada interaktiv va

samarali ta'lim muhitini yaratishga yordam berishini, natijada o'quvchilarning diqqati va ishtirokini yaxshilashini ko'rsatadi.

Kalit so'zlar: o'tirish tartibi, o'quvchi faolligi, sinfdagi o'zaro ta'sir, ta'lim muhiti

КАК ИЗМЕНЕНИЕ РАССАДКИ В КЛАССЕ ВЛИЯЕТ НА ВНИМАНИЕ И УЧАСТИЕ УЧАЩИХСЯ?

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Аннотация: В последние годы рассадка в классе стала важным фактором повышения успеваемости и вовлечённости учащихся. Однако ученики, сидящие на задних рядах, часто склонны разговаривать друг с другом и терять внимание во время урока, что снижает их участие в учебной деятельности. Цель данного исследования — изучить взаимосвязь между рассадкой, вниманием и активностью учащихся, а также определить наиболее подходящую форму рассадки для учащихся начальных классов. Для этого были применены различные варианты рассадки, включая U-образную и другие формы организации класса. Исследование проводилось на основе опроса с участием 15 учеников 4 класса школы №20 Ферганской области. Данные были собраны с помощью анкетирования учащихся для выявления их мнений о текущей рассадке, а также посредством наблюдений за уроками для более глубокого понимания влияния различных форм рассадки на внимание и активность учащихся. Результаты показали, что изменение рассадки может значительно повысить активность и внимательность учащихся во время урока. Эти выводы свидетельствуют о том, что гибкая организация рассадки помогает учителям создавать более интерактивную и эффективную образовательную среду, что в итоге улучшает внимание и участие учащихся.

Ключевые слова: рассадка, вовлечённость учащихся, взаимодействие в классе, образовательная среда

INTRODUCTION

Classroom seating arrangements have been widely studied as a key factor influencing student behaviour, interaction, and participation. According to Wannarka and Ruhl (2008), seating arrangements are important classroom setting events because they have the potential to help prevent problem behaviours that decrease student attention and diminish available instructional time. This shows that seating arrangement helps manage behaviour and maintain students' focus.

In addition, seating position within the classroom affects communication and interaction. As Robert Sommer (1967) states, seating position in the classroom affects patterns of communication and interaction among students. This suggests that students' location in the classroom influences how actively they communicate and participate. Furthermore, flexible seating arrangements can improve interaction and engagement. Marx, Fuhrer, and Hartig (1999) reported that students in classrooms arranged for interaction asked more questions and engaged in more on-task behaviour. This indicates that interactive seating designs encourage active learning and participation.

Furthermore, Black (2007) emphasized the importance of proper classroom layout, stating that poor seating arrangements can negatively affect students' learning by up to 50%. This shows

that inappropriate seating design can significantly reduce learning effectiveness and student performance. Overall, the literature shows that seating arrangements significantly influence student engagement, communication, behaviour, classroom management, and student participation. However, it is still not clear which seating arrangement is the most effective for increasing student participation. Some classrooms continue to use traditional seating, even though it may limit interaction and engagement. Therefore, further investigation is needed to understand how different seating arrangements influence students' participation and learning outcomes.

The purpose of this study is to examine how various classroom seating arrangements influence student engagement and participation in Grade 4 classes. This research aims to identify which seating layouts promote more active learning and interaction among students.

Research questions:

1. How do different classroom seating arrangements affect student engagement in Grade 4 classrooms?
2. Which seating layouts encourage more student participation and interaction?
3. How does the teacher's position in the classroom influence student attention and involvement?

This paper first explains how different classroom seating arrangements can affect student engagement. Then it reviews studies on classroom layouts and participation. The methodology and results show which arrangements promote active learning. Finally, it discusses ways to increase student engagement and concludes with recommendations for teachers.

MATERIALS AND METHODS

Research design: At the beginning of the study, students were seated in traditional rows. Five students sitting at the back were talking to each other, which limited their focus and participation. This initial seating arrangement showed that some students were easily distracted and did not fully engage in classroom activities.

In this study, a mixed-method research design was used to see how different seating arrangements affect students' participation and interaction during English lessons. This method was chosen because using only one type of data would not give a full understanding of what happens in the classroom. The study was carried out at Secondary School No. 20 in the Uzbekistan district of Fergana region. The participants were 15 Grade 4 students, including both boys and girls, all with a similar level of English.

Both numerical data and observations were collected to see how students behave under different seating arrangements. The survey results helped to show general trends, while observing students in class gave a better idea of how they interact and take part in activities. Earlier studies in language teaching show that the classroom setup affects how students communicate, work together, and participate. This research looked at the same idea in a real classroom, testing different ways of arranging the students' seats.

Lessons were conducted normally, without any artificial changes, so students acted naturally. Using both surveys and observations made the results more trustworthy and balanced.

Procedure and tools: In this study, seating arrangement was treated as the independent variable, while students' participation, interaction, and engagement were considered the dependent variables. To collect data, three main tools were used: teacher survey, student survey, and observation checklist.

Student survey: A paper-based survey was conducted with the 15 students to understand their preferences and feelings toward different seating arrangements. The survey was completed anonymously, allowing students to express their opinions honestly and freely.

Reason for paper-based survey: Since the students are in Grade 4 and do not have access to mobile devices or computers in class, a paper-based survey ensured that all students could participate easily and answer honestly. This format also made it simpler for the researcher to distribute, collect, and analyze the responses.

Student survey questions;

1. Do you like your current seat? A) Yes; B) No; C) A little.
2. Where do you prefer to sit? A) In the front; B) In the middle; C) In the back; D) Alone.
3. Which seating style do you like most? A) Rows; B) Groups; C) U-shape; D) Circle.
4. Do you get distracted easily in your current seat? A) Yes; B) No; C) Sometimes.
5. What distracts you the most? A) Classmates talking; B) Noise from outside; C) Sitting with friends; D) Being too far from the board.
6. Does your seat help you participate more in class? A) Yes; B) No.
7. Do you like working in groups? A) Yes, very much; B) A little; C) No.
8. Do you talk more when you sit next to your friends? A) Yes; B) No; C) Sometimes.
9. Write one thing that makes it hard for you to pay attention.
10. Write one thing that helps you pay attention in class.

Teacher survey: Teachers completed a short survey to provide their perspectives on how seating arrangements affect student participation and interaction. This allowed for additional insights based on teaching experience.

Reflective journaling: The teacher kept a reflective journal to record daily observations about how different classroom seating arrangements influenced student participation and engagement. Six lessons were observed over three weeks to identify patterns and changes in students' behavior. Firstly, student participation was recorded in each lesson based on seating positions, such as front, middle, back rows, and group or traditional seating. The teacher noted how often students answered questions, asked questions, and took part in discussions. The general classroom atmosphere and students' motivation were also recorded, as they helped to understand engagement levels.

Secondly, the teacher reflected on instruction clarity and classroom management. It was observed whether students in different seating positions understood the lesson equally well and how seating affected their attention and focus. Any problems, such as low participation or off-task behavior, were also noted for analysis. Lastly, after each lesson, the teacher wrote suggestions for improvement, such as changing seating arrangements or grouping students differently to increase interaction. Students' informal feedback was also considered to understand their preferences. These reflections helped improve future lesson planning and student engagement.

The study was conducted over a three-week period. Each lesson was observed for approximately 45 minutes during regular classroom instruction. The main focus was to examine how different seating arrangements affect student participation and engagement.

In the first phase, traditional row seating was used. Students were seated in straight rows facing the teacher. This arrangement was used as a baseline to observe students' normal participation and behavior in a traditional classroom setting. In the following phases, alternative seating arrangements were introduced. First, the seating was changed to a U-shaped arrangement, where desks were organized in a semi-circle to allow better visibility and interaction between students and the teacher. After that, group seating was implemented, where students were placed in small groups to encourage discussion, cooperation, and peer interaction.

Throughout all lessons, students were not moved based on behavior, and seating positions remained consistent during each session. The teacher observed and recorded student participation, engagement, and attention levels under each seating arrangement. However, it is still not clear which seating arrangement is the most effective for increasing student participation. Some classrooms continue to use traditional seating, even though it may limit interaction and engagement. Therefore, further investigation is needed to understand how different seating arrangements influence students' participation and learning outcomes. The purpose of this study is to examine how various classroom seating arrangements influence student engagement and participation in Grade 4 classes. This research aims to identify which seating layouts promote more active learning and interaction among students.

RESULTS

The results show that most students do not really like their current seats. Only 33.3% of students said they like their seat, while 40% said "a little" and 26.7% said they do not like it. This means many students are not fully satisfied. The main finding is that most students prefer to sit in the front of the classroom (46.7%). Fewer students prefer the middle (26.7%), the back (13.3%), or sitting alone (13.3%). This shows that students feel more comfortable and focused when they sit in the front. In terms of seating style, 40% of students prefer group seating and 33.3% prefer U-shape, while only 26.7% prefer traditional rows. This means students like interactive seating more. However, distraction is still a problem. About 33.3% of students said they get distracted easily, and 40% said "sometimes." The main distractions are classmates talking (60%) and sitting with friends (46.7%). Participation is slightly higher, as 60% of students said their seat helps them participate more in class, while 40% said it does not.

Teacher survey results

Question 1: What grade level do you teach?

According to the chart, the respondents are equally divided between primary school (42.9%) and middle school (42.9%) teachers. A smaller portion of the sample, representing 14.3%, consists of teachers working with high school students (grades 10–11). Overall, the results indicate that the seating strategies discussed are primarily being applied in early and intermediate education stages.

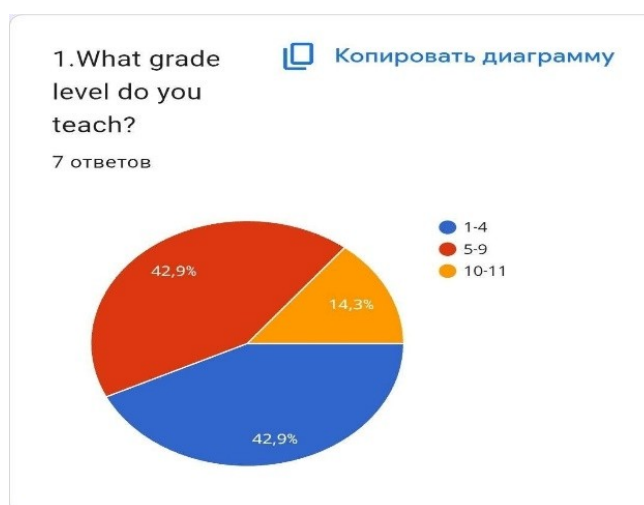


Diagram 1. Teacher survey results: grade level

Question 2: How many years of teaching experience do you have?

The data show that the vast majority of respondents (85.7%) are early-career educators with 0–3 years of teaching experience. The remaining 14.3% have between 4 and 7 years of experience.

This suggests that the feedback reflects the perspectives of a younger generation of teachers who may be more inclined to experiment with classroom management techniques.

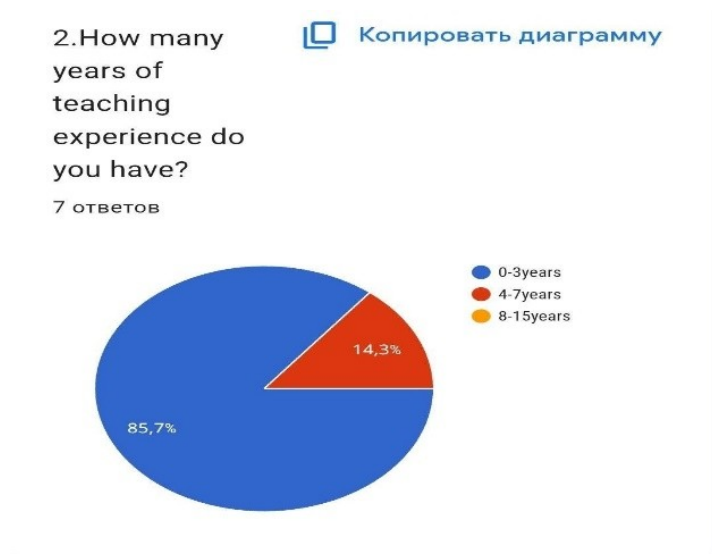


Diagram 2. Teacher survey results: teaching experience

Question 3: Do you have pupils who like to talk to each other instead of paying attention?

The results for this question are unanimous, with 100% of respondents indicating that they deal with students who prioritize peer conversation over classroom instruction. This highlights that student distraction is a universal challenge, regardless of the teacher's experience or the grade level taught.

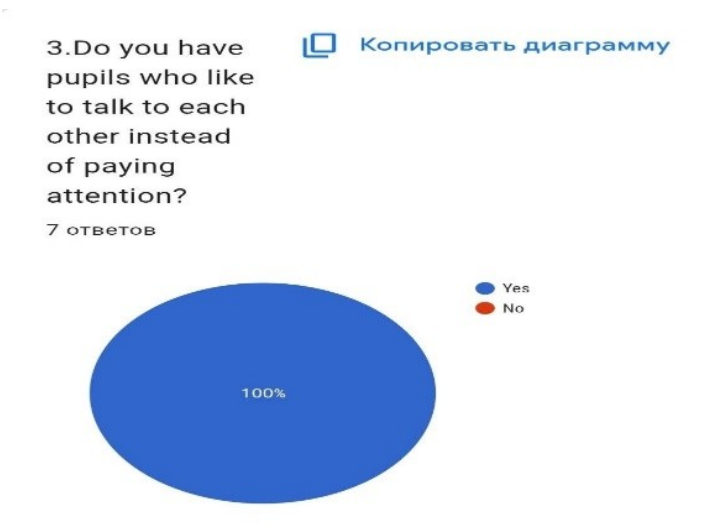


Diagram 3. Teacher survey results: pupils talking instead of paying attention

Question 4: How often do you change seating arrangements?

According to the survey, the largest proportion of teachers (71.4%) change their students' seating arrangements every week. Meanwhile, 14.3% of respondents perform this task every day, and another 14.3% do so every month. This frequent rotation indicates that teachers actively use seating as a dynamic tool for classroom management.

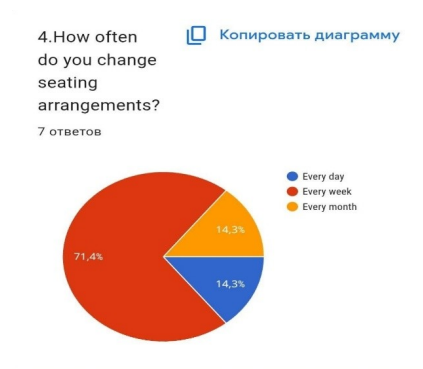


Diagram 4. Teacher survey results: frequency of changing seating arrangements

Question 5: In your opinion, does changing seating arrangements improve students' attention?

The chart demonstrates total consensus among the participants, as 100% of respondents believe that changing seating arrangements effectively improves student attention. This indicates a high level of confidence in the pedagogical benefits of rotating student positions.

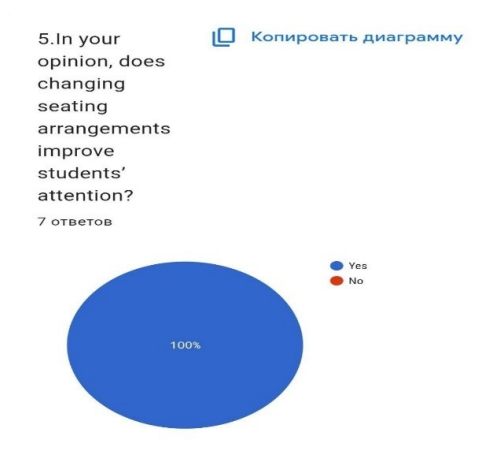


Diagram 5. Teacher survey results: effect of seating change on attention

Question 6: What type of seating arrangement do you usually use?

According to the chart, traditional rows remain the most common setup, used by 42.9% of respondents. Both U-shaped and group seating arrangements are utilized by 28.6% of teachers each. This shows a diverse approach to classroom layout, with over half of the teachers moving away from traditional seating.

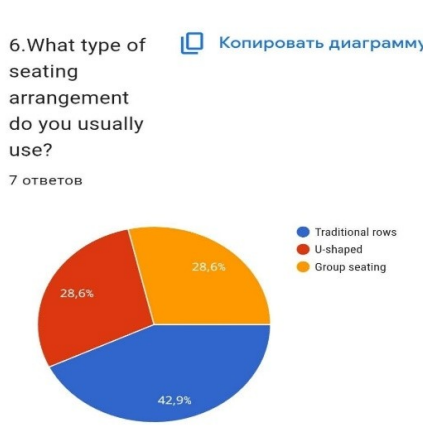


Diagram 6. Teacher survey results: seating arrangement usually used

Question 7: Have you noticed increased focus after changing seats?

The feedback shows that 100% of teachers have noticed a tangible increase in student focus after rearranging the classroom. These results confirm that physical changes in the learning environment have a direct and positive impact on student concentration.

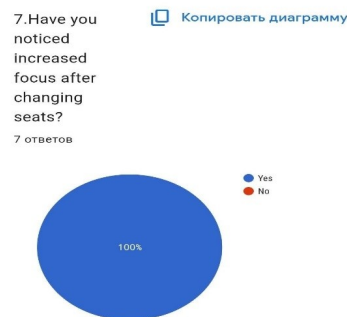


Diagram 7. Teacher survey results: increased focus after changing seats

Question 8: Students participate more when they sit:

The data reveal that the majority of teachers (71.4%) believe students participate more when they are seated near the teacher. On the other hand, 28.6% of respondents found that sitting in mixed-ability groups encourages higher participation. Interestingly, no teachers indicated that sitting with friends increases academic engagement.

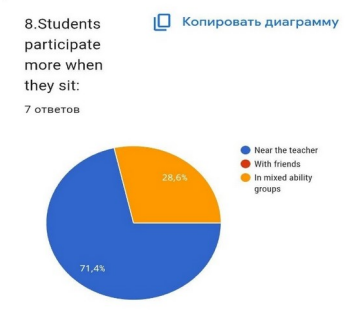


Diagram 8. Teacher survey results: seating position and participation

Question 9: After changing seats, students become:

The chart shows that 100% of respondents observed that students become more active after a seating change. This suggests that the novelty of a new seat prevents passivity and re-energizes the students' interest in the lesson.

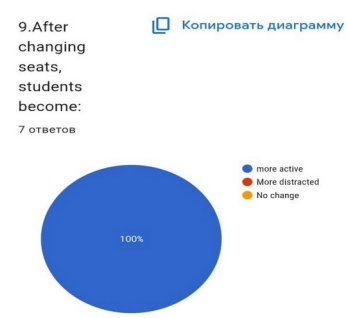


Diagram 9. Teacher survey results: student behaviour after changing seats

Question 10: What challenges do you face when changing seating arrangements?

According to the results, the primary obstacle for teachers is classroom space (57.1%), indicating that room size limits layout options. Additionally, 28.6% of respondents face student resistance, while 14.3% struggle with time management. These findings suggest that while the method is effective, physical and logistical constraints remain a significant hurdle.

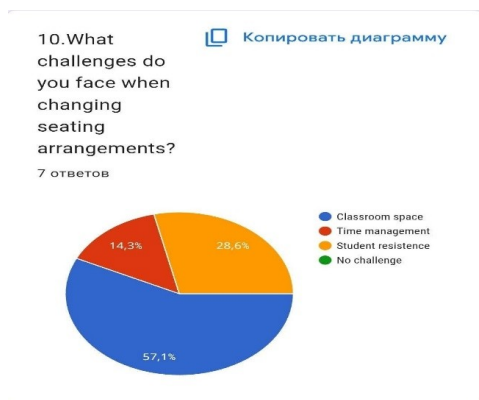


Diagram 10. Teacher survey results: challenges in changing seating arrangements

DISCUSSION

This section explains the reasons for the obtained results. The effectiveness of different seating arrangements can be explained by several factors. First, students sitting in the front rows were more focused and attentive during the lesson. They had better eye contact with the teacher, which increased their participation.

In addition, seating arrangements such as U-shape and group seating encouraged more interaction among students. This made it easier for them to communicate, share ideas, and work together. As a result, students became more active in classroom activities. Another reason is that some students did not like their current seating positions. According to the survey results, many students felt uncomfortable or less motivated in their usual seats. Changing the seating arrangement helped improve their interest and engagement.

Overall, flexible seating arrangements created a more active and supportive learning environment, which improved students' participation.

CONCLUSION

In conclusion, this study showed that classroom seating arrangement has a significant impact on students' participation and engagement. The results demonstrated that students sitting in front rows were more attentive, while interactive seating arrangements such as U-shape and group seating increased communication and collaboration among students. The findings also revealed that many students were not fully satisfied with their current seating positions. Changing the seating arrangement helped improve their motivation and classroom involvement. Overall, the study confirms that seating arrangement is an important factor in creating an effective learning environment. Teachers should consider using flexible and student-centered seating strategies to enhance participation and improve learning outcomes.

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IMPROVING READING COMPREHENSION SKILLS OF 7TH GRADE STUDENTS

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Abstract: Developing students' reading skills is considered an essential part of the learning process because it helps learners expand their vocabulary and better understand written texts. However, many seventh-grade students face difficulties in developing reading comprehension skills. Therefore, this study aims to investigate the main problems students experience in understanding English texts. The study was conducted in Norin district with 15 seventh-grade students. Data were collected through surveys, student interviews, and classroom observations with the assistance of an observer. The expected results indicated that some students have difficulties understanding long texts, possess limited vocabulary, and struggle to identify the main ideas of texts. Based on these findings, the study suggests that teachers should apply effective teaching strategies to improve students' reading comprehension skills.

Keywords: reading comprehension skills, improving reading comprehension, EFL students, middle school learners, vocabulary limitations, identifying main ideas, reading comprehension difficulties.

7-SINF O'QUVCHILARINING O'QIB TUSHUNISH KO'NIKMALARINI

RIVOJLANTIRISH

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Annotatsiya: O'quvchilarning o'qish ko'nikmalarini rivojlantirish ta'lim jarayonining muhim qismi hisoblanadi, chunki bu o'quvchilarga so'z boyligini kengaytirish va yozma matnlarni yaxshiroq tushunishga yordam beradi. Biroq ko'plab yettinchi sinf o'quvchilari o'qib tushunish ko'nikmalarini rivojlantirishda qiyinchiliklarga duch keladilar. Shu sababli, mazkur tadqiqot o'quvchilarning ingliz tilidagi matnlarni tushunishda duch keladigan asosiy muammolarini aniqlashni maqsad qiladi. Tadqiqot Norin tumanida 7-sinfning 15 nafar o'quvchisi ishtirokida o'tkazildi. Ma'lumotlar so'rovnomalar, o'quvchilar bilan suhbatlar hamda kuzatuvchi yordamida olib borilgan sinf kuzatuvlari orqali to'plandi. Kutilayotgan natijalar shuni ko'rsatdiki, ayrim o'quvchilar uzun matnlarni tushunishda qiyinchiliklarga duch keladi, ularning so'z boyligi cheklangan hamda matnning asosiy g'oyasini aniqlashda muammolar mavjud. Ushbu natijalarga asoslanib, tadqiqot o'qituvchilarga o'quvchilarning o'qib tushunish ko'nikmalarini rivojlantirish uchun samarali o'qitish strategiyalarini qo'llashni tavsiya etadi.

Kalit so'zlar: o'qib tushunish ko'nikmalari, o'qib tushunishni rivojlantirish, EFL o'quvchilari, o'rta maktab o'quvchilari, so'z boyligining cheklanganligi, asosiy g'oyani aniqlash, o'qib tushunishdagi qiyinchiliklar.

СОВЕРШЕНСТВОВАНИЕ НАВЫКОВ ПОНИМАНИЯ ПРОЧИТАННОГО У УЧАЩИХСЯ 7-ГО КЛАССА

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Аннотация: Развитие навыков чтения учащихся считается важной частью образовательного процесса, поскольку оно помогает обучающимся расширять словарный запас и лучше понимать письменные тексты. Однако многие учащиеся седьмого класса сталкиваются с трудностями при развитии навыков понимания прочитанного. Поэтому данное исследование направлено на выявление основных проблем, с которыми учащиеся сталкиваются при понимании текстов на английском языке. Исследование было проведено в Нарынском районе с участием 15 учащихся седьмого класса. Данные были собраны с помощью анкетирования, интервью с учащимися и наблюдений на уроках при содействии наблюдателя. Ожидаемые результаты показали, что некоторые учащиеся испытывают трудности при понимании длинных текстов, обладают ограниченным словарным запасом и затрудняются в определении основной идеи текста. На основе полученных результатов исследование рекомендует учителям применять эффективные стратегии обучения для улучшения навыков понимания прочитанного у учащихся.

Ключевые слова: навыки понимания прочитанного, развитие понимания прочитанного, учащиеся EFL, учащиеся средней школы, ограниченный словарный запас, определение основной идеи, трудности понимания прочитанного.

INTRODUCTION

Reading is a process of understanding and interpreting written text in order to extract meaning. Reading is the process of constructing meaning from written texts and is considered a complex skill requiring the coordination of various sources of information. Anderson et al. compared reading to a symphonic orchestra and explained it through three main ideas: first, reading is a holistic act; second, success in reading comes from long-term practice, similar to learning musical instruments; and third, like a musical score, a text may have multiple interpretations [1].

Reading is especially important for secondary school students, as they need to succeed in English entrance examinations. Therefore, the ability to read and comprehend texts effectively is crucial for EFL learners. Due to increasing academic demands, students must develop stronger reading comprehension skills [2]. However, a significant number of seventh-grade students encounter challenges when developing effective reading comprehension skills.

The objectives of this study are to identify the types of reading tasks in which seventh-grade students perform most effectively, to determine which types of reading tasks are most appropriate for seventh-grade students in terms of their level and age, and to examine students' attitudes and feelings toward engaging in reading practice during classroom lessons.

The study seeks to answer the following research questions: 1) In which type of reading tasks do students perform better? 2) Which type of reading tasks are suitable for the level and age of seventh-grade students? 3) How do students feel while doing reading practice during the lesson?

Classroom-based research is needed to explore seventh-grade students' reading comprehension and provide practical guidance for teachers. This study aims to identify the key difficulties students face in understanding English texts and to examine their attitudes toward reading activities. Based on the findings, the study proposes effective instructional strategies to enhance students' reading comprehension and engagement in the classroom.

Reading is a cognitive process involving three key elements: the reader, the text, and the interaction between them. There are three main models that explain second-language reading: the

bottom-up model, the top-down model, and the interactive model. There are also three main types of reading comprehension theories: mental representations, content literacy, and cognitive processes [3]. Chandran and Shah note that although reading is regarded as the most important skill in the academic sector, it is not always promoted successfully among students. If students fail to comprehend a text, language learning may not be successful as expected because reading supports all language skills [4].

Kholboeva recommends emphasizing critical analysis by encouraging students to ask questions and engage critically with texts, using diverse materials such as fiction, nonfiction, and multimedia resources, and integrating real-life events and discussions around reading materials to enhance contextual understanding [5]. Focusing on these areas can strengthen students' overall reading skills and prepare them for future assessments. In this process, the teacher's role is also an important factor in shaping students' attitudes toward reading tasks.

MATERIALS AND METHODS

The development of students' reading skills is a vital part of the learning process, as it expands vocabulary and enhances the understanding of written texts. Following the theoretical framework of Anderson et al. [1], reading is viewed as a process of constructing meaning from written texts through holistic action and consistent practice. This study is further grounded in the cognitive model discussed by Ahmadi and Pourhoseini Gilakjani [3], which emphasizes the interaction between the reader and the text.

Before conducting this research, the teacher usually provided students with academic and relatively long reading texts followed by true/false and matching-type comprehension activities. These activities were used to check students' understanding of the texts and to develop their reading comprehension skills. During these lessons, it became noticeable that many students had difficulty completing the tasks on time. One hour was usually given for completing the reading tasks. In addition, the reading materials were provided in paper form and consisted only of text.

Since the seventh-grade students were at an A1 level and had only recently studied basic tenses, many of them struggled to understand longer texts. Some students had difficulty recognizing basic vocabulary, while others found it challenging to identify the main idea or match information correctly. These difficulties indicated that the reading materials were not fully appropriate for their language level.

These classroom experiences encouraged the teacher to investigate students' reading comprehension difficulties in a more systematic way. To test the primary hypothesis that seventh-grade students struggle with long texts, limited vocabulary, and identifying main ideas, a mixed-method study was conducted. The research was situated in Norin district. The participants included 15 seventh-grade students who were selected because they were experiencing difficulties in developing reading comprehension skills within an EFL context at the A1 proficiency level.

The research design involved three primary data collection instruments. First, a Google Forms survey consisting of 10 multiple-choice questions was administered to 17 English teachers. The purpose of the survey was to identify teachers' perspectives on students' reading comprehension difficulties, including problems with long texts, limited vocabulary, and identifying main ideas. The survey also explored commonly used teaching strategies and challenges faced during reading lessons. Using only multiple-choice questions allowed structured and easy-to-analyze data to be collected.

Second, semi-structured interviews were conducted with students to examine their specific attitudes and feelings toward reading practice during lessons. The interviews explored whether

students liked reading English texts, what they found most difficult, whether they understood the main idea after reading a long text, what helped them understand a text better, and how often they practised reading English outside the classroom.

Third, classroom observations were carried out with the help of a partner teacher invited as an observer. The observer monitored students' participation, engagement, and interaction with reading tasks during lessons. This observation provided practical guidance on how students engage with English texts in real time and helped identify difficulties such as limited vocabulary, problems understanding long texts, and difficulty identifying the main idea.

Before analysis, all collected data were checked for completeness. Quantitative data from the teacher survey were analyzed using percentages. Qualitative data from interviews and classroom observations were analyzed thematically to identify common patterns. Data from different sources were compared to increase the accuracy and trustworthiness of the findings.

RESULTS

The results of the survey revealed several important findings.

1. How many years have you worked in the teaching field?
17 responses



Figure 1. Teachers' teaching experience.

Figure 1 shows that most respondents (58.8%) are early-career teachers with 0-2 years of experience, while 29.4% have 3-5 years of experience. The purpose of this question was to identify the teaching background of participants and ensure the reliability of responses from teachers working with seventh-grade students.

2. Have your students ever faced difficulties while doing reading activities?
17 responses

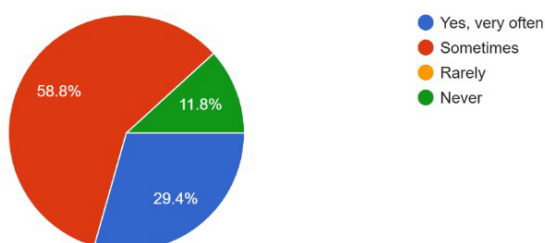


Figure 2. Frequency of students' difficulties during reading activities.

Figure 2 shows that nearly 88% of teachers reported that students experience reading difficulties very often or sometimes. The purpose of this question was to determine how frequently students face reading comprehension problems in classroom practice.

3. How do your students usually practice reading tasks during the lesson?
17 responses

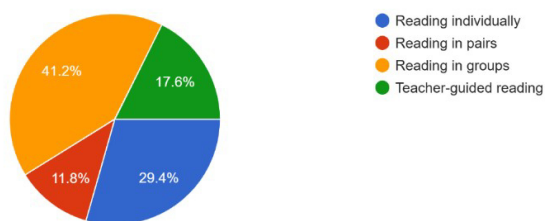


Figure 3. Methods used by teachers to practice reading tasks during lessons.

Figure 3 shows that group work (41.2%) is the most commonly used reading practice method, followed by individual reading and teacher-guided sessions. The purpose of this question was to identify the teaching methods commonly used to develop students' reading skills.

4. Are your students able to complete reading tasks on time?
17 responses

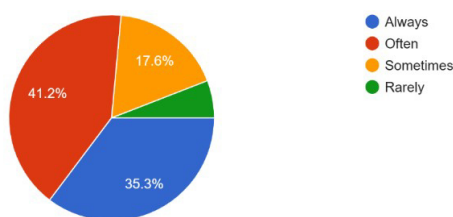


Figure 4. Students' ability to complete reading tasks on time.

Figure 4 indicates that most students often or always complete reading tasks on time, while some only sometimes manage to finish them. The purpose of this question was to examine whether students are able to complete reading tasks within the given time.

5. Have you ever noticed that your students feel bored during reading activities?
17 responses

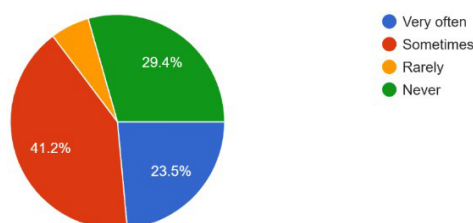


Figure 5. Frequency of students' boredom during reading activities.

Figure 5 shows that more than 60% of teachers notice student boredom very often or sometimes. The purpose of this question was to investigate students' engagement and interest during reading activities.

6. What types of reading activities are more suitable for 7th-grade students?
17 responses

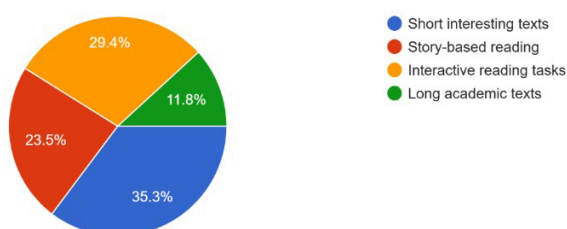


Figure 6. Suitable reading activities for seventh-grade students.

Figure 6 shows that short interesting texts and interactive tasks are considered the most suitable activities for seventh-grade learners. The purpose of this question was to determine which reading activities are appropriate for students' level and age.

7. Is it important to know students' levels before giving reading activities?
17 responses

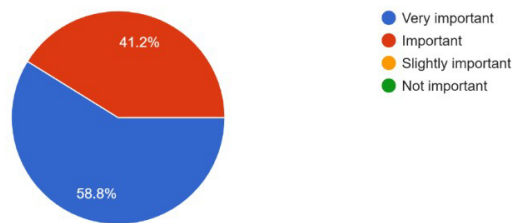


Figure 7. Importance of identifying students' reading level before assigning reading activities.

Figure 7 indicates that all respondents believe knowing students' reading level before assigning tasks is important. The purpose of this question was to identify the importance of level-appropriate reading materials.

8. If some students do not want to read long texts, what strategies would you use?
17 responses

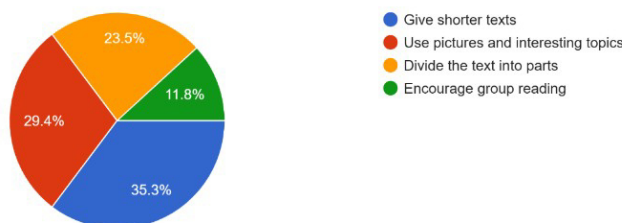


Figure 8. Strategies used when students do not want to read long texts.

Figure 8 shows that teachers prefer giving shorter texts or using pictures and interesting topics when students face difficulties with long texts. The purpose of this question was to identify strategies teachers use to support students with long reading passages.

9. Is it necessary to include reading activities in every lesson for 7th-grade students?
17 responses

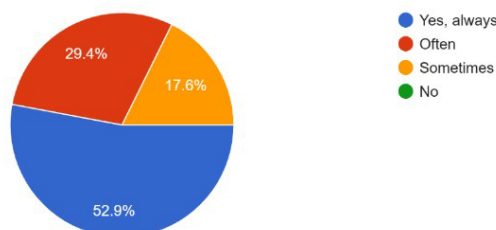


Figure 9. Necessity of including reading activities in every lesson.

Figure 9 indicates that the majority of teachers believe reading activities should be included in every lesson. The purpose of this question was to determine how often reading practice should be conducted.

10. In your opinion, what is the main purpose of teaching reading skills to students?
17 responses

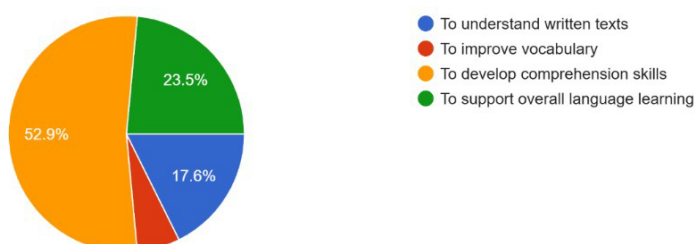


Figure 10. Main purpose of teaching reading skills to students.

Figure 10 shows that more than half of the teachers consider developing comprehension skills to be the main purpose of teaching reading. The purpose of this question was to identify teachers' main goals when using reading activities in the classroom.

Overall, the survey results indicate that seventh-grade students frequently experience difficulties in reading comprehension. The most commonly reported challenges include working with long texts, limited vocabulary, and maintaining interest during reading activities. In addition, student boredom during reading tasks was reported by more than half of the teachers. To further explore these findings, semi-structured interviews were conducted with 15 seventh-grade students to gain deeper insight into their reading comprehension difficulties.

Table 1. Results of semi-structured interviews with seventh-grade students

Interview questions	Main responses	Number of students
Do you like reading English texts?	Yes, but texts are difficult	9
	No, because I do not understand the meaning	6
What is the most difficult part?	Understanding vocabulary	7
	Understanding long texts	5
	Finding the main idea	3
Do you understand the main idea after reading a long text?	Sometimes	8
	No	5
	Yes	2
What helps you understand better?	Teacher explanation	6
	Pictures	5
	Vocabulary list	4
How often do you practice reading outside the classroom?	Rarely	10
	Sometimes	4

The interview results show that the majority of students experience difficulties in reading comprehension, particularly when working with long texts and unfamiliar vocabulary. Most students reported that they are unable to fully understand the meaning of texts and often struggle to identify the main idea.

The data also indicate that students find teacher explanations, pictures, and vocabulary support helpful in understanding reading materials. Furthermore, most students reported that they rarely practice reading outside the classroom, while only a few indicated occasional practice.

Peer classroom observation showed that most students participated actively during group work and discussion. However, some students showed difficulty during individual reading and needed teacher support. The observer noted that students showed interest in the reading topic, especially during interactive activities. Some students struggled with unfamiliar vocabulary and required additional explanation. Group work helped students understand the text better, while a few students needed more time to complete comprehension tasks.

Based on the observation, it is suggested that teachers use more pre-teaching vocabulary activities before reading, provide shorter texts, include more visual support to improve comprehension, and encourage students to practise independent reading.

DISCUSSION

The findings of this study indicate that seventh-grade students experience significant difficulties in reading comprehension. The survey results showed that a large number of teachers reported students struggling with long texts, limited vocabulary, and maintaining interest during reading activities. These findings were supported by the interview results, where students identified unfamiliar vocabulary and understanding long texts as the most challenging aspects of reading. In addition, many students reported difficulty identifying the main idea, which suggests that comprehension problems affect overall understanding of the text.

The peer classroom observation further confirmed these findings. During the observed lesson, students showed better participation during group work and interactive activities, while some students struggled during individual reading tasks. The observer also noted that students required teacher support to understand unfamiliar vocabulary and complete comprehension tasks. These observations align with both the survey and interview data, indicating that vocabulary knowledge and text difficulty play an important role in students' reading comprehension.

Another important finding is related to student engagement. The survey results showed that more than half of the teachers observed student boredom during reading activities. Similarly, the observation indicated that students were more interested when short texts, pictures, and interactive tasks were used. This suggests that long and complex texts may reduce motivation and negatively affect comprehension. Therefore, selecting appropriate reading materials based on students' level is essential.

Furthermore, the interview results revealed that most students rarely practise reading outside the classroom. Limited exposure to reading materials may contribute to low vocabulary knowledge and weak comprehension skills. This finding highlights the importance of providing more reading opportunities both inside and outside the classroom.

Overall, the findings suggest that using shorter texts, pre-teaching vocabulary, and incorporating interactive activities such as group work and discussion can improve students' reading comprehension. In addition, visual support and level-appropriate materials may help students better understand reading passages and increase their engagement during reading activities.

CONCLUSION

This study examined the reading comprehension skills of seventh-grade students using survey, interview, and classroom observation data. The findings show that students frequently face difficulties in understanding long texts, unfamiliar vocabulary, and identifying the main idea.

The results also indicate that limited vocabulary knowledge and low reading motivation negatively affect students' comprehension. In addition, students perform better during interactive activities such as group work and visually supported tasks compared to individual reading.

It can be concluded that reading comprehension skills can be improved by using shorter texts, teaching key vocabulary before reading, and applying interactive teaching methods. These strategies help increase student engagement and support better understanding of reading materials.

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IMPROVING GRADE 4 STUDENTS' SPEAKING PARTICIPATION THROUGH INTERACTIVE CLASSROOM STRATEGIES

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Abstract: In recent years, students' participation in speaking activities has become both essential and challenging, as many learners struggle to express themselves orally in English. Although a number of studies have addressed this issue, some teachers still face difficulties in finding effective strategies to engage students in speaking tasks, especially in 4th and 5th grades, where learners are expected to complete more speaking exercises during lessons. The main aim of this study is to investigate the reasons behind students' low participation in speaking activities and to identify effective classroom strategies to improve their engagement. The study employed classroom-based action research. The participants consisted of 22 fourth-grade students from School No. 15 in Shahrihan district, Andijan region. Data were collected through classroom observations, student questionnaires, and informal conversations with colleagues. After data collection, all information was carefully analyzed using descriptive methods. The findings revealed that initially only a small number of students actively participated in speaking activities, while some learners did not want to do speaking exercises because of shyness, lack of vocabulary, and fear of making mistakes. However, after implementing interactive strategies such as pair work, group work, the "Find a Friend" activity, a speaking dice game, and group storytelling, the number of active participants increased significantly. The results also showed that students became more confident, motivated, and willing to speak when they were engaged in interactive and collaborative tasks. This study can be useful for teachers who face similar challenges, as it highlights effective strategies for improving students' speaking participation. In conclusion, creating a supportive and interactive classroom environment helps enhance students' confidence and develop their speaking skills more effectively.

Keywords: speaking skills, student participation, interactive strategies, pair work, group work.

INTERAKTIV SINF STRATEGIYALARI ORQALI 4-SINF O'QUVCHILARINING GAPIRISHDAGI ISHTIROKINI OSHIRISH

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Annotatsiya: So'nggi yillarda o'quvchilarning gapirish faoliyatlarida ishtiroki muhim bo'lishi bilan birga murakkab masalaga ham aylanmoqda, chunki ko'plab o'quvchilar ingliz tilida og'zaki fikr bildirishda qiynalmoqda. Garchi bu muammo bo'yicha bir qator tadqiqotlar olib borilgan bo'lsa-da, ayrim o'qituvchilar hanuzgacha o'quvchilarni gapirish mashg'ulotlariga jalb qilish uchun samarali strategiyalarni topishda qiyinchiliklarga duch kelmoqdalar, ayniqsa 4–5-sinf o'quvchilari bilan ishlashda, chunki ular darslarda ko'proq gapirish mashqlarini bajaradilar. Mazkur tadqiqotning asosiy maqsadi o'quvchilarning gapirish faoliyatlarida past ishtirok etish sabablarini aniqlash hamda ularning faolligini oshirish uchun samarali sinf strategiyalarini

belgilashdan iborat. Tadqiqot sinfda olib borilgan amaliy tadqiqot shaklida tashkil etildi. Ishtirokchilar Andijon viloyati Shahrixon tumani 15-maktabning 4-sinfida tahsil olayotgan 22 nafar o'quvchidan iborat bo'ldi. Ma'lumotlar sinf kuzatuvlari, o'quvchilar so'rovnomalari hamda hamkasblar bilan norasmiy suhbatlar orqali to'plandi. To'plangan barcha ma'lumotlar tavsifiy usullar yordamida sinchkovlik bilan tahlil qilindi. Natijalar shuni ko'rsatdiki, dastlab o'quvchilarning faqat kichik qismi gapirish faoliyatlarida faol ishtirok etgan yoki ayrimlari uyatchanlik, so'z boyligining yetishmasligi va xato qilishdan qo'rqish kabi omillar sabab gapirish mashqlarini bajarishni istamagan. Biroq juftlikda ishlash, guruhda ishlash, "Find a Friend" faoliyati, gapirish uchun kubik o'yini hamda guruhliy hikoya tuzish kabi interaktiv strategiyalar qo'llanilgandan so'ng faol ishtirokchilar soni sezilarli darajada oshdi. Natijalar shuningdek, o'quvchilar interaktiv va hamkorlikka asoslangan vazifalarda ishtirok etganlarida o'zlariga ishonchi, motivatsiyasi va gapirishga bo'lgan istagi ortganini ko'rsatdi. Mazkur tadqiqot o'xshash muammolarga duch kelayotgan o'qituvchilar uchun foydali bo'lishi mumkin, chunki u o'quvchilarning gapirishdagi faolligini oshirish uchun samarali strategiyalarni yoritadi. Xulosa qilib aytganda, qo'llab-quvvatlovchi va interaktiv sinf muhitini yaratish o'quvchilarning o'ziga ishonchini oshirish hamda ularning gapirish ko'nikmalarini yanada samarali rivojlantirishga yordam beradi.

Kalit so'zlar: gapirish ko'nikmalari, o'quvchilar ishtiroki, interaktiv strategiyalar, juftlikda ishlash, guruhda ishlash.

ПОВЫШЕНИЕ УЧАСТИЯ УЧАЩИХСЯ 4-ГО КЛАССА В ГОВОРЕНИИ ПОСРЕДСТВОМ ИНТЕРАКТИВНЫХ КЛАССНЫХ СТРАТЕГИЙ

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Аннотация: В последние годы участие учащихся в заданиях по говорению стало как важным, так и сложным, поскольку многие учащиеся испытывают трудности в устном выражении своих мыслей на английском языке. Несмотря на то, что данная проблема рассматривалась в ряде исследований, некоторые учителя по-прежнему сталкиваются с трудностями при поиске эффективных стратегий для вовлечения учащихся в задания по говорению, особенно среди учеников 4–5 классов, которые выполняют больше устных упражнений на уроках. Основной целью данного исследования является выявление причин низкой активности учащихся в заданиях по говорению, а также определение эффективных стратегий для повышения их вовлечённости. Исследование было проведено в форме практико-ориентированного исследования в классе. В исследовании приняли участие 22 ученика 4 класса школы №15 Шахриханского района Андижанской области. Данные были собраны посредством наблюдений за уроками, анкетирования учащихся, а также неформальных бесед с коллегами. Все собранные данные были тщательно проанализированы с использованием описательных методов. Результаты показали, что на начальном этапе лишь небольшое количество учащихся активно участвовало в заданиях по говорению, а некоторые вовсе не хотели выполнять устные упражнения из-за таких факторов, как застенчивость, недостаточный словарный запас и страх совершить ошибки. Однако после внедрения интерактивных стратегий, таких как работа в парах, работа в

группах, задание «Find a Friend», игра с говорящим кубиком и групповое составление рассказов, количество активных участников значительно увеличилось. Результаты также показали, что учащиеся становились более уверенными, мотивированными и готовыми говорить при выполнении интерактивных и совместных заданий. Данное исследование может быть полезным для учителей, сталкивающихся с аналогичными трудностями, поскольку оно подчёркивает эффективные стратегии повышения активности учащихся в говорении. В заключение следует отметить, что создание поддерживающей и интерактивной образовательной среды способствует повышению уверенности учащихся и более эффективному развитию их навыков говорения.

Ключевые слова: навыки говорения, участие учащихся, интерактивные стратегии, работа в парах, групповая работа.

INTRODUCTION

In recent years, developing students' speaking skills has become a central goal in English language teaching; however, many young learners still struggle to participate actively in classroom speaking activities. Despite years of English instruction, it is common to observe that some 4th grade students are able to complete written tasks but remain silent when asked to speak. This situation raises an important question about the effectiveness of current teaching practices in promoting oral communication.

Syafrizal and Rohmawati (2017) noted that students avoid speaking due to lack of confidence and fear of making mistakes. However, working in small groups provides a safe environment for learners to practice and negotiate meaning. Other studies, such as Setiyadi, Sukirlan, and Mahpul (2016), support the use of social strategies to improve oral skills. Activities such as opinion sharing and search dynamics allow students to interact on topics of interest, which encourages communication and learning.

Furthermore, local educational authorities recommend not focusing too much on accuracy in the early years of learning, but rather allowing students to experiment. Pronunciation is also considered crucial for intelligibility (Foote, Holtby, & Derwing, 2011), while other elements such as rhythm and intonation complement effective communication (Alotaibi, 2014). On the one hand, studies such as those of Alwi and Sidhu (2013) have shown that peer assessment contributes significantly to the development of oral skills, particularly in contexts where students need to practice communicative interaction.

According to these authors, the simple act of receiving immediate feedback fosters greater awareness of aspects such as pronunciation, fluency, and grammatical structure, improving performance on future tasks. It can be concluded that working in pairs helps students overcome negative feelings that may become barriers to speaking skills. In Ecuador, the Ministry of Education (2016) highlights that collaborative learning is an essential component for the comprehensive development of students, promoting values such as empathy, respect, and shared responsibility. This approach aligns with working in groups in order to develop and improve speaking skills.

This study aims to investigate the reasons behind Grade 4 students' low participation in speaking activities and to examine the effectiveness of interactive classroom strategies in improving their engagement. The study seeks to answer the following research questions:

1. Why do Grade 4 students feel reluctant to participate in speaking activities?

2. How do interactive strategies such as pair work, group work, and speaking games influence students' participation?

3. To what extent can these strategies improve students' confidence and speaking performance?

METHODOLOGY

This section includes information about the participants and instruments. The present study was framed as action research, since its objective was to generate changes in the current strategies for student engagement in speaking activities. Action research is characterized as an evidence-based process used to improve educational practices, whether in teaching or learning (Hunter, 2017; Norton, 2014).

The students attended a public school where the researcher worked. The participants were 22 fourth-grade elementary school students, including 8 boys and 14 girls, aged between 10 and 11 years old. To answer the first research question, classroom observations and a student questionnaire were used. The questionnaire consisted of simple multiple-choice items designed to identify factors such as shyness, lack of vocabulary, fear of making mistakes, and students' attitudes toward speaking English. Classroom observations were conducted to examine students' behavior during speaking tasks and to identify common difficulties they faced.

To answer the second research question, several interactive classroom activities were implemented, including "Find a Friend," pair interviews, a speaking dice game, and group storytelling. Students' participation levels were observed and compared before and after the intervention in order to evaluate the effectiveness of these strategies.

To answer the third research question, follow-up observations and analysis of students' classroom behavior were conducted. Changes in students' willingness to speak, their ability to answer questions, and their level of engagement in activities were carefully monitored throughout the study. In order to better understand students' interest in speaking activities, their attitudes toward learning, and the importance they attach to speaking skills, a set of simple statements was provided to the learners. The aim was to explore their confidence level, motivation, and preferences related to speaking English in the classroom. Students responded to the statements using a simplified scale appropriate for their level.

The student questionnaire included the following items:

1. I speak English in class / Men darsda inglizcha gapiraman: Yes, I try; Sometimes; No.
2. I feel when I speak English / Men inglizcha gapirganda o'zimni his qilaman: Good; Okay; Bad.
3. I speak English because I am / Men inglizcha gapiraman, chunki men: Not shy; A little shy; Very shy.
4. When I do not know a word / So'z bilmaganimda men: I try to say something; I wait; I stop speaking.
5. Speaking English in class is / Darsda inglizcha gapirish: Easy; A little hard; Very hard.
6. I like speaking with friends / Do'stlarim bilan gapirishni yoqtiraman: Yes; Sometimes; No.
7. I speak English when the teacher asks me / O'qituvchi savol berganda inglizcha javob beraman: Yes; Sometimes; No.
8. I am afraid to make mistakes / Men xato qilishdan qo'rqaman: No; A little; Yes.
9. I speak more when we play games / O'yin o'ynaganimizda ko'proq gapiraman: Yes; Sometimes; No.

10. I want to speak English more / Men ko‘proq inglizcha gapirmoqchiman: Yes; A little; No.

The results indicated that a considerable number of students did not feel fully confident speaking English in front of others. Most learners selected moderate responses, showing that they were only partially confident and still experienced hesitation during speaking tasks. Similarly, when asked whether they understood themselves while speaking English, many students expressed uncertainty, suggesting limited confidence in their communicative ability.

In terms of pronunciation, the findings revealed that a significant number of students were not sure how to improve their pronunciation skills. This suggests that they lacked clear strategies or guidance for developing this aspect of speaking. However, more positive responses were observed in relation to collaborative learning. A large proportion of students agreed that working in groups helped improve their pronunciation and speaking skills. They also reported feeling more comfortable and relaxed when practicing English with classmates.

Furthermore, most students expressed a positive attitude toward peer-based learning. They indicated that they would enjoy using peer assessment in future lessons, which reflects their interest in interactive and student-centered classroom activities. Overall, the results suggest that while students have a certain level of interest in speaking activities, their confidence remains limited. At the same time, they show a clear preference for collaborative and interactive learning environments, which can play a key role in improving their speaking performance.

Teacher survey

This survey was conducted to collect teachers' and colleagues' opinions about students' speaking participation in English lessons. Teachers with different teaching experience took part in the survey, which helped to obtain reliable information.

The first question is about teachers' teaching experience to understand how experience influences their views on speaking development.

The second question asks whether teachers find it difficult to make students speak in English. The third question focuses on when children should start learning speaking.

The fourth question identifies the best way to start speaking practice, such as writing, memorizing, or short speech. The fifth question asks whether speaking activities are appropriate for Grade 4 students. The sixth question is about how much time should be given for speaking practice. The seventh question identifies the best speaking activity for young learners, including role-play, storytelling, and presentation. The eighth question explores reasons why students do not want to speak, such as fear or lack of vocabulary. The ninth question is about how to motivate students to speak in class.

The last question asks about the best way to start classroom research, including observation, interviews, or colleagues' help.

RESULTS

This section presents the results of the study and discusses their implications for improving students' participation in speaking activities. The results show that students' speaking participation improved significantly after the implementation of interactive classroom strategies. At the beginning of the study, most students were reluctant to speak. When they were asked simple oral questions, many remained silent, searched for answers in their notebooks, or refused to respond. Only 8 out of 22 students were able to answer basic questions confidently, while 3 students responded fully. Two students stated that they did not know English at all, and the remaining students showed minimal effort.

The findings indicate that students were more willing to participate when activities were structured, interactive, and engaging. For example, during a group-based writing and speaking activity using colored paper, all students contributed by writing at least one word or sentence. Furthermore, the use of short cartoon-based videos increased students' understanding and encouraged them to speak more freely. After watching and discussing the video, students were able to respond to questions more spontaneously compared to previous lessons.

Another important finding is that peer interaction played a crucial role in improving speaking performance. During group and pair activities, students supported each other by correcting mistakes and explaining answers. As shown in classroom observations, participation increased from approximately 10 active students to 17 after the intervention, demonstrating a clear improvement in engagement. This can be explained by the use of low-pressure, collaborative activities that reduced students' fear of making mistakes.

One possible reason is that students were given more opportunities to practice speaking in a supportive environment rather than being forced to answer individually. In addition, the use of visual materials such as videos and interactive games helped students understand the topic better and feel more confident. These findings are in line with previous research showing that interactive and student-centered approaches increase motivation and classroom participation.

The results support the idea that young learners are more likely to speak when they are engaged in meaningful and enjoyable activities rather than traditional, textbook-based exercises. These findings suggest that teachers should incorporate more interactive strategies such as group work, games, storytelling, and video-based tasks in primary classrooms. This has important implications for improving students' confidence, reducing anxiety, and developing their speaking skills more effectively.

How many teaching experience do you have?

19 responses

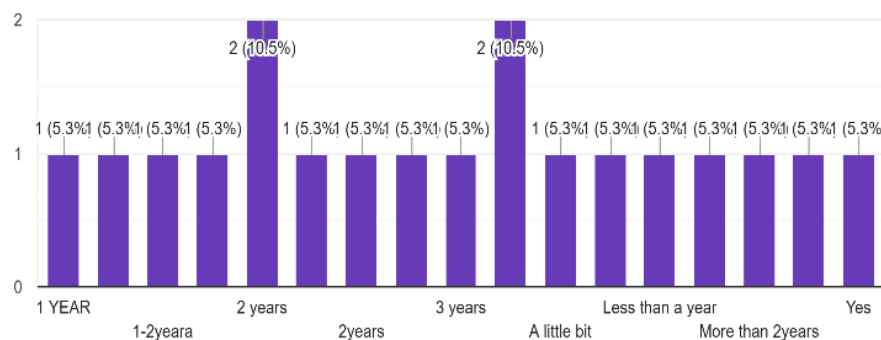


Figure 1. Teachers' teaching experience.

Why students do not want to speak ?

19 responses

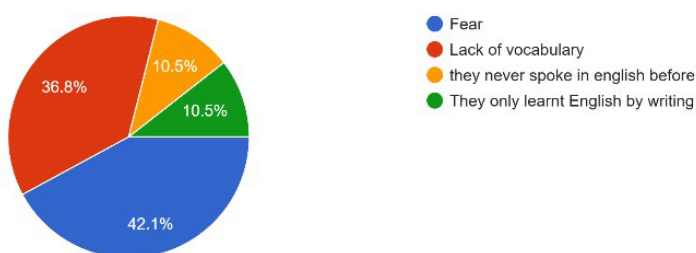


Figure 2. Teachers' opinions on why students do not want to speak.

It is right to try speaking activities during 4th grade students?
19 responses

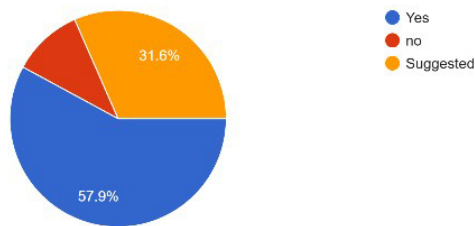


Figure 3. Teachers' views on introducing speaking activities in Grade 4.

Which activity is best for their age?
19 responses

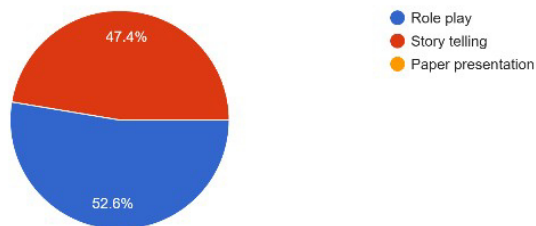


Figure 4. Teachers' opinions on the most suitable speaking activity for young learners.

what do you think how much time i should separate for their speaking lessons?
19 responses

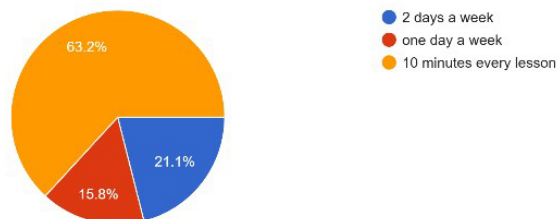


Figure 5. Teachers' opinions on the amount of time allocated for speaking practice.

Which is good to start teaching from?
19 responses

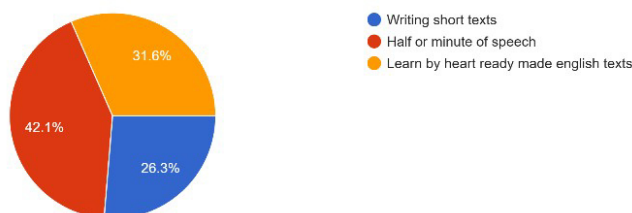


Figure 6. Teachers' opinions on how to start speaking lessons.

What do you think when exactly do school children start to learn speaking?
19 responses

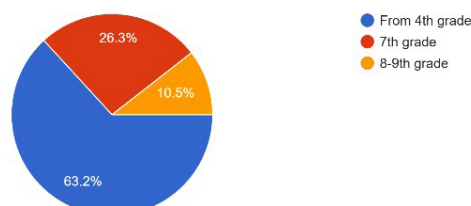


Figure 7. Teachers' opinions on when children should start learning speaking.

Do you find it difficult to make your students speak in English?
19 responses

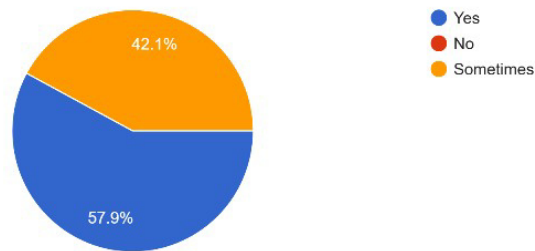


Figure 8. Teachers' responses about difficulties in making students speak English.

Do you find it difficult to make your students speak in English?
19 responses

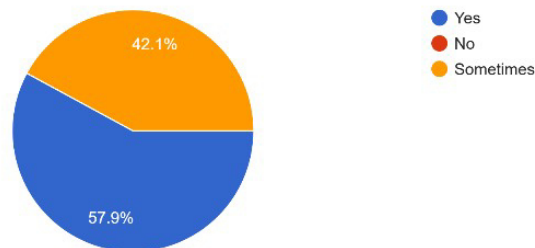


Figure 9. Teachers' opinions on motivating students to speak English in class.

Which is better to start researching?
19 responses

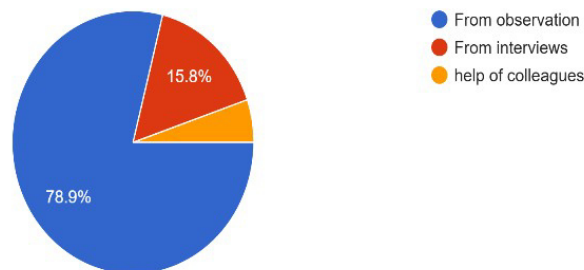


Figure 10. Teachers' opinions on the best way to start classroom research.

Data analysis

Before analysis, all the collected data were checked to make sure they were complete and usable. The students' and teachers' questionnaire results were analyzed using simple percentages to show how many learners gave similar answers about speaking activities. The classroom observations and teacher notes were analyzed by looking for common patterns, for example, how students behaved during speaking tasks, whether they were confident or shy, and how they reacted to pair work, group work, and speaking games.

To make the results more reliable, information from different sources, including questionnaires, observations, and teacher feedback, was compared. This helped the researcher to see whether the same ideas and problems appeared in different data. In this way, the findings became clearer and more trustworthy.

The results show a clear improvement in students' speaking participation after the intervention. Initially, only 10 out of 22 students actively participated in speaking activities. After

applying interactive strategies, this number increased to 17 students. In addition, classroom observations revealed that students became more confident and willing to speak during pair and group activities. The “Find a Friend” activity was particularly effective in encouraging shy students to participate. The speaking dice game increased motivation, while group storytelling improved collaboration and vocabulary use.

Overall, students showed higher engagement, more frequent participation, and reduced anxiety during speaking tasks. This section presents the results of the study and discusses their implications for improving students’ speaking participation and confidence in English lessons. The results show that students’ speaking participation and confidence improved after the intervention. In addition, the number of active students increased from 10 to 17 out of 22 learners, which shows a clear improvement in classroom engagement.

Students also became more willing to take part in speaking activities, especially during interactive tasks. Furthermore, shy students showed gradual progress in their participation. As shown in the classroom observations and questionnaire results, students initially reported low confidence in speaking due to shyness and fear of making mistakes. However, during game-based and group activities, their participation increased significantly. Group work was more effective than pair work in encouraging overall participation, while pair work helped students practice speaking individually. Activities such as “Find a Friend” were especially successful in improving engagement.

This can be explained by the use of interactive, game-based, and group activities during lessons. One possible reason is that students felt less pressure and more support when speaking with classmates. Structured activities also helped students prepare their answers before speaking, which reduced anxiety. Another reason is that writing simple questions before speaking helped students organize their ideas more easily. These findings are in line with previous studies showing that interactive and collaborative learning improves students’ speaking confidence and participation.

This supports the idea that young learners perform better in supportive and low-stress classroom environments. These findings suggest that speaking activities should be designed in a structured and interactive way for primary school learners. This has important implications for English teachers, as using games, group work, and guided speaking tasks can significantly reduce students’ fear and improve participation. Overall, the findings demonstrate that the intervention was effective in improving students’ speaking participation and confidence in English lessons.

DISCUSSION

The improvement in students’ speaking participation can be explained by the use of interactive and student-centered learning strategies. These activities created a low-anxiety environment where students felt more comfortable speaking. Pair and group work allowed students to support each other, which reduced fear of making mistakes. Game-based activities such as the speaking dice increased motivation and made learning more enjoyable.

These findings are consistent with previous research that emphasizes the importance of interactive learning in developing speaking skills. The results also show that traditional textbook-based teaching alone is not sufficient to improve speaking ability in young learners. Therefore, teachers need to provide activities that encourage communication, cooperation, and repeated practice in a supportive classroom atmosphere.

CONCLUSION

This study concludes that interactive classroom strategies significantly improve Grade 4 students' speaking participation. Activities such as "Find a Friend," pair interviews, speaking dice games, and group storytelling increased students' confidence and engagement. The study suggests that teachers should integrate more interactive and communicative activities into English lessons to improve students' speaking skills. Creating a supportive and enjoyable classroom environment is essential for reducing anxiety and encouraging active participation.

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14.00.00 – Tibbiyot fanlari

14.00.00 – Medical sciences

14.00.00 – Медицинские науки

THE RELATIONSHIP BETWEEN OBESITY AND DIABETES

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Abstract: This article analyzes the relationship between obesity and diabetes. Studies show that excess weight and fat accumulation lead to insulin resistance and hormonal imbalance in the body, which increases the risk of developing diabetes. The article scientifically reviews different types of obesity, methods of their assessment, and their impact on diabetes. It also analyzes prevention and treatment strategies, including the importance of proper nutrition, physical activity, and lifestyle changes. This article helps to understand the complex mechanisms between obesity and diabetes and to identify preventive and health-promoting measures.

Keywords: Obesity, weight gain, insulin resistance, hormonal imbalance, metabolic syndrome, diabetes, lifestyle, prevention.

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Annotatsiya: Mazkur maqolada semizlik va diabet o'rtasidagi bog'liqlik tahlil qilinadi. Tadqiqotlar shuni ko'rsatadiki, ortiqcha vazn va yog' to'planishi organizmda insulin rezistentligi hamda gormonal nomutanosiblikni keltirib chiqaradi, bu esa diabet rivojlanish xavfini oshiradi. Maqolada semizlikning turli turlari, ularni baholash usullari va diabetga ta'siri ilmiy jihatdan ko'rib chiqilgan. Shuningdek, profilaktika va davolash strategiyalari, jumladan, to'g'ri ovqatlanish, jismoniy faollik va turmush tarzini o'zgartirishning ahamiyati tahlil qilingan. Ushbu maqola semizlik va diabet o'rtasidagi murakkab mexanizmlarni tushunishga hamda profilaktik va sog'lomlashtiruvchi choralarni aniqlashga yordam beradi.

Kalit so'zlar: Semizlik, vazn ortishi, insulin rezistentligi, gormonal nomutanosiblik, metabolik sindrom, diabet, turmush tarzi, profilaktika.

ВЗАИМОСВЯЗЬ МЕЖДУ ОЖИРЕНИЕМ И ДИАБЕТОМ

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Аннотация: В данной статье анализируется взаимосвязь между ожирением и диабетом. Исследования показывают, что избыточный вес и накопление жира приводят к инсулинорезистентности и гормональному дисбалансу в организме, что увеличивает риск развития диабета. В статье с научной точки зрения рассматриваются различные типы ожирения, методы их оценки и влияние на развитие диабета. Также анализируются

стратегии профилактики и лечения, включая значение правильного питания, физической активности и изменения образа жизни. Статья способствует пониманию сложных механизмов взаимосвязи ожирения и диабета, а также выявлению профилактических и оздоровительных мер.

Ключевые слова: Ожирение, увеличение массы тела, инсулинорезистентность, гормональный дисбаланс, метаболический синдром, диабет, образ жизни, профилактика.

INTRODUCTION

Obesity and diabetes are among the most serious social and medical problems in the global healthcare system today. The number of overweight people worldwide is increasing, which significantly raises the risk of various chronic diseases, particularly diabetes. Studies show that obesity reduces insulin sensitivity in the body and disrupts metabolic processes, ultimately leading to the development of diabetes. The type and degree of obesity also affect the risk of diabetes: visceral fat, or abdominal fat, is particularly associated with a high risk. However, lifestyle, dietary habits, lack of physical activity, and genetic factors also play a role in the development of these diseases. This article scientifically analyzes the complex mechanisms between obesity and diabetes, examining their assessment methods, risk factors, and preventive measures. The goal is to provide scientific recommendations for the identification, prevention, and development of strategies to improve diabetes associated with obesity.

MATERIALS AND METHODS

Obesity is a chronic metabolic disorder characterized by the excessive accumulation of fat in the human body to an extent that may impair health and increase the risk of numerous non-communicable diseases, particularly diabetes mellitus. In medical and epidemiological studies, obesity is usually evaluated using indicators such as body mass index (BMI), waist circumference, and waist-to-hip ratio. Among the different forms of obesity, two major patterns are often distinguished: general obesity and abdominal obesity. General obesity refers to an overall increase in body fat distributed across various parts of the body, whereas abdominal obesity is specifically associated with the accumulation of visceral fat in the abdominal cavity around internal organs such as the liver, pancreas, and intestines. This distinction is clinically important because abdominal obesity has been shown to have a stronger association with metabolic dysfunction and the development of type II diabetes mellitus. Visceral adipose tissue is metabolically active and contributes significantly to disturbances in glucose and lipid metabolism. It releases free fatty acids and inflammatory mediators directly into the portal circulation, thereby affecting liver metabolism and promoting insulin resistance more aggressively than subcutaneous fat.

RESULTS

The relationship between obesity and diabetes is largely mediated through metabolic mechanisms that alter normal physiological processes. Excess fat tissue is no longer viewed merely as a passive energy storage site, but rather as an active endocrine organ capable of producing numerous bioactive molecules, including cytokines, adipokines, and inflammatory mediators. As adipose tissue expands, especially in obese individuals, it becomes associated with chronic low-grade inflammation. This inflammatory environment disrupts cellular signaling pathways involved in glucose regulation and insulin action. As a result, the transport of glucose from the bloodstream into muscle and fat cells becomes less efficient. In parallel, obesity contributes to dyslipidemia, characterized by elevated triglyceride levels, increased low-density lipoprotein (LDL), and reduced high-density lipoprotein (HDL), which further aggravates insulin resistance and metabolic

syndrome. These metabolic abnormalities form the basis for the close pathophysiological link between obesity and diabetes and explain why obesity is one of the most important risk factors for the disease.

One of the central mechanisms connecting obesity with diabetes is insulin resistance. Insulin is a hormone produced by the beta cells of the pancreas and is responsible for facilitating the uptake of glucose by body tissues for energy production or storage. In obese individuals, especially those with excess abdominal fat, the body's tissues become less responsive to insulin. This reduced responsiveness means that the same amount of insulin is no longer sufficient to maintain normal blood glucose levels. Consequently, the pancreas attempts to compensate by secreting larger amounts of insulin, leading to a state known as hyperinsulinemia. Over time, this compensatory mechanism becomes insufficient, and pancreatic beta-cell function begins to decline. When insulin secretion can no longer overcome the resistance of peripheral tissues, blood glucose levels rise and type II diabetes develops. In addition, obesity increases the release of free fatty acids into the circulation, which can accumulate in the liver and muscles, further impairing insulin signaling. The liver also becomes more active in producing glucose through gluconeogenesis, even when blood sugar levels are already elevated, which contributes to persistent hyperglycemia. Thus, insulin resistance represents a key metabolic bridge between obesity and diabetes.

Hormonal imbalance is another critical factor in the obesity–diabetes relationship. Adipose tissue secretes several hormones and hormone-like substances that regulate appetite, energy balance, inflammation, and glucose homeostasis. Among these, leptin, adiponectin, and resistin are especially important. Leptin is primarily responsible for signaling satiety to the hypothalamus and regulating energy intake and expenditure. In obese individuals, leptin levels are usually elevated; however, the body often becomes resistant to its effects, a condition referred to as leptin resistance. As a result, appetite control and energy regulation become impaired, contributing to further weight gain. Adiponectin, in contrast, has protective metabolic effects because it enhances insulin sensitivity and possesses anti-inflammatory properties. However, adiponectin levels tend to decrease as body fat increases, particularly in abdominal obesity. This reduction contributes to worsening insulin resistance and impaired glucose metabolism. Resistin is another adipokine that has been associated with increased insulin resistance and inflammatory activity. In addition to these adipose-derived hormones, obesity may also influence cortisol levels, reproductive hormones, and gastrointestinal peptides involved in hunger and satiety, such as ghrelin and peptide YY. Therefore, the association between obesity and diabetes is not solely a consequence of excess body mass but is deeply rooted in endocrine dysregulation and altered metabolic signaling.

DISCUSSION

The progression from obesity to diabetes is also influenced by lifestyle-related factors, many of which are modifiable. Sedentary behavior, excessive caloric intake, poor dietary quality, irregular eating patterns, and insufficient physical activity are major contributors to weight gain and metabolic dysfunction. Diets high in refined carbohydrates, sugar-sweetened beverages, saturated fats, and ultra-processed foods have been strongly linked to both obesity and diabetes. In contrast, a diet rich in whole grains, vegetables, fruits, legumes, lean protein, and unsaturated fats supports metabolic health and improves insulin sensitivity. Physical activity is equally essential, as regular exercise promotes glucose uptake by skeletal muscles independently of insulin and helps reduce visceral fat accumulation. Even moderate forms of activity, such as brisk walking, cycling, or daily household movement, have been shown to improve glycemic control and reduce the risk of

diabetes. Moreover, adequate sleep, stress management, smoking cessation, and limiting alcohol consumption are important lifestyle factors that influence body weight and metabolic balance. Prevention strategies should therefore emphasize comprehensive lifestyle modification rather than focusing only on weight reduction. Public awareness campaigns, school-based health education, nutritional counseling, and community-level interventions can all contribute to reducing the burden of obesity-related diabetes.

Early diagnosis and preventive screening are essential in addressing the growing overlap between obesity and diabetes. Many individuals remain unaware that they are in a prediabetic or insulin-resistant state until symptoms or complications appear. Routine assessment of BMI, waist circumference, fasting glucose, glycated hemoglobin (HbA1c), and lipid profile can help identify at-risk individuals before diabetes becomes established. Early intervention at this stage can significantly reduce long-term health complications such as cardiovascular disease, kidney dysfunction, neuropathy, and retinopathy. In clinical practice, multidisciplinary approaches involving physicians, endocrinologists, nutritionists, physical therapists, and public health educators are often the most effective in managing obesity and preventing diabetes. Educational interventions are especially important because many patients require support in understanding the long-term health consequences of obesity and in maintaining sustainable lifestyle changes.

From a global public health perspective, obesity and diabetes are now considered twin epidemics. International studies consistently show a dramatic increase in the prevalence of overweight and obesity across both developed and developing countries. Urbanization, reduced physical labor, increased screen time, changes in food environments, and the widespread availability of energy-dense foods have all contributed to this trend. As obesity rates continue to rise, the incidence of type II diabetes has increased correspondingly. Epidemiological evidence shows that obesity is one of the strongest modifiable risk factors for diabetes, particularly among adults over the age of 30, although recent trends also indicate a worrying increase among adolescents and young adults. This shift suggests that obesity-related metabolic disorders are appearing earlier in life, which may increase the burden of chronic disease in future generations. Population-based studies have also shown that central obesity is often a better predictor of diabetes risk than BMI alone, highlighting the need for more comprehensive screening tools in both research and clinical settings.

CONCLUSION

The relationship between obesity and diabetes is complex and multifaceted. Studies show that excess weight, especially abdominal obesity, leads to insulin resistance and hormonal imbalance, which significantly increases the risk of developing diabetes. However, lifestyle, dietary habits, and lack of physical activity exacerbate the link between these diseases. A healthy diet, regular exercise, and weight control are important for preventing diabetes and reducing obesity. In addition, early diagnosis and preventive measures can improve the effectiveness of detecting and treating diabetes associated with obesity. This article helps to understand the complex mechanisms between obesity and diabetes, identify risk factors, and develop preventive strategies, which are important for promoting health and preventing disease effectively.

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O‘TKIR ISHEMIK INSULTDA ENDOVASKULYAR REPERFUZIYA VA ERTA REABILITATSIYA: TASVIRLASHGA ASOSLANGAN INDIVIDUAL YONDASHUV

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Annotatsiya: O‘tkir ishemik insult dunyo bo‘yicha o‘lim va uzoq muddatli nogironlikning asosiy sabablaridan biri bo‘lib qolmoqda. To‘qima plasminogen aktivatori bilan intravenoz tromboliz insultni erta bosqichda samarali boshqarishni sezilarli darajada yaxshilagan bo‘lsa-da, uning samaradorligi tor terapevtik oynasi va katta tomir yopilishlarida to‘liq rekanalizatsiya bo‘lmasligi bilan cheklangan. So‘nggi paytlarda endovaskulyar reperfuziya texnikasidagi ilg‘or yutuqlar davolash sohasini tubdan o‘zgartirdi, bu esa tomirlarning muvaffaqiyatli rekanalizatsiya darajasini oshirish va klinik natijalarni yaxshilash imkonini berdi. Zamonaviy yondashuvlar, jumladan, mexanik trombektomiya, aspiratsion trombektomiya va intraarterial tromboliz, ayniqsa intravenoz trombolitik terapiya bilan birgalikda qo‘llanganda yuqori samaradorlikni namoyon qilmoqda. Shuningdek, yangi fibrinolitik vositalarning rivojlanishi va ultratovush yordamida tromboliz kabi yordamchi usullar terapevtik imkoniyatlarni yanada kengaytirdi. Reperfuziya strategiyalari bilan bir qatorda, o‘tkir va akut bosqichda rehabilitatsiyani erta boshlash nevrologik tiklanishni yaxshilash, neyroplastiklikni rag‘batlantirish va uzoq muddatli nogironlikni kamaytirishda muhim rol o‘ynaydi. Ilg‘or endovaskulyar aralashuvlarni erta rehabilitatsiya bilan integratsiyalash o‘tkir ishemik insultni boshqarishda kompleks va bemor markazli yondashuvni tashkil qiladi. Kelajakda individual, tasvirlashga asoslangan davolash strategiyalari va ko‘p tarmoqli yondashuvlar funksional natijalarni optimallashtirish va terapevtik oynalarni kengaytirishga e‘tibor qaratadi.

Kalit so‘zlar: O‘tkir ishemik insult; Endovaskulyar reperfuziya; Mexanik trombektomiya; Intravenoz tromboliz; Erta rehabilitatsiya; Neyroplastiklik; Rekanalizatsiya; Neyrointerventsiya; Insult natijalari; Tasvirlashga asoslangan terapiya.

ОСТРЫЙ ИШЕМИЧЕСКИЙ ИНСУЛЬТ: ЭНДОВАСКУЛЯРНАЯ РЕПЕРФУЗИЯ И РАННЯЯ РЕАБИЛИТАЦИЯ - ПЕРСОНАЛИЗИРОВАННЫЙ ПОДХОД НА ОСНОВЕ НЕЙРОВИЗУАЛИЗАЦИИ

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Аннотация: Острый ишемический инсульт по-прежнему является одной из ведущих причин смертности и длительной инвалидности во всем мире. Хотя внутривенная тромболизис с использованием активатора тканевого плазминогена значительно улучшила раннее лечение инсульта, её эффективность ограничена узким терапевтическим окном и неполной реканализацией при окклюзии крупных сосудов. Последние достижения в эндоваскулярных техниках реперфузии изменили подходы к лечению, обеспечивая более высокие показатели успешной реканализации сосудов и улучшенные клинические исходы. Современные методы, включая механическую тромбэктомию, аспирационную

тромбэктомии и интраартериальный тромболиз, показали высокую эффективность, особенно в сочетании с внутривенной тромболитической терапией. Кроме того, разработка новых фибринолитических препаратов и вспомогательные методы, такие как ультразвуковая усиленная тромболизис, расширили терапевтические возможности. Наряду со стратегиями реперфузии раннее начало реабилитации играет ключевую роль в улучшении неврологического восстановления, стимулировании нейропластичности и снижении долгосрочной инвалидности. Интеграция современных эндоваскулярных вмешательств с ранней реабилитацией представляет собой комплексный и ориентированный на пациента подход к управлению острым ишемическим инсультом. В будущем акцент будет сделан на индивидуализированные, основанные на визуализации стратегии лечения и мультидисциплинарный подход для оптимизации функциональных исходов и расширения терапевтических окон.

Ключевые слова: Острый ишемический инсульт; Эндоваскулярная реперфузия; Механическая тромбэктомия; Внутривенная тромболизис; Ранняя реабилитация; Нейропластичность; Реканализация; Нейроинтервенция; Исходы инсульта; Визуализированная терапия.

ACUTE ISCHEMIC STROKE: ENDOVASCULAR REPERFUSION AND EARLY REHABILITATION - A PERSONALIZED IMAGING-GUIDED APPROACH
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Abstract: Acute ischemic stroke remains one of the leading causes of mortality and long-term disability worldwide. While intravenous thrombolysis with tissue plasminogen activator has significantly improved early stroke management, its effectiveness is limited by a narrow therapeutic window and incomplete recanalization in large vessel occlusions. Recent advances in endovascular reperfusion techniques have transformed the treatment landscape, offering higher rates of successful vessel recanalization and improved clinical outcomes. Modern approaches, including mechanical thrombectomy, aspiration thrombectomy, and intra-arterial thrombolysis, have demonstrated superior efficacy, particularly when combined with intravenous thrombolytic therapy. In addition, the development of novel fibrinolytic agents and adjunctive methods such as ultrasound-enhanced thrombolysis has further expanded therapeutic possibilities. Alongside reperfusion strategies, early initiation of rehabilitation plays a critical role in enhancing neurological recovery, promoting neuroplasticity, and reducing long-term disability. The integration of advanced endovascular interventions with early rehabilitation represents a comprehensive and patient-centered approach to the management of acute ischemic stroke. Future perspectives emphasize individualized, imaging-guided treatment strategies and multidisciplinary care to optimize functional outcomes and extend therapeutic time windows.

Keywords: Acute ischemic stroke; Endovascular reperfusion; Mechanical thrombectomy; Intravenous thrombolysis; Early rehabilitation; Neuroplasticity; Recanalization; Neurointervention; Stroke outcomes; Imaging-guided therapy.

KIRISH

O'tkir ishemik insult (OII) zamonaviy nevrologiya va neyroxirurgiyaning eng dolzarb muammolaridan biri bo'lib, u global miqyosda o'lim va nogironlikning yetakchi sabablaridan biri sifatida qaraladi. Jahon sog'liqni saqlash tashkiloti ma'lumotlariga ko'ra, har yili millionlab bemorlar insult tufayli hayotdan ko'z yumadi yoki uzoq muddatli funksional cheklovlar bilan yashashga majbur bo'ladi. Patofiziologik nuqtai nazardan, OII miya to'qimalarida perfuziyaning keskin buzilishi bilan bog'liq bo'lib, bu holat energiya yetishmovchiligi, ion muvozanatining izdan chiqishi, glutamat orqali yuzaga keluvchi eksitotoksiklik va oksidlovchi stress orqali neyronlarning tez nobud bo'lishiga olib keladi. Ishemik jarayon ikki asosiy zona bilan tavsiflanadi: infarkt yadrosi va uning atrofidagi penumbra [3,7,12]. Penumbra - bu hali qaytariladigan, ammo xavf ostida bo'lgan miya to'qimasi bo'lib, aynan shu hududni saqlab qolish zamonaviy davolash strategiyalarining asosiy maqsadi hisoblanadi. Shu sababli, "time is brain" konsepsiyasi bilan bir qatorda "tissue is brain" modeli ham shakllanib, davolash qarorlarini faqat vaqtga emas, balki to'qimaning hayotiyligiga asoslash zarurligi ta'kidlanmoqda [2,5,11,16]. So'nggi o'n yillikda endovaskulyar reperfuziya usullari, ayniqsa mexanik trombektomiya, OII davolashida inqilobiy burilish yasadi. Mexanik trombektomiya katta tomir okklyuziyalarida (ICA, MCA) qon oqimini tez va samarali tiklash imkonini berib, rekanalizatsiya darajasini 80–85% gacha oshirdi. Stent-retrieverlar va aspiratsion tizimlarning rivojlanishi bilan bu usullar yanada samarali va xavfsiz bo'lib bormoqda. Ayniqsa, perfuzion KT va MRT yordamida bemorlarni tanlash imkoniyati terapevtik oynani 24 soatgacha kengaytirishga yordam berdi [1,4,9,18]. Biroq, faqat rekanalizatsiya bilan cheklanib qolish yetarli emas. Klinik amaliyot shuni ko'rsatadiki, muvaffaqiyatli reperfuziyaga qaramay, ayrim bemorlarda funksional tiklanish yetarli darajada kuzatilmaydi. Bu fenomen "futile recanalization" deb ataladi va u miya to'qimalarining qaytarilmas shikastlanishi, mikrosirkulyatsiya buzilishi va neyropastiklikning yetarli darajada faollashmasligi bilan bog'liq [6,10,13,17].

Shu nuqtai nazardan, erta reabilitatsiya insultni davolashning ajralmas komponentiga aylanmoqda. Neyropastiklik jarayonlari ayniqsa insultdan keyingi dastlabki kunlarda maksimal darajada faollashadi, bu esa reabilitatsiya uchun "kritik oynani" yaratadi. Bu davrda to'g'ri tashkil etilgan reabilitatsiya sinaptogenez, neyron tarmoqlarning qayta tashkil topishi va funksional tiklanishni sezilarli darajada tezlashtiradi. Shu bilan birga, juda erta va intensiv mobilizatsiya ayrim hollarda zararli bo'lishi mumkin, chunki u miya perfuziyasini pasaytirishi va ikkilamchi shikastlanishga olib kelishi mumkin [7,9,12]. Shu sababli, reabilitatsiyaning vaqtini, intensivligini va turini individual tarzda tanlash zarur. Zamonaviy konsepsiya shuni ko'rsatadiki, optimal natijalarga erishish uchun endovaskulyar reperfuziya va erta reabilitatsiya bir-birini to'ldiruvchi jarayonlar sifatida qaralishi kerak. Bunda asosiy urg'u tasvirlashga asoslangan individual yondashuvga beriladi. Mazkur tadqiqotning maqsadi - o'tkir ishemik insultda endovaskulyar reperfuziya strategiyalari va erta reabilitatsiyaning integratsiyalashgan ta'sirini chuqur tahlil qilish hamda individual davolash algoritmlarini ishlab chiqishdir [10,11,14,18].

MATERIALLAR VA METODLAR

Mazkur ilmiy ishda o'tkir ishemik insult bilan og'rigan bemorlarni davolashda qo'llaniladigan zamonaviy reperfuziya strategiyalari va erta reabilitatsiya usullarining samaradorligi tizimli ravishda tahlil qilindi. Tadqiqot metodologiyasi dalillarga asoslangan tibbiyot prinsiplari asosida shakllantirildi va randomizatsiyalangan klinik tadqiqotlar, metaanalizlar hamda registr ma'lumotlari o'rganildi. Tahlil jarayonida asosiy e'tibor quyidagi parametrlar va mezonlarga qaratildi: bemorlarni tanlash, davolash oynasi, reperfuziya usullari,

neyroimaging natijalari va funksional chiqish ko'rsatkichlari. Bemorlarni tanlashda perfuzion KT va KT-angiografiya asosiy vosita sifatida qo'llanildi. Bu metodlar yordamida infarkt yadrosi, penumbra va kollateral qon aylanishi baholandi. Intravenoz tromboliz (IV-tPA) insult boshlanishidan keyingi dastlabki 4,5 soat ichida qo'llanilib, standart davolash usuli sifatida ko'rib chiqildi. Alteplaza 0,9 mg/kg dozada (maksimal 90 mg) qo'llanilib, uning samaradorligi va xavfsizligi ko'plab klinik tadqiqotlar bilan tasdiqlangan. Mexanik trombektomiya esa katta tomir okklyuziyalarida asosiy davolash usuli sifatida qo'llanildi. Ushbu usulda quyidagi texnikalar ishlatildi: stent-retrieverlar, aspiratsion tizimlar va kombinatsiyalangan yondashuvlar. Qurilma tanlashda tromb uzunligi, tomir diametri, kollateral status va anatomik xususiyatlar hisobga olindi.

Jadval 1. Reperfuziya usullari va klinik xususiyatlari

Usul	Ta'sir mexanizmi	Afzalliklari	Cheklovlari
IV-tPA	Fibrinoliz	Tez boshlanadi	Qon ketish xavfi
Stent-retriever	Mexanik ekstraktsiya	Yuqori samaradorlik	Texnik murakkablik
Aspiratsiya	Negativ bosim	Tezlik	To'liq chiqarilmaslik
Kombinatsiya	Ikki usul	Eng yuqori natija	Ko'proq resurs talab

Reabilitatsiya strategiyalari insultdan keyingi dastlabki 24–72 soat ichida boshlanishiga qarab baholandi. Reabilitatsiya dasturi quyidagilarni o'z ichiga oldi: erta mobilizatsiya, passiv va aktiv mashqlar, nafas mashqlari va kognitiv treninglar. Statistik tahlil natijalari turli klinik tadqiqotlar va metaanalizlar asosida umumlashtirildi.

NATIJALAR

O'rganilgan adabiyotlar va klinik tadqiqotlar shuni ko'rsatdiki, IV-rtPA bilan tezkor tromboliz davosi va mexanik trombektomiya (MT) giperakut ishemik insultli bemorlar uchun samarali reperfuzion strategiyalar hisoblanadi. IV-rtPA bilan davolangan bemorlar orasida 0–3 soat ichida davolanish, mRS 0–1 bo'yicha minimal nogironlikni ta'minlashda aniq afzallik ko'rsatdi. ECASS-III, CASES va SITS-ISTR registrlarining ma'lumotlari esa, 3–4,5 soatlik davolash oynasida ham sezilarli klinik foyda mavjudligini tasdiqlaydi. Shu bilan birga, 4,5 soatdan keyingi davolashda xavf foydadan oshishi mumkinligi aniqlangan.

Mexanik trombektomiya qurilmalari bilan amalga oshirilgan tadqiqotlar, ayniqsa katta arteriya okklyuziyalarida yuqori rekanalizatsiya darajalarini ko'rsatdi. Solitaire, Trevo Pro va ReVive kabi stent retriever qurilmalari bilan rekanalizatsiya darajasi 85% ga yetgan, bu esa klinik natijalarni sezilarli yaxshilashga imkon yaratadi. Coil retriever va Penumbra aspiratsion tizimlarining birinchi avlod qurilmalari esa, rekanalizatsiya samaradorligini ta'minlagan bo'lsa-da, uzoq muddatli klinik yaxshilanishni yetarli darajada ko'rsatmagan. Keyingi avlod MT qurilmalari – stent retrieverlar va rivojlangan aspiratsion tizimlar – qon oqimini tez tiklash va residual trombni kamaytirishda aniq afzalliklar bergan. Mexanik trombektomiya esa yuqori rekanalizatsiya darajasi bilan ajralib turadi. Ayniqsa, zamonaviy stent-retrieverlar va aspiratsion tizimlar yordamida qon oqimi tez tiklanadi va neyronlar saqlanib qoladi.

Jadval 2. Klinik natijalar

Ko'rsatkich	IV-tPA	MT	MT + reabilitatsiya
Rekanalizatsiya	40%	85%	85%+
mRS ≤2	O'rtacha	Yuqori	Eng yuqori
Nogironlik	Yuqori	Kam	Minimal

Erta reabilitatsiya esa motor va kognitiv tiklanishni tezlashtirdi. Ayniqsa, 24–48 soat ichida boshlangan reabilitatsiya eng samarali natijalarni ko'rsatdi

Jadval 3. MT qurilmalari – ishlab chiqaruvchi va ta'sir mexanizmi

MT qurilma nomi	Ishlab chiqaruvchi	Ta'sir mexanizmi
Merci Clot Retriever	Concentric Medical	Spiral retriever
Phenox	Phenox, Bochum, Germaniya	Spiral retriever / Aspiratsiya
Catch	Balt, Montmorency, Fransiya	Spiral retriever
Distal Access Catheter (DAC)	DAC; Concentric Medical, AQSh	Spiral retriever
Early Penumbra	Penumbra Inc., AQSh	Aspiratsiya
AngioJet	Possis Medical, MN, AQSh	Aspiratsiya / Reolitik trombektomiya
EKOS Primo	EKOS, Bothell, WA, AQSh	Ultrasonik asosda trombni parchalash
Neuroform	Stryker Neurovascular, AQSh	Stent-retriever
Solitaire	Covidien/Medtronic, Dublin, Irlandiya	Stent-retriever
Trevo	Stryker, Kalamazoo, Michigan, AQSh	Stent-retriever
ReVive™	Micrus Endovascular, CA, AQSh	Stent-retriever
APERIO	Acandis, Pforzheim, Germaniya	Stent-retriever
ERIC	MicroVention, CA, AQSh	Stent-retriever
Penumbra 5MAX ACE	Penumbra Inc., Kaliforniya, AQSh	Aspiratsiya
Penumbra ACE 64	Penumbra Inc., Kaliforniya, AQSh	Aspiratsiya
LaTIS Neurolaser	Latis Inc., Minneapolis, AQSh	Lazer yordamida rekanalizatsiya
MicroLysUS catheter	EKOS, Bothell, WA, AQSh	Ultrasonik asosda trombni parchalash

Umuman olganda, IV-rtPA va MT kombinatsiyasi, ayniqsa reperfuzion davolash vaqtida tezkorlik bilan birga qo'llanilganda, bemorlarning nevrologik tiklanishiga sezilarli ijobiy ta'sir ko'rsatadi. Shu bilan birga, erta reabilitatsiya bosqichi bilan birgalikda qo'llanilganda, neyropastiklikni rag'batlantirish va uzoq muddatli nogironlikni kamaytirish imkoniyatlari ortadi [4,10,13,17].

MUHOKAMA

Olingan natijalar shuni ko'rsatadiki, o'tkir ishemik insultni davolashda kompleks, ko'p bosqichli va integratsiyalashgan yondashuv eng samarali strategiya hisoblanadi [3,6,9,15]. Endovaskulyar reperfuziya va erta reabilitatsiya jarayonlari bir-biri bilan patofiziologik jihatdan uzviy bog'langan bo'lib, ular alohida qo'llanilganda emas, balki kombinatsiyalangan holda maksimal klinik natijalarni ta'minlaydi [1,8,13]. Reperfuziya miya to'qimalarini ishemiyadan qutqarishga xizmat qilsa, reabilitatsiya esa ushbu saqlab qolingani neyronal strukturalarning funksional tiklanishini ta'minlaydi. Zamonaviy ilmiy qarashlar shuni ko'rsatadiki, muvaffaqiyatli rekanalizatsiya har doim ham yaxshi funksional natija bilan yakunlanmaydi [2,7,16,19]. Bu holat

“futile recanalization” fenomeni bilan izohlanadi, ya’ni qon oqimi tiklangan bo’lsa ham, miya to’qimasida qaytarilmas shikastlanish yuz bergan bo’ladi. Ushbu muammoning asosiy sabablaridan biri mikrosirkulyatsiya buzilishi, endotelial disfunktsiya va reperfuziya jarayonida yuzaga keluvchi oksidlovchi stress hisoblanadi. Shu sababli, faqat tomirni ochish yetarli emas, balki tiklangan perfuziyadan maksimal foyda olish uchun neyroplastik jarayonlarni ham faollashtirish zarur [4,5,11,17].

Bu yerda perfuzion KT va KT-angiografiyaning roli alohida ahamiyat kasb etadi. Ushbu tasvirlash usullari orqali nafaqat tomir okklyuziyasi darajasi, balki penumbra va infarkt yadrosi o’rtasidagi nisbat ham aniqlanadi [6,10,12,18]. Bu esa bemorlarni individual tanlash va terapevtik oynani kengaytirish imkonini beradi. Natijada, “time-based” yondashuvdan “tissue-based” yondashuvga o’tish amalga oshiriladi, bu esa klinik natijalarni sezilarli darajada yaxshilaydi [1,2,3,4].

Endovaskulyar texnikaning tanlanishi ham muhim omil hisoblanadi. Stent-retrieverlar yuqori zichlikdagi tromblarda samarali bo’lsa, aspiratsion texnikalar tezkorligi va kam invazivligi bilan ajralib turadi. Kombinatsiyalangan yondashuv esa murakkab anatomik sharoitlarda eng yuqori rekanalizatsiya darajasini ta’minlaydi [8,9,14]. Shu bilan birga, angioarxitektonika va kollateral qon aylanishining holati ham natijalarga sezilarli ta’sir ko’rsatadi. Yaxshi rivojlangan kollateralalar penumbrani uzoqroq vaqt davomida saqlab turadi, bu esa davolash samaradorligini oshiradi. Erta reabilitatsiya esa insultdan keyingi tiklanish jarayonining ajralmas qismi hisoblanadi [5,7,13,19]. Neyroplastiklik jarayonlari ayniqsa insultdan keyingi dastlabki kunlarda maksimal darajada faollashadi [2,6,10,15]. Bu davrda sinaptogenez, aksonal sprouting va kortikal qayta tashkil topish jarayonlari kuchayadi. Shu sababli, aynan 24–48 soat oralig’ida boshlanadigan reabilitatsiya eng samarali hisoblanadi [4,8,12,17]. Bu davrda o’tkazilgan mashg’ulotlar motor funksiyalarni tiklash, mushak kuchini oshirish va kundalik faoliyatni yaxshilashga yordam beradi. Biroq, reabilitatsiya intensivligini noto’g’ri tanlash salbiy oqibatlarga olib kelishi mumkin. Juda erta va yuqori intensivlikdagi mobilizatsiya miya perfuziyasini kamaytirib, ikkilamchi ishemik shikastlanishga sabab bo’lishi mumkin. Shu sababli, reabilitatsiya dasturi individual tarzda, bemorning nevrologik holati, gemodinamik barqarorligi va kollateral qon aylanishi darajasiga qarab moslashtirilishi lozim [3,11,16].

Shuningdek, multidissipliner yondashuvning ahamiyati ham ortib bormoqda. Nevrolog, neyroxirurg, reabilitolog va radiologlarning hamkorligi bemorni kompleks baholash va optimal davolash strategiyasini tanlash imkonini beradi [9,13,18]. Bu esa nafaqat qisqa muddatli, balki uzoq muddatli natijalarni ham yaxshilaydi.

Kelajakda insultni davolashda sun’iy intellekt asosidagi diagnostika tizimlari, yangi avlod trombektomiya qurilmalari va individual reabilitatsiya protokollarini ishlab chiqish muhim yo’nalishlardan biri bo’lib qoladi [1,7,14,19]. Ayniqsa, real vaqt rejimida perfuziya va kollateral holatini baholovchi tizimlar klinik qaror qabul qilish jarayonini yanada optimallashtirishi mumkin [5,6,11,16]. Shu tarzda, o’tkir ishemik insultni davolashda asosiy maqsad - nafaqat tomirni ochish, balki funksional tiklanishni maksimal darajada ta’minlashdir. Bu esa faqat kompleks, individual va ilmiy asoslangan yondashuv orqali amalga oshirilishi mumkin [2,3,8,18].

XULOSA

O’tkir ishemik insultni boshqarishda vaqt omili asosiy ahamiyatga ega bo’lib, har bir daqiqa neyronlarning saqlanishi va funksional tiklanish imkoniyatiga ta’sir qiladi. Intravenoz tromboliz (IV-tPA) va mexanik trombektomiya (MT) kombinatsiyasi, ayniqsa reperfuziya davolashini erta boshlash bilan birga qo’llanganda, bemorlarning nevrologik tiklanishida sezilarli

ijobiy natijalar beradi. Endovaskulyar reperfuziya strategiyalari katta tomir yopilishlarida yuqori rekanalizatsiya darajalarini ta'minlab, klinik natijalarni yaxshilash imkonini beradi. Shu bilan birga, erta reabilitatsiya bosqichi neyroplastiklikni rag'batlantiradi, motor va kognitiv tiklanishni tezlashtiradi hamda uzoq muddatli nogironlik xavfini kamaytiradi. Kelajakda individual, tasvirlashga asoslangan va ko'p tarmoqli yondashuvlar OII bemorlarining funksional natijalarini optimallashtirish va terapevtik oynalarni kengaytirishga yo'naltirilgan. Umuman olganda, endovaskulyar reperfuziya va erta reabilitatsiya kombinatsiyasi o'tkir ishemik insultni boshqarishda kompleks, bemor markazli va samarali yondashuvni tashkil qiladi.

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15.00.00 – Farmatsevtika fanlari

15.00.00 – Pharmaceutical sciences

15.00.00 – Фармацевтические науки

PHARMACEUTICAL TERMINOLOGY IN LATIN

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Abstract: This article analyzes the fundamental role of Latin terminology in the modern pharmaceutical field and its importance in shaping international drug nomenclature. Although Latin is considered a “dead language” in the age of artificial intelligence and digital technologies, in pharmacy it continues to play an important role as a lingua franca. The study considers the unification of the nomenclature of medicinal plants, dosage forms, and traditional Latin abbreviations in prescriptions. Statistical data and comparative analyses show that the correct use of Latin terminology helps reduce medication errors in pharmaceutical practice by up to 15–20%. In conclusion, Latin in pharmaceutical education and in the global healthcare system appears not only as a tradition, but also as a guarantee of safety and precision.

Keywords: pharmaceutical terminology, trivial names, dosage forms, abbreviation, structural components, nomenclature of medicines, scientific names, preparation, Latin.

LOTIN TILIDA FARMATSEVTİK TERMINOLOGIYA

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Annotatsiya: Ushbu maqolada lotin terminologiyasining zamonaviy farmatsevtika sohasidagi fundamental oʻrni va xalqaro dori nomenklaturasini shakllantirishdagi ahamiyati tahlil qilinadi. Lotin tili sunʼiy intellekt va raqamli texnologiyalar davrida “oʻlik til” deb hisoblansa-da, farmatsiyada u hamon lingua franca sifatida muhim rol oʻynaydi. Tadqiqotda dorivor oʻsimliklar nomenklaturasi, dori shakllari hamda retseptlardagi anʼanaviy lotincha qisqartmalarning unifikatsiyasi koʻrib chiqilgan. Statistika maʼlumotlar va qiyosiy tahlillar lotin terminologiyasidan toʻgʻri foydalanish farmatsevtik amaliyotdagi dori xatolarini 15–20% gacha kamaytirishga yordam berishini koʻrsatadi. Xulosa qilib aytganda, farmatsevtik taʼlimda va global sogʻliqni saqlash tizimida lotin tili nafaqat anʼana, balki xavfsizlik va aniqlik kafolati sifatida namoyon boʻladi.

Kalit soʻzlar: farmatsevtik terminologiya, trivial nomlar, dori shakllari, qisqartma, struktur komponentlar, dori vositalari nomenklaturasi, ilmiy nomlar, preparat, lotin tili.

ФАРМАЦЕВТИЧЕСКАЯ ТЕРМИНОЛОГИЯ НА ЛАТИНСКОМ ЯЗЫКЕ

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Аннотация: В данной статье анализируется фундаментальная роль латинской терминологии в современной фармацевтической сфере и её значение в формировании международной номенклатуры лекарственных средств. Хотя латынь в эпоху искусственного интеллекта и цифровых технологий считается «мёртвым языком», в фармации она продолжает играть важную роль как lingua franca. В исследовании

рассматривается унификация номенклатуры лекарственных растений, лекарственных форм и традиционных латинских сокращений в рецептах. Статистические данные и сравнительные анализы показывают, что правильное использование латинской терминологии помогает снизить количество медикаментозных ошибок в фармацевтической практике на 15–20%. В заключение отмечается, что латинский язык в фармацевтическом образовании и в глобальной системе здравоохранения выступает не только как традиция, но и как гарантия безопасности и точности.

Ключевые слова: фармацевтическая терминология, тривиальные названия, лекарственные формы, сокращение, структурные компоненты, номенклатура лекарств, научные названия, препарат, латинский язык.

INTRODUCTION

At a time when modern medicine and pharmacy are rapidly developing, the accurate and understandable naming of medicinal products remains one of the most important tasks of the global healthcare system. In the complex of sciences united under the name Pharmacy (Greek *pharmakeia* – preparation and use of medicine), drug nomenclature occupies a central place. Pharmaceutical terminology is not simply a collection of names, but a complex linguistic system reflecting the chemical composition, biological activity, and therapeutic properties of medicinal substances.

Most chemical compounds used as medicinal substances have two types of names: complex systematic scientific names and concise trivial names (Lat. *trivialis* – ordinary). Although scientific names precisely express the molecular structure of a substance, their excessive complexity (for example, 1-fenil-2,3-dimetil-4-metilaminapirazolon-5-metansulfanat natriya) creates inconvenience in daily practice, in prescription writing, and in pharmacy trade. For this reason, in pharmaceutical practice, simple and convenient trivial names formed from roots belonging to Latin or Greek acquire priority importance.

This article analyzes the main methods of pharmaceutical term formation, in particular abbreviation (shortening) and structural components carrying special meaning (-cor-, -vas-, -sept-, -cillin-). Also, dosage forms (*Tabuletta*, *Unguentum*, *Solutio*) and the rules of their grammatical connection with preparation names are considered. The correct formation of pharmaceutical terms in accordance with international standards is considered a decisive factor in understanding the therapeutic and prophylactic effect of medicinal products and in preventing medical errors.

MATERIALS AND METHODS

The study is based on the analysis of the main pharmaceutical word-formation methods, the specific composition of medicines and medicinal preparations, as well as the naming features of dosage forms and medicinal substances. Special attention is paid to the connection features of structural components and to the practical use of trivial names in pharmaceutical terminology.

For the purpose of the analysis, examples of pharmaceutical terms, dosage forms, and Latin constructions used in prescriptions were comparatively examined. Scientific and trivial names of medicinal substances, abbreviations, and grammatical models of term formation were systematized on the basis of educational and normative sources cited in the article.

RESULTS

Pharmacy (Greek *pharmakeia* – preparation and use of medicine) consists of a complex of a number of specialized sciences engaged in studying, searching for, producing, and applying the composition of medicines. In this complex, the central place is occupied by the nomenclature of medicines that have official permission for use.

Medicines are substances or combinations of substances that have permission given in the established order by an organization guaranteeing their use for the purpose of preventing, identifying, and treating disease in a certain state. Medicinal substances express specific chemical compounds or biological substances. Medicinal plant raw material is plant raw material permitted for use in medicine. Dosage forms are the convenient state of a medicine or medicinal plant prepared in order to preserve its healing properties during the process of application. A medicinal preparation is a medicine brought into a definite form. Complex medicine is a medicine that in one dosage form has more than one active substance in prescribed doses.

Most chemical compounds used as medicinal substances have two types of names: scientific or systematic name and trivial (Lat. *trivialis* – ordinary) name. A scientific name expresses the chemical composition of medicinal substances. But because of its complexity and difficulty, it is considered inconvenient for use in prescriptions, labels, and pharmacy trade. Trivial names, however, are considered convenient for practical use because of their compactness, shortness, and simplicity.

The trivial names of medicines have different word-formation structures. Their basis consists of roots belonging to Latin or Greek. In addition, other word-formation means also participate in the formation of trivial names. Accordingly, trivial names may consist of simple, derived, compound, and abbreviated words. Among the most common examples are Mentholum, Analginum, Papaverinum, Apisarthronum, Dimexidum, and Sulfadimezinum.

The most commonly used word-formation method in forming trivial names is abbreviation (shortening). In this case, the scientific name is shortened. Structural components can approximately provide information of an anatomical, physiological, and therapeutic character.

Table 1. Trivial names and scientific names

Trivial names	Scientific names
Analgin	1-fenil-2,3-dimetil-4-metilamina-pirazolon-5-metansulfanat natriya
Fenasetin	1-etoksi-4-asetaminobenzol trano-9,13-dimetil-7
Retinol (vitamin A)	1,1,5-trimetilsiklogeksen-5-il-6/nonatetrayen-7,9,11,13-ol

Table 2. Trivial names formed by abbreviation

Trivial names / abbreviation	Scientific names
Dimexidum (dimeksid)	Dimetilsulfaksid
Aethacridinum (etakridin)	Laktat 2-etoksin-6,9-dinaminoakridin
Phenaminum (fenamin)	Sulfat d, 1-fenil 2-aminopropana N-fenilkarbomoid-3 (B-fenilizopropil)
Sydnocarbum (sidnokarb)	Sidnonimin

Table 3. Structural components and their meanings

Latin	Uzbek	Meaning
-cor-, card-	-kor-, -kard-	affecting the heart, affecting heart tone, dilating the coronary vessels

-vas-, -angi-	-vaz-, -angi-	dilating blood vessels, spasmolytic
-sept-	-sept-	disinfecting, antiseptic
-dol-, -alg-	-dol-, -alg-	pain-relieving, analgesic
-pres(s)-, -ten(s)-	-pres(s)-, -ten	lowering blood pressure
-sed-	-sed-	calming, sedative
-pyr-	-pir-	lowering temperature, antipyretic
-aesthes-	-estez-	pain-relieving, anesthetic
-test-, -vir-	-test-, -vir-	prepared from male sex hormones
-andr-	-andr-	androgen
-thyr-	-tir-	affecting thyroid gland activity
-myco-	-miko-	against fungi
-chol-	-xol-	choleretic
-cid- (Lat. occidere)	-sid-	antimicrobial / against microbes

DISCUSSION

If the dosage form is expressed together with the preparation name, in the first place the name of the dosage form, and in the second place the name of the medicine in the genitive case is used. Examples include Unguentum Streptocidi (Streptotsid ointment), Solutio Novocaini (Novokain solution), and Tabulettae Analgini (Analgina tablets).

Complex medicine names are given in quotation marks in the nominative case as an apposition to the name of the dosage form. For example: Unguentum "Calendulas" and Tabulettae "Urosalum". The agreeing attribute indicating the dosage form is used in the last place in the preparation name and agrees with the dosage form, as in Unguentum Hydrargyri cinereum and Extractum Belladonnae spissum.

In the names of decoctions and infusions, the name of the raw material is used in the genitive case between the dosage form and the plant names, as in Infusum radicis Valerianae and Decoctum rhizomatis Tormentaliae. These examples show that pharmaceutical terminology is not only a lexical system, but also a grammatical system built on precision and standardization.

CONCLUSION

Pharmaceutical terminology is not simply a collection of complex words on paper, but a culture of precision formed over centuries on the path of human health.

First, considering Latin a "dead language" is a big mistake, because the Latin roots living behind the name of every tablet, every ointment, or solution perform the function of a common language for specialists. The use of compact trivial names instead of extremely complex scientific names of medicines creates convenience for human memory and daily practice.

The naming of dosage forms in strict grammatical order (Genetivus) is not simply a rule, but an international standard preventing medical errors throughout the world. Therefore, Latin in pharmaceutical education and global healthcare remains a guarantee of safety and precision.

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16.00.00 – Veterinariya fanlari

16.00.00 – Veterinary sciences

16.00.00 – Ветеринарные науки

UDK: 616-093:636.92

QO'SHTEPA VA TOSHLOQ TUMANLARIDA QUYON EYMERIOZINING DIAGNOSTIKASI

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Annotatsiya: Ushbu maqolada Farg'ona viloyatining Qo'shtepa va Toshloq tumanlaridagi zamonaviy quyonchilikka ixtisoslashgan xo'jaliklardagi quyonlarda o'tkazilgan eymeriozga qarshi tekshirish natijalari keltirilgan. Bundan tashqari, tekshirish uchun qo'llanilgan usullarning mohiyati, o'tkazish usullari bo'yicha to'liq ma'lumotlar berilgan hamda tumanlardagi xo'jaliklarda invaziyaning ekstensivlik va intensivlik holati bo'yicha ma'lumotlar bayon qilingan.

Kalit so'zlar: quyon, eymerioz, eymeriya, protozoa, apicomplexa, sporozoa, coccidiida, ootsista, invaziya, Darling usuli, ekstensivlik, intensivlik.

ДИАГНОСТИКА КРОЛИЧЬЕГО ЭЙМЕРОЗА В РАЙОНАХ КОШТЕПА И ТАШЛОК

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Аннотация: В данной статье представлены результаты исследования кроликов на наличие эймерий в специализированных хозяйствах по современному кролиководству Куштепского и Ташлокского районов Ферганской области. Кроме того, изложена суть методов исследования, представлена полная информация о способах проведения исследования, а также сведения о распространенности и интенсивности инвазии на фермах в районах.

Ключевые слова: кролик, эймерия, эймерии, простейшие, апикомплексы, спорозои, кокцидиоидеи, ооцисты, инвазия, метод Дарлинга, распространенность, интенсивность.

DIAGNOSIS OF RABBIT EIMERIOSIS IN QO'SHTEPA AND TOSHLOQ DISTRICTS

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Abstract: This article presents the results of examinations for eimeriosis in rabbits kept on farms specializing in modern rabbit breeding in the Qo'shtepa and Toshloq districts of Fergana

region. In addition, the essence of the methods used for the examination is presented, complete information on the methods of conducting the examination is provided, and information on the extensiveness and intensity of invasion in farms in the districts is given.

Keywords: rabbit, eimeriosis, eimeria, protozoa, apicomplexa, sporozoa, coccidiida, oocyst, invasion, Darling method, extensiveness, intensity.

KIRISH

O'zbekiston Respublikasi Prezidentining 2022-yil 8-fevraldagi PQ-120-son qarorida O'zbekiston Respublikasida chorvachilik sohasi va uning tarmoqlarini rivojlantirish bo'yicha 2022–2026-yillarga mo'ljallangan dastur tasdiqlangan bo'lib, mamlakatda chorvachilik mahsulotlari ishlab chiqarishni ko'paytirish hisobiga oziq-ovqat xavfsizligini ta'minlash, ishlab chiqarishning zamonaviy usullarini keng joriy etish, bu orqali qo'shilgan qiymat zanjirini yaratish, kooperatsiya munosabatlarini rivojlantirish, chorvachilik sohasi va uning tarmoqlarini davlat tomonidan qo'llab-quvvatlash, shuningdek, mazkur sohada zamonaviy axborot-kommunikatsiya texnologiyalari va ilm-fan yutuqlaridan samarali foydalanishni tashkil etish maqsadida chorvachilik sohasi va uning tarmoqlarining joriy holati tahlil qilinganda, bugungi kunda respublikamizda 254 ta quyonchilik xo'jaligi faoliyat yuritayotganligi, ilg'or xorijiy tajriba asosida chorvachilik sohasining quyonchilik tarmoqlarida ishlab chiqarilayotgan mahsulotlar salmog'ini oshirish, quyon go'shti mahsulotlarining ichki va tashqi bozorlardagi raqobatbardoshligini oshirish hamda mahalliy mahsulotlarni xalqaro sifat talablariga moslashtirish, quyon go'shtining tavsiya etilgan minimal iste'mol normalarini qayta ko'rib chiqish, shuningdek, aholining sog'lom ovqatlanish madaniyatini oshirish, quyonchilik tarmog'ini yanada rivojlantirish hamda kooperatsiya tizimi asosida mahsulot ishlab chiqarish hajmini ko'paytirish ustuvor vazifa etib belgilangan. Ushbu ustuvor yo'nalishlar doirasida respublikamizda sifatli quyon go'shtini iste'mol qilish darajasini ko'tarish hamda umumiy go'sht mahsulotlari hajmida uning ulushini oshirish nazarda tutilgan va ijrosi bo'yicha barcha mas'ul tashkilot va korxonalar faoliyatini jadallashtirish talab etilgan.

Dasturni amalga oshirishdan kutilayotgan natijalar quyonchilik tarmog'ini rivojlantirish yo'nalishida quyon go'shtini yetishtirish hajmini 100 tonnadan 23 ming tonnaga yetkazish, aholi jon boshiga quyon go'shtini iste'mol qilish hajmini 3 kilogrammdan oshirishga imkoniyat yaratadi; quyon boqishni ilmiy asosda yo'lga qo'yish maqsadida respublika hududlarida quyonchilik naslchilik xo'jaliklarini tashkil etish va naslli quyonlar bosh sonini ko'paytirish choralari ko'rish; go'sht yo'nalishidagi quyon zotlarini mahalliy sharoitga moslashtirish va ixtisoslashgan quyonchilik-bo'rdoqichilik xo'jaliklarini tashkil etish hisobiga kooperatsiya tizimini joriy etish va qo'shilgan qiymat zanjirini yaratish choralari ko'rish; ilm-fan va ishlab chiqarishni tizimli asosda uzviy integratsiyalashtirish, innovatsion texnologiyalarni amaliyotga keng joriy etish, quyonchilik tarmog'ida yuqori malakali mutaxassislariga bo'lgan joriy va istiqboldagi ehtiyojni hisobga olgan holda kadrlar tayyorlash, ularning malakasini oshirish maqsadida o'quv-uslubiy qo'llanma va amaliy tavsiyalar tayyorlash, chop etish zaruriyatini belgilaydi.

Ayni paytda quyonlarning kasallanishida, mahsuldorligining kamayib ketishida parazitlar kasalliklarning salmog'i ham sezilarli darajada ta'sir qilmoqda. Bunga asosiy sabab quyonchilik bilan shug'ullanuvchilarning malakasi yetishmasligi, veterinariya mutaxassislarining jalb etilmaganligi, zoogigiyena va sanitariya qoidalariga rioya etilmasligi, parazitlar kasalliklarga qarshi rejali profilaktika choralari ko'rilmasligidir.

Oziq-ovqat xavfsizligini ta'minlash dolzarb vazifa hisoblangan hozirgi davrda quyonchilik tarmog'ining ham samaradorligini oshirish muhim ahamiyat kasb etadi. Bu dolzarb vazifani bajarishda quyonlarda uchraydigan kasalliklarning oldini olish va samarali davolash usullarini joriy etish ushbu tarmoq uchun ishlab chiqarishdagi zarurat hisoblanadi. Chunki so'nggi yillarda respublikamizda quyonlarning parazitlar va boshqa kasalliklari ilmiy izlanuvchilar tomonidan deyarli o'rganilmagan [2; 7; 10; 13].

Tadqiqotning maqsadi Farg'ona viloyatining Toshloq tumani va Qo'shtepa tumanlarida ko'paytirilayotgan naslli (Hycle zotli) quyonlar orasida eymeriozning diagnostikasi hamda epizootologik holatini o'rganishdan iborat.

Quyon eymeriozining qo'zg'atuvchisi sistematika bo'yicha Protozoa hayvonot olamiga, Apicomplexa tipiga, Sporozoa sinfiga, Coccidiida turkumiga, Eimeriidae oilasiga, Eimerinae kichik oilasiga va Eimeria avlodiga mansub. Ushbu koksidiyalar turlaridan biri Eimeria stiedae quyon jigarida parazitlik qiladi va eymeriozni keltirib chiqaradi, boshqa turlari E. perforans, E. media, E. magna, E. irresidua esa ichakda parazitlik qilib, patologik jarayon uzoq vaqt davom etadi (30–50 kun) [11; 14].

Barcha sporalilar kabi quyon eymeriozi ham uchta taraqqiyot davrini boshdan kechiradi: 1-davr – shizogoniya yoki jinssiz ko'p marta bo'linish yo'li bilan ko'payish; 2-davr – gametogoniya yoki jinsiy ko'payish; 3-davr – sporogoniya yoki jinssiz ko'payish yo'li bilan sporozoitlar hosil qilish va ularni bir xo'jayin ishtirokida rivojlanuvchilarida tashqi muhit taassurotidan himoya qiluvchi spora hosil qilish davrlari bilan ko'payadi [1; 3; 5; 8; 16].

Eymeriyalarning hayvon organizmida joylashuviga bog'liq ravishda quyon eymeriozining uch shakli farqlanadi: 1) ichak, 2) jigar, 3) aralash shakllari. Amaliyotda invaziyaning aralash shakli muhim o'rin tutadi. Kasallikning boshlanishida quyonning ichaklari zararlanib, keyinchalik jigari invazyalanadi va natijada aralash shakl boshlanadi. Invaziyaning yashirin davridan keyin quyonchalar lohaslanadi, odatdagidek harakatchanligi yo'qolib, qornini yerga berib yotadi. Ishtahasi pasayib, ozuqa yemay qo'yadi. Qorin bo'shlig'i shishadi va og'riq beradi, axlati suyuqlashib, ba'zan shilliq va qon aralash bo'ladi. Kasal quyonlar o'sishdan qoladi, oriqlaydi, jun qoplami hurpayib turadi. Siydik ajralishi tezlashadi. Ba'zan so'lak ajralishi kuchayib, burun shilliq pardasi kataral yallig'lanadi va konyunktivit rivojlanadi. Jigarda yallig'lanish jarayonlari boshlanishi bilan organizm nimjonlashib, quyon tashqi muhitga e'tiborsiz bo'lib qoladi va uzoq yotadi. Ishtahasi yo'qoladi, qorni shishgan bo'lib, o'ng tomonini bosib ko'rganda og'riq sezadi. Ko'rinarli shilliq pardalari sarg'ayadi, oyoqlari va bo'yin mushaklari shol bo'lib, qaltiray boshlaydi, so'ngra esa 7–10 kunda nobud bo'ladi [4; 6; 9; 12; 15; 17].

MATERIALLAR VA METODLAR

Tadqiqotlar Farg'ona viloyatining Toshloq tumani va Qo'shtepa tumanlaridagi shaxsiy yordamchi, dehqon va fermer xo'jaliklari, "Halol quyon naslli chorvasi" MChJ hamda "Vodiy naslli quyonlari" MChJlarida ko'paytirilayotgan turli yoshdagi spontan (tabiiy) zararlangan quyonlarda olib borildi. Tadqiqotlarda quyonlardan olingan tezak namunalari tekshirishda Darling usulidan foydalanildi.

Tadqiqotlar Farg'ona viloyatining Toshloq va Qo'shtepa tumanlarida o'tkazildi. Ilmiy tadqiqot davomida eksperimental, mikroskopik va statistik usullardan foydalanildi. Kasallikka gumon qilingan va kasallangan quyonlarning 3–5 g tezak namunasi suv bilan zichlik darajasi yarim suyuq holatga kelguncha aralashtirildi, sentrifuga probirkalariga suzildi va 1–2 daqiqa davomida sentrifuganing 1000–1500 tezlik/minutida sentrifuga qilindi. Suyuqlik qismi to'kib tashlandi, cho'kmaga glitserin va osh tuzining to'yingan eritmasidan teng miqdorda tayyorlangan

aralashmadan qo'shildi, sentrifuga probirkasi yaxshilab chayqatilib, qaytadan 2 daqiqa davomida 1000–1500 tezlik/minutda sentrifuga qilindi. Suyuqlik yuzasiga qalqib chiqqan eymeriya ootsistalari simli ilmoq bilan olinib, buyum oynasiga qo'yilib, mikroskopda tekshirildi.

NATIJALAR

Tekshirilgan quyonlarning tezak namunasida eymeriya ootsistalari mavjudligi aniqlandi.

1-jadval. Quyon eymeriozini koprologik tekshirish natijalari

Xo'jalik nomi	Quyonlar bosh soni	Tekshirish usuli	Invaziyaning ekstensivligi	
			soni	foizi
“Halol quyon naslli chorvasi” MChJ	125	koprologik	36	28,8
“Vodiy naslli quyonlari” MChJ	355	koprologik	24	6,2

Ushbu jadval ma'lumoti bo'yicha “Halol quyon naslli chorvasi” MChJda parvarishlanayotgan 125 bosh quyonlarning 36 boshida eymeriyalar bilan zararlanganligi tekshiruv natijasida aniqlanib, invaziyaning ekstensivligi 28,8% ni tashkil qildi.

Qo'shtepa tumanidagi “Vodiy naslli quyonlari” MChJda ko'paytirilayotgan 355 bosh quyonlarning 24 boshi eymerioz bilan kasallanganligi koprologik usul yordamida aniqlanib, invaziyaning ekstensivligi 6,2% ni tashkil etdi.

MUHOKAMA

Tadqiqot natijalariga ko'ra, kasallikning ikki hududdagi tarqalish holati saqlash sharoiti, oziqlantirish va profilaktika tadbirlarini rejali amalga oshirish ko'rsatkichlariga bog'liq bo'lib, “Vodiy naslli quyonlari” MChJda oxirgi zamonaviy texnologiyalardan unumli foydalanilganligi va oziqlantirish uchun boyitilgan qo'shimchalari mavjud oziqa berilganligi, profilaktika maqsadida eymeriostatik vositalardan foydalanilganligi natijasida kasallik ko'rsatkichi nisbatan past ko'rsatkichda bo'lsa, “Halol quyon naslli chorvasi” MChJda invaziya ekstensivligi yuqori ko'rsatkichda qayd etildi. Chunki ushbu MChJ quyonxonasida asrash uchun yetarli gigiyenik qulayliklar yaratilmaganligi, profilaktika maqsadida eymeriostatiklarni qo'llamaslik va oziqlantirish uchun sifatli omuxta yemdan foydalanilmaganligi asosiy sabab hisoblanadi.

XULOSA

Ushbu tadqiqot bo'yicha olingan ma'lumotlarga ko'ra, “Halol quyon naslli chorvasi” MChJda parvarishlanayotgan 125 bosh quyonlarning 36 boshida eymeriyalar bilan zararlanganligi tekshiruv natijasida aniqlanib, invaziyaning ekstensivligi 28,8% ni, Qo'shtepa tumanidagi “Vodiy naslli quyonlari” MChJda ko'paytirilayotgan 355 bosh quyonlarning 24 boshi eymerioz bilan kasallanganligi koprologik usul yordamida aniqlanib, invaziyaning ekstensivligi 6,2% ni tashkil etdi.

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**HAYVONLAR BRUTSELLYOZIDA O'TKAZILADIGAN SEROLOGIK
TAHLILLARNING TAVSIFI**

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Annotatsiya: Mazkur maqolada hayvonlarning brutsellyozida qo'llaniladigan diagnostika usullarining qiyosiy bahosi, ularning afzalliklari va kamchiliklari keltirilgan hamda O'zbekistonda qishloq xo'jaligi hayvonlarida brutsellyoz bo'yicha tadqiqotlar holati tahlil qilingan.

Kalit so'zlar: RBT, AR, KBR, KUBR, SHR, IFT, PZR, simptom, allergen, brutsellyoz, antitelo, bakterioskopiya, test, nospesifik, modifikatsiya, agglyutinatsiya, lunka, konyugat, substrat, HSHQT.

**ХАРАКТЕРИСТИКА ПРОВОДИМЫХ СЕРОЛОГИЧЕСКИХ ТЕСТОВ ПРИ
БРУЦЕЛЛЕЗЕ ЖИВОТНЫХ**

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Аннотация: В данной статье приведена сравнительная оценка диагностических методов, применяемых при бруцеллёзе животных, а также их преимущества и недостатки. Кроме того, проанализировано состояние исследовательских работ по бруцеллёзу сельскохозяйственных животных в Узбекистане.

Ключевые слова: РБТ, РА, РСК, РДСК, КР, ИФА, ПЦР, симптом, аллерген, бруцеллёз, антитело, бактериоскопия, тест, неспецифический, модификация, агглютинация, лунка, конъюгат, субстрат, МЭБ.

**CHARACTERISTICS OF CURRENT SEROLOGICAL TESTS FOR ANIMAL
BRUCELLOSIS**

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Abstract: This article provides a comparative assessment of diagnostic methods used for animal brucellosis and their advantages and disadvantages. It also analyzes the state of research on brucellosis in farm animals in Uzbekistan.

Keywords: RBT, AR, CBR, PCBR, RR, ELISA, PCR, symptom, allergen, brucellosis, antibody, bacterioscopy, test, non-specific, modification, agglutination, well, conjugate, substrate, OIE.

KIRISH

Brutsellyoz — turli xil hayvon va odamlarning infeksiyon kasalligi boʻlib, *Brucella* avlodiga mansub bakteriyalar orqali chaqiriladi. Hayvonlarda brutsellyoz koʻpincha abort (homila tashlash), yashashga qobil boʻlmagan nasl tugʻilishi, yoʻldoshning ushlanib qolinishi va uzoq davom etadigan pushtsizlik bilan kechadi. Hayvonlarda brutsellyoz surunkali va koʻp hollarda simptomtsiz shaklda kechadi. Shundan kelib chiqib, bu kasallikni erta bosqichda va oʻz vaqtida aniqlash juda katta ahamiyatga ega. Bu borada eng samarali usullar — bakteriologik (shu jumladan PZR), allergik (palpebral usul) va serologik (AR, KBR) usullardir.

MATERIALLAR VA METODLAR

Hozirda amalda qoʻllanilayotgan hayvonlar brutsellyozi tashxisida qoʻllaniladigan serologik usullarni tahlil qilish, ularning ijobiy va salbiy tomonlarini oʻrganish hamda ilmiy izlanishdagi xodimlar va joylardagi veterinariya tashxis markazlari mutaxassislari zaruriy maʼlumotlarni berish mazkur tadqiqotning asosiy vazifasi hisoblanadi.

NATIJALAR

Brutsellyozda bakteriologik diagnostika brusellalar kulturalarini ajratishga va ularning differensiatsiyasiga asoslanadi. Laboratoriyada hayvonlardan olingan biomateriallar (qon, sut, siydik, homila, yoʻldosh, bursa tarkibi, parenximatoz aʼzolar va limfa tugunlari va h.k.) oʻrganiladi. Shu jumladan, Gram va boshqa maxsus usullar bilan boʻyalgan surtmalarni bakterioskopiya qilish, zarur hollarda dengiz choʻchqalarida biosinov oʻtkaziladi. *Brucella* kulturasini biomaterialdan ajratib olish va ijobiy biosinov brutsellyozga yakuniy tashxis qoʻyish uchun asos boʻlib, bu serologik tadqiqotlarning ijobiy natijalari bilan tasdiqlanishi mumkin.

Kasallikning serologik diagnostikasi RBT, AR, KBR, KUBR, XR, IFT, PZR va boshqalardan foydalangan holda kompleks tarzda oʻtkaziladi.

Hozirda mamlakatimizda hayvonlarni brutsellyozga ommaviy sinovdan oʻtkazishda HSHQT (Hayvonlar sogʻligʻini himoya qilish tashkiloti) tomonidan rasman tavsiya etilgan (Yer usti hayvonlar salomatligi kodeksi, 2010) serologik testlar qoʻllanilmoqda — probirkali agglyutinatsiya reaksiyasi (AR — Agg yoki SAT; KUBR — LCFT), komplementni bogʻlash reaksiyasi (KBR — CFT), Roz-Bengal testi (RBT — BBAT yoki RBT), immunoferment tahlil (IFT — enzyme-linked immunosorbent assay, ELISA). Epizootik holatni nazorat qilish uchun butun jahonda hayvonlar brutsellyozini ommaviy tashxislashda yuqorida sanab oʻtilgan serologik testlar qatʼiy reglamentga kiritilgan.

Agglyutinatsiya reaksiyasi (AR) — bu 1897-yilda Rayt va Sempl tomonidan taklif qilingan, oʻz ahamiyatini bugungi kunda ham yoʻqotmagan, tadqiqotchilar tomonidan bir qancha takomillashtirilgan va brutsellyozning oʻtkir shakllarida ishlab chiqariladigan IgM ni aniqlashda qoʻllaniladigan eng dastlabki tashxis usulidir. Ushbu reaksiyaning asosiy ijobiy xususiyatlari uning yuqori faolligi, qatʼiy maxsusligi, natijalarni olish tezligi, minimal moddiy xarajatlar bilan qoʻyish texnikasining soddaligidadir. Bu reaksiyaning boshqa serologik usullardan afzalligi shundaki, reaksiya brutsellyoz bilan kasallangan hayvonlarni infeksiyaning dastlabki davrida aniqlashga yordam beradi, bu esa kasal hayvonlarni oʻz vaqtida izolyatsiya qilish va infeksiya tarqalishining oldini olish uchun zarur choralarni tezda koʻrish imkonini beradi. AR ham boshqa serologik testlar singari oʻziga xos kamchiliklarga ega. Masalan, hayvonning tanasida uzoq muddatli infeksiya (surunkali shaklda) boʻlsa, AR koʻrsatkichlari har doim ham ijobiy boʻlmasligi va har doim ham KBR/KUBR natijalariga toʻgʻri kelmasligi mumkin.

KBR va KUBR — AR ning modifikatsiyalari boʻlib, keyinchalik ishlab chiqariladigan IgG ni aniqlash uchun ishlatiladi, yaʼni kasallikning surunkali shakldagi kechishida qoʻllaniladi [1; 38–

39-b.; 2; 15–19-b.]. Ammo bir qator mualliflar KBRning ham kamchiliklari bor deb hisoblaydilar, ya'ni reaksiya uslubiga nisbatan murakkab va reaksiyada ishtirok etadigan komponentlar uchun qo'shimcha xarajatlarni talab qiladi. Biroq KBR AR o'rnini bosa olmaydi, chunki u har doim ham uning ijobiy va gumon natijalarini tasdiqlamaydi. Brutsellyoz infeksiyasining davomiyligi turlicha bo'lgan xo'jaliklarda KBR va AR o'rganilganda, tadqiqotchilar KBR odatda ARdan kechroq paydo bo'lishini, ammo uning ko'rsatkichlari doimiy va uzoq vaqt saqlanib turishini aniqlaganlar. Shu sababli brutsellyoz bo'yicha nosog'lom podalarni o'rganish uchun AR va KBR serologik kompleksini o'tkazish qabul qilingan. Biroq bu bilan ham hayvonlar brutsellyozini yo'q qilish muammosi hal bo'lmadi, chunki AR va KBRda salbiy natija olinganidan keyin bir necha hafta o'tgach, sigirlar orasida brutsellyozga xos abortlar kuzatilgan.

Sovuq usulda (KUBR)ni qo'llab, KBRning modifikatsiyasi reaksiyaning sezgirligi va samaradorligini sezilarli darajada oshirdi. Tahlilning birinchi bosqichini sovuqda 16–18 soat davomida uzoq muddatli ta'sir qilishiga asoslangan takomillashtirilgan reaksiya texnikasi nafaqat ilmiy maqsadlarda, balki laboratoriya veterinariya amaliyotida ham keng qo'llaniladigan KBRga qaraganda ko'proq reaksiyaga javob beruvchi hayvonlarni aniqladi. Shu bilan birga, KUBR va KBR o'zlarining mavjud afzalliklariga qaramay, ular juda murakkab bo'lib, texnik bajarish va natijalarni hisobga olish uchun tajribali laboratoriya mutaxassisi talab etiladi.

RBT 1977-yilda hayvonlarni brutsellyozga tekshirish uchun rasman qabul qilingan va hozirgacha brutsellyoz tashxisida keng qo'llaniladi. Jumladan, Nicoletti taklif qilgan va Card-test deb nom olgan RBT butun dunyoda yordamchi test sifatida 1967-yildan buyon rasman ishlatilib kelinmoqda. Mazkur testning afzalligi — maxsus immunoglobulinlarni erta aniqlash va kislotali pH sabab nospesifik reaksiyalarni kamaytirishdan iboratdir [3; 185–188-b.]. RBTning boshqa serologik reaksiyalar bilan solishtirgandagi asosiy afzalligi shundaki, reaksiya ko'rsatkichlari qo'yilganidan 3–5 daqiqa o'tgach hisobga olinadi, bu esa podadagi epizootik vaziyat holatini tezda aniqlash imkonini beradi. Bundan tashqari, reaksiyani qo'yish texnikasi oson va ko'p mehnat talab qilmaydi, uni qon zardobi va sutni tekshirish uchun dala sharoitida ham qo'llash mumkin. Shu bilan birga, RBT ham o'ziga xos bo'lmagan reaksiyalarni berishi mumkin.

Sutdagi halqali reaksiya (SHR) ham ekspress testlar qatoriga kiradi va 1937-yildan buyon podaning sog'lomligini aniqlash uchun keng qo'llanilib keladi [4; 5; 98-b.]. Sut halqali reaksiyasi yirik shoxli mollar podalarini brutsellyoz kasalligi bo'yicha sog'lomligini tekshirish maqsadida va bozorlarda sutni nazorat qilish uchun qo'llaniladi. SHR uchun brusella mikroblari termik va fenolli bufer eritmada inaktivatsiya qilingan, ko'k-binafsha yoki pushti rangda bo'yalgan suyuqlik shaklidagi rangli brutsellyoz antigeni ishlatiladi. Reaksiya mexanizmi antigen-antitelo komplekslarining sutning mayda dispers yog' zarralari yuzasida adsorbsiya bo'lishidan iborat. Agar sutda brutsellyoz antigeniga qarshi antitelolar bo'lmasa, adsorbsiya hosil bo'lmaydi va sut yuzasiga faqat rangsiz qaymoq qatlami chiqadi.

Immunoferment tahlil (IFT) brutsellyoz antitelolarining paydo bo'lishi va qon zardobida ularning titrini aniqlash, atrof-muhit obyektlari va oziq-ovqat mahsulotlarida brutsellyoz antigenini aniqlash, shuningdek, ajratilgan kulturalarni identifikatsiya qilish orqali brutsellyozning turli shakllarini tashxislash uchun ishlatiladi. Hosil bo'lgan «antigen + antitelo» kon'yugat va substrat yordamida aniqlanadi. Reaksiya natijalari lunkalarda sariq, to'q sariq rang paydo bo'lishi bilan yoki spektrofotometr yordamida vizual tarzda baholanadi [6; 93–98-b.; 7; 66-b.].

Polimeraza zanjirli reaksiyasi (PZR) brusellalarning DNKsini turli xil materiallarda: qon zardobi, orqa miya va sinovial suyuqliklarda aniqlash uchun tavsiya etiladi. PZR brusellalarning barcha tur DNKlarini, shu jumladan vaksina shtammlarini ham aniqlaydi. PZR uchun barcha zarur

ingredientlarni o'z ichiga olgan maxsus test-tizimlar ishlab chiqariladi. Usulning asosida brusella DNKsining maxsus fragmentini in vitro ko'p marta nusxalash (amplifikatsiya) yotadi. PZR tekshirilayotgan materialda 100–1000 bakterial hujayralar sonini aniqlash imkonini beradi [8; 9; 66–68-b.].

Allergik diagnostika VIEV brusellinini qo'llashda eng ishonchli usullardan biri bo'lib, 1964-yildan buyon qo'llanilib kelinadi va kasallikka sezgir hayvonlar organizmining yuqori sezuvchanligini aniqlash imkonini beradi. Usulning mohiyati brutsellyoz bilan kasallangan yoki kasallikka qarshi emlangan organizmning maxsus allergenning teri ostiga yoki teri ichiga yuborilishida mahalliy reaksiya (shish, og'riq) bilan javob berishiga asoslanadi. Hayvon organizmining yuqori sezuvchanligi kasal hayvonlarda kasallik boshlanganidan 2–3 hafta o'tgach paydo bo'ladi va klinik simptomlar yo'qolganidan so'ng ham yillar davomida saqlanib qolishi aniqlangan.

MUHOKAMA

Har bir mamlakatda o'ta xavfli kasalliklarni, shu jumladan brutsellyozni yo'qotishga qaratilgan har qanday tadbir tasdiqlangan milliy direktiv hujjatlarga va hududlarda hayvonlar brutsellyozini nazorat qilish hamda oldini olish bo'yicha maxsus strategiyaga asoslangan bo'lishi kerak, bunda asosiy e'tibor diagnostik tadbirlarga qaratilishi shart. Brutsellyozni nazorat qilish — bu kasallik yoki infeksiya yo'qligini isbotlash yoki kasallik yoxud infeksiya borligini aniqlash demakdir. Bugungi kunda dunyoda brutsellyoz nazorati sog'lom veterinariya maqomini olishning asosiy mexanizmi bo'lib, unga mamlakatda brutsellyoz bo'yicha mavjud epizootik holatni baholash uchun muntazam serologik va bakteriologik tadqiqotlar natijalari, shu jumladan yuqori molekulyar diagnostik IFT va PZR usullari bo'yicha FAO/JSST talablariga binoan amalga oshirilishi lozim [10; 631-b.; 11; 96–103-b.].

Hayvonlar brutsellyozida tashxislashning yuqorida keltirib o'tilgan usullaridan eng ishonchlisi va eng ko'p qo'llaniladigani serologik usul ekanligi isbotlangan. Serologik diagnostikaning klassik usullari doimiy ravishda takomillashtirish va yangi usullarni ishlab chiqish jarayonida bo'lib, ularning ko'pchiligi amalda qo'llanilmoqda va ular mamlakatimizda hamda xorijda yo'riqnomalarda reglamentlashtirilganiga qaramay takomillashtirib borilmoqda.

XULOSA

Shunday qilib, avvalda va hozirda ham barcha mamlakatlarda asosiy va ishonchli serologik usullar RBT, SHR, AR, KBR, KUBR, IFT, shuningdek brutsellyozning allergik diagnostikasi bo'lib, ular hayvonlarda brutsellyoz bilan infeksiyalanish hamda epizootik holat darajasini baholash imkonini beradi. Shu bois, hayvonlar brutsellyoziga tashxis qo'yish vosita va usullarini takomillashtirish hozirgi kunga qadar o'z ahamiyatini yo'qotgani yo'q.

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O'STIRISH YOSHIDAGI BUZOQLARDA DISPANSER TEKSHIRISHLAR NATIJALARI

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Annotatsiya: Maqolada Samarqand viloyati qoramolchilik xo'jaliklarida 40-120 kunlik buzoqlarda dispanser tekshirishlar natijalari keltirilgan bo'lib, 60 kundan keyin buzoqlarda eritropoez jarayonining susayishi oqibatida qondagi gemoglobin, eritrotsitlar, gematokrit ko'rsatkichining va biokimyoviy ko'rsatkichlarning pasayishi qayd etilgan. Buzoqlarda alimantar anemiyaning rivojlanishida ratsionlarning takomillashmaganligi, tarkibidagi to'yimli moddalar, vitaminlar va mineral moddalar miqdorining, qand-oqsil va fosfor-kalsiy nisbatining me'yoriy ko'rsatkichlardan pastligi, ayniqsa temir va rux tanqisligi asosiy alimantar omil ekanligi bayon qilingan.

Kalit so'zlar: dispanser tekshirish, buzoqlar, alimantar anemiya, klinik belgilar, qon ko'rsatkichlari, mikroelementlar, modda almashinuvi, fermer xo'jaliklari, eritropoez, oziqlantirish sharoitlari.

РЕЗУЛЬТАТЫ ДИСПАНСЕРИЗАЦИИ ТЕЛЯТ В ПЕРИОД ВЫРАЩИВАНИЯ

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Аннотация: В статье представлены результаты диспансерных обследований телят в возрасте 40-120 дней на животноводческих фермах Самаркандской области, и после 60 дней отмечено снижение уровня гемоглобина, эритроцитов, гематокрита и биохимических показателей крови вследствие замедления процесса эритропоэза у телят. Утверждается, что основными алиментарными факторами развития алиментарной анемии у телят являются несбалансированность рациона, недостаточное содержание микроэлементов, витаминов и минералов, показатели соотношения сахара и белка, а также фосфора и кальция ниже нормативных значений, особенно дефицит железа и цинка.

Ключевые слова: диспансерное обследование, телята, алиментарная анемия, клинические признаки, показатели крови, микроэлементы, обмен веществ, животноводческие хозяйства, эритропоэз, условия кормления.

RESULTS OF DISPENSARY EXAMINATIONS IN GROWING CALVES

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Abstract: This article presents the results of clinical examinations of calves aged 40-120 days on livestock farms in the Samarkand region. After 60 days, a decrease in hemoglobin, red blood cell count, hematocrit, and blood biochemistry was noted due to a slowdown in

erythropoiesis in calves. It is argued that the main nutritional factors in the development of alimentary anemia in calves are an unbalanced diet, insufficient trace elements, vitamins, and minerals, below-standard sugar-to-protein and phosphorus-to-calcium ratios, and, especially, iron and zinc deficiencies.

Keywords: dispensary examination, calves, alimentary anemia, clinical signs, blood parameters, trace elements, metabolism, livestock farms, erythropoiesis, feeding conditions.

KIRISH

Davlatimiz agrar siyosatining asosiy jabhalaridan biri chorvachilik fermer xo'jaliklarini zotdor hayvonlar bilan ta'minlash, chorvachilik madaniyatini oshirish va rentabelli sohalardan biriga aylantirish hisoblanadi. Shu bilan birga, veterinariya xizmatlari sifatini oshirish, hayvonlar kasalliklarining oldini olish va oziq-ovqat xavfsizligini ta'minlashga alohida e'tibor qaratilgan.

Bugungi kunda dunyo miqyosida qoramollar orasida moddalar almashinuvi buzilishlari, ovqat hazm qilish, nafas olish tizimi, jigar va boshqa organlar kasalliklari, ulardan tug'ilgan buzoqlarda anemiyalar ko'p uchramoqda. Buzoqlarda anemiya kasalligi ko'pincha 1-3 oylikda qayd etilib, xo'jaliklarning oziqa bazasi, ratsionlarning to'yimli moddalar, hazmlanuvchi protein, uglevodlar, kalsiy, fosfor, karotin va ayniqsa mikroelementlar bilan ta'minlanganlik darajasiga ko'ra, 16,3 dan 26,1% gacha buzoqlarda uchraydi [3].

Adabiyotlar ma'lumotlarini tahlil qilish shuni ko'rsatadiki, o'stirish yoshidagi sutdan chiqarilgan buzoqlar orasida anemiya kasalligi keng tarqalgan bo'lib, ayrim xo'jaliklarda kasallanish ko'rsatkichi 46% ga va o'lim darajasi 32 foizgacha yetishiga qaramasdan, qoramolchilik fermer xo'jaliklari sharoitida ushbu kasallikni davolash va oldini olish usullari to'liq o'rganilmagan [1,4].

O'stirish davridagi buzoqlarda alimantar anemiyaning asosiy sabablari ratsionlarning takomillashmaganligi, tarkibidagi to'yimli moddalar, vitaminlar va mineral moddalar miqdorining, qand-oqsil va fosfor-kalsiy nisbatining me'yoriy ko'rsatkichlardan pastligi, kislotali xususiyatli va kletchatkaga boy oziqalarning ortiqchaligi, buzoqlar uchun yayratish va quyosh nurlarining yetarli emasligi hisoblanadi [2,5].

MATERIALLAR VA METODLAR

Dispanser tadqiqotlar Samarqand viloyati qoramolchilik fermer xo'jaliklariga qarashli 40-120 kunlik buzoqlarda o'tkazilib, klinik-fiziologik statusi, ulardan olingan qonning morfobiokimyoviy ko'rsatkichlari tahlil qilindi.

Tadqiqotlar davomida qondagi eritrotsitlar soni, gemoglobin miqdori hamda gematokrit darajasi avtomatik gematologik analizator — "Mindray BC-5000" yordamida tekshirildi. Qondagi glyukoza, umumiy oqsil, mis, rux, temir, kalsiy va fosfor miqdori "Mindray BS-200" avtomatik biokimyoviy analizatori yordamida aniqlandi.

NATIJALAR

Dispanser tekshirishlar o'tkazilgan xo'jalikda buzoqlarni saqlash sharoitlari o'rganilganda, buzoqlar ustki qismi yopiq ayvonlarda saqlanishi aniqlandi. Xo'jalikda pol beton bo'lib, asosan guruh holatida saqlanib, buzoqxonada namlik yuqori va sanitariya-gigiyena talablariga to'liq rioya etilmasligi kuzatildi. Buzoqlar uchun faol harakat va quyosh nurlari yetishmasligi qayd etildi.

Xo'jalikda buzoqlar ratsioni va oziqlantirish tizimi tahlil qilinganda, buzoqlarni sut bilan oziqlantirishdan o'rgatmasdan turib, dag'al oziqalar berishga o'tilishi va ratsionning to'yimlilikining pastligi, ratsionda energiya va protein muvozanatining buzilishi, ayrim mineral moddalar yetishmovchiligi aniqlandi.

Buzoqlarda dispanserlash davomida har 20 kunda bir marta klinik-fiziologik ko'rsatkichlar (umumiy holat, tana vazni, shilliq pardalar, teri holati, yurak urishi va nafas soni) hamda anemiyaga xos belgilar bor-yo'qligi aniqlanib borildi.

Natijalarga ko'ra, buzoqlarda anemiya belgilaridan umumiy holsizlik, tashqi ta'sirga befarqlik, shilliq pardalarning oqarishi, teri qoplamasi yaltiroqligining pasayishi va semizlik darajasining pasayishi kabi belgilarning buzoqlar yoshining ortishi bilan kuchayishi qayd etildi.

Buzoqlar qonidagi mikro- va makroelementlar miqdorining xo'jaliklar bo'yicha yoshga bog'liq o'zgarishi 1-jadvalda keltirilgan.

1-jadval. Dispanser tadqiqotlar davomida buzoqlar qonining morfobiokimyoviy ko'rsatkichlari

Gematologik ko'rsatkichlar	Buzoqlarning yoshi				
Gematologik ko'rsatkichlar	40 kunlik	60 kunlik	80 kunlik	100 kunlik	120 kunlik
Eritrotsit, mln/mkl	8,17±0,21	7,41±0,27	7,45±0,27	5,54±0,18	5,33±0,15
Gemoglobin, g/l	106,1±3,03	99,8±2,66	95,5±3,36	91,1±3,28	89,3±2,64
Gematokrit, %	38,5±1,13	35,0±0,79	33,0±1,22	31,1±1,02	30,5±1,13
Glyukoza, mmol/l	3,3±0,07	3,0±0,10	3,0±0,09	2,8±0,09	2,7±0,10
Umumiy oqsil, g/l	64,1±1,34	59,0±1,54	56,6±1,33	53,9±2,07	51,1±1,91
Mis, mkmol/l	11,8±0,38	10,6±0,40	10,0±0,28	9,3±0,27	9,1±0,25
Rux, mkmol/l	47,0±1,01	44,3±1,03	40,4±1,07	38,8±1,41	38,8±0,73
Temir, mkmol/l	15,1±0,53	16,7±0,45	15,1±0,39	14,3±0,24	13,3±0,33
Fosfor, mmol/l	1,45±0,02	1,42±0,02	1,42±0,03	1,38±0,04	1,37±0,02
Kalsiy, mmol/l	2,75±0,10	2,23±0,07	2,23±0,08	2,07±0,07	1,81±0,06

MUHOKAMA

Ushbu jadvaldagi ma'lumotlarga ko'ra, 40 kunlik buzoqlarda eritrotsitlar soni — 8,17±0,21 mln/mkl, gemoglobin miqdori — 106,1±3,03 g/l, gematokrit — 38,5±1,13%, glyukoza — 3,3±0,07 mmol/l, umumiy oqsil — 64,1±1,34 g/l bo'lib, makro- va mikroelementlardan qon zardobidagi mis miqdori — 11,8±0,38 mkmol/l, rux — 47,0±1,01 mkmol/l, temir — 15,1±0,53 mkmol/l, fosfor — 1,45±0,02 mmol/l va kalsiy — 2,75±0,10 mmol/l ni tashkil etgan bo'lsa, buzoqlarning 120 kunligiga kelib, dastlabki ko'rsatkichlarga nisbatan qondagi eritrotsitlar sonining o'rtacha 5,33±0,15 mln/mkl, gemoglobin miqdori — 89,3±2,64 g/l, gematokrit — 30,5±1,13%, glyukoza — 2,7±0,10 mmol/l, umumiy oqsil — 51,1±1,91 g/l bo'lib, mis — 9,1±0,25 mkmol/l, rux — 38,8±0,73 mkmol/l, temir — 13,3±0,33 mkmol/l, fosfor — 1,37±0,02 mmol/l va kalsiyning — 1,81±0,06 mmol/l gacha kamayganligi aniqlandi.

XULOSA

1. Buzoqlarning 40 kunligiga nisbatan 120 kunligiga kelib gematologik ko'rsatkichlarning (eritrotsit, gemoglobin, gematokrit) hamda biokimyoviy ko'rsatkichlarning yomonlashib borishi bu yoshdagi buzoqlarda modda almashinuvining izdan chiqishi hamda alimentar anemiya rivojlanishini ko'rsatadi.

2. Buzoqlarning 120 kunligida alimentar anemiya dastlabki ko'rsatkichlarga nisbatan qondagi eritrotsitlar sonining o'rtacha 5,33±0,15 mln/mkl, gemoglobin miqdorining — 89,3±2,64

g/l, gematokrit ko'rsatkichining — $30,5 \pm 1,13\%$, glyukozaning — $2,7 \pm 0,10$ mmol/l, umumiy oqsilning — $51,1 \pm 1,91$ g/l, misning — $9,1 \pm 0,25$ mkmol/l, ruxning — $38,8 \pm 0,73$ mkmol/l, temirning — $13,3 \pm 0,33$ mkmol/l, fosforning — $1,37 \pm 0,02$ mmol/l va kalsiyning — $1,81 \pm 0,06$ mmol/l gacha kamayishi bilan kechadi.

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QO'YLAR KLOSTRIDIOZLARIGA QARSHI VAKSINANI IMMUNOSTIMULYATOR VA VITAMIN BILAN BIRGA QO'LLAGANDA QO'YLAR QONIDAGI GEMATOLOGIK VA BIOKIMYOVIY O'ZGARISHLAR NATIJALARI

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Annotatsiya: Tadqiqotda qo'ylarni klostridioz kasalliklariga qarshi emlash jarayonida organizmning tabiiy rezistentligini oshirish maqsadida E-Selen va Gamavit veterinariya preparatlari qo'llanildi. Tajriba hayvonlaridan qon namunalari emlash va preparatlarni yuborishdan oldin, shuningdek, ularni qo'llagandan keyin 14-, 35- va 180-kunlarda olindi. Qon namunalari eritrotsitlar, leykotsitlar, gemoglobin miqdori hamda eritrotsitlarning cho'kish tezligi (EChT), shuningdek, qon zardobining biokimyoviy ko'rsatkichlari aniqlandi. Tadqiqot natijalari qo'ylar qonida eritrotsitlar, leykotsitlar va gemoglobin konsentratsiyasining ishonchli darajada, shuningdek, qon zardobining biokimyoviy ko'rsatkichlari oshganligini ko'rsatdi.

Kalit so'zlar: Qo'y, qon, E-Selen, Gamavit, vaksina, gemoglobin, eritrotsitlar, leykotsitlar, globulinlar, albuminlar.

ГЕМАТОЛОГИЧЕСКИЕ И БИОХИМИЧЕСКИЕ ИЗМЕНЕНИЯ В КРОВИ ОВЕЦ ПРИ СОВМЕСТНОМ ПРИМЕНЕНИИ ВАКЦИНЫ ПРОТИВ КЛОСТРИДИОЗОВ С ИММУНОСТИМУЛЯТОРАМИ И ВИТАМИНАМИ

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Аннотация: В данном исследовании с целью повышения естественной резистентности организма овец при вакцинации против клостридиозных заболеваний применялись ветеринарные препараты Е-Selenium и Гамавит. Образцы крови у подопытных животных отбирались до вакцинации и введения препаратов, а также на 14-е, 35-е и 180-е сутки после их применения. В образцах крови определяли количество эритроцитов и лейкоцитов, концентрацию гемоглобина, скорость оседания эритроцитов (СОЭ), а также биохимические показатели сыворотки крови. Результаты исследования показали статистически достоверное увеличение количества эритроцитов, лейкоцитов и концентрации гемоглобина, а также улучшение биохимических показателей сыворотки крови у овец.

Ключевые слова: овцы, кровь, Е-Selenium, Гамавит, вакцина, гемоглобин, эритроциты, лейкоциты, глобулины, альбумины.

HEMATOLOGICAL AND BIOCHEMICAL CHANGES IN SHEEP BLOOD FOLLOWING THE COMBINED ADMINISTRATION OF A VACCINE AGAINST CLOSTRIDIAL INFECTIONS WITH IMMUNOSTIMULANTS AND VITAMINS

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Abstract: In this study, the veterinary preparations E-Selenium and Gamavit were administered to sheep during vaccination against clostridial diseases in order to enhance the natural resistance of the organism. Blood samples were collected from experimental animals prior to vaccination and administration of the preparations, as well as on days 14, 35, and 180 after treatment. The blood samples were analyzed for erythrocyte count, leukocyte count, hemoglobin concentration, erythrocyte sedimentation rate (ESR), and biochemical parameters of blood serum. The results of the study demonstrated a statistically significant increase in erythrocytes, leukocytes, and hemoglobin concentration in the blood of sheep, as well as an elevation in biochemical parameters of blood serum.

Keywords: sheep, blood, E-Selenium, Gamavit, vaccine, hemoglobin, erythrocytes, leukocytes, globulins, albumins.

KIRISH

Fermer xo'jaliklari va shaxsiy xo'jaliklarda tarqalishi bo'yicha qo'ylarda klostridiozlar ko'proq uchrashi aniqlandi. Tadqiqotchilar tomonidan olib borilgan tadqiqotlar oz miqdorda E-Selen va Gamavit veterinariya preparatlari tananing tabiiy immunitetini yaxshilovchi vosita ekanligidan dalolat beradi. Har bir organizmning gematologik ko'rsatkichlarini tekshirish turli davolovchi preparatlar va boshqa ta'sir etuvchi omillarga javoban organizmda ro'y beradigan o'zgarishlarni aniqlashga imkon beradi. Shu sababli veterinariyada keng qo'llaniladigan immunostimulyator, antioksidant-metabolitik preparat bo'lgan Gamavit va E-Selen vitamin preparatining qo'ylar organizmidagi gematologik ko'rsatkichlarga ta'siri o'rganildi.

MATERIALLAR VA METODLAR

Ilmiy tajribalar Samarqand davlat veterinariya meditsinasi, chorvachilik va biotexnologiyalar universiteti Toshkent filiali "Hayvonlar yuqumli va parazitar kasalliklar" kafedrası hamda Veterinariya ilmiy-tadqiqot instituti "Immunologiya va biotexnologiya laboratoriyasi", Payariq tumani "Abdulaziz Zokirovich Chorvasi" chorvachilik fermer xo'jaligida o'tkazildi.

Buning uchun Payariq tumanidagi "Abdulaziz Zokirovich Chorvasi" MChJ xo'jaligi tanlab olindi. Xo'jalikda jami klinik sog'lom o'ttiz ($n=30$) bosh ikki-uch yoshgacha (20-23 kg) bo'lgan qo'ylar ajratib olindi.

Ajratib olingan qo'ylar uch guruhga ajratildi ($n=10$). Birinchi tajriba guruhidagi qo'ylarga Gamavit preparati tana vazniga nisbatan 0,1 ml/kg miqdorida teri orasiga yuborildi. Ikkinchi tajriba guruhidagi qo'ylarga E-Selen tana vazniga nisbatan 0,2 ml/10 kg miqdorida teri ostiga yuborildi. Oradan uch kun o'tib ikkala guruhga ham 2 ml Tetratoks vaksinasi muskul orasiga yuborildi. Nazorat guruhidagi qo'ylarga "Tetratoks" vaksinasi muskul orasiga 2 ml miqdorida

yuborildi. Ikkinchi in'eksiya 14 kun o'tgach 3 ml dan mushak orasiga qo'llanildi va hayvonlar 180 kun davomida nazorat qilib borildi.

Tajriba va nazorat guruhidagi qo'ylar klinik tekshiruvdan o'tkazilib, klinik-fiziologik holati baholandi. Ulardan olingan qon namunalarida ayrim morfofiokimyoviy ko'rsatkichlarni aniqlash bo'yicha laboratoriya tekshirishlari 14-kun, 35-kun va 180-kun davomida olib borildi.

NATIJALAR

Tajribalardagi birinchi, ikkinchi tajriba hamda nazorat guruhlaridagi barcha qo'ylarda muntazam klinik ko'rsatkichlar va qonning gematologik ko'rsatkichlari tekshirildi. Olingan ma'lumotlardan ma'lum bo'ldiki, birinchi guruh hayvonlari qonidagi eritrotsitlar miqdori Gamavit + vaksina yuborishdan oldin $6,5 \pm 0,166 \times 10^{12}/l$ bo'lgan bo'lsa, 14-kunga kelib eritrotsitlar soni $6,8 \pm 0,197 \times 10^{12}/l$, 35-kunga kelib $6,8 \pm 0,197 \times 10^{12}/l$ ni tashkil etdi. Tajribaning oxiriga kelib, 180 kun o'tgach, ularning miqdori $7,7 \pm 0,218 \times 10^{12}/l$ bo'lib, dastlabki ko'rsatkichlarga nisbatan 15,5% ga ($P < 0,05$) oshganligi namoyon bo'ldi.

Leykotsitlar soni tajribaning dastlabki kunlarida $7,8 \pm 0,188 \times 10^9/l$ bo'lgan bo'lsa, 14-kundan boshlab $7,4 \pm 0,166 \times 10^9/l$ gacha yoki 5,4% ga kamaydi. 35-kunda $7,2 \pm 0,196 \times 10^9/l$ gacha yoki 8,3% ga ($P < 0,05$) kamayganligi aniqlandi. Tadqiqotlarning oxirgi 180-kunida dastlabki kunga nisbatan $6,6 \pm 0,361 \times 10^9/l$ gacha yoki 18,2% ga ($P < 0,05$) kamayganligi ma'lum bo'ldi. Qo'ylar qonidagi gemoglobin miqdori tajribaning dastlabki kunlarida $89,3 \pm 1,433$ g/l bo'lgan bo'lsa, 14-kunda $92,3 \pm 0,318$ g/l ga, 35-kunda $92,8 \pm 0,318$ g/l ga va tadqiqot natijalarining oxirgi 180-kunida $95,4 \pm 0,737$ g/l ga yetdi. Bu esa gemoglobin miqdori dastlabki kunlarga nisbatan 6,4% ga ($P < 0,05$) oshganligini ko'rsatdi.

Ikkinchi tajriba guruhidagi qo'ylarning qonidagi ayrim morfofiokimyoviy ko'rsatkichlar tajriba boshida barcha guruhlarda bir xil bo'lib, tajriba guruhida fiziologik me'yorlar chegarasida yaxshilanib borishi kuzatildi. Ikkinchi guruh hayvonlari qonidagi eritrotsitlar miqdori E-Selen + vaksina yuborishdan oldin $6,3 \pm 0,156 \times 10^{12}/l$ bo'lgan bo'lsa, 14-kunga kelib eritrotsitlar soni $6,6 \pm 0,210 \times 10^{12}/l$, 35-kunga kelib $7,6 \pm 0,412 \times 10^{12}/l$ ni tashkil etdi. Tajribaning oxiriga kelib, 180 kun o'tgach, ularning miqdori $7,7 \pm 0,218 \times 10^{12}/l$ bo'lib, dastlabki ko'rsatkichlarga nisbatan 18,2% ga ($P < 0,05$) oshganligi kuzatildi.

Ikkinchi tajriba guruhidagi qo'ylar qonida leykotsitlar soni tajribaning dastlabki kunlarida $7,7 \pm 0,188 \times 10^9/l$ bo'lgan bo'lsa, 14-kundan boshlab $7,5 \pm 0,166 \times 10^9/l$ gacha yoki 2,67% ga kamaydi. 35-kunda $7,3 \pm 0,196 \times 10^9/l$ gacha yoki 5,2% ga ($P < 0,05$) kamayganligi aniqlandi. Tadqiqotlarning oxirgi 180-kunida dastlabki kunga nisbatan $6,7 \pm 0,261 \times 10^9/l$ gacha yoki 12,87% ga ($P < 0,05$) kamayganligi ma'lum bo'ldi. Ikkinchi tajriba guruhidagi qo'ylar qonidagi gemoglobin miqdori tajribaning dastlabki kunlarida $90,1 \pm 1,203$ g/l bo'lgan bo'lsa, 14-kunda $91,3 \pm 0,118$ g/l ga, 35-kunda $93,6 \pm 0,318$ g/l ga va tadqiqot natijalarining oxirgi 180-kunida $96,4 \pm 0,637$ g/l ga yetdi. Bu esa gemoglobin miqdori dastlabki kunlarga nisbatan 6,5% ga ($P < 0,05$) oshganligini ko'rsatdi.

1-jadval. Tajriba guruhlaridagi qo'ylarning qonidagi morfologik ko'rsatkichlari (n=10)

T. r	Tajriba guruhlar i	Tajriba kunlari	Statistik ko'rsatkic h	Eritrotsitla r $10^{12}/l$ (me'yor 7,0-12,0)	Leykotsitla r $10^9/l$ (me'yor 6,0-14,0)	Gemoglobi n (g/l) (me'yor 70-110)	EChT mm/soat (me'yor 1-2)
1	Nazorat guruhi	Tajribagacha	$M \pm m \%$	$6,9 \pm 0,21$	$6,4 \pm 0,25$	$89,2 \pm 0,201$	$0,65 \pm 0,214$
		14-kun	$M \pm m \%$	$7,1 \pm 0,23$	$7,1 \pm 0,61$	$93,1 \pm 0,118$	$0,75 \pm 0,21$

		35-kun	M±m %	7,5±0,17	7,8±0,16	93,1±0,118	0,72±0,26
		180-kun	M±m %	7,3±0,29	6,5±0,23	90,1±0,34	0,7±0,65
2	Birinchi tajriba guruhi	Tajribagacha	M±m %	6,5±0,166	7,8±0,188	89,3±1,433	0,6±0,464
		14-kun	M±m %	6,8±0,197	7,4±0,166	92,3±0,318	0,7±0,464
		35-kun	M±m %	6,8±0,197	7,2±0,196	92,8±0,318	0,74±0,44
		180-kun	M±m %	7,7±0,218	6,6±0,361	95,4±0,737	0,75±0,414
3	Ikkinchi tajriba guruhi	Tajribagacha	M±m %	6,3±0,156	7,7±0,188	90,1±1,203	0,6±0,464
		14-kun	M±m %	6,6±0,210	7,5±0,166	91,3±0,118	0,66±0,164
		35-kun	M±m %	7,6±0,412	7,3±0,196	93,6±0,318	0,78±0,44
		180-kun	M±m %	7,7±0,218	6,7±0,261	96,4±0,637	0,9±0,164

Tajribamizda birinchi tajriba guruhining qon zardobidagi biokimyoviy ko'rsatkichlari tekshirilganda, tajribaning 14-kunida umumiy oqsil miqdori 5,4% ga va tajriba oxirida tajriba boshidagi ko'rsatkichlarga nisbatan 9,2% ga ($P<0,05$) ko'payganligi kuzatildi. Tajriba davomida qon zardobidagi albuminlar miqdorining maksimal ko'payish darajasi tajriba oxirida kuzatildi va 19,7% ni tashkil etdi. Qon zardobidagi alfa globulinlar miqdori tajriba oxiriga borib 21,6% ni tashkil etgan bo'lsa, beta globulinlar miqdori tajribaning 14-kunida 15,6% ga ($P<0,05$) oshib, tajriba oxirida tajriba boshiga nisbatan 24,6% ga ($P<0,05$) ko'payganligi, gamma globulinlar esa tajriba davomida kamayib borib, tajribaning oxirida 18,2% ga kamayganligi kuzatildi.

Ikkinchi tajriba guruhidagi qo'ylarda qon zardobining biokimyoviy ko'rsatkichlari tekshirilganda, tajribaning dastlabki kunlariga nisbatan umumiy oqsil miqdori 10,76% ga ko'payganligi kuzatildi. Tadqiqotlar davomida qon zardobidagi albuminlar miqdorining maksimal ko'payish darajasi tajriba oxirida kuzatildi va 24% ni tashkil etdi. Qon zardobidagi alfa globulinlar miqdori tadqiqotlarning oxiriga borib 20,5% ga ko'payganligi kuzatildi.

2-jadval. Tajriba guruhlaridagi qo'ylarning qoni zardobidagi biokimyoviy ko'rsatkichlari (n=10)

T.r	Tajriba guruhlari	Tajriba kunlari	Statistik ko'rsatkich	Umumiy oqsil, g/l	Albuminlar, %	Globulinlar, %
1	Nazorat guruhi	Tajribagacha	M±m %	6,4±0,132	2,4±0,70	3,5±0,22
		14-kun	M±m %	6,6±0,25	2,4±0,28	3,8±0,21
		35-kun	M±m %	6,5±0,19	2,2±0,19	3,8±0,55
		180-kun	M±m %	6,5±0,73	2,4±0,149	3,6±0,48
2	Birinchi tajriba guruhi	Tajribagacha	M±m %	6,1±1,4	2,2±0,80	3,6±0,84
		14-kun	M±m %	6,4±0,65	2,3±0,72	3,4±0,75
		35-kun	M±m %	6,5±0,98	2,5±0,29	3,8±0,55

		180-kun	M±m %	6,6±0,67	2,6±0,49	4,0±0,48
3	Ikkinchi tajriba guruhi	Tajribagacha	M±m %	5,8±0,8	1,9±0,44	3,1±0,27
		14-kun	M±m %	6,0±0,153	2,0±0,52	3,6±0,42
		35-kun	M±m %	6,2±0,98	2,2±0,481	3,7±0,108
		180-kun	M±m %	6,5±0,47	2,5±0,201	3,9±0,78

MUHOKAMA

Olingan natijalar E-Selen va Gamavit veterinariya preparatlari qo'ylar organizmida gematologik va biokimyoviy ko'rsatkichlarning fiziologik me'yorlar doirasida yaxshilanishiga xizmat qilganligini ko'rsatadi. Vaksina bilan birgalikda qo'llanganda eritrotsitlar va gemoglobin miqdorining oshishi, leykotsitlar ko'rsatkichlarining pasayishi hamda qon zardobidagi oqsil fraksiyalarining o'zgarishi organizmning tabiiy rezistentligi faollashgani bilan izohlanadi.

XULOSA

“E-Selen” va “Gamavit” veterinariya preparatlari qo'ylar qonining gematologik ko'rsatkichlariga salbiy ta'sir etmaydi, balki rag'batlantiradi. “E-Selen” 0,2 ml/10 kg dozada va “Gamavit” veterinariya preparati tana vazniga nisbatan 0,1 ml/kg dozada yuborilgandan keyin kuzatilgan natijalar organizmning tabiiy himoya mexanizmlarini faollashtirib, rezistentlikni oshirishini ko'rsatdi.

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QISHLOQ XO‘JALIK HAYVONLARINING DERMATOMIKOZLARIGA ZAMONAVIY USULLAR ASOSIDA DIAGNOZ QO‘YISH

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Annotatsiya: Ushbu maqolada qishloq xo‘jalik hayvonlarida dermatomikozlarni zamonaviy diagnostika usullari asosida aniqlash masalalari yoritilgan. Tadqiqotda mikroskopik, kultural, lyuminescent va molekulyar (PZR) usullarning samaradorligi tahlil qilingan. Mikroskopik usul zamburug‘ elementlarini tez aniqlashga, kultural usul esa qo‘zg‘atuvchini tur darajasida identifikatsiya qilishga xizmat qiladi. Lyuminescent usul yashirin shakllarni aniqlashda, PZR esa tez va aniq tashxis qo‘yishda yuqori samaradorlikka ega. Natijalar dermatomikozlarni kompleks yondashuv asosida diagnostika qilish eng ishonchli usul ekanligini ko‘rsatdi va bu yondashuv kasallikni erta aniqlash hamda samarali profilaktika va davolash choralarini ishlab chiqishda muhim ahamiyat kasb etadi.

Kalit so‘zlar: dermatomikoz, zamburug‘, mitseliy, spora, Saburo muhiti, Chapek muhiti, suslo-agar, GPA, mikrosporum, inkubatsiya, koloniya, morfologiya.

ДИАГНОСТИКА ДЕРМАТОМИКОЗОВ СЕЛЬСКОХОЗЯЙСТВЕННЫХ ЖИВОТНЫХ НА ОСНОВЕ СОВРЕМЕННЫХ МЕТОДОВ

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Аннотация: В данной статье рассматриваются вопросы диагностики дерматомикозов у сельскохозяйственных животных с использованием современных методов. Проведён анализ эффективности микроскопического, культурального, люминесцентного и молекулярного (ПЦР) методов. Микроскопический метод позволяет быстро выявлять элементы грибов, культуральный метод используется для идентификации возбудителя до видового уровня. Люминесцентный метод эффективен для выявления скрытых форм заболевания, а ПЦР обеспечивает быстрый и точный диагноз. Результаты исследования показали, что комплексный подход к диагностике дерматомикозов является

наиболее надёжным, обеспечивая раннее выявление заболевания и эффективную разработку профилактических и лечебных мероприятий.

Ключевые слова: дерматомикоз, гриб, мицелий, спора, среда Сабуро, среда Чапека, сусло-агар, ГПА, микроспорум, инкубация, колония, морфология.

DIAGNOSIS OF DERMATOMYCOSES IN AGRICULTURAL ANIMALS BASED ON MODERN METHODS

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Abstract: This article addresses the diagnosis of dermatomycoses in farm animals using modern diagnostic methods. The effectiveness of microscopic, cultural, fluorescent, and molecular (PCR) techniques was analyzed. The microscopic method enables rapid detection of fungal elements, while the cultural method allows species-level identification of the pathogen. The fluorescent method is effective for detecting subclinical forms of infection, and PCR provides fast and accurate pathogen identification. The results demonstrated that a comprehensive diagnostic approach is the most reliable method for dermatomycosis detection, enabling early diagnosis and effective development of preventive and therapeutic measures.

Keywords: dermatomycosis, fungus, mycelium, spore, Sabouraud medium, Chapek medium, wort agar, GPA, Microsporum, incubation, colony, morphology.

KIRISH

Hozirgi kunda qishloq xo'jalik hayvonlari orasida dermatomikoz kasalliklarining tarqalish darajasi ortib borayotganligi veterinariya amaliyoti va chorvachilik tarmog'i oldida dolzarb muammolardan biri sifatida e'tirof etilmoqda. Dermatomikozlar patogen zamburug'lar tomonidan chaqiriladigan yuqumli kasalliklar bo'lib, ular teri, jun qoplami, ba'zan esa tirnoq va shox to'qimalarini zararlaydi. Ushbu kasalliklar ayniqsa intensiv chorvachilik sharoitida, zoogigiyenik talablarga rioya etilmagan va hayvonlarning immun holati pasaygan holatlarda keng tarqaladi. Dermatomikozlarning keng tarqalishi chorvachilik mahsuldorligining pasayishiga, sut, go'sht va jun sifatining yomonlashuviga olib keladi. Bundan tashqari, ular zoonoz xususiyatga ega bo'lib, inson salomatligi uchun ham xavf tug'diradi. Shu sababli muammo nafaqat veterinariya, balki sanitariya-epidemiologik jihatdan ham dolzarb hisoblanadi. Kasallik tufayli yuzaga keladigan iqtisodiy zarar davolash xarajatlari, mahsuldorlikning kamayishi va cheklov choralarining joriy etilishi bilan bog'liq.

So'nggi yillarda iqlim o'zgarishlari, intensiv parvarishlash tizimlari va tashqi muhit omillari dermatomikoz qo'zg'atuvchilarining moslashuvchanligini oshirib, kasallikning epizootologik xususiyatlarini murakkablashtirmoqda. Bu esa diagnostika va nazorat jarayonlarini yanada takomillashtirish zaruratini keltirib chiqarmoqda. Shu bois dermatomikozlarni erta va aniq aniqlash, qo'zg'atuvchilarni tezkor identifikatsiya qilish hamda samarali profilaktika va davolash choralarini ishlab chiqish veterinariya fanining muhim yo'nalishlaridan biridir. Ayniqsa,

mikologik, serologik va molekulyar-genetik usullarni amaliyotga joriy etish tashxis imkoniyatlarini sezilarli kengaytiradi.

Yuqoridagilar asosida qishloq xo'jalik hayvonlarida dermatomikozlarni zamonaviy usullar yordamida tashxislash, etiologik tuzilmasini aniqlash va samarali kurash choralarini ishlab chiqish ilmiy va amaliy jihatdan katta ahamiyatga ega.

Qishloq xo'jalik hayvonlarining dermatomikozlari bo'yicha olib borilgan ilmiy tadqiqotlar ushbu kasalliklarning keng tarqalganligi va dermatofit zamburug'lar — *Microsporum*, *Trichophyton* va *Epidermophyton* avlodlari bilan bog'liqligini ko'rsatadi. Ushbu zamburug'lar keratinolitik xususiyatga ega bo'lib, teri, jun va tirnoq to'qimalarini zararlaydi [6].

Dermatomikozlar zoonoz kasallik sifatida baholanib, hayvonlardan insonlarga yuqish xususiyatiga ega ekanligi ko'plab ilmiy tadqiqotlarda tasdiqlangan. Dermatofit zamburug'lari hayvonlar va insonlar o'rtasida muhim epidemiologik bog'liqlikka ega patogenlar sifatida qaraladi, bu esa "One Health" konsepsiyasi doirasida ularni o'rganish zarurligini ko'rsatadi [8].

Dermatomikozlarning epizootologiyasi bo'yicha o'tkazilgan tadqiqotlar kasallikning tarqalishi ko'p jihatdan iqlim sharoiti, namlik va xo'jalik gigiyenasiga bog'liqligini ko'rsatadi. Hayvonlarda dermatofitlar tarqalishini o'rganish zoonoz infeksiyalarni oldini olishda muhim ahamiyatga ega [2]. So'nggi yillarda dermatofitlarning taksonomiyasi va tasnifi molekulyar-genetik usullar asosida qayta ko'rib chiqilmoqda. DNK tahlillari natijasida dermatofitlarning yangi turlari va filogenetik aloqalari aniqlangan [5].

Dermatomikozlarni diagnostika qilishda klassik mikroskopik va kultivatsiya usullari "oltin standart" hisoblanadi, biroq ular uzoq vaqt talab etadi. Zamonaviy molekulyar usullar, xususan, polimeraza zanjir reaksiyasi (PZR), dermatofit qo'zg'atuvchini tezkor va yuqori aniqlikda identifikatsiya qilish imkonini beradi [3]. Hayvonlarda dermatofitozlarning tarqalish darajasi yuqori bo'lib, ayrim hududlarda 45–53 % gacha yetishi mumkinligi aniqlangan. Eng ko'p uchraydigan qo'zg'atuvchilar *Trichophyton mentagrophytes* va *Microsporum canis* hisoblanadi [1]. Yevropa hududida olib borilgan uzoq muddatli epidemiologik tadqiqotlar dermatofitozlarning asosiy qo'zg'atuvchisi sifatida *Microsporum canis* ustunlik qilishini ko'rsatgan. Shuningdek, kasallikning tarqalishi hududiy va ekologik omillarga bog'liqligi aniqlangan [4].

Turkiyada olib borilgan zamonaviy tadqiqotlarda dermatofitozlarni aniqlashda klassik usullar bilan birga PZR metodlari qo'llanilib, kasallik qo'zg'atuvchilarining aniq identifikatsiyasi ta'minlangan [7]. Dermatomikozlarning klinik belgilari odatda alopetsiya, eritema va qobiq hosil bo'lishi bilan namoyon bo'ladi hamda kasallik rivojlanishida hayvonlarning immun holati muhim rol o'ynaydi [6].

Shuningdek, global miqyosda dermatomikozlar hayvonlar va insonlar salomatligi o'rtasidagi o'zaro bog'liqlikni aks ettiruvchi muhim zoonoz kasallik sifatida baholanadi va ularni o'rganish "One Health" konsepsiyasi doirasida amalga oshiriladi [8]. Yuqoridagi manbalar tahlili shuni ko'rsatadiki, dermatomikozlar bo'yicha fundamental va amaliy tadqiqotlar yetarli darajada olib borilgan bo'lsa-da, qishloq xo'jalik hayvonlarida kasallikni zamonaviy molekulyar diagnostika asosida erta aniqlash, qo'zg'atuvchilarning genetik xilma-xilligini baholash va hududiy epizootologik xususiyatlarini kompleks o'rganish masalalari hali ham dolzarbligicha qolmoqda. Shuning uchun dermatomikozlarning diagnostikasini takomillashtirish, zamonaviy laboratoriya usullarini keng joriy etish va ularning amaliy samaradorligini baholashga qaratilgan ilmiy tadqiqotlar olib borish muhim ilmiy-amaliy ahamiyat kasb etadi. Tadqiqotning maqsadi qishloq xo'jalik hayvonlarida uchraydigan dermatomikozlarni klassik va zamonaviy diagnostika usullari asosida o'rganish hamda ularni qo'zg'atuvchi zamburug' turlarini aniqlashdan iborat.

Tadqiqot vazifalari: dermatomikoz bilan zararlangan hayvonlarni aniqlash; zararlangan o'choqlardan (jun, teri qirindisi, surtma) patologik material olish; laboratoriya sharoitida mikroskopik, kultural va zamonaviy diagnostika usullarini qo'llash; zamburug' turlarini identifikatsiya qilish.

MATERIALLAR VA METODLAR

Olingan patologik materiallar laboratoriya tekshiruviga tayyorlandi. Mikroskopik tekshiruvda namunalar 10–20 % kaliy gidroksid eritmasi bilan ishlov berilib, yorug'lik mikroskopi ostida o'rganildi. Ushbu usul yordamida zamburug' mitseliylari va artrokonidiyalar aniqlandi. Metodning afzalligi - tezkorligi (10–15 daqiqa), kamchiligi esa zamburug' turini aniqlash imkonining cheklanganligidir.

Kultural usulda patologik materiallar Saburo, suslo-agar, 2 % glyukozali GPA va Chapek oziqa muhitlariga ekildi. Ekilgan namunalar 25–28 °C haroratda 3–7 kun davomida inkubatsiya qilindi. Hosil bo'lgan koloniyalar makroskopik (rang, shakl, pigmentatsiya) va mikroskopik belgilariga ko'ra o'rganilib, Trichophyton, Microsporum va Epidermophyton turlari aniqlandi.

NATIJALAR

O'tkazilgan tadqiqotlar natijasida qishloq xo'jalik hayvonlarida dermatomikozlarning uchrashi, ularning etiologik tuzilmasi hamda diagnostika usullarining samaradorligi kompleks tarzda baholandi. Klinik tekshiruvlar davomida kasallikka xos belgilar — alopetsiya o'choqlari, terida qobiq hosil bo'lishi, qizarish va qichishish holatlari aniqlanib, dastlabki tashxis qo'yildi. Tanlab olingan patologik materiallar (jun, teri qirindisi va surtma namunalar) laboratoriya tekshiruvlariga jalb qilindi.

Mikroskopik tekshiruv natijalariga ko'ra, 10–20 % kaliy gidroksid eritmasi bilan ishlov berilgan namunalar yorug'lik mikroskopi ostida o'rganilganda, zamburug'larning mitseliylari va artrokonidiyalari aniqlandi. Xususan, uzun, shoxlangan septali mitseliy ipchalari hamda zanjirsimon joylashgan sporalar kuzatildi. Ushbu usulning tezkorligi (10–15 daqiqa ichida natija olish imkoniyati) uni dastlabki skrining diagnostika vositasi sifatida samarali ekanligini ko'rsatdi. Biroq mikroskopik tekshiruv zamburug'larning tur darajasida aniqlanishi uchun yetarli emasligi qayd etildi. Kultural tekshiruvlar natijasida patologik materiallardan olingan ekinlar Saburo, suslo-agar, 2 % glyukozali GPA va Chapek oziqa muhitlarida muvaffaqiyatli o'stirildi. Inkubatsiya jarayonida (25–28 °C, 3–7 kun) turli morfologik xususiyatlarga ega koloniyalar hosil bo'ldi. Makroskopik tahlil natijalariga ko'ra, Microsporum jinsiga mansub koloniyalar odatda oqish-yashil rangli, momiqsimon tuzilishga ega bo'lib, markaziy qismi zichroq bo'lishi bilan ajralib turdi. Trichophyton turlarida esa kukunsimon yoki baxmalsimon koloniyalar, rangining oqdan sarg'ish-jigarranggacha o'zgarishi kuzatildi. Epidermophyton koloniyalari nisbatan silliq va sariq-jigarrang pigmentatsiyaga ega ekanligi bilan tavsiflandi.

Mikroskopik identifikatsiya jarayonida konidiyalarning shakli, joylashuvi va o'lchamiga qarab zamburug' turlari differensial tashxis qilindi. Jumladan, Microsporum turlariga xos ko'p hujayrali, qalin devorli makrokonidiyalar, Trichophyton turlarida esa asosan mikrokonidiyalar ustunligi aniqlandi. Shu asosda tadqiqot obyektlarida dermatomikoz qo'zg'atuvchilarining asosiy qismi aynan ushbu ikki jins vakillaridan iborat ekanligi tasdiqlandi.

Lyuminestsent (fluorestsent) diagnostika usuli qo'llanilganda patologik materiallar ultrabinafsha nurlanish ostida tekshirildi. Natijada zararlangan jun tolalarida xos yashil rangli nurlanish kuzatilib, bu Microsporum jinsiga mansub zamburug'lar mavjudligini ko'rsatdi. Ushbu usulning muhim afzalligi shundaki, u kasallikning klinik belgilar hali to'liq namoyon bo'lmagan yashirin (subklinik) shakllarini ham aniqlash imkonini berdi. Shu bilan birga, Trichophyton

turlarida bunday nurlanish kuzatilmasligi differensial tashxis qo'yishda muhim mezon sifatida xizmat qildi. Qo'shimcha ravishda, shubhali holatlarda sof kultura ajratib olinib, laboratoriya hayvonlarida (quyonlarda) biosinov o'tkazildi. Tajriba natijalariga ko'ra, yuqtirilgan hayvonlarda 7–10 kun ichida dermatomikozga xos klinik belgilar rivojlanib, ajratilgan kulturaga patogenlik xos ekanligi tasdiqlandi. Bu esa olingan natijalarning ishonchliligini oshirdi hamda etiologik tashxisni yakuniy tasdiqlash imkonini berdi.

MUHOKAMA

Umuman olganda, tadqiqot natijalari shuni ko'rsatdiki, dermatomikozlarni aniqlashda kompleks yondashuv, ya'ni mikroskopik, kultural va lyuminescent diagnostika usullarini birgalikda qo'llash yuqori samaradorlikka ega. Har bir usulning o'ziga xos afzallik va cheklovlari mavjud bo'lib, ularni uyg'unlashtirish orqali kasallikka aniq va ishonchli tashxis qo'yish mumkinligi ilmiy jihatdan asoslab berildi.

XULOSA

1. Qishloq xo'jalik hayvonlaridan olingan patologik materiallarni (jun, teri qirindisi va surtma namunalarini) to'g'ri tanlash, aseptik sharoitda yig'ish va laboratoriyaga o'z vaqtida yetkazish dermatomikozlarni aniq tashxislashning muhim bosqichi hisoblanadi hamda tekshiruv natijalarining ishonchliligini belgilovchi asosiy omillardan biri sifatida xizmat qiladi.

2. Dermatomikozlarni diagnostika qilishda mikroskopik, kultural va lyuminescent usullarni o'zaro uyg'unlashtirilgan kompleks tarzda qo'llash eng yuqori samaradorlikni ta'minlaydi. Ushbu yondashuv kasallikni erta aniqlash, qo'zg'atuvchini differensial tashxis qilish hamda yashirin shakllarni aniqlash imkoniyatini sezilarli darajada oshiradi.

3. Zamburug' qo'zg'atuvchilarini tur darajasida aniq identifikatsiya qilish (*Trichophyton*, *Microsporum* va *Epidermophyton*) dermatomikozlarga qarshi profilaktik va davolash chora-tadbirlarini ilmiy asosda ishlab chiqish hamda ularning samaradorligini oshirishga xizmat qiladi, shuningdek, epizootologik nazorat tizimini takomillashtirish imkonini beradi.

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QO'YLAR XLAMIDIOZINI IMMUNOLOGIK TAHLILI HAMDA ABORT BO'LGAN HOMILA TO'QIMASIDAGI PATOMORFOLOGIK O'ZGARISHLAR

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Annotatsiya: Maqolada tug'ishiga qisqa muddat qolgan va abort qilgan qo'ylarning qon zardobida xlamidioz kasalligida (*Chlamydia abortus ovis*) immunologik tahlil natijalarini optik zichlik ko'rsatkichlari o'rganilgan. *Chlamydia abortus ovis*ning qo'ylar organizmida surunkali va o'tkir shaklda kechishini IgG va IgM turlarini Qozog'iston Davlatining "MVA GROUP" qo'shma korxonasining test to'plamida tekshirilgan natijalari va ularga matematik ishlov berilgan ko'rsatkichlar keltirilgan. Tadqiqotlarni bajarish uchun Jizzax viloyatining G'allaorol tumani "Rohat" fermer xo'jaligi shuningdek mazkur tuman aholisining shaxsiy qo'ylarida hamda Qashqadaryo viloyati Muborak tumani "Turon" Qoraqo'lchilik MChJlarida tug'ish davridan 12-14 kun avval abort qilgan va chala rivojlangan homilalarni immunologik, serologik hamda patomorfologik tahlillarning natijalari keltirilgan. Shuningdek *Chlamydia abortus ovis*dan nobud bo'lgan 140-150 kunlik homilalarni ichki a'zolarida patologoanatomik hamda gistologik o'zgarishlari haqida ma'lumotlar berilgan.

Kalit so'zlar: xlamidioz, abort, homila, *Chlamydia abortus ovis*, optik zichlik, salbiy natija, IgG-immunoglobulin, C-reaktiv oqsil, antigen, immun tizim, ijobiy natija, substrat oqsil, parafin, glitserin, qon zardobi, IgM-immunoglobulin, ichki a'zo, gematoksilin, eozin, ELISA, test to'plami, giperemiya, polimorf hujayra, dozator, xromogen, antitelo, immunofermentli tahlil, kon'yugat, distrofiya, infiltratsiya, miokard, atelektaz.

ИММУНОЛОГИЧЕСКИЙ АНАЛИЗ ХЛАМИДИОЗА ОВЕЦ И ПАТОМОРФОЛОГИЧЕСКИЕ ИЗМЕНЕНИЯ В ТКАНЯХ АБОРТИРОВАННОГО ПЛОДА

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Аннотация: В статье представлены результаты исследования оптической плотности при иммунологическом анализе сыворотки крови овец, находящихся на поздних сроках беременности и подвергшихся аборту, при хламидиозе (*Chlamydia abortus ovis*). Приведены результаты определения иммуноглобулинов классов IgG и IgM при остром и хроническом течении *Chlamydia abortus ovis* в организме овец с использованием тест-наборов

совместного предприятия «MVA GROUP» Республики Казахстан, а также их статистическая (математическая) обработка. Исследования проводились на овцах фермерского хозяйства «Rohat» Галляаральского района Джизакской области, а также на животных, содержащихся в личных хозяйствах населения данного района, и в ООО «Турон» (каракулеводческое хозяйство) Мубарекского района Кашкадарьинской области. В работе представлены результаты иммунологических, серологических и патоморфологических исследований абортировавших овец за 12–14 дней до окота, а также данные по недоразвитым плодам. Кроме того, приведены сведения о патологоанатомических и гистологических изменениях во внутренних органах плодов (возраст 140–150 дней), павших вследствие инфицирования *Chlamydia abortus ovis*.

Ключевые слова: Хламидиоз, аборт, плод, *Chlamydia abortus ovis*, оптическая плотность, отрицательный результат, иммуноглобулин IgG, С-реактивный белок, антиген, иммунная система, положительный результат, белковый субстрат, парафин, глицерин, сыворотка крови, иммуноглобулин IgM, внутренние органы, гематоксилин, эозин, ИФА (иммуноферментный анализ), диагностический тест-набор, гиперемия, полиморфные клетки, дозатор (пипет-дозатор), хромоген, антитело, конъюгат, дистрофия, инфильтрация, миокард, ателектаз.

IMMUNOLOGICAL ANALYSIS OF OVINE CHLAMYDIOSIS AND PATHOMORPHOLOGICAL CHANGES IN THE TISSUES OF ABORTED FETUSES

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Abstract: The article presents the results of a study on optical density indicators obtained during the immunological analysis of blood serum from sheep in late pregnancy that experienced abortion due to chlamydiosis (*Chlamydia abortus ovis*). The study provides data on the determination of immunoglobulin classes IgG and IgM in both acute and chronic forms of *Chlamydia abortus ovis* infection in sheep, using diagnostic test kits produced by the joint venture “MVA GROUP” of the Republic of Kazakhstan, along with their statistical (mathematical) processing. The investigations were conducted on sheep from the “Rohat” farm in the Gallaaral district of the Jizzakh region, as well as on animals kept in private households within the same district, and in the “Turon” LLC (Karakul breeding farm) located in the Mubarek district of the Kashkadarya region. The study presents the results of immunological, serological, and pathomorphological analyses of sheep that aborted 12–14 days prior to lambing, as well as data on underdeveloped fetuses. In addition, information is provided on the pathoanatomical and histological changes observed in the internal organs of fetuses (140–150 days of gestation) that died as a result of infection with *Chlamydia abortus ovis*.

Keywords: Chlamydiosis, abortion, fetus, *Chlamydia abortus ovis*, optical density, negative result, IgG immunoglobulin, C-reactive protein, antigen, immune system, positive result, protein substrate, parafin, glycerin, blood serum, IgM immunoglobulin, internal organs, hematoxylin, eosin, ELISA, diagnostic test kit, hyperemia, polymorphic cells, pipette dispenser

(dosator), chromogen, antibody, enzyme-linked immunosorbent assay (ELISA), conjugate, dystrophy, infiltration, myocardium, atelectasis.

KIRISH

Respublikamizdagi ayrim chorvachilik fermer xo'jaliklariga mayda va yirik shoxli hayvonlarning xlamidiozi ko'p holatlarda iqtisodiy zarar keltirishi ma'lum. Xlamidioz – enzootik kechadigan, kontagiozli infeksiyon kasallik bo'lib, homila yo'ldoshining, ayniqsa kotiledonlarning yallig'lanishi va bo'g'ozlikning 2 – yarmida abort yoki nimjon layoqatsiz qo'zi va buzoqlarning (umuman yosh hayvonlarning) tug'ilishi hamda ularda o'pkaning yallig'lanishi (pnevmoniya) bilan tavsiflanadi [5].

Chorva hayvonlari orasida, tekshirishlar natijasiga ko'ra, har yili o'rtacha 12 foizgacha abort bo'lishi aynan xlamidioz kasalligi tufaylidir. Xlamidioz natijasida qishloq xo'jaligi hayvonlarida 50 foizgacha abort bo'lishi aniqlangan [13]. Kasal hayvonlarni davolash va kasallikka qarshi kurashish tadbirlari uchun katta mablag' sarflanadi. Ba'zi ma'lumotlarida mayda shoxli hayvonlar orasida AQSHda 3-10 foiz atrofida; Xitoyda 20-21; Gollandiya, Fransiya, Angliya va Ispaniya kabi Yevropa davlatlarida 35-65 foizni, Avstraliyada 6-26,2 va Isroilda 3-34 foiz xlamidioz tarqalganligi ta'kidlangan [12, 10, 8, 14].

Qo'zg'atuvchisi – Chlamydia abortus, Chlamydiaceae oilasiga mansub obligat hujayra ichki bakteriya. Xlamidiyalar hujayra ichi parazit bo'lib, o'lchami 250-300 nm gacha bo'ladi. Ularning hujayra devori qalin bo'lib, tarkibida DNK va RNK mavjud mikroorganizmlar hisoblanadi [7].

Xlamidiya qo'zg'atuvchisi murakkab antigen tuzilishiga ega bo'lib, unda 3 ta jinsga, turga va seroguruhga xos antigen markazlari mavjuddir. Uning jinsga bog'liqligi- gram manfiy bakteriyalar singari hujayra devori termostabilligi tufayli lipopolisaxariddir [4].

Xlamidiyalar uchun antigenlik, jinsning o'ziga xosligini aniqlaydigan bog'lanuvchi epitop uglevodda joylashgan maxsus retseptor va 3 monomerdan iborat oligosaxarid molekulasidan iboratligi bilan ifodalanadi. Antigen serotiplari o'ziga xos turdagi determinantlarni oqsil membranasida sisteinga boy aminokislotasini maxsus lokalizatsiya qilishidan farqlanadi [4]. Organizmning mikroblar bilan qarshi kurashishi immunoglobulinlar miqdori va qo'zg'atuvchilarga ta'siri bilan belgilandi. Qishloq xo'jaligi hayvonlarida immunoglobulin-E va immunoglobulin-D deyarli aniqlanmagan [14]. Makroglobulinlardan IgM-immun reaksiyalarning boshlang'ich bosqichida paydo bo'ladi. IgG-qon zardobidagi asosiy immunoglobulin bo'lib, uning ikkita Ig-G₁ va Ig-G₂ turlari mavjud. Immunoglobulinlardan tashqari organizmning asosiy hujayra elementlari makrofaglar (monotsitlar), shuningdek, faol T va B – limfotsitlar ham organizmning mikroorganizm va viruslarga qarshi chidamliligini ta'minlaydi [6].

Xlamidioz bilan zararlangan hayvonlarni davolashda ishlatiladigan antibiotik vositalar organizm to'qima va hujayralarini morfologik va patologik holatiga salbiy ta'sir etadi. Bunday fermentli va bosqichli reaksiyalarda poliklonal faollashuv sindromlari noto'g'ri ijobiy natijalarning sababi bo'lishini inobatga olish kerak bo'ladi [14].

Shu bilan birga hayvon organizmida individual (ontogonistik) davrda maxsus moddalar – superantigenlar –B limfotsitlar organizmga kirib kelgan turli begona antigenlarga qarshi maxsus himoyalovchi oqsil tabiatli fermentlar ishlab chiqarishi va javob qaytarishini o'ziga xos bo'lgan tarzda rag'batlantiradi [8]. Amalda, bu jarayonlar bir vaqtning o'zida ko'plab patogenlarga antigen titrining o'ziga xos bo'lmagan tarzda ortishi bilan ifodalanadi.

Antigenlarni aniqlashda noto'g'ri salbiy natijalar immunitet tanqisligi holatlariga, shuningdek, reaksiyani shakllantirishdagi texnik xatolarga bog'liq bo'lishi mumkinligi adabiyot manbalari va ilmiy ishlarda keltirilgan.

MATERIALLAR VA METODLAR

Tadqiqotning maqsadi. Xlamidiozli abortga gumon qilingan qo'ylardan olingan qon namunalari Chlamydia abortusga qarshi antitelolarni immunofermentli tahlil usulida aniqlash orqali serologik va immunobiologik o'zgarishlarni baholash hamda ushbu qo'zg'atuvchi ta'sirida 140–150 kunlik abort qilingan qo'y homilasidagi patomorfologik o'zgarishlarni kompleks o'rganish.

Tadqiqotning vazifalari.

-Xlamidiozni tadqiq qilishda uning respublikaning ayrim hududlarida epizootologik holatini o'rganish;

-Xlamidiozga gumon qilingan qo'ylar qon zardobida immunologik va serologik reaksiya natijalarini o'rganish;

-Xlamidioz kasalligidan (Chlamydia abortus ovis) abort bo'lgan homilalarni patologoanatomik ko'rsatkichlarini ilmiy asoslash;

-Xlamidiozdan zararlanib (Chlamydia abortus ovis) o'lgan homilalarni gistologik uslubda tadqiq qilish;

Tadqiqotning ob'ekti va uslubiyatlari. Tadqiqotlar VITining Mikrobiologiya, Hududiy diagnostika va Patomorfologiya laboratoriyalarida shuningdek ishlab chiqarish sharoitida Jizzax viloyati G'allaorol tumani "Rohat" fermer xo'jaligida, Qashqadaryo viloyati Muborak tumani "Turon" Qorako'lchilik naslchilikka ixtisoslashtirilgan xo'jaliklari va aholiga tegishli tug'ishiga qisqa muddat qolgan (5-7 kun) qo'ylarda o'rganildi.

Respublikamizning ayrim viloyatlarida xlamidioz kasalligi bo'yicha epizootik holatni o'rganish maqsadida xo'jaliklarda o'rganilgan patologik namunalarni patomorfologiya va mikrobiologiya laboratoriyalari xodimlari bilan hamkorlikda o'tkazilgan patomorfologik tekshirishlarda Jizzax viloyatining G'allaorol tumanidagi "Roxat" fermer xo'jaligidan keltirilgan 140 kunlik uch bosh va shu tumandagi Uzunsoy MFYda joylashgan "Yo'ldosh Suvonov"ning shaxsiy xo'jaligiga tegishli 4 oylik (142 kunlik) abort bo'lgan homilada, Qashqadaryo viloyati Muborak tumani "Turon" Qorako'lchilik naslchilik MChJdan keltirilgan ikki bosh mayda shoxli hayvon homilasida (138-140 kunlik) xlamidioz kasalligining tashqi klinik belgilari aniqlandi. Shuningdek mazkur xo'jaliklardan boshqa abort qilgan qo'ylarning qon zardoblari immunobiologik uslubda (IFT) tekshirildi va Chlamydia abortus ovisga nisbatan qon zardoblarida negativ natijalar aniqlandi (1,2,3-jadvallar).

Abort bo'lgan homila fiksatsiya qilingandan so'ng ichki a'zolardan olingan namunalar gistologik ishlov berish jarayonidan o'tkazildi va parafinda qotirildi. Qotirilgan bo'lakchalardan chanali mikrotomda gistokesmalar tayyorlanib, gematoksilin-eozin bilan bo'yaldi va mikroskop ostida tekshirildi.

Xlamidioz bilan kasallangan qo'ylar organizmidagi patomorfologik o'zgarishlar abort bo'lgan homila gavdasini yorib ko'rish va parenximatоз organlarining gistologik hamda patologoanatomik usullar yordamida tekshirildi [11].

Xlamidioz bilan kasallangan homiladan olingan teri to'qimasi, ichki parenximatоз organlari (jigar, o'pka, taloq, limfa tugunlari, yurak va buyrak) namunalari yorib ko'rish orqali, ichki organlardagi patologoanatomik o'zgarishlar esa gistologik uslubda tekshirildi.

Ichki a'zolar va to'qimalardan olingan patologik namunalarni (bo'lakchalar) gistologik tekshirish uchun parafinli usulda quyidagicha gistologik tekshirish uchun namuna tayyorlandi (50-100 ml sig'imdagi idishlarda (qorong'i shisha idishlarda o'tkazildi).

I. Fiksatsiya

1. Olingan patologik namunalarni (bo'lakchalar) 10-12 foizli formalin eritmasida 24 soat saqlandi;

2. 96° li etil spirti va formalinning 1:1 nisbatli eritmasida 24 soat davomida saqlandi;

3. Karnua suyuqligida namunalar to'liq botirilgan holatda 2-4 soat davomida saqlandi;

4. 96°-100° li spirtida 12-24 soat saqlandi.

II. Suvsizlantirish

Olingan patologik namunalarni (bo'lakchalar) suvsizlantirish uchun 96° li spirtli eritmada 24 soat davomida saqlandi;

1. Keyingi kun ham gistologik namunalar 96° li spirt eritmasida 24 soat saqlab turildi.

III. Parafin quyish

1. 6-12 soatga 96° spirt va xloroformning 1:1 eritmasiga solindi;

2. Toza xloroform eritmasida 6-12 soat saqlandi. Saqlash yakunida bo'lakchalar rangi tiniqlashishi kuzatildi;

3. Parafin bir maromda va yaxshiroq singishi uchun bo'lakchalar eritilgan parafin va xloroformning 1:1 nisbatdagi eritmasiga solindi hamda +35-40°C haroratli termostatda 2-3 soatga qoldirildi. Tadqiqotlarni bajarish davomida ba'zan bunday eritmalar ishlatilmay qolganda qotirilgan holatda qorong'i xonada +18°C da saqlandi;

4. So'ngra bo'lakchalar +54 - +55°C li termostatda saqlanayotgan eritilgan parafinga solib qo'yildi. Bunda bo'lakchalar avval I porsiyaga, ya'ni, birinchi idishdagi eritilgan parafinda 1,5-2,5 soat va so'ngra isitilgan pinset yordamida II porsiyaga solinib 0,5-1,5 soat davomida bo'lakchalarning kattaligi va qalinligiga e'tibor bergan holatda saqlandi;

5. Bo'lakchalar tubiga glitserin surtilgan va gaz gorelkasi yordamida +60+70°C gacha qizdirilgan bankachaga solindi hamda 0,5 sm qalinlikda qoplanguncha ustidan eritilgan toza parafin quyildi. Bo'lakchalar bir-biridan ajratish oson bo'lgan erkin masofalarda joylashtirib qo'yildi;

6. Bo'lakchalar solingan parafinli idish sovuq suv solingan katta idishda sovutildi. Bunda parafinning sovushi pastdan yuqoriga qarab harakatlanib erishiga asoslangan holda olib berildi;

7. Parafin qotgach chekkalaridan kesib chiqarib olindi, parafinda chegaralangan oqimtir joylari (sindirilganda maydalanadigan, ushoqlanadigan) mavjudligi uchun, uning yangi porsiyasi qayta quyib olindi;

8. Qotgan parafindan bo'lakchalar atrofida kamida 2 mm parafinli qatlam qoldirilgan holda bloklar kesib solindi. Bunda har bir bo'lakcha alohida-alohida qilib olindi;

9. Olingan bloklar parafini ko'p tomoni bilan taxtakachlarga qizdirilgan shpatel yordamida yopishtirildi.

Bloklardan mikrotom yordamida kesmalar olinib, buyum oynasida mikropreparat tayyorlandi hamda gematoksilin va eozin bo'yog'i bilan bo'yalib, mikroskopiya qilindi. Mikroskopiya natijasida abort bo'lgan homilaning ichki a'zolarida ro'y bergan morfologik o'zgarishlar aniqlandi (1-rasmlar).

Immunofermentli tahlil tugatilgach, maxsus apparat (kolorimetr) yordamida planshet chuqurchalaridagi suyuqlikning ranglanish zichligi o'lchanadi, natijalarni hisoblash uchun maxsus uskunadan foydalanildi. Nazoratdagi namunalar optik zichligi bilan solishtirilib, tahlil natijalari

matematik ishlovdan o'tkazildi. Ushbu natural son kattaligi chuqurchada optik zichlik qancha yuqori bo'lsa, namunadagi maxsus Chlamydia abortus ovis antitelolar miqdori shuncha ko'p va kasallik yaqqol namoyon bo'ladi deb (xlamidiozning o'tkir shakli) xulosa qilindi.

IFT uchun chuqurchalari devorlariga oldindan Chlamydia abortus ovis antigen adsorbsiya qilingan 96 chuqurchali polistirol planshetlardan foydalanildi. Tekshirilayotgan qon zardobi planshet chuqurchasiga solindi. Bunda gomologik Chlamydia abortus ovis antitelolari oldindan adsorbsiya qilingan Chlamydia abortus ovis antigeniga bog'lanib, birikdi. Xlamidiyalarning birikmagan antitelolari yuvish jarayonida chiqib ketdi.

Keyin chuqurchaga kon'yugat; quyon yoki boshqa hayvon immunoglobulinlariga (xlamidiya antitelolariga) qarshi ferment bilan belgilangan antitelolar qo'shildi. Agar tekshirilayotgan qon zardobida aniqlanayotgan Chlamydia abortus ovis antitelolari mavjud bo'lsa, ular bu bosqichda antigen roliga qatnashadilar va fermentga belgilangan Chlamydia abortus ovis antitelolari bilan birikadi.

Yuvishdan so'ng qo'shilgan xromogen (rang beruvchi) modda chuqurchalarda bo'yalishning rivojlanish bo'yicha reaksiyani hisobga olish imkonini berdi. Bo'yalish intensivligi ferment miqdoriga proporsional, demak, Chlamydia abortus ovisning antitelolar miqdoriga ham son jihatdan ekvivalent bo'ladi. Immunofermentli tahlil – laboratoriya tadqiqoti bo'lib “antigen-antitelo” immunologik reaksiyalarining yuqori darajadagi maxsuslik va sezuvchanlik xususiyatlariga asoslangan. IFT 2 ta turli komponentdan – immun va fermentli reaksiyalardan iborat. Immun reaksiya (mikroorganizm va virus molekulalari) antigen va antitelo bog'lanishi bo'lib xizmat qildi. Fermentli reaksiya esa immunologik reaksiya natijalarini ko'rish va o'lchash imkoniyatini berdi.

Chuqurchalardagi suyuqlikning optik zichligini o'lchashda va uni nazorat namunasi bilan solishtirishda antitelolar konsentratsiyasi hajm birligida hisoblandi. Natijalarni optik zichlik birligida hisoblashdan foydalanildi. IFT natijalarini, me'yoriy va patologik ko'rsatkichlar pog'onalarini hisobga olish bo'yicha har bir test-tizimlarning ishlab chiqaruvchi tashkilot yoki davlatning maxsus ko'rsatkichlari mavjud. Immunoferment tahlil natijalarini hisob qilishda ularga asos qilinadi.

IFTni o'tkazishda “Socorex” dozatorlari, Elx405 mikroplanshetlarni yuvish uskunasi, ELx808 mikroplanshetli avtomatik analizatorlardan foydalanildi. Reaksiya jarayonida olingan natijalar **interpretatsiyasi Bio-Tek KC4™ ta'minlovchi dasturi yordamida elektron tarzda (kompyuterda) amalga oshirildi.**

Reaksiyani bajarish uchun quyidagi ketma-ket qadamlar bajarildi;

1. Zarur miqdordagi striplar ramkaga joylashtirildi. Bular monoplikatlardagi tekshiriladigan namunalarni dublikatlarda va 4 ta chuqurcha nazorat zardoblari (salbiy nazorat 2 ta chuqurcha, ijobiy nazorat 2 ta chuqurcha) 100 mkldan solindi.

Foydalanilmagan striplar namlikning ta'sirini oldini olishda planshetni yopish uchun foydalaniladigan yopishqoq qog'oz bilan ehtiyotkorlik bilan yopishtirilib, Chlamydia abortus ovisni aniqlashda foydalanilgan test to'plamining butun yaroqlilik muddati davomida +2-+8°C haroratda saqlash uchun qo'yildi.

2. Tekshiriladigan namunalarni suyultirish uchun IFT-Bufer bilan 500 marta suyultirildi. Buning uchun quyidagi tartibda suyultirish tadbiri bajarildi.

a) 990 mkl IFT-Bufer probirkaga (1,5-3,0 ml hajmli) solindi va 10 mkl namuna mazkur buferga qo'shildi.

b) Tekshiriladigan namunalar chuqurchalariga 80 mkl IFT-Bufer solindi.

v) Tekshiriladigan namunalar chuqurchalariga suyultirilgan namunalar ("a"-band) 20 mkl dan solindi. Har bir tekshiriladigan namuna 2 tadan chuqurchaga solindi.

3. Ijobiy va salbiy nazoratlar uchun mo'ljallangan chuqurchalarga 100 mkl dan nazorat zardoblari namunalari solindi.

Planshet chuqurchalaridagi suyuqlikni yaxshi aralashtirish uchun uni gorizontal yuza bo'ylab, aylana shaklda ehtiyotkorlik bilan chayqatildi (avtomatik qurilmalardan foydalanish maqsadga muvofiq), planshetni yopishqoq qog'oz bilan yopildi.

4. Termostatda +37°C haroratda 30 daqiqa inkubatsiyada saqlandi.

5. Inkubatsiya tugagach, chuqurchalardagi suyuqlikni aspiratsiya (masalan, suv nasosi yordamida) yoki dekantlash usulida yo'q qilindi va chuqurchalarni 3 marta yuvildi. Har bir yuvish uchun barcha chuqurchalarga 250 mkl ishchi yuvish eritmasi solindi.

Yuvish eritmasini tayyorlash: yuvish konsentrat eritmasi distillangan suv bilan 26 marta suyultirildi (1 ml yuvish eritmasi konsentrati + 24 ml distillangan suv). Bu eritmani +2+8°C haroratda 2 hafta saqlash maqsadga muvofiq. Planshetni gorizontal yuzada aylana shaklda silkitib, so'ngra aspiratsiya yoki dekantlash yordamida suyuqlik yo'q qilindi. Yuvishta saqlash (chuqurchalarni shimdirish) talab etilmadi. Har bir dekantlashda chuqurchada qolgan suyuqlikni ehtiyotkorlik bilan olib tashlash kerakligi inobatga olindi.

6. Chuqurchalarga 100 mkl miqdorida Kon'yugat quyildi.

7. Termostatda +37°C haroratda 30 daqiqa inkubatsiya qilindi.

8. Striplarni 5 marta ishchi yuvish eritmasi bilan yuvildi.

9. Barcha chuqurchalarga 100 mkl tetrametilbenzidin (TMB) substrat eritmasidan solindi. Tetrametilbenzidin substrat eritmasini chuqurchalarga qo'yish 2-3 daqiqa ichida amalga oshirilishi o'rinli bo'ldi. Reaksiya davomida tayyorlangan planshetni qorong'u joyda xona haroratida (+20-+25°C) inkubatsiya qilindi va ko'k ranglanish bosqichiga bog'liq holda 10-20 daqiqa saqlandi.

10. 100 mkl stop-reagentni tetrametilbenzidin substrat eritmasi solingan ketma-ketlikda va xuddi o'sha tezlikda barcha chuqurchalarga solindi, bunda chuqurchalardagi suyuqlik yorqin sariq rangga bo'yaldi.

11. Planshet chuqurchalaridagi suyuqlik optik zichligini (Op.Z.) 450 nm to'lqin uzunligida vertikal skaynerlash fotometrida o'lchanadi (ba'zi holatlarda boshqa ishlab chiqaruvchi firmalarning yo'riqnomasiga bog'liq holatda boshqa ko'rinishda bo'ladi). Planshet chuqurchalaridagi suyuqlik optik zichlikni o'lchash stop-reagent quyilgandan keyin, 15 daqiqa ichida amalga oshirildi. Fotometr blanki havo bilan o'lchandi. Tadqiqotlar uchun ajratilgan qo'y va uning homilalari xo'jalik veterinariya vrachini anamnez ma'lumotlari asosida avvalgi yil abort qilgan va tuqqan qo'zilar hayotga layoqatsiz ekanligi inobatga olingan holda belgilandi.

NATIJALAR

"MVA GROUP" MChJ firmasi tomonidan ishlab chiqarilgan IgM va IgG test to'plamidan foydalanib, 2021-2025 yillar davomida Qashqadaryo viloyati Muborak tumani "Turon" Qorako'chilik MChJ shirkat xo'jaligida aniqlanib kelinayotgan xlamidiozdan zararlangan (*Chlamydia abortus ovis*) qo'ylardan olingan qon namunalarida tajribalar olib borildi. *Chlamydia abortus ovis*dan zararlangan qo'ylarning qon zardoblarida faslning uch mavsumida yoz oyi (avgust, iyul), bahor oyi (mart, aprel) va qish oylarida (yanvar, fevral) immunologik tahlil kasallikning surunkali va o'tkir bosqichda kechishi aniqlandi. Immunofermentli tahlil (IFT) reaksiyasini *Chlamydia abortus* antigeni yoki unga qarshi hosil bo'lgan maxsus antiteloga nisbatan qisqa vaqtda aniqlab berishiga asoslangan holda o'rgandik. *Chlamydia abortus*dan zararlangan qo'ylarning qon zardoblarida IF tahlil 3 ta guruhga bo'lingan holatda o'rganildi.

1-guruh Qashqadaryo viloyati Muborak tumani “Turon” Qorako‘lchilik MChJ shirkat xo‘jaligidan 15 bosh Chlamydia abortus ovisdan zararlangan qo‘ylarda o‘rganildi (1-jadval).

1-jadval. Qashqadaryo viloyati Muborak tumani “Turon” Qorako‘lchilik MChJ shirkat xo‘jaligidagi qo‘ylarda Chlamydia abortus ovis bo‘yicha optik zichlik natijalari

Optical Density Values

	1	2	3
A	1,413	1,652	1,503
B	1,451	1,524	1,569
C	0,257	1,581	1,746
D	0,224	1,456	—
E	1,829	1,485	—
F	1,516	1,589	—
G	1,446	1,635	—
H	1,701	1,647	—

1-jadval natijalaridan ko‘rinib turibdiki, dastlabki juftlikdagi namunalar (A₁ va B₁) salbiy namunalar uchun, keyingi juftlik esa ijobiy holatdagi qon namunalari (C₁ va D₁) uchun optik zichlikdagi standartlaridir. Tekshirilgan 15 ta qon namunasi tahliliga ko‘ra E₁, F₁, G₁, H₁, A₂, dan toki C₃ da aniqlangan namulargacha bo‘lgan chuqurchalardagi qon zardoblarida musbat natijalar aniqlandi.

2-guruh Jizzax viloyati G‘allaorol tumani “Rohat” fermer xo‘jaligida 15 bosh Chlamydia abortusdan zararlangan qo‘ylarda o‘rganildi (2-jadval).

2-jadval. Jizzax viloyati G‘allaorol tumani “Rohat” fermer xo‘jaligidagi qo‘ylarda Chlamydia abortus bo‘yicha optik zichlik natijalari

Optical Density Values

	1	2	3
A	1,413	1,547	1,562
B	1,451	1,621	1,637
C	0,257	1,482	1,719
D	0,224	1,451	—
E	1,716	1,526	—
F	1,487	1,613	—
G	1,523	1,601	—
H	1,748	1,543	—

2-jadval natijalaridan ko‘rinib turibdiki Jizzax viloyati G‘allaorol tumani “Rohat” fermer xo‘jaligida 2 yil davomida (2024 va 2025 yillar) abort qilgan qo‘ylardan olingan zardobdagi namunalar immunofermentli tahlil usulida tekshirilib, quyidagi holatlar aniqlandi. E₁, F₁, G₁, H₁, A₂, dan C₃ gacha bo‘lgan chuqurchalardagi qon namunalari musbat natijalar aniqlandi. Dastlabki juftlikdagi namunalar (A₁ va B₁) salbiy namunalar uchun, keyingi juftlik esa ijobiy holatdagi qon namunalari (C₁ va D₁) uchun optik zichlikdagi standartlardir.

3-guruh Jizzax viloyati G‘allaorol tumani aholining shaxsiy qaramog‘idagi 15 bosh Chlamydia abortusdan zararlangan qo‘ylarda o‘rganildi (3-jadval). Bu jadvalga ko‘ra shaxsiy xo‘jalikning qo‘ylarida (faqat abort bo‘lganlari tekshirildi) dastlabki juftlikdagi namunalar (A₁ va B₁) salbiy namunalar uchun, keyingi juftlik esa ijobiy holatdagi qon namunalari (C₁ va D₁) uchun optik zichlikdagi standartlardir.

3-jadval. Jizzax viloyati G‘allaorol tumani aholiga qarashli shaxsiy xo‘jaliklardagi qo‘ylarda Chlamydia abortus bo‘yicha optik zichlik natijalari

Optical Density Values

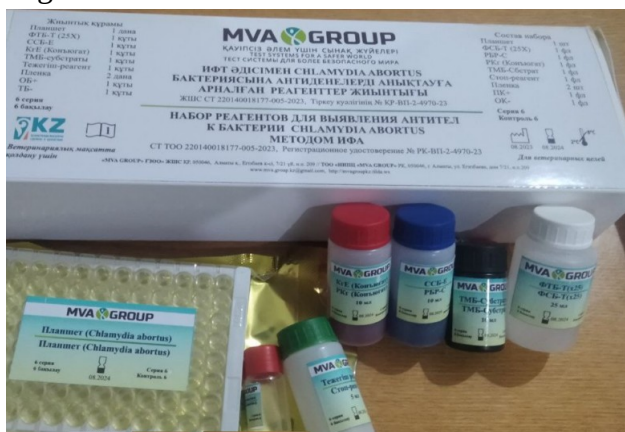
	1	2	3
A	1,415	1,628	1,608

B	1,454	1,612	1,487
C	0,257	1,597	1,526
D	0,224	1,602	
E	1,628	1,584	
F	1,724	--	
G	1,630	1,667	
H	1,587	1,516	

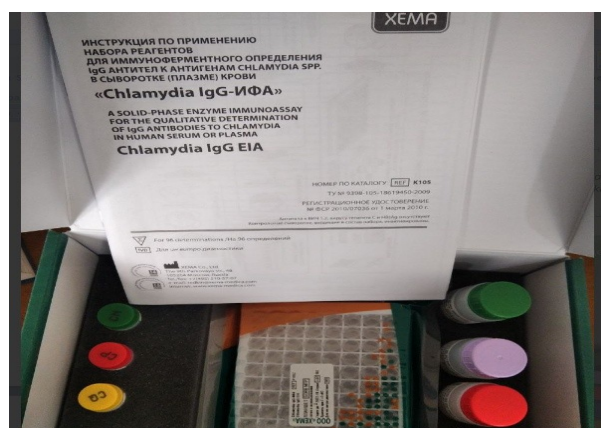
3-jadval natijalaridan ko‘rinib turibdiki Jizzax viloyati G‘allaorol tumani aholiga qarashli shaxsiy xo‘jaliklarda faqatgina 2025 yilda abort qilgan qo‘ylardan olingan namunasining zardobida immunofermentli tahlil usulida tekshirilib, quyidagi holatlar aniqlandi. E1, F1, G1, H1, A2, dan C3 gacha bo‘lgan chuqurchalardagi qon namunalari musbat natijalar aniqlandi. (faqatgina F2 chuqurchasidagi qon namunasi gemolizga uchragan).

Qoramol va mayda shoxli hayvonlar qon zardoblaridagi xlamidiyalarga qarshi IgG-maxsus antitelolarni aniqlash bo‘yicha immunofermentli tahlil (IFT yoki ELISA) Veterinariya ITI hamda “UNIGEN” va “XEMA” MChJ qo‘shma korxonalari hamkorligida ishlab chiqilgan “Xlamidiya qo‘zg‘atuvchisiga “Xlamidiya IgG-IFA” IgG antitelolarini immunoferment bilan aniqlash uchun reagentlar to‘plami” (“Набор реагентов для иммуноферментного выявления IgG антител к возбудителю хламидиоза крупного и мелкого рогатого скота”) test-tizimi yordamida qiyosiy bajarildi (1,2-rasmlar). IFT reaksiyalarining barchasi test-tizim jamlanmasini ishlab chiqaruvchi tashkilotning qo‘llash yo‘riqnomasiga va IFT reaksiyasini o‘tkazishning umumiy qoidalariga amal qilgan holda bajarildi.

Reaksiyalarni parallel ravishda Qozog‘iston Respublikasi TOO NIPTS “MVA GROUP” QK tomonidan ishlab chiqarilgan “Набор реагентов для выявления антител к бактерии Chlamydia abortus методом ИФА” test to‘plamida (seriya 6, yaroqlilik muddati 2026.11) bajarildi. Har ikkala holatdada ham reaksiyalar natijalari bir xilda ekanligi aniqlanib borildi va tegishli xulosalandi.



1-rasm. IgM-immunoglobulin



2-rasm. IgG-immunoglobulin

4-jadval. Chlamydia abortus bilan zararlangan qo‘ylar qon zardobida C-reaktiv oqsilning immunologik tahlili

Guruhlar	Hayvonlar bosh soni	Tahlilturlari		
		C-reaktiv oqsil (me'yorda 0,1-0,3 mg/l)	IgM (me'yorda 0,4-2,3 mg/l)	IgG (me'yorda 7-16 mg/l)

I tajriba guruhi	15	$0,32 \pm 0,025$	$2,8 \pm 0,23$	$17,1 \pm 0,96$
II qiyosiy guruh	15	$0,287 \pm 0,015$	$2,04 \pm 0,143$	$16 \pm 1,144$
III nazorat guruhi	14	$0,108 \pm 0,0058$	$0,286 \pm 0,022$	$7,3 \pm 0,46$

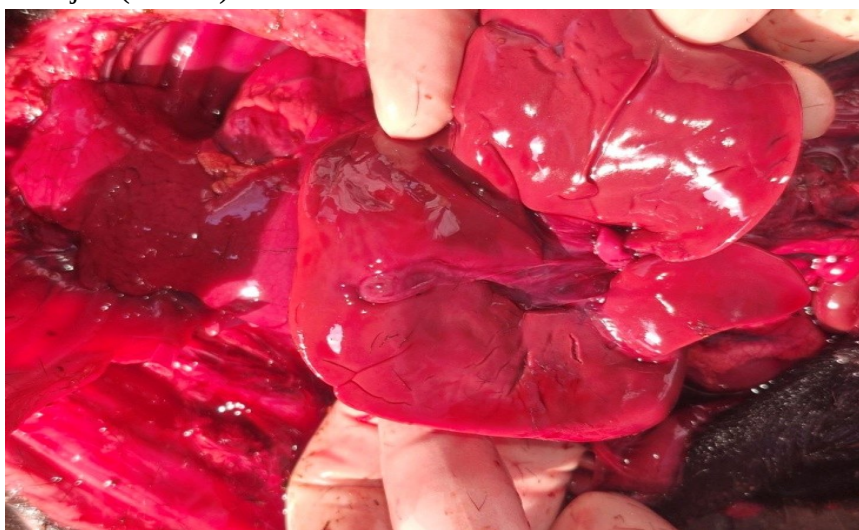
MUHOKAMA

C-reaktiv oqsil miqdori I tajriba guruhida me'yordan 1,55 marta yuqori ekanligi aniqlandi. II qiyosiy tajriba guruhida me'yor darajasida bo'lib, birinchi guruh qiyosiy tajriba guruhidan 1,13 marta yuqori ekanligi aniqlandi. Kasallikning surunkali holatda kechishini IgGning o'zgarishiga qarab aniqlanganda I tajriba guruhi me'yordan 1,69 marta, II guruhdan esa 1,21 marta yuqori natija berganligi aniqlandi. Ayniqsa, bu ko'rsatkichlar birinchi guruhda IgM va IgGlarni yuqori darajada bo'lganligi, II guruhga nisbatan ozroq farq borligi, III guruhga nisbatan esa ancha yuqori samarasi tadqiqotlar natijasida aniqlandi.

Jizzax viloyati G'allaorol tuman "Rohat" fermer xo'jaligida va Jizzax viloyati "Jizzaxlik" MFY fuqarolarga tegishli 130-140 kunlikda abort bo'lgan homila va 43 dona qon namunalari olib borilgan tekshirishlar davomida immunofermentli tahlil uslubida IgM ko'rsatkichlari aniqlandi. Mazkur xo'jaliklarda ikki bosh qo'y homilasi patologoanatomik tekshirildi va parenximatuz organlari va bachadon uning atrofidagi karankula va kotiledonlar gistologik jihatdan o'rganildi.

Respublikamiz ayrim hududlarida xlamidioz kasalligiga gumon qilinishi bo'yicha epizootik holatni o'rganish maqsadida chorvachilik xo'jaliklaridan keltirilgan patologik namunalar patomorfologiya va mikrobiologiya laboratoriyalari xodimlari bilan hamkorlikda atroflicha patologoanatomik tekshirildi. Mazkur hayvonlarni tekshirish jarayonida asosan quyidagi patologik holatlar kuzatildi.

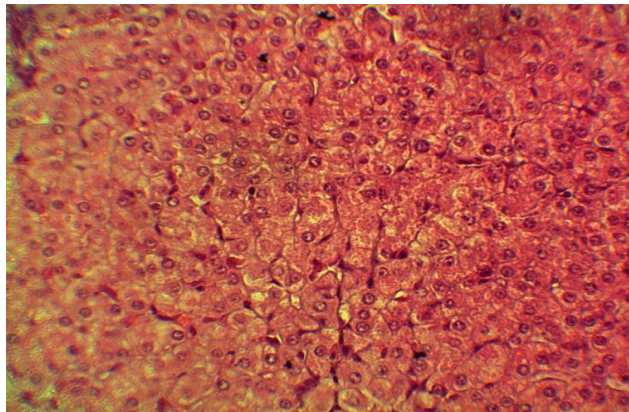
Patologoanatomik tekshirishlarda qo'zilarining o'pkasida atelektaz, havo to'planishi va qon turg'unligi kuzatildi. Yurak mushaklari bo'shashgan, quloqchalarida nuqtali va dog'li qon quyilishlar rivojlangani hamda yurak kameralarida juda oz miqdorda qon mavjudligi aniqlandi. Mazkur o'zgarishlar yurak faoliyatining yetishmovchiligidan darak beradi va bu jarayon boshqa ichki a'zolariga ham o'z ta'sirini ko'rsatgan. Jigar konsistensiyasi zichlashgan, turli kattalikdagi abscess va nekroz o'choqlari rivojlangan. Taloq bo'shashgan va yuzasining ayrim joylarida shishlar, buyraklar yuzasida esa nuqtali qon quyilishlar mavjud. Shirdon atrofida to'liq kataral yallig'lanishlar mavjud (3-rasm).



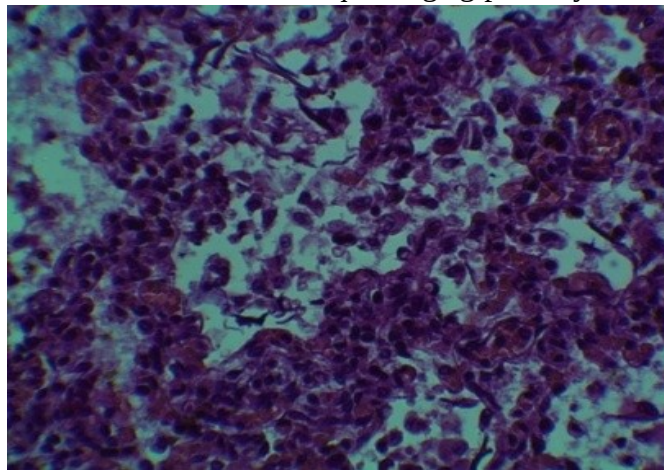
3-rasm. Jigar to'qimasidagi patologiya.

Mazkur homilalarining barchasidan olingan patologik namunalar fiksatsiya qilingandan so'ng parafin bilan qotirildi va chanali mikrotomda gistokesmalar tayyorlanib, gematoksilin-eozin bo'yog'i bilan bo'yaldi. Tayyorlangan gistologik kesmalar mikroskop ostida tekshirilganda quyidagi natijalar aniqlandi.

O'pka tomirlarining devorlari bo'kkan, alveolalararo to'siqlarning giperemiyasi va



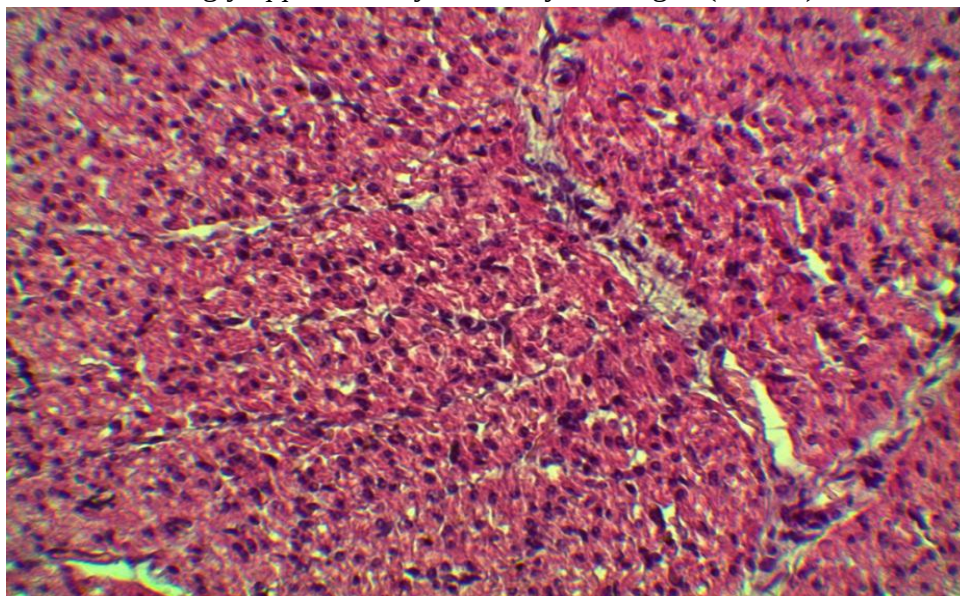
5-rasm. Gepatotsitlarning gidropik distrofiyasi.



4-rasm. O'pkadagi alveolalararo to'siqlarning giperemiyasi va turli hujayrali infiltratsiya.

polimorf hujayrali infiltratlar kuzatiladi. Bu o'zgarishlar, o'z navbatida, turli pnevmoniyalar, ya'ni mayda o'choqli, o'choqli va o'choqli-tutashgan yallig'lanishlarning rivojlanishiga sabab bo'lgan (4-rasm).

Yurakning biriktiruvchi to'qimali negizi – stroma bo'kkan, tomirlar va hujayralar reaksiyalarining asosida miokardning turli qismlarida kollagen va elastik tolalarning shakllanishi hamda kardiomiotsitlarning yaqqol distrofiyasi namoyon bo'lgan (6-rasm).



6-rasm. Yurak stromasining bo'kishi va kardiomiotsitlar distrofiyasi.

Tomirlar devorlarining o'tkazuvchanligidagi o'zgarishi tufayli jigar hepatotsitlarida turli darajali gialin tomchili va suvli (gidropik) distrofiyalar rivojlangan. Shuningdek jigar traktlarida to'qimalardagi yallig'lanish reaksiyalari mavjud (6-rasm) (5-rasm).

Tarkibida oz sonli plazmotsitlar mavjud bo'lgan limfomakroflagli infiltratlarning hosil bo'lishi jigarda yuqumli yallig'lanish jarayonining mavjudligidan darak beradi.

Shunday qilib, mayda shoxli hayvonlarning xlamidiozi immunologik tashxislanganda; to'qimalarning bo'kishi, gemodinamik buzilishlar, alterativ, immunopatologik jarayonlar va tizimli yallig'lanishlar ko'rinishida namoyon bo'lishi Jizzax va Qashqadaryo viloyatining chorvachilik xo'jaliklari misolida Chlamydia abortus ovisdan zararlanishi aniqlandi.

XULOSA

1. Jizzax viloyatining chorvachilik xo'jaliklarida xlamidiozning yashirin shakliga (IgG) jami tekshirilgan 153 dona qon namunalarining 39 ta ya'ni 25,49 foizida ijobiy va 105 tasida 68,63 foiz salbiy natija aniqlandi. Jami tekshirilgan namunalarga nisbatan viloyat bo'yicha 5,7 foiz qo'ylarda xlamidiozdan (Chlamydia abortus) zararlanish holati aniqlandi.

2. Chlamydia abortus bilan zararlangan qo'ylar qon zardobida C-reaktiv oqsil va immunoglobulinlar (IgG, IgM) abort bo'lishning 140 va 150 kunlarida aniqlanib, ular miqdorini oshishi to'qima suyuqligida infeksiyon yallig'lanish jarayoni kuchayishi hisobidan immun tizimning faollashishi bilan tavsiflandi.

3. Chlamydia abortus ovis infeksiyasidan zararlangan 132-142 kunlik chala rivojlangan homilalarning jigarida tomirlar devorining o'tkazuvchanligi oshishi natijasida hepatotsidlarda turli darajadagi gialin-tomchili gidropik (suvli) distrofiyalar rivojlanishi aniqlandi.

4. Tug'ishiga 7-10 kun qolgan homilalar o'pkasida atelektaz, havo to'planishi, qon turg'unligi kuzatildi, yurak mushaklari bo'shashgan, quloqchalarida nuqtali va dog'li qon quyilishlar rivojlangani, yurak kameralarida juda oz miqdorda qon mavjudligi hamda ko'krak qafasida transsudat suyuqlik miqdori 120-160 mlni tashkil qilishi aniqlandi.

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UO‘K:619:616.98:579.852.11

QO‘YLARNING SALMONELLYOZLI ABORTI

(Adabiyot ma’lumotlarining tahlili asosida)

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<https://doi.org/10.5281/zenodo.20107895>

Annotatsiya: Maqolada qishloq xo‘jaligi hayvonlarining salmonellyoz kasalligi bo‘yicha umuman, shuningdek, qo‘ylarning salmonellyozli aborti haqida xususan, ilmiy adabiyot manbalarida keltirilgan ma’lumotlar muhokama va tahlil qilingan. Kasallikning nafaqat O‘zbekistonda, balki dunyoning barcha mamlakatlarida keng tarqalganligi va sezilarli iqtisodiy zarar keltirayotgani yoritilgan. Qishloq xo‘jaligining qo‘ychilik sohasida abortga sabab bo‘luvchi boshqa kasalliklarning ham mavjudligi va ularning orasida o‘ziga xos klinik yoki boshqa belgilarning sezilmasligi, ya’ni differentsiatsiya qilishning imkoniyati yo‘qligi mazkur kasallikka aniq tashxis qo‘yishda anchagina jiddiy muammolar tug‘ilishiga sabab bo‘lmoqda.

Kalit so‘zlar: salmonellyoz, abort, homila, *S. abortus ovis*, diagnoz, differentsiatsiya, profilaktika, immunitet, patologoanatomik o‘zgarishlar, endotoksinlar, saqlash va oziqlantirish.

САЛЬМОНЕЛЛЕЗНЫЙ АБОРТ ОВЕЦ

(На основании литературных сведений)

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Аннотация: В статье обсуждены и проанализированы сведения, приведённые в научных литературных источниках, по сальмонеллёзам сельскохозяйственных животных вообще, а также сальмонеллёзному аборт у овец в частности. Освещены широкая распространённость и нанесение значительного экономического ущерба сальмонеллёзом не только в Узбекистане, но и во всех странах мира. Наличие в отрасли овцеводства сельского хозяйства также иных заболеваний, вызывающих аборт, и отсутствие между ними специфических клинических и других признаков, то есть отсутствие возможности дифференциации, создают серьёзные проблемы в постановке точного диагноза.

Ключевые слова: сальмонеллёз, аборт, плод, *S. abortus ovis*, диагноз, дифференциация, профилактика, иммунитет, патологоанатомические изменения, эндотоксины, уход и кормление.

SALMONELLA ABORTION IN SHEEP

(Based on literary sources)

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Abstract: This article discusses and analyzes scientific literature on salmonellosis in farm animals in general, and salmonellosis-induced abortion in sheep in particular. It highlights the widespread prevalence and significant economic damage caused by salmonellosis not only in Uzbekistan but worldwide. The presence of other diseases that cause abortions in the sheep farming industry, along with the lack of specific clinical and other signs between them, creates significant challenges in establishing an accurate diagnosis.

Keywords: salmonellosis, abortion, fetus, *S. abortus ovis*, diagnosis, differentiation, prevention, immunity, pathological changes, endotoxins, care and feeding.

KIRISH

O'zbekistonning barcha hududlarida qo'ylarning salmonellyoz kasalligi bo'yicha ma'lumotlar ilmiy adabiyot manbalarida ko'p yoritilgan bo'lsa-da, mazkur infeksiya qo'ychilik xo'jaliklariga hozirgacha katta iqtisodiy zarar keltirmoqda. Chorva hayvonlari, ayniqsa, qo'ylar orasida abortga sabab bo'ladigan boshqa kasalliklarning ham mavjudligi veterinariya fani va amaliyoti oldida turgan muammolarni yanada murakkablashtiradi. Chunki ularga tashxis qo'yish ancha mushkul bo'lib, noiloj so'yilgan yoki o'lgan qo'ylarni patologoanatomik tekshirishlar davomida ularning tashqi ko'rinishi va ichki a'zolarida o'ziga xos bo'lgan belgi va o'zgarishlarni aniqlash muammolar tug'diradi. Bu esa, o'z navbatida, kasallikka aniq diagnoz qo'yishda jiddiy qiyinchiliklarga olib keladi. Mazkur kasalliklarni bir-biridan farqlash ishlab chiqarishdagi veterinariya mutaxassislari uchun murakkab bo'lib, ularning differensial diagnostikasini yaratish, xo'jaliklar amaliyotida foydalanish uchun joriy etish juda muhimdir.

Qo'ychilikda sohaning taraqqiyoti uchun qo'ylar orasida uchraydigan infeksiyon kasalliklarga qarshi samarali kurashish bo'yicha chora-tadbirlarning zamonaviy usullarini yaratish va tatbiq etish muhim ahamiyat kasb etadi. Veterinariya fani oldida turgan yirik muammolardan biri — qo'ylar salmonellyozli abortlariga tashxis qo'yish, oldini olish va qarshi kurash chora-tadbirlarini ishlab chiqish, takomillashtirish hamda amaliyotga joriy etish hisoblanadi. Yuqorida ko'rsatilgan muammolarni bartaraf etish uchun veterinariya-sanitariya talablaridan tashqari, yuzaga kelgan vaziyatni chuqurroq va atroflicha ilmiy talqin qilish lozim bo'ladi. Qo'ylar salmonellyozli abortning patomorfologik differensial diagnostikasini ishlab chiqish ham dolzarb masalalardan biridir.

MATERIALLAR VA METODLAR

Salmonellyozli abort — infeksiyon kasallik bo'lib, bo'g'oz qo'ylarda homila tashlash yoki yashashga layoqatsiz qo'zilar tug'ilishi bilan xarakterlanadi. Kasallik Yevropada XVIII asr oxirlarida ma'lum bo'lgan. Rossiyada 1901-yilda tadqiqotchi D. V. Polyakov tomonidan aniqlangan bo'lib [5, 279-b.], hozirgi kunda bu kasallik barcha mamlakatlarda uchraydi. Qo'zg'atuvchisi — *Salmonella abortus ovis*, harakatlanuvchi tayoqcha, aerob va anaerob sharoitda barcha ozuqa muhitlarida o'sadi, anilin bo'yoqlari bilan bo'yaladi. Oddiy ozuqa muhitlarida (pH 7,2–7,4) 35–37 °C haroratda yaxshi vegetatsiya bo'ladi. Go'sht-peptonli qaynatmada loyqalanish, go'sht-peptonli agarda ko'kish tusdagi koloniyalar hosil qiladi. Endo muhitida rangsiz koloniyalar va gaz hosil qiladi, glukoza, maltoza, galaktoza, dulsit, ksiloza, ramnozani parchalaydi. GPQda 12–18 kunda endotoksin to'planadi, bu holat bakteriyalarning nobud bo'lishi va parchalanishidan hosil bo'ladi.

Qo'zg'atuvchining chidamliligi — tuproq yuzasidagi bakteriyalarni quyosh nuri 10 kunda o'ldiradi, 0,5 sm chuqurlikdagi salmonellalar 2 oydan keyin o'ladi. Quritilganda 5 oy faol saqlanadi, ammo saprofit bakteriyalarga aylanib qoladi. Qaynatilganda darhol o'ladi, 60 °C gacha qizdirilganda 30 daqiqada, 2 % karbol kislotasi 5 daqiqada, 0,5 % formaldegid 15 daqiqada o'ldiradi. Organizmga alimantar yo'l bilan kirgan salmonellalar bo'g'oz qo'y ichagidan qonga o'tadi va septik holatni yuzaga keltiradi, qon orqali jinsiy a'zolarga kelgan qo'zg'atuvchilar u yerda rivojlanadi hamda ko'payadi. Embrion pardalarida ko'paygan salmonellalar uni kuchli yallig'laydi, natijada homila o'ladi. Kasallikning yashirin davri 2–3, ba'zan 6–8 hafta davom etadi. Abort ko'pincha bo'g'ozlikning 4–5 oylarida to'satdan paydo bo'ladi [1, 352-b.].

Salmonellyozli paratif turli xil uy hayvonlarining yuqumli kasalligi bo'lib, klinik-anatomik jihatdan kasallik septitsemiya, o'tkir va surunkali enterit ko'rinishida o'tadi. Infeksiyaning tashuvchisi va yuqtiruvchisi katta yoshli shartli sog'lom hayvonlar, turli yoshdagi kasal va sog'lom

yosh hayvonlardir. Qo'ylarda salmonellyozli homila tushishi epizootologik jihatdan otlarning bola tashlashiga juda yaqin turadi. Qo'zg'atuvchisi koitus paytida yuqishi mumkin. Sovliqlar bo'g'ozligining oxirgi davrlarida ko'proq bola tashlashi va 10–15 kunlik qo'zilarining ko'plab kasal bo'lishi mazkur kasallikka juda xosdir. Bo'g'oz sovliqlarda asosiy o'zgarishlar bachadonda topiladi va ular bola tashlashdan ancha oldin boshlanadi. Chunki bachadon devorida va platsenta to'qimasida chuqur rivojlangan patologik jarayonlar homilaning o'limiga olib keladi va tushishiga sabab bo'ladi. Bu o'zgarishlar alterativ nekrozlanuvchi endometrit ko'rinishida rivojlanadi.

Ko'pincha homila tushgandan keyin homila pardalari ushlanib qoladi, yiringli chirigan endometrit yuzaga keladi. Gistologik tekshirishlarda bachadon devorlarining tuzilishida yirik maydonlarning nekrozga uchraganini hamda ularning atrofida demarkatsion hoshiya hosil bo'lganligini, ba'zan ayrim nekrotik fokuslarning ohaklanishini, shilliq parda asosining tagidagi qatlamda yiringli eksudat to'planishini ko'rish mumkin. Bachadon devorida yiringli eksudat to'planishi bilan bir qatorda biriktiruvchi to'qima o'sishi tufayli kotelidonlarning birlashgan chiziqlarida biriktiruvchi to'qimaning o'sishi yaqqol ko'rinadi. Bu holat bola tashlashdan oldin boshlanadi. Shuning uchun ham bola tashlagan hayvonlarda yo'ldoshning tushishi kechikadi [3].

Qo'ylar salmonellyozi qo'zg'atuvchisi *Salmonella abortus ovis*ning boshqa salmonellalardan farqi shundaki, ozuqa muhitlarida nisbatan sust o'sadi. Ular mayda, shaffof, yorug'likni o'tkazuvchi koloniyalar hosil qilib, yuzasida rivojlangan radial chiziqlanish chetlarida kuzatilmaydi. Suyuq ozuqa muhitlarida bir tekis loyqalanish chaqiradi, ozgina cho'kma hosil bo'ladi, yuza pardasi va idish devori bo'ylab halqa paydo bo'lmaydi. Agar ozuqa muhitiga 5–10 % qon zardobi yoki 0,2 % glukoza qo'shilsa, mikroorganizmlarning o'sishi nisbatan yaxshilanadi.

Salmonellyozdan o'lgan hayvonlardan laboratoriya tekshirishlari uchun parenximatоз a'zolar (jigar, taloq, o'pka, yurak), ichak bo'limlari, limfa tugunlari, naysimon suyagi, abort homila va plasenta olinadi. Material shisha idishlarda 30 % li suvli glitserin eritmalari bilan saqlanadi. Abort paytidagi najas, qon va bachadondan qirindi laboratoriyaga yuboriladi. Serologik tekshirishlar uchun 1–4 kun ichida qon olinishi kerak. Najasda qon, shilliq va yiring aralashgan bo'lsa, ular ham namunaga kiritilishi kerak. Najas ichakdan to'g'ridan to'g'ri steril shisha naycha orqali olinadi [2, 420-b.].

NATIJALAR

Salmonellyozlar turli qishloq xo'jalik hayvonlari va parrandalarning yuqumli kasalligi bo'lib, o'tkir kechganda isitma va diareya, surunkali kechganda esa ko'pincha o'pkaning yallig'lanishi hamda artrit bilan xarakterlanadi. 1934-yilda bakteriyani kasal cho'chqadan birinchi ajratgan olim Salmonning nomi bilan *Salmonella*, kasallik esa salmonellyoz deb atalgan [5, 279-b.]. Kasallikning paydo bo'lishida oziqada oqsil, vitamin, mineral moddalarning, ayniqsa, kalsiy va fosforning kam bo'lishi, namlik, haroratning pasayishi, yoz faslida yuqori issiqlik muhim rol o'ynaydi.

Salmonella turlarining epizootologik ahamiyati bir xil emas. Kasallikning kechishi hayvonning rezistentligiga va tashqi muhit sharoitlariga bog'liq. Salmonellalar ichakka tushgach, ko'payadi va yallig'lanish jarayonlarini chaqiradi. So'ngra salmonellalar va ularning endotoksinlari limfa orqali qonga o'tib, septitsemiya chaqiradi. Bunda, ayniqsa, ularning endotoksinlari qon tomirlari devorini yemiradi, natijada seroz va shilliq pardalarda qon quyilishlar kuzatiladi. Salmonellyozning barcha ichki a'zolarida ko'payishi va ulardan chiqqan endotoksinlarning zararli ta'siri kasal hayvonlarning o'limiga olib keladi.

Kasallikning oldini olish uchun quyuqlashtirilgan formol-kvasli vaksina buzoqlarning 1–2 kunligidan boshlab 2 marta 3–5 kunlik oraliq bilan, bo'g'oz sigirlarga tug'ishidan 50–60 kun oldin

2 marta 8–10 kunlik oraliq bilan 1-marta 10 ml, 2-marta 15 ml dozada teri ostiga emlanadi. Passiv immunitet uchun kolibakterioz, salmonellyoz va pasterellyozga qarshi VITIda yaratilgan giperimmun qon zardobi asosan davolash uchun ishlatiladi. Yosh hayvonlar kasalliklariga qarshi yaratilgan vaksinalar bo‘g‘oz hayvonlarga tug‘ishidan 1 oy oldin yuboriladi [6, 564-b.].

Salmonellyozli abortda patologoanatomik o‘zgarishlar kasallikning o‘tkir kechishida taloq kattalashadi va qon bilan to‘ladi, seroz pardalarda qon quyilish-gemorragiyalar paydo bo‘ladi. Ingichka ichaklarda seroz-kataral yallig‘lanishdan gemorragik yallig‘lanishgacha bo‘lgan o‘zgarishlar kuzatiladi. Jigar shishib, uning yuzasi va kesimida to‘g‘nag‘ich boshidek hajmdagi ko‘plab kulrang-sariq tugunchalar aniqlanadi. Surunkali hollarda o‘pka zararlanadi. Seroz-kataral bronxopnevmoniya rivojlanadi va bunda, asosan, o‘pkaning yuqori apikal hamda o‘rta bo‘laklari zararlanadi. O‘pkaning diafragma sohasiga yaqin qismlarida seroz-kataral bronxopnevmoniya asosida nekrotik o‘choqlarning rivojlanishi bilan kechuvchi krupoz pnevmoniya rivojlanishi mumkin. Atrof-muhit omillari infeksiya tarqalishida katta rol o‘ynaydi. Jigardagi tugunchali o‘zgarishlar gistologik tekshirilganda quyidagilar aniqlanadi: o‘choqli nekrozlar, makrofag elementlardan tashkil topgan granulyomalar jigar bo‘lakchalari ichida intralobulyar joylashgan bo‘ladi [4, 399-b.].

Salmonellyozga qarshi kurash bir qator chora-tadbirlarni o‘z ichiga oladi va bunda emlash muhim rol o‘ynaydi. So‘nggi 10 yillikda tadqiqotchilar bakterial genetika sohasidagi yutuqlardan muvaffaqiyatli foydalanib, virulentligi doimiy ravishda pasaygan va immunogen xususiyatlari yaxshilangan vaksina shtamlarini yaratdilar. Qo‘ylarda salmonellyoz abortiga qarshi yuqori immunogen biopreparatni ishlab chiqish masalasi ochiq qolmoqda.

Rossiya Federatsiyasining janubiy hududlaridagi xo‘jaliklarda qo‘ylarda salmonellyozning epizootologik xususiyatlari va etiologik kelib chiqishi o‘rganilgan. Yuqori immunogenlikka ega bo‘lgan S. abortus ovisning virulentligi pasaytirilgan shtamlari tanlab olinib, kasallikka qarshi jonli quruq vaksina texnologiyasi ishlab chiqilgan. Qo‘ylarda salmonellyozga qarshi kurash bo‘yicha chora-tadbirlar majmuasini qo‘llashda S. abortus ovis N-105 shtamidan tayyorlangan qo‘ylarning salmonellyoziga qarshi quruq tirik vaksinadan foydalanish bo‘yicha ko‘rsatmalar ishlab chiqilgan. 1989–2003-yillarda Dog‘istonda o‘tkazilgan tadqiqotlarda salmonellyozga qarshi emlangan qo‘ylarning kasallanish va o‘lim darajalari har 100 ming boshga nisbatan hisoblab chiqilgan. Aniqlanishicha, Dog‘iston Respublikasining barcha tabiiy iqlim hududlarida kasallik mavsumiyligi bo‘yicha bahorda (3 oygacha) ko‘proq uchraydi [7].

Salmonellyoz — Salmonella turiga mansub bakteriyalar chaqiradigan infeksiyadir. Kasallikning klinik ko‘rinishi sog‘lom tashuvchanlikdan boshlanib, o‘tkir yoki surunkali enterit hamda sepsisgacha o‘zgarib borishi mumkin. Kasallikka tashxis qo‘yish qo‘zg‘atuvchini bakteriologik tekshirishlarda ajratib olish orqali tasdiqlanadi. Salmonellalar Enterobacteriaceae oilasiga kiruvchi tayoqchasimon grammanfiy bakteriyalar turkumidir. Zararlangan hayvonlar ma‘lum vaqt davomida klinik belgilersiz kasallikning patogenini tashib yuradi. Klinik jihatdan kasallik asosan quyidagi sindromlar bilan namoyon bo‘ladi: septitsemiya, ich terlama, enteritli abort, artritlar, nafas olish yo‘llari kasalliklari, oyoqlar to‘qimalarining nekrozi va meningit.

1-jadval. Hayvonlarda aniqlangan salmonellalarning serotiplari

Shoxli yirik mollar	S. typhimurium S. dublin S. newport
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Shoxli mayda mollar	S. typhimurium S. diarezonae S. abortus ovis S. hindmarsh S. brandenburg
Otlar	S. typhimurium S. apone S. anotum
Uy parrandalari	S. pullorum S. gallinarum S. typhimurium S. enteritidis
Cho'chqalar	S. geidelberg S. typhimurium S. cholerae suis S. typhi suis S. derby

Organizmga tushgan salmonellalar ovqat hazm qilish tizimi yo'llarini kolonizatsiya qiladi; ichaklarning epiteliy hujayralari va bodomsimon bezlarning limfoid to'qimalariga kirib boradi hamda shu yerda ko'payadi. Bakteriyalarning ichak shilliq qavatining xususiy plastinkasiga kirib borishi qatlamning shikastlanishiga va diareyaga olib keladi. Qo'ychilik xo'jaliklarida salmonellyoz epidemiyalari salqin va sovuq fasllarda ko'proq uchraydi, bu davrda hayvonlar guruhlarda zich saqlanadi. Bunda kasallik qo'zg'atuvchisi ifloslangan suv manbasi orqali oson tarqaladi [8].

MUHOKAMA

Qo'ylarda abortli holatlarning juda ko'p sabablari, jumladan, zaharli o'simliklar — Veratrum californicum, karam, Trifolium subterraneum va ularning toksinlari bo'lishi mumkin. Mazkur o'simliklar, ayniqsa, erta embrional o'limga ham sabab bo'lishi mumkin. Bundan tashqari, kasallikning etiologiyasida infeksiya sabablar, ya'ni kampilobakteriyalar, chlamydiyalar, toksoplazmalar, listeriyalar, brutsellalar kabi mikroorganizm turlari juda katta ahamiyatga egadir.

Qo'ylarda abortga sabab bo'luvchi Kesh-Velli virusi chivinlar orqali yuqadigan kasallik bo'lib, bepustlik, abort, o'lik tug'ilish, ko'plab tug'ma nuqsonlarni keltirib chiqaradi. Bu virus, asosan, AQSH, Kanada, Meksika hududlarida keng tarqalgan. Bunda urg'ochi qo'ylarda homiladorlikning 30–32 kunlarida embrion o'ladi, 32–37 kunlarda ularning nerv tizimi zararlanadi, 37–48 kunlarga kelib ko'pincha harakat apparati zararlanadi. Xulosa qilib aytganda, eng ko'p o'zgarishlar markaziy nerv tizimi, tayanch-harakat apparati, gidroensefaliya, gidrocefaliya, bosh miya va miyachaning rivojlanmasligi (gipoplaziya), artrogripoz (bo'g'imlar qotib qolishi), skolioz (umurtqa qiyshayishi), bo'yinning qiyshayishi, skelet mushaklarining rivojlanmasligi bilan kechadi [9].

XULOSA

Yuqorida keltirilgan ma'lumotlardan xulosa qilish mumkinki, veterinariya meditsinasi fani va amaliyotida hayvonlar salmonellyozi qo'zg'atuvchilarini bir necha soat davomida aniqlash bo'yicha yangi yuqori sezgir usullarni ishlab chiqishga ehtiyoj va talab mavjud. Salmonellyoz kasalligi xavfli hisoblanib, oldi olinmasa xo'jalikka juda katta iqtisodiy zarar yetkazadi. Bu kasallikning oldini olish uchun xo'jaliklarda epizootologik tadbirlar kompleksini to'liq bajarish

bilan bir qatorda, muntazam tarzda veterinariya sanitariyasi, zoogigiyena, zootexniya qoidalariga qat'iy rioya qilish kerak. Yuqoridagilarni umumlashtirib, qo'ylar salmonellyozli abortining oldini olishga qaratilgan profilaktika choralari, birinchi navbatda, umumiy veterinariya va zoogigiyenik qoidalariga rioya qilishga hamda epidemiyaga qarshi tasdiqlangan choralar rejasini qat'iy bajarishga asoslangan bo'lishi kerak. Bunda referent diagnostikumlar ishlab chiqish va diagnostika usullarini standartlashtirishga alohida e'tibor qaratish talab etiladi.

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**QO‘YLAR EXINOKOKKOZIDA GO‘SHT VA ICHKI ORGANLARINING
VETERINARIYA-SANITARIYA EKSPERTIZASI (ADABIYOTLAR TAHLILI)**

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Annotatsiya: Ushbu maqolada qo‘ylar orasida uchraydigan exinokokkoz kasalligining go‘sh t va ichki organlar sifatiga ta‘siri hamda ularni veterinariya-sanitariya ekspertizasi jarayonida baholash masalalari adabiyotlar asosida tahlil qilindi. Mahalliy va xorijiy olimlarning ilmiy ishlari o‘rganilib, kasallikning etiologiyasi, patogenez, tarqalish xususiyatlari hamda go‘sh mahsulotlarining sanitariya holatiga ta‘siri, shuningdek, zararlangan organlarni aniqlash, ularni veterinariya-sanitariya qoidalariga muvofiq baholash va utilizatsiya qilish masalalari adabiyotlar tahlili natijasida o‘rganildi.

Kalit so‘zlar: qo‘ylar, exinokokkoz, veterinariya-sanitariya ekspertizasi, go‘sh sifati, ichki organlar, parazitlar kasalliklar, chorvachilik mahsulotlari xavfsizligi.

**ВЕТЕРИНАРНО-САНИТАРНАЯ ЭКСПЕРТИЗА МЯСА И ВНУТРЕННИХ
ОРГАНОВ ПРИ ЭХИНОКОККОЗЕ У ОВЕЦ (ОБЗОР ЛИТЕРАТУРЫ)**

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Аннотация: В данной работе на основе анализа литературных источников рассмотрено влияние эхинококкоза у овец на качество мяса и внутренних органов, а также особенности их оценки в процессе ветеринарно-санитарной экспертизы. Изучены научные труды отечественных и зарубежных исследователей, освещающие этиологию, патогенез и эпизоотологические особенности заболевания. Особое внимание уделено влиянию эхинококкоза на санитарное состояние мясной продукции. На основании проведенного анализа обобщены данные по выявлению поражённых органов, их ветеринарно-санитарной оценке и методам утилизации в соответствии с действующими нормативными требованиями.

Ключевые слова: овцы, эхинококкоз, ветеринарно-санитарная экспертиза, качество мяса, внутренние органы, паразитарные заболевания, безопасность продукции животноводства.

VETERINARY AND SANITARY INSPECTION OF MEAT AND INTERNAL ORGANS IN SHEEP ECHINOCOCCOSIS (LITERATURE REVIEW)

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Abstract: This study analyzes the impact of echinococcosis in sheep on the quality of meat and internal organs, as well as the specifics of their evaluation during veterinary and sanitary inspection, based on a review of scientific literature. The works of domestic and foreign researchers were examined, covering the etiology, pathogenesis, and epidemiological features of the disease. Particular attention is given to the effect of echinococcosis on the sanitary quality of meat products. Based on the literature review, key aspects of detecting affected organs, their veterinary-sanitary assessment, and disposal methods in accordance with current regulatory requirements are summarized.

Keywords: sheep, echinococcosis, veterinary-sanitary examination, meat quality, internal organs, parasitic diseases, safety of livestock products.

KIRISH

Chorvachilik mahsulotlari xavfsizligini ta'minlash veterinariya tibbiyotining muhim vazifalaridan biridir. Qishloq xo'jaligi hayvonlarida uchraydigan parazitlar kasalliklar nafaqat hayvonlar salomatligiga, balki oziq-ovqat mahsulotlarining sanitariya sifati va inson salomatligiga ham sezilarli ta'sir ko'rsatadi. Shunday kasalliklardan biri exinokokkoz bo'lib, u dunyoning ko'plab hududlarida keng tarqalgan zoonoz kasallik hisoblanadi. Parazitning rivojlanish siklida oraliq xo'jayin sifatida ko'pincha qo'ylar, qoramol va boshqa qishloq xo'jaligi hayvonlari ishtirok etadi. Lichinka bosqichida parazit hayvon organizmida turli ichki organlarda, asosan jigar va o'pkada pufaksimon kistalar hosil qiladi. Bu esa zararlangan organlarda morfologik va funksional o'zgarishlarga olib kelib, go'sht mahsulotlarining veterinariya-sanitariya sifatini pasaytiradi. So'yish korxonalarida o'tkaziladigan veterinariya-sanitariya ekspertizasi jarayonida exinokokkoz bilan zararlangan organlarni aniqlash muhim ahamiyatga ega. Chunki zararlangan jigar yoki o'pka iste'mol uchun yaroqsiz bo'lib, ular sanitariya qoidalariga muvofiq utilizatsiya qilinishi kerak. Shu bilan birga, kasallikning zoonoz xususiyatga ega ekanligi inson salomatligini himoya qilish nuqtai nazaridan veterinariya nazoratini kuchaytirishni talab etadi. So'nggi yillarda turli mamlakatlarda olib borilgan ilmiy tadqiqotlar exinokokkoz chorvachilik uchun katta iqtisodiy zarar yetkazishini ko'rsatmoqda. Shu sababli qo'ylarning exinokokkoz kasalligida go'sht va ichki organlarning veterinariya-sanitariya ekspertizasini o'rganish, kasallikning tarqalish xususiyatlarini aniqlash

hamda mahsulotlarning sanitariya bahosini ilmiy asosda tahlil qilish dolzarb ilmiy masalalardan biri hisoblanadi.

MATERIALLAR VA METODLAR

O'zbekistonlik bir qator olimlar chorvachilikda uchraydigan parazitlar kasalliklar va ularning chorvachilik mahsulotlari sifatiga ta'sirini o'rganish bo'yicha ilmiy tadqiqotlar olib borganlar. Ularning tadqiqotlarida exinokokkoz kasalligining epizootologiyasi, patogenezi hamda veterinariya-sanitariya ekspertizasi masalalariga alohida e'tibor qaratilgan. Shuningdek, ayrim tadqiqotlarda exinokokkoz bilan zararlangan hayvonlarning go'shti va ichki organlarining oziq-ovqat sifat ko'rsatkichlari pasayishi, biologik va sanitariya jihatdan xavf tug'dirishi mumkinligi qayd etilgan. Shu sababli chorvachilik mahsulotlarini realizatsiya qilishdan oldin ularni veterinariya-sanitariya ekspertizasidan o'tkazish muhim ahamiyat kasb etadi.

NATIJALAR

O'zbekiston va xorijiy olimlari tomonidan olib borilgan ilmiy tadqiqotlarda chorvachilikda uchraydigan parazitlar kasalliklar, xususan qo'ylar exinokokkozi keng o'rganilgan. Tadqiqotchilar ushbu kasallikning epizootologiyasi, patogenezi hamda chorvachilik mahsulotlari sifatiga ta'sirini o'rganishga alohida e'tibor qaratganlar.

O'zbekistonlik olimlar exinokokkoz kasalligining chorva hayvonlari orasida keng tarqalgan parazitlar kasalliklardan biri ekanligini ta'kidlab, uning asosan qo'ylarning jigar va o'pka organlarida pufakchalar hosil qilishi bilan tavsiflanishini ko'rsatib o'tganlar. Ularning fikricha, bunday zararlanish chorvachilik mahsulotlarining veterinariya-sanitariya sifatiga salbiy ta'sir ko'rsatadi [3].

Exinokokkoz bilan zararlangan qo'ylarning ichki organlarida morfologik va patologik o'zgarishlar kuzatilishi, ayniqsa jigar va o'pka to'qimalarida exinokokk pufakchalari rivojlanishi qayd etilgan. Olimlarning ta'kidlashicha, bunday organlar veterinariya-sanitariya ekspertizasi jarayonida iste'mol uchun yaroqsiz deb topilib, utilizatsiya qilinishi lozim [10].

Chorvachilik mahsulotlari xavfsizligini ta'minlashda veterinariya-sanitariya ekspertizasining ahamiyatini alohida ko'rsatib o'tganlar. Ularning fikriga ko'ra, exinokokkoz bilan zararlangan hayvonlarning go'shti va ichki organlarini to'g'ri baholash hamda zararsizlantirish chorvachilik mahsulotlarining sanitariya holatini yaxshilashga xizmat qiladi [12].

Mazkur kasallik ko'plab mamlakatlarda, ayniqsa chorvachilik rivojlangan hududlarda keng tarqalgan. Parazitologiya sohasida olib borilgan ko'plab tadqiqotlar exinokokkozning epizootologiyasi, patogenezi va tarqalish qonuniyatlarini o'rganishga bag'ishlangan [19].

Gelmintoz kasalliklarining biologiyasi, rivojlanish sikli hamda chorvachilikka yetkazadigan zarari batafsil tahlil qilingan. Uning ta'kidlashicha, gelmintozlar qishloq xo'jaligi hayvonlari organizmida turli patologik o'zgarishlarni keltirib chiqaradi va bu chorvachilik mahsulotlarining sanitariya sifatiga salbiy ta'sir ko'rsatadi [18].

Keyingi yillarda olib borilgan xalqaro tadqiqotlar ham exinokokkoz kasalligining global miqyosdagi muammo ekanligini tasdiqlaydi. Exinokokkozning biologiyasi, molekulyar xususiyatlari va epidemiologik tarqalishi batafsil o'rganilgan. Olimning fikriga ko'ra, ushbu kasallik chorvachilik rivojlangan hududlarda keng tarqalgan bo'lib, u iqtisodiy zarar bilan birga inson salomatligi uchun ham jiddiy xavf tug'diradi [11].

Exinokokkoz kasalligining epizootologiyasi va iqtisodiy ahamiyatiga katta e'tibor qaratilgan. Exinokokkoz chorvachilik va jamoat salomatligi uchun katta iqtisodiy zarar keltirishi ta'kidlangan [20].

Craig o'z ilmiy ishlarida kasallikning tarqalish xususiyatlarini chuqur o'rganib, *Echinococcus granulosus* ning ekologiyasi va tarqalish mexanizmlarini tahlil qilgan. Muallifning ta'kidlashicha, kasallikning tarqalish darajasi chorcachilik tizimi, sanitariya sharoiti hamda asosiy xo'jayin hayvonlarning populyatsiyasi bilan chambarchas bog'liq [5].

Exinokokkoz kasalligining hayvon organizmida rivojlanish jarayoni hamda uning diagnostikasi masalalari keng yoritilgan. Olimning fikriga ko'ra, kasallikni aniqlashda so'yish jarayonida ichki organlarni puxta tekshirish muhim diagnostik ahamiyatga ega [8].

Exinokokkoz kasalligining zoonoz xususiyati va uning inson salomatligi bilan bog'liqligi alohida qayd etilgan. Tadqiqotlarda veterinariya va tibbiyot sohalari o'rtasidagi hamkorlik kasallikni nazorat qilish va profilaktika qilishda muhim omil ekanligi ta'kidlangan [22].

MUHOKAMA

Qo'y mahsulotlarining veterinariya-sanitariya ekspertizasi jarayonida go'sht va ichki organlarning sifati alohida ahamiyatga ega. Bu jarayonda zararlangan to'qimalarni aniqlash, ularning iste'molga yaroqliligini baholash hamda sanitariya qoidalariga muvofiq qaror qabul qilish muhim hisoblanadi [16].

Qishloq xo'jalik hayvonlarida uchraydigan kasalliklar, jumladan parazitlar kasalliklar, chorcachilik rivojiga salbiy ta'sir ko'rsatadi. Qo'y kasalliklari va ularning klinik xususiyatlari keng tahlil qilingan [6].

Qo'ylarda exinokokkozning tarqalishi va uning oldini olish choralari mahalliy sharoitlarda ham dolzarb muammo hisoblanadi. Kasallikning epizootologik holati va profilaktik choralar yoritilgan [1].

Go'sht mahsulotlarining sanitariya holati va ularning sifat ko'rsatkichlari veterinariya-sanitariya ekspertizasida muhim ahamiyatga ega. Go'sht mahsulotlarining sanitariya bahosi va ularni baholash mezonlari keng yoritilgan [21].

Parazitlar kasalliklar, jumladan exinokokkoz, uy hayvonlarida keng tarqalgan bo'lib, ularning etiologiyasi va morfologik xususiyatlari xalqaro ilmiy adabiyotlarda chuqur o'rganilgan. Gelmintlar va ularning biologiyasi batafsil tahlil qilingan [17].

Shuningdek, kasallikning tarqalishi va nazorati bo'yicha zamonaviy yondashuvlar ham ishlab chiqilgan [4].

Echinococcus jinsining biologiyasi va sistematikasi chuqur ilmiy asosda o'rganilgan bo'lib, bu kasallikni tushunishda muhim ahamiyat kasb etadi [19].

Go'sht nazorati va inspeksiya bo'yicha xalqaro tashkilotlar, jumladan FAO tomonidan ishlab chiqilgan qo'llanmalar veterinariya amaliyotida muhim yo'riqnoma hisoblanadi [9].

Hayvonlardan olinadigan mahsulotlar xavfsizligini ta'minlash veterinariya-sanitariya nazoratining asosiy vazifalaridan biri hisoblanadi. OIE (WOAH) tomonidan ishlab chiqilgan Terrestrial Animal Health Code'da go'sht va hayvon mahsulotlarini xavfsiz baholash bo'yicha xalqaro talablar belgilangan [14].

Chorcachilik mahsulotlari xavfsizligi va ularni iste'molga yaroqliligini ta'minlash masalalari milliy darajada ham muhim ahamiyatga ega. Chorcachilik mahsulotlarining xavfsizligi, sanitariya talablari va nazorat tizimi yoritilgan [2].

Qo'ylar kasalliklari va ularning klinik ko'rinishlari veterinariya amaliyotida muhim o'rin tutadi. Qo'y kasalliklari, jumladan parazitlar kasalliklar va ularni davolash usullari keng o'rganilgan [15].

Go'sht sifatining biokimyoviy asoslari mahsulotning oziqaviy qiymati va sanitariya holatini baholashda muhim hisoblanadi. Go'sht sifat ko'rsatkichlari va biokimyoviy o'zgarishlar ilmiy asosda tahlil qilingan [13].

Shuningdek, Jahon sog'liqni saqlash tashkiloti (WHO) tomonidan exinokokkoz kasalligi bo'yicha dolzarb ma'lumotlar berilgan bo'lib, kasallikning inson salomatligiga xavfi va global tarqalishi ta'kidlangan [23].

XULOSA

O'rganilgan ilmiy adabiyotlar tahlili shuni ko'rsatadiki, qo'ylar orasida uchraydigan exinokokkoz chorvachilik uchun eng muhim veterinariya-sanitariya muammolaridan biri hisoblanadi. Ilmiy adabiyotlar tahlili qo'ylarning exinokokkoz kasalligida veterinariya-sanitariya ekspertizasi chorvachilik mahsulotlari xavfsizligini ta'minlashda, shuningdek, kasallikning insonlar orasida tarqalishining oldini olishda juda muhim o'rin tutishini ko'rsatadi. Kelgusida ushbu yo'nalishda kasallikning epizootologik xususiyatlarini chuqurroq o'rganish, diagnostika va profilaktika choralarini takomillashtirish hamda veterinariya nazoratini yanada samarali tashkil etishga qaratilgan ilmiy tadqiqotlarni kengaytirish zarur.

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O'ZBEKISTONNING MARKAZIY VILOYATLARIDA QO'YLARNING MONIEZIOZ BILAN ZARARLANISH DARAJASINI ANIQLASH

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Annotatsiya: Ushbu maqolada O'zbekiston Respublikasining Samarqand va Jizzax viloyatlarida qo'ylar orasida moniezirozning uchrash darajasi, ya'ni invaziya ekstensivligi bo'yicha ma'lumotlar keltirilgan. Olingan natijalarga ko'ra, Samarqand viloyatida tekshirilgan qo'ylarning 11,0% ida, Jizzax viloyatida esa tekshirilgan qo'ylarning 11,2% ida monieziroz bilan ekstensiv zararlanish aniqlangan.

Kalit so'zlar: Samarqand, Jizzax, monieziroz, ekstensiv zararlanish.

ОПРЕДЕЛЕНИЕ СТЕПЕНИ ЗАРАЖЁННОСТИ ОВЕЦ МОНИЕЗИОЗОМ В ЦЕНТРАЛЬНЫХ ОБЛАСТЯХ УЗБЕКИСТАНА

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Аннотация: В данной статье представлены сведения о степени распространённости мониезиоза среди овец, а именно об экстенсивности инвазии, в Самаркандской и Джизакской областях Республики Узбекистан. Согласно полученным результатам, в Самаркандской области мониезиоз выявлен у 11,0% обследованных овец, тогда как в Джизакской области экстенсивная заражённость составила 11,2% от числа исследованных животных.

Ключевые слова: Самарканд, Джизак, мониезиоз, экстенсивность инвазии.

DETERMINATION OF THE DEGREE OF SHEEP INFESTATION WITH MONIEZIOSIS IN THE CENTRAL REGIONS OF UZBEKISTAN

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Abstract: This article presents information on the prevalence of monieziosis in sheep, specifically the extent of invasion, in the Samarkand and Jizzakh regions of the Republic of Uzbekistan. According to the obtained results, monieziosis was detected in 11.0% of the examined sheep in the Samarkand region, whereas in the Jizzakh region the prevalence rate was 11.2% of the investigated animals.

Keywords: Samarkand, Jizzakh, monieziosis, prevalence of invasion.

KIRISH

Moniyezioz bu – qo‘y va boshqa mayda kavsh qaytaruvchi hayvonlarning ingichka ichagida yashovchi Moniezia turi tasmasimonlari tomonidan chaqiriladigan kasallik hisoblanadi. U ko‘plab mintaqalarda keng tarqalgan, ayniqsa yaylovda boqiladigan yosh qo‘ylar orasida uchraydi [1,2,3,4]. Olib borilgan tadqiqotlar bu invaziya ba‘zan yengil o‘tishini, ba‘zan esa iqtisodiy va sog‘liq jihatdan sezilarli zarar berishini ko‘rsatadi [3,7,12].

Moniyezioz bilan zararlangan qo‘zilarda 1,5–3 kg gacha tirik vazn ortishining yo‘qolishi, jun sifatining bir kilogrammgacha kamayishi qayd etilgan. Boshqa hududlarda olib borilgan tadqiqotlarga ko‘ra, qo‘ylarda ham ishtaha pasayishi, vazn yo‘qotish va sut miqdorining kamayishi ta‘riflangan [5,7,8].

Moniyezioz ko‘pincha boshqa parazitlar (nematodlar, trematodlar, qon parazitlari) bilan aralash holda uchrab, qo‘zilarda 4–5 oylikda o‘lim xavfini oshiradi [6,10,13]. Ko‘plab mintaqalarda zararlanish darajasi 6–40% atrofida, ba‘zi joylarda yosh qo‘zilarda 60–70% gacha yetadi. Eng yuqori ko‘rsatkichlar yaylov hududlarida – ko‘pincha bahor-yoz oylarida qayd etilgan [4,9,11,14].

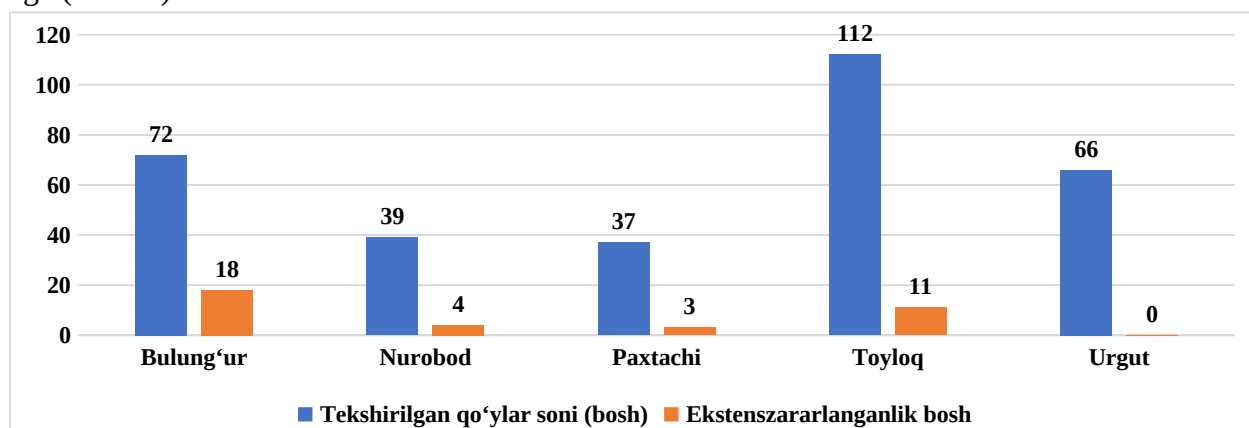
Ushbu ma‘lumotlar mazkur kasallikning qo‘ylar orasida tarqalish darajasini aniqlash muhim veterinariya tadbirlaridan biri ekanligidan dalolat beradi.

ASOSIY QISM

Tadqiqotlar 2023-yil davomida chorvachilik yuritishning zamonaviy texnologiyali sharoitida qo‘ylarning asosiy gelmintozlari va ularning Respublikamizning Samarqand va Jizzax viloyatlaridagi fermer, dehqon xo‘jaliklari va aholi xonadonlaridagi turli yoshdagi qo‘ylarda gelmintologik tekshirishlar olib borildi.

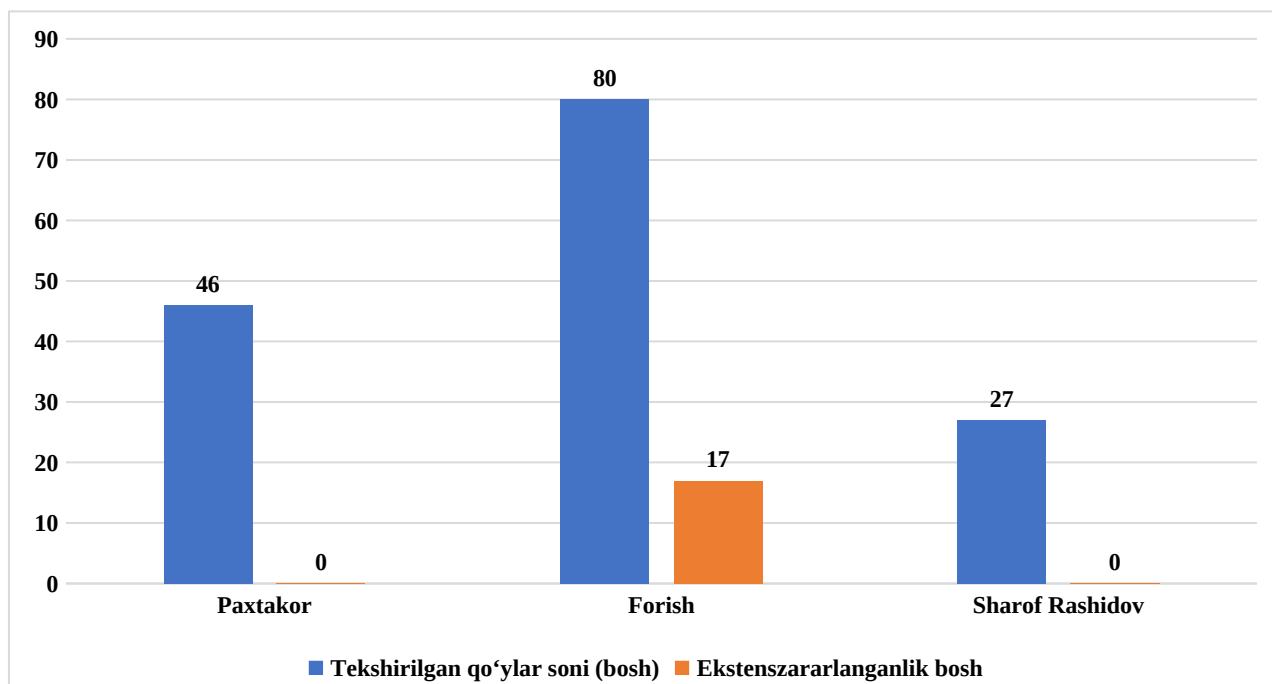
Mazkur tekshirishlar tezak namunalarini gelmintoovoskopiyaning ikki turi – flotatsion Fyulleborn usuli va sedimentatsion ketma-ket yuvish usullari bilan hamda gelmintolarvoskopiyaning Berman-Orlovning VITIda takomillashtirilgan (Ya.D. Nikolskiy) uslubi bilan amalga oshirildi.

Samarqand viloyatida keng qamrovli gelmintologik tadqiqotlar olib borildi. Viloyatning Bulung‘ur, Nurobod, Paxtachi, Toyloq, Urgut tumanlarida joylashgan turli fermer xo‘jaliklari va aholi xonadonlarida mavjud qo‘ylardan 326 ta tezak namunalari olindi va gelmintokoprologik usullarda tekshirildi. Tekshirilgan namunalar natijalarining tahliliga ko‘ra, 326 bosh qo‘yning 36 boshi (11,0%) moniyezioz bilan zararlanganligi aniqlandi. Tumanlar bo‘yicha ekstensiv zararlanish darajasi turlicha bo‘lib, hududning geografik joylashuviga ko‘ra har xil ko‘rsatkichga ega (1-rasm).



1-rasm. Samarqand viloyatining tumanlarida qo'ylarning moniyezioz bilan ekstensiv zararlanganligi (gelmintokoprologik tekshirishlar asosida)

Jizzax viloyatining Paxtakor, Forish va Sharof Rashidov tumanlarida olib borilgan tadqiqotlar davomida viloyatda 153 bosh qo'y tekshirilgan bo'lib, ular orasida 17 bosh (11,2%) qo'y moniyezioz bilan zararlanganligi aniqlandi.

**2-rasm. Jizzax viloyatining tumanlarida qo'ylarning moniyezioz bilan ekstensiv zararlanganligi (gelmintokoprologik tekshirishlar asosida)**

Samarqand viloyatidan farqli ravishda ushbu viloyatning faqatgina Forish tumanida qo'ylarning moniyezioz bilan ekstensivzararlanishi mavjudligi aniqlandi (2-rasm).

Xulosa

1. Samarqand viloyatida qo'ylardan olib tekshirilgan 326 ta namunadan 36 tasida, ya'ni 11,0% ida moniyezioz bilan ekstensiv zararlanganligi aniqlandi.

2. Jizzax viloyatida tekshirilgan 153 bosh qo'yning 17 boshi, ya'ni 11,2% i moniyezioz bilan ekstensiv zararlanganligi aniqlandi.

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18.00.00 – Arxitektura

18.00.00 – Architecture

18.00.00 – Архитектура

**SAMARQAND ARXITEKTURA-QURILISH INSTITUTI VA SHAHAR
INFRATUZILMASI RIVOJLANISHI O'RTASIDAGI BOG'LIQLIK**

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Annotatsiya: Ushbu maqolada Samarqand arxitektura-qurilish institutining shahar infratuzilmasi rivojlanishidagi o'rni va ta'siri ilmiy jihatdan tahlil qilinadi. Tadqiqotda institutning muhandislik, arxitektura va qurilish yo'nalishlarida mutaxassislar tayyorlashdagi roli, ilmiy tadqiqotlari hamda ularning shaharsozlik, transport tizimi, kommunal xo'jalik va uy-joy qurilishiga qo'shgan hissasi yoritiladi. Shuningdek, institut faoliyati orqali Samarqand shahrida zamonaviy infratuzilmaning shakllanishi, urbanizatsiya jarayonlari va texnologik rivojlanish o'rtasidagi o'zaro bog'liqlik ochib beriladi. Tadqiqot natijalari oliy ta'lim muassasalarining shahar rivojlanishidagi strategik ahamiyatini asoslaydi.

Kalit so'zlar: arxitektura, qurilish, infratuzilma, urbanizatsiya, Samarqand, oliy ta'lim, muhandislik, shaharsozlik, transport tizimi

**СВЯЗЬ МЕЖДУ САМАРКАНДСКИМ АРХИТЕКТУРНО-СТРОИТЕЛЬНЫМ
ИНСТИТУТОМ И РАЗВИТИЕМ ГОРОДСКОЙ ИНФРАСТРУКТУРЫ**

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Аннотация: В данной статье анализируется взаимосвязь Самаркандского архитектурно-строительного института с развитием городской инфраструктуры. В исследовании рассматривается роль института в подготовке специалистов в области инженерии, архитектуры и строительства, а также его вклад в развитие градостроительства, транспортной системы, коммунального хозяйства и жилищного строительства. Особое внимание уделяется взаимосвязи высшего образования, технологического развития и процессов урбанизации. Результаты исследования показывают стратегическую роль вузов в формировании современной городской инфраструктуры.

Ключевые слова: архитектура, строительство, инфраструктура, урбанизация, Самарканд, высшее образование, градостроительство

**THE RELATIONSHIP BETWEEN THE SAMARKAND INSTITUTE OF
ARCHITECTURE AND CIVIL ENGINEERING AND URBAN INFRASTRUCTURE
DEVELOPMENT**

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Abstract: This article analyzes the relationship between the Samarkand Institute of Architecture and Civil Engineering and the development of urban infrastructure. The study examines the role of the institute in training specialists in engineering, architecture, and construction, as well as its scientific contributions to urban planning, transportation systems, utilities, and housing development. It also highlights the interaction between higher education, technological progress, and urbanization processes in Samarkand. The findings demonstrate that higher education institutions play a strategic role in shaping modern urban infrastructure.

Keywords: architecture, construction, infrastructure, urbanization, Samarkand, higher education, engineering, urban planning

KIRISH

XX asrning ikkinchi yarmi va XXI asr boshlarida urbanizatsiya jarayonlarining jadallashuvi shahar infratuzilmasini rivojlantirishni eng muhim ijtimoiy-iqtisodiy vazifalardan biriga aylantirdi. Zamonaviy shaharlar murakkab muhandislik-kommunikatsiya tizimlari, transport tarmoqlari, uy-joy qurilishi va ijtimoiy obyektlarning o'zaro uyg'unlashgan majmui sifatida shakllanmoqda. Shu bois, shahar infratuzilmasining barqaror rivojlanishi nafaqat iqtisodiy omillarga, balki ilmiy-texnik salohiyat va malakali kadrlar tayyorlash tizimiga ham bevosita bog'liqdir [1].

Oliy ta'lim muassasalari, ayniqsa arxitektura va qurilish yo'nalishidagi institutlar, ushbu jarayonda muhim o'rin egallaydi. Ular nafaqat muhandislar va arxitektorlarni tayyorlaydi, balki shaharsozlik, hududiy rejalashtirish va infratuzilma tizimlarini takomillashtirishga qaratilgan ilmiy tadqiqotlarni ham amalga oshiradi. Shu nuqtai nazardan, Samarqand arxitektura-qurilish instituti mintaqadagi yetakchi ilmiy-ta'lim markazlaridan biri sifatida shahar infratuzilmasining rivojlanishida muhim rol o'ynab kelmoqda [1].

Institut faoliyati orqali tayyorlangan mutaxassislar Samarqand shahrida turar joy massivlari, transport tizimlari, muhandislik kommunikatsiyalari va kommunal xo'jalik obyektlarini loyihalash hamda qurish jarayonlarida faol ishtirok etgan. Shu bilan birga, institutda olib borilgan ilmiy tadqiqotlar shahar infratuzilmasini modernizatsiya qilish, resurslardan samarali foydalanish va ekologik barqarorlikni ta'minlashga xizmat qilgan.

Mazkur mavzuning dolzarbligi shundaki, bugungi kunda shaharlar jadal rivojlanib borayotgan bir sharoitda infratuzilmani ilmiy asosda rejalashtirish va boshqarish zarurati ortib bormoqda. Bu esa oliy ta'lim muassasalari va shahar rivojlanishi o'rtasidagi o'zaro bog'liqlikni chuqur o'rganishni talab etadi. Mazkur tadqiqotning maqsadi Samarqand arxitektura-qurilish instituti faoliyati bilan shahar infratuzilmasi rivojlanishi o'rtasidagi o'zaro bog'liqlikni aniqlash va uni ilmiy jihatdan asoslashdan iborat.

MATERIALLAR VA METODLAR

Mazkur tadqiqot Samarqand arxitektura-qurilish instituti faoliyati va shahar infratuzilmasi rivojlanishi o'rtasidagi o'zaro bog'liqlikni aniqlashga qaratilib, kompleks ilmiy yondashuvlar asosida olib borildi. Tadqiqotning metodologik asosini shaharsozlik, muhandislik ta'limi va ijtimoiy-iqtisodiy rivojlanish nazariyalariga oid ilmiy qarashlar tashkil etdi.

Tadqiqot jarayonida tarixiylik metodi qo'llanilib, institutning shakllanishi va rivojlanishi shahar infratuzilmasining evolyutsiyasi bilan uzviy bog'liq holda tahlil qilindi. Ushbu metod

yordamida institut faoliyati alohida hodisa sifatida emas, balki muayyan davrning urbanizatsiya jarayonlari va iqtisodiy siyosati kontekstida o'rganildi [2].

Qiyosiy-tahliliy metod orqali Samarqand shahrida turli davrlarda infratuzilma rivojlanish bosqichlari o'zaro solishtirildi va ular institut faoliyati bilan bog'liq holda baholandi. Bu usul shahar infratuzilmasidagi o'zgarishlar va muhandislik yechimlarining rivojlanish dinamikasini aniqlashga imkon berdi.

Tizimli yondashuv asosida esa ta'lim jarayoni, ilmiy tadqiqotlar va amaliy qurilish faoliyati yagona tizim sifatida ko'rib chiqildi. Ushbu yondashuv orqali institut faoliyatining turli komponentlari — kadrlar tayyorlash, ilmiy ishlanmalar va ishlab chiqarish bilan hamkorlik — o'rtasidagi uzviy bog'liqlik ochib berildi.

Shuningdek, kontent-tahlil metodi yordamida arxitektura loyihalari, qurilish obyektlari, transport va kommunal infratuzilmaga oid ilmiy materiallar hamda shaharsozlikka oid ma'lumotlar mazmuniy jihatdan tahlil qilindi. Bu metod infratuzilma rivojlanishida qo'llanilgan asosiy yo'nalishlar va yondashuvlarni aniqlashda muhim ahamiyat kasb etdi.

Bundan tashqari, funksional tahlil orqali institutning shahar infratuzilmasi rivojlanishidagi asosiy vazifalari — muhandislik yechimlarini ishlab chiqish, mutaxassislar tayyorlash va innovatsion texnologiyalarni joriy etishdagi roli aniqlashtirildi.

Umuman olganda, qo'llanilgan metodlar mazkur mavzuni kompleks tarzda o'rganish, institut faoliyati va shahar infratuzilmasi o'rtasidagi o'zaro aloqani aniqlash hamda uning ilmiy asoslarini ochib berishga xizmat qildi.

NATIJALAR

Tadqiqot natijalari Samarqand arxitektura-qurilish instituti faoliyati shahar infratuzilmasi rivojlanishiga ko'p qirrali va tizimli ta'sir ko'rsatganini aniqlash imkonini berdi. Institutning ta'lim, ilmiy va amaliy faoliyati shahar rivojlanishining asosiy yo'nalishlari bilan bevosita bog'liq ekanligi kuzatildi.

Birinchidan, institutda tayyorlangan arxitektor va qurilish muhandislari Samarqand shahrining zamonaviy me'moriy qiyofasini shakllantirishda muhim rol o'ynagan. Ularning ishtirokida turar joy massivlari, ijtimoiy obyektlar, ta'lim va madaniyat muassasalari hamda jamoat binolari loyihalashtirilgan va qurilgan. Bu jarayon shahar hududining kengayishi va funksional jihatdan takomillashuviga olib kelgan.

Ikkinchidan, transport infratuzilmasi rivojlanishida institut mutaxassislarining hissasi sezilarli bo'lgan. Yo'l qurilishi, transport oqimini tashkil etish, logistika tizimlarini optimallashtirish va shahar ichki kommunikatsiyalarini yaxshilashga qaratilgan muhandislik yechimlari ishlab chiqilgan. Natijada transport tizimining samaradorligi oshgan va harakatlanish qulayligi yaxshilangan [3].

Uchinchidan, kommunal infratuzilma — suv ta'minoti, kanalizatsiya, issiqlik va energiya tizimlari — rivojlanishida institut ilmiy ishlanmalari muhim o'rin tutgan. Ayniqsa, suv resurslaridan samarali foydalanish, energiya tejavchi texnologiyalarni joriy etish va ekologik barqarorlikni ta'minlashga qaratilgan yechimlar ishlab chiqilgan.

To'rtinchidan, institut ilmiy tadqiqotlari shaharsozlik va hududiy rejalashtirish jarayonlariga ilmiy asos yaratgan. Urbanistik tahlillar, hududlarni zonalarga ajratish, landshaftni tashkil etish va ekologik muvozanatni saqlashga qaratilgan yondashuvlar shahar rivojlanish strategiyasini takomillashtirishga xizmat qilgan.

Beshinchidan, institut faoliyati natijasida shahar infratuzilmasi rivojlanishida ta'lim, ilmfan va ishlab chiqarish integratsiyasi ta'minlangan. Bu integratsiya muhandislik yechimlarining

amaliyotga tez tatbiq etilishiga va innovatsion yondashuvlarning keng joriy qilinishiga imkon yaratgan [4].

Oltinchidan, institut bitiruvchilari nafaqat Samarqand shahrida, balki respublikaning boshqa hududlarida ham infratuzilma obyektlarini loyihalash va qurishda faol ishtirok etgan. Bu esa institutning mintaqaviy va milliy darajadagi ahamiyatini oshirgan.

Umuman olganda, tadqiqot natijalari Samarqand arxitektura-qurilish instituti shahar infratuzilmasi rivojlanishining muhim omillaridan biri bo'lganini, uning faoliyati orqali zamonaviy shahar muhitini shakllantirishda ilmiy va amaliy asos yaratilganini ko'rsatadi.

MUHOKAMA

Tadqiqot natijalari Samarqand arxitektura-qurilish instituti faoliyati shahar infratuzilmasi rivojlanishida muhim strategik omil bo'lganini ko'rsatadi. Institut nafaqat mutaxassis tayyorlovchi ta'lim muassasasi, balki shaharsozlik va muhandislik sohalarida ilmiy va amaliy yechimlar ishlab chiquvchi markaz sifatida ham namoyon bo'ladi. Bu esa oliy ta'lim tizimi va shahar rivojlanishi o'rtasida uzviy bog'liqlik mavjudligini tasdiqlaydi [5].

Birinchidan, institut faoliyati orqali ta'lim, ilm-fan va ishlab chiqarish o'rtasidagi integratsiya ta'minlangan. Mazkur integratsiya natijasida nazariy bilimlar amaliy qurilish va loyihalash jarayonlari bilan uyg'unlashgan. Bu holat shahar infratuzilmasining sifatli va samarali rivojlanishiga xizmat qilgan hamda muhandislik yechimlarining real sharoitlarda sinovdan o'tishini ta'minlagan.

Ikkinchidan, institut tomonidan tayyorlangan mutaxassislar shahar infratuzilmasi rivojlanishining asosiy harakatlantiruvchi kuchi bo'lgan. Ularning professional tayyorgarligi va ilmiy salohiyati Samarqand shahrida zamonaviy arxitektura va muhandislik tizimlarini joriy etishga imkon yaratgan. Bu esa oliy ta'lim muassasalarining inson kapitalini shakllantirishdagi muhim rolini yana bir bor tasdiqlaydi.

Uchinchidan, institut ilmiy tadqiqotlari shaharsozlik va infratuzilma rivojlanishida innovatsion yondashuvlarning shakllanishiga xizmat qilgan. Urbanistik rejalashtirish, transport tizimini optimallashtirish va resurslardan samarali foydalanishga qaratilgan ilmiy ishlanmalar shahar rivojlanish strategiyasini takomillashtirishga yordam bergan.

Shu bilan birga, muhokama jarayonida shuni ham ta'kidlash lozimki, urbanizatsiya jarayonlarining jadallashuvi yangi muammolarni yuzaga keltirmoqda. Aholi sonining ortishi, transport yuklamasining oshishi, ekologik muvozanatning buzilishi va resurslardan ortiqcha foydalanish kabi muammolar zamonaviy shaharlar uchun dolzarb hisoblanadi. Bu esa arxitektura-qurilish sohasida yangi texnologiyalar, raqamli boshqaruv tizimlari va barqaror rivojlanish tamoyillarini keng joriy etishni talab etadi.

Bundan tashqari, institut faoliyati ayrim davrlarda iqtisodiy va boshqaruv tizimiga bog'liq holda cheklangan bo'lishi mumkin. Bu holat infratuzilma rivojlanishining ayrim yo'nalishlarida nomutanosibliklarga olib kelgan bo'lishi ehtimoldan xoli emas. Shunga qaramay, umumiy tahlil natijalari institutning shahar rivojlanishiga qo'shgan hissasi yuqori bo'lganini ko'rsatadi.

Umuman olganda, muhokama natijalari Samarqand arxitektura-qurilish instituti modeli shahar infratuzilmasini rivojlantirishda samarali mexanizm sifatida qaralishi mumkinligini tasdiqlaydi. Ayniqsa, ta'lim va amaliyot integratsiyasi, ilmiy tadqiqotlarning amaliy ahamiyati hamda malakali kadrlar tayyorlash kabi omillar zamonaviy urbanistik rivojlanishda ham dolzarb ahamiyat kasb etadi.

XULOSA

Xulosa qilib aytganda, Samarqand arxitektura-qurilish instituti shahar infratuzilmasi rivojlanishida muhim ilmiy, ta'limiy va amaliy markaz sifatida faoliyat yuritgan. Institut tomonidan tayyorlangan mutaxassislar, amalga oshirilgan ilmiy tadqiqotlar va ishlab chiqilgan muhandislik yechimlari Samarqand shahrining zamonaviy infratuzilmasini shakllantirishda muhim rol o'ynagan.

Tadqiqot natijalari shuni ko'rsatadiki, institut faoliyati orqali ta'lim, ilm-fan va ishlab chiqarish o'rtasida samarali integratsiya ta'minlangan. Bu esa shahar infratuzilmasining sifatli rivojlanishiga, zamonaviy arxitektura va muhandislik tizimlarining joriy etilishiga hamda urbanizatsiya jarayonlarining ilmiy asosda boshqarilishiga xizmat qilgan.

Shuningdek, institut ilmiy salohiyati va kadrlar tayyorlash tizimi nafaqat Samarqand, balki butun respublika miqyosida infratuzilma rivojlanishiga ijobiy ta'sir ko'rsatgan. Bu holat oliy ta'lim muassasalarining ijtimoiy-iqtisodiy rivojlanishdagi strategik ahamiyatini yana bir bor tasdiqlaydi.

Shu bilan birga, zamonaviy shaharlar oldida turgan yangi muammolar — ekologik barqarorlik, transport yuklamasi, resurslardan samarali foydalanish va raqamli texnologiyalarni joriy etish — arxitektura-qurilish sohasida yangi yondashuvlarni talab etadi. Bu esa institut faoliyatini yanada takomillashtirish va innovatsion yo'nalishlarni rivojlantirish zaruratini ko'rsatadi.

Umuman olganda, Samarqand arxitektura-qurilish instituti va shahar infratuzilmasi rivojlanishi o'rtasidagi o'zaro bog'liqlik ilmiy jihatdan asoslangan bo'lib, ushbu tajriba kelajakda barqaror va samarali urbanistik rivojlanishni ta'minlashda muhim metodologik asos sifatida xizmat qilishi mumkin.

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MUNDARIJA / СОДЕРЖАНИЕ / TABLE OF CONTENTS

02.00.00 - KIMYO FANLARI

- | | | |
|---|--|----|
| 1. | FLAVONOID PROFILE OF “AS-INFUSUM” AND ITS BIOLOGICAL ACTIVITY | 10 |
| Ibrokhim Rakhimjonovich Askarov, Shavkat Vokhidovich Abdullaev, Eldorbek Rakhimjon o'g'li Khaydarov, Qirg'izbayev Xusniddin Xasanbayevich | | |

05.00.00 - TEXNIKA FANLARI

- | | | |
|---|---|----|
| 2. | MAHALLIY XOMASHYOLAR ASOSIDA POLIETILENTEREFTALAT ISHLAB CHIQRISHNI TASHKIL ETISH | 15 |
| Beknazarov Xasan Soyibnazarovich, Karimov Mas'ud Ubaydulla o'g'li, To'rayev Erkin Rustamovich, Bekmurodov Azamat Alisher o'g'li | | |
| 3. | AYLANUVCHI MEKANIZMLARNING ASOSIY TURLARI VA ULARDA KO'P UCHRAYDIGAN NOSOZLIKLAR | 21 |
| Ubaydullayev Utkirjon, Elmira Rakhmanova | | |
| 4. | TO'SHKENT SHA'XRI IKLIMI SHAROITI DA MAVSUMIY ISSIQLIKNI JAMLOVCHI BAK-AKKUMULYATORLI FAOL VA PASSIV QU'YISH ISITISH TIZIMLARINING EKOLOGIK VA IKTISODIY SAMARADORLIGI | 28 |
| Abduhamidov Diddorbek Ulug'bekovich | | |
| 5. | TAKSIMLASH ELEKTR TARMOQLARIDA ELEKTROMOBIL ZARYDLASH JARA'ENLARINI LOGISTIK-ENERGETIK OPTIMAL BO'XQARIISH | 33 |
| Tagaev Bahodir Kuchkarbekovich, Kuchkorbekova Nigora Bahtiyor kizi, Kuchkorbekova Dillnosa Bahtiyrovna | | |

06.00.00 - QISHLOQ XO'JALIGI FANLARI

- | | | |
|---|--|----|
| 6. | STUDY OF CLIMATE CHANGE BASED ON SATELLITE IMAGERY AND GOOGLE EARTH ENGINE (IN THE CONTEXT OF THE REPUBLIC OF KARAKALPAKSTAN) | 39 |
| Berdimbetov Timur Tileubergenovich, Kipshakbaeva Gauhar Adilbaevna, Yerejepov Miyratdiyn Sharapatdiyn uli | | |
| 7. | ВЛИЯНИЕ ЛИСТОВОЙ ПОДКОРМКИ БИОЛОГИЧЕСКИ АКТИВНЫМИ ВЕЩЕСТВАМИ НА УРОЖАЙНОСТЬ ЗЕРНА И ЗЕЛЁНОЙ МАССЫ ПОДСОЛНЕЧНИКА | 44 |
| Суванов Б.У., Суванова Ю.С. | | |
| 8. | ULTRATEZPISHAR KUZGI BUG'DOY NAVLARINING MAQBUL SUG'ORISH TARTIBLARI | 48 |
| N.H. Durdiyev, Z.I. G'opporova | | |
| 9. | G'O'ZANING O'SISH VA RIVOJLANISHIGA “TANDEM” STIMULYATORINING TA'SIRI | 54 |
| Xolboyeva Muxayyo Boboyor qizi, Tadjiyev Karim Mardanakulovich | | |

07.00.00 - TARIX FANLARI

- | | | |
|--|--|----|
| 10. | SAMARQAND QISHLOQ XO'JALIGI INSTITUTINING MUTAXASSISLARNI TAYYORLASHDAGI ROLI (1930–1990) | 59 |
| Begimova Ruxshona Botirjonovna, Uralova Dilnura Samariddin qizi, Buriyeva Sevinch Dilshod qizi | | |

10.00.00 - FILOLOGIYA FANLARI

- | | | |
|------------------------------------|---|----|
| 11. | ЛИНГВОКУЛЬТУРОЛОГИЧЕСКИЙ ПОТЕНЦИАЛ КОНЦЕПТА «ХЛЕБ» В ПРАКТИКЕ ОБУЧЕНИЯ РУССКОМУ ЯЗЫКУ КАК ИНОСТРАННОМУ | 65 |
| Абдусамиева Дилшода Абдухамид кизи | | |
| 12. | ОАВ БИЛАН АЛОҚАЛАР – КОММУНИКАЦИОН СТРАТЕГИЯНИНГ АЖРАЛМАС ҚИСМИ СИФАТИДА | 71 |
| Кумушбиби Эрматовна | | |

12.00.00 - YURIDIK FANLAR

13. **DASTLABKI TERGOV BOSQICHIDA DALILLARNI TO'PLASHNING PROTSESSUAL XUSUSIYATLARI** 75
Usmonov Vosid Muhammadievich, Holiqova Nargiza Shermamatovna

13.00.00 - PEDAGOGIKA FANLARI

14. **TEACHING ENGLISH FOR OIL AND GAS ENGINEERING STUDENTS: A PRACTITIONER'S PERSPECTIVE** 80
Davron Begmatov
15. **DIFFICULTIES IN OVERCOMING VOCABULARY LEARNING PROBLEMS IN 7TH GRADE STUDENTS** 86
Hotimatova Muborak
16. **MASOFAVIY TA'LIM SHAROITIDA INGLIZ TILINI SAMARALI O'QITISH: YETAKCHI TAMOYILLAR VA AMALIY KO'NIKMALAR** 97
Ismoilov Javohir Alisher o'g'li
17. **MASOFAVIY TA'LIMDA SAMARALI PEDAGOGIK METODLAR: ZAMONAVIY YONDASHUVLAR TAHLILI** 102
Ismoilov Javohir Alisher o'g'li
18. **BOSHLANG'ICH SINIF O'QUVCHILARINING DARS MASHG'ULOTLARIDA HARAKATLI O'YINLAR ORQALI JISMONIY SIFATLARINI TARBIYALASH** 108
Mavlanova Obidaxon Dedaxanovna
19. **SCROLLING OR STUDYING? HOW SOCIAL MEDIA AFFECTS THE ACADEMIC PERFORMANCE OF 11–12-YEAR-OLD LEARNERS** 112
Maxmudova Mashxuraxon Muhammadzokir qizi, Scientific adviser: Abdusattorova Maxarram Sharifjon qizi
20. **BOSHLANG'ICH SINIF O'QUVCHILARIDA QADDI-QOMAT HOLATI VA UNGA TA'SIR ETUVCHI OMILLAR BO'YICHA O'TKAZILGAN SO'ROVNOMA NATIJALARI TAHLILI** 120
Narmamatova Sabina G'ayrat qizi
21. **MOTIVATING PRIMARY PUPILS TO SUBMIT THEIR HOMEWORK ON TIME** 126
Nurmatova Mushtariybonu
22. **THE INFLUENCE OF AFFECTIVE FACTORS ON LISTENING COMPREHENSION: ANXIETY AND DISTRACTION IN EFL CONTEXTS** 137
Oxunova Nargiza Xayrullo qizi, Scientific adviser: Abdusattorova Muxarram Sharifjon qizi
23. **SAMARQAND DAVLAT TIBBIYOT INSTITUTIDA TALABALAR ILMIY JAMIYATLARI VA YOSH OLIMLAR JAMIYATI (1960–1990-YILLAR)** 145
O'rinboyeva Malikabonu Ulug'bek qizi, Suyunova Roziya A'zam qizi
24. **MILLIY VA XALQ O'YINLARINING TARBIYAVIY VA JISMONIY TARBIYADAGI AHAMIYATI** 151
Parmonov Akmal Abdupattoyevich
25. **PARADZYUDOKHILARDA JISMONIY SIFATLARNING RIVOJLANGANLIK DARAJASINI TAHLIL QILISH** 155
Raxmatova Dilnoza Nigbayevna
26. **HOW DOES CHANGING SEATING ARRANGEMENTS AFFECT STUDENTS' ATTENTION AND PARTICIPATION?** 160
Sohibova Zarnigor Mansurovna
27. **IMPROVING READING COMPREHENSION SKILLS OF 7TH GRADE STUDENTS** 169
Soliyeva Ruxshona
28. **IMPROVING GRADE 4 STUDENTS' SPEAKING PARTICIPATION THROUGH INTERACTIVE CLASSROOM STRATEGIES** 178
Toshtemirova Muslimaxon

14.00.00 - TIBBIYOT FANLARI

29. **THE RELATIONSHIP BETWEEN OBESITY AND DIABETES** 188
Asatullayev Rustam Bahtiyorovich, Murodullayeva Rukhshona Jasur qizi

-
30. **O‘TKIR ISHEMIK INSULTDA ENDOVASKULYAR REPERFUZIYA VA ERTA REABILITATSIYA: TASVIRLASHGA ASOSLANGAN INDIVIDUAL YONDASHUV** 193
Kilichev Farruh Ahmadovich, Yarmuhamedova Nargiza Anvarovna, Aliyev Mansur Abduxoliqovich

15.00.00 - FARMATSEVTIKA FANLARI

-
31. **PHARMACEUTICAL TERMINOLOGY IN LATIN** 201
Hamroyeva Bonu Baxtiyor qizi, Xamdamova Muqaddas Xamidovna

16.00.00 - VETERINARIYA FANLARI

-
32. **QO‘SHTEPA VA TOSHLOQ TUMANLARIDA QUYON EYMERIOZINING DIAGNOSTIKASI** 206
Axmadaliyev N.T.
33. **HAYVONLAR BRUTSELLYOZIDA O‘TKAZILADIGAN SEROLOGIK TAHLILLARNING TAVSIFI** 211
Baxriddinov D.I., Ulug‘muradov A.D.
34. **O‘STIRISH YOSHIDAGI BUZOQLARDA DISPANSER TEKSHIRISHLAR NATIJALARI** 216
Botirova Shohista Abdiqaharovna
35. **QO‘YLAR KLOSTRIDIOZLARIGA QARSHI VAKSINANI IMMUNOSTIMULYATOR VA VITAMIN BILAN BIRGA QO‘LLAGANDA QO‘YLAR QONIDAGI GEMATOLOGIK VA BIOKIMYOVIY O‘ZGARISHLAR NATIJALARI** 220
N.B. Ergashev, G‘.A. Mengliyev, I.X. Salimov
36. **QISHLOQ XO‘JALIK HAYVONLARINING DERMATOMIKOZLARIGA ZAMONAVIY USULLAR ASOSIDA DIAGNOZ QO‘YISH** 225
N.I. Mamatkulova, X.B. Yunusov, X.K. Bazarov
37. **QO‘YLAR XLAMIDIOZINI IMMUNOLOGIK TAHLILI HAMDA ABORT BO‘LGAN HOMILA TO‘QIMASIDAGI PATOMORFOLOGIK O‘ZGARISHLAR** 230
Navruzov N.I., Hamroqulov N.Sh., Aktamov U.B.
38. **QO‘YLARNING SALMONELLYOZLI ABORTI (ADABIYOT MA‘LUMOTLARINING TAHLILI ASOSIDA)** 243
O. Abduraimova
39. **QO‘YLAR EXINOKOKKOZIDA GO‘SHT VA ICHKI ORGANLARINING VETERINARIYA-SANITARIYA EKSPERTIZASI (ADABIYOTLAR TAHLILI)** 249
Rasulov O‘tkir Ilashovich, Achilov Odil Elmurodovich, Boymuratova Xonzoda Sharofiddin qizi
40. **O‘ZBEKISTONNING MARKAZIY VILOYATLARIDA QO‘YLARNING MONIYEZIOZ BILAN ZARARLANISH DARAJASINI ANIQLASH** 255
Safarov X.A., Djabbarov Sh.A., Akramov K.Sh.

18.00.00 - ARXITEKTURA

-
41. **SAMARQAND ARXITEKTURA-QURILISH INSTITUTI VA SHAHAR INFRATUZILMASI RIVOJLANISHI O‘RTASIDAGI BOG‘LIQLIK** 259
Sa’dullayev Ibrohim Nasrullayevich, Otaxanov Javlonbek Mammats Sharip o‘g‘li, Azizbek Shomurodov Rustam o‘g‘li

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