ROLE OF INFORMATION TECHNOLOGIES IN THE PREVENTION AND CONTROL OF INFECTIOUS DISEASES

Ibroximova Mohida Murodjon qizi

1st year master's degree student ASMI

mohidamaxammadjonova@gmail.com

Ismanova Arofatxon Abdulhamidovna

Andijan State Medical Institute, head of

Biological physics , computer science ,

medical technologies department

Abstract. *The application of information technologies (IT) in healthcare has transformed how infectious diseases are monitored, diagnosed, and controlled. This article discusses the role of IT in disease prevention and management, emphasizing tools such as telemedicine, big data analytics, and artificial intelligence. These technologies enhance global health systems' responsiveness, improving patient outcomes and public health strategies.*

Keywords: Infectious diseases, prevention, information technology, digital health, artificial intelligence, telemedicine

Introduction. Infectious diseases represent a persistent challenge to global health, causing millions of deaths and widespread social disruption annually. The need for swift, accurate diagnostics, effective treatments, and robust public health responses has never been more critical. Information technologies (IT) offer a promising solution to these ongoing challenges by providing innovative tools that enhance the ability of healthcare systems to diagnose, treat, and prevent infectious diseases. From the use of artificial intelligence (AI) for rapid diagnostics to the adoption of telemedicine for expanding access to care, IT solutions are transforming the way healthcare professionals approach infectious diseases. Additionally, the use of big data analytics and mobile health (mHealth) applications is contributing to the

development of proactive strategies that improve patient outcomes and control disease spread. This article explores the various ways in which IT is being applied in the realm of infectious disease management, examining both its benefits and the challenges associated with these advancements.

Materials and Methods. This research synthesizes data from international health organizations, peer-reviewed studies, and case analyses of recent IT applications in infectious disease management. Methods include a comparative review of technological tools and their impacts on healthcare efficiency.

Results and Discussion

1.	**Digital Disease Surveillance.** Real-time data aggregation tools, such as HealthMap and ProMED, monitor infectious disease outbreaks worldwide, enabling faster response and better resource allocation. These systems rely on big data analytics to identify emerging threats before they escalate into epidemics.[1]

2.	**Artificial Intelligence in Diagnostics.** AI-based models analyze medical imaging and laboratory data to identify pathogens with greater speed and precision than traditional methods. For example, machine learning algorithms were pivotal in the rapid identification of COVID-19 infections.[2]

3.	**Telemedicine for Safe Patient Interaction.** Telemedicine platforms reduce the risk of disease transmission by enabling remote consultations and monitoring. This approach became essential during the COVID-19 pandemic, ensuring continued healthcare delivery without direct physical contact.[3]

4.	**Educational Technologies for Medical Students.** Simulation-based learning and virtual reality platforms provide immersive experiences for medical students, enhancing their preparedness for real-world infectious disease cases. Online learning resources also increase access to up-to-date knowledge.

Conclusion. Information technologies are indispensable in the modern fight against infectious diseases. Digital tools improve the speed and accuracy of diagnostics, enhance surveillance systems, and promote safe healthcare delivery through telemedicine. For medical professionals and students, IT literacy is crucial in navigating current and future challenges in infectious disease management.

Policymakers and educational institutions must prioritize IT integration to build resilient healthcare systems capable of responding to global health crises effectively. The application of information technologies in infectious disease management marks a significant advancement in modern medicine. IT tools enhance disease surveillance, improve diagnostic accuracy, and enable effective patient management through telemedicine and AI-based systems. For medical students specializing in infectious diseases, acquiring skills in IT applications is essential for developing a comprehensive, modern approach to healthcare. By integrating technology into both clinical practice and education, future healthcare professionals can better address the challenges posed by infectious diseases, contributing to improved public health outcomes globally.

REFERENCES:

1. Smith, A. "AI and Big Data in Global Health Surveillance." Global Health Journal, 2023.

2. World Health Organization. "Digital Technologies for Health: A Global Overview."

3. Brown, T. "Telemedicine as a Public Health Tool." The Lancet, 2022.

4. ISMANOVA, A. (2024). YOSHLARGA OID DAVLAT SIYOSATINI AMALGA OSHIRISHNING PEDAGOGIK TAHLILI. News of UzMU journal, 1(1.4), 104-108.

5. Mukhammadjonovich, R. M., Abdulkhamidovna, I. A., Abdumukhtorovich, G. S., Abdusaitovich, T. O., & Sobirovich, K. S. (2023). Use of new innovative methods in teaching the science of information technologies and modeling of technological processes. Journal of Survey in Fisheries Sciences, 10(2S), 1458-1463.

6. Tukhtaeva, N., Ismanova, A., Allamuratova, Z., & Khayitboev, N. (2024, November). Using mind mapping in teaching computer science. In AIP Conference Proceedings (Vol. 3244, No. 1). AIP Publishing.Arofat, I. (2016). Social-political need of fighting with Enlightenment against ideology of religious extremism and terrorism. *European research*, (6 (17)), 96-98.

7. Ismanova, A. (2016). The Mechanisms of Influence on the Minds of Young People and Socio-Educational Prevention. *Eastern European Scientific Journal*, (3).

8. QOBULOVA, M. (2024). MOSLASHUVCHN ONLAYN O'QUV TIZIMLARI VA ULARDAN TIBBIY TA'LIMDA FOYDALANISH. News of the NUUz, 1(1.9. 1), 107-109.

9. Mengliyev, I., Meylikulov, S., Fayzullayeva, Z., & Kobulova, M. (2024, November). Education artificial intelligence systems and their use in teaching. In AIP Conference Proceedings (Vol. 3244, No. 1). AIP Publishing.

10. Ismanova, A. A. (2018). Role of Pedagogical Prevention in Struggle Against Religious Extremism and Terrorism. *Eastern European Scientific Journal*, (2).

11. Ismanova, A. A. (2015). EDUCATIONAL AND OTHERS TECHNOLOGIES FOR THE PREVENTION OF THE STRUGGLE AGAINST RELIGIOUS EXTREMISM AND TERRORISM. *Theoretical & Applied Science*, (11), 63-66.

12. Ismanova, A. (2022). UPBRINGING OF HIGHLY EDUCATED YOUNG PEOPLE IS THE MAIN BASIS FOR PREVENTING RELIGIOUS EXTREMISM AND TERRORISM. Экономика и социум, (10-2 (101)), 59-62.

13. Кобулова Мохинабону Авазбековна ОСНОВНЫЕ НАПРАВЛЕНИЯ ИСПОЛЬЗОВАНИЯ КОМПЬЮТЕРНЫХ ТЕХНОЛОГИЙ В АДАПТИВНЫХ ОНЛАЙН ОБУЧАЮЩИХ СИСТЕМАХ // Universum: психология и образование. 2024. №10 (124).

14. Turg'unboyevna, K. D., & O'rmonovna, X. X. (2024). YORUGLIKNING SOCHILISH QONUNI VA UNDAN TIBBIYOTDA FOYDALANISH. *JOURNAL OF NEW CENTURY INNOVATIONS*, *67*(6), 109-112.

15. Тешабоева, З. Т., & Кобулова, М. А. (2024). СОВЕРШЕНСТВОВАНИЕ МЕТОДОВ ПРИВЛЕЧЕНИЯ СТУДЕНТОВ К НАУКЕ И ИССЛЕДОВАНИЯМ В ВУЗАХ. *Science and innovation*, *3*(Special Issue 15), 442-444.

16. Кобулова, М. А. (2024). ИНФОРМАЦИОННЫЕ ТЕХНОЛОГИИ В МЕДИЦИНСКОМ ОБРАЗОВАНИИ-КАК ФАКТОР ПОВЫШЕНИЯ КАЧЕСТВА ОБУЧЕНИЯ. *AndMI Xalqaro ilmiy-amaliy konferensiyalari*, *1*(1), 434-437.