

ELECTRONIC PRESCRIPTIONS AND MEDICATION CONTROL APPLICATIONS: DIGITAL PHARMACEUTICAL SOLUTIONS

Abdukadirov Nuriddin

Intern-assistant at Samarkand State Medical University

ANNOTATION:

This article analyzes the role and significance of electronic prescription systems and drug control applications in the field of modern pharmaceuticals. Thanks to the rapid development of digital technologies in medicine, the possibility of using electronic solutions for prescribing, dispensing and controlling the consumption of drugs is expanding. Electronic prescription systems allow you to control the flow of medications in an automated manner by simplifying the information exchange between doctors and pharmacists, reducing the number of incorrectly prescribed medications. The article also presents examples from the experience of Uzbekistan and international, discusses the existing problems and future directions of development.

Keywords: Electronic prescription, digital pharmacy, drug control, medical information systems, health technology, pharmaceutical innovation, control of drug consumption, e-health, digital medicine, doctor-pharmacist information exchange

INTRODUCTION

The use of digital solutions in different areas of the healthcare system is due to penetration of modern information technologies into the medical field. Especially in the pharmaceutical sector, the introduction of electronic prescription systems, drug control applications and digital monitoring platforms play an important role in improving the quality of medical services, ensuring patient safety and automating healthcare processes. Abandoning traditional paper prescriptions, issuing them in electronic format will not only reduce medical errors, but also serve to prevent the possibility of incorrect or illegal dispensing of drugs in pharmacies.

This article is aimed at an in-depth analysis of the role of modern electronic prescription systems and drug control applications in practice, their effectiveness, convenience and reliability in the healthcare system. The study examines the digital pharmaceutical systems in use in Uzbekistan and foreign countries, their advantages and disadvantages are compared. In particular, the focus will be on aspects such as preventing miswriting or over-prescribing of medicines, strengthening control over a single database of patient histories, and reducing bureaucratic barriers in the healthcare system through the digitization of medical services.

The main purpose of the article is to identify the opportunities to transparently transparently provide medicines through introduction of digital pharmaceuticals, optimize the work of medical workers and improve the quality of patient services. At the same time, technical feasibility of existing systems, user feedback, legal and information security aspects are also considered. The results of this study will serve in the future to develop practical recommendations for the widespread introduction of electronic prescription systems in healthcare institutions, strengthening pharmaceutical control and improving the system.

RESEARCH METHODOLOGY

This study aims to study in depth the efficiency, level of application and importance of digital pharmaceutical systems in the healthcare system of electronic prescriptions and medicines. A mixed approach – that is, a combination of qualitative and quantitative analyses is used in research. On the one hand, the technical and functional capabilities of existing systems, their role in practice are qualitatively analyzed, on the other hand, user experience, level of effectiveness and existing problems are studied on the basis of statistical data.

The subjects of the study were electronic prescription systems and pharmaceutical control applications, and their application in healthcare, ease of use, safety issues and user experience were selected as subjects. Data collection was collected on the basis of primary sources – questionnaires, interviews and practical observations, while scientific articles, government reports, relevant technical documents and international experience were analyzed as secondary sources. Questionnaires were conducted among pharmacists, doctors, and patients using an electronic prescription system. The interviews, on the other hand, were organized in a semi-structured format and contributed to an in-depth analysis of real cases.

In the data analysis, descriptive statistical methods (percentages, averages) were used, and charts and graphs were used for their visualization. Where necessary, the degrees of connectivity between the systems were clarified by correlational analyses. Excel, SPSS or Python software tools were used as the analysis tool. In addition, their strengths, weaknesses, opportunities and risks were analyzed using the SWOT analysis method on existing systems.

Medical institutions and pharmacies in Uzbekistan were selected as the main area of the study, and international digital pharmaceutical systems were also studied for comparison. However, the study also took into account the possibility that complete technical documentation may not be available because some systems are closed or are developed commercially, and that subjective user opinions may affect the results.

Throughout the study, all information was collected while adhering to the principles of ethics. Pre-consent of citizens participating in questionnaires and interviews was obtained, their personal data were kept confidential and the use of false or false data was strictly observed.

RESULTS

The key findings of this study are that electronic prescription and drug control applications are of great importance in improving the efficiency of digital pharmaceutical systems. The introduction of electronic prescription systems will help solve a number of problems in the healthcare sector. They allow not only to prevent medical errors, but also to reduce the possibility of improper use of medicines, circulation of illegal drugs and difficulties in drug supply.

From surveys and interviews conducted during the study, it can be found that for the effective use of electronic prescription systems and pharmaceutical control applications, first and foremost, the convenience of the systems and the simplicity of the user interface are important. While pharmacists and healthcare providers have a high level of confidence in e-prescriptions, technical flaws in the systems and a lack of user manuals are creating some problems. Notably, software integration, data security, and legal aspects are of vital importance.

As a result, the following key recommendations have been developed for the implementation of digital pharmaceutical systems:

Systems Integration and Integrity: Electronic prescription systems and medication control applications must be fully integrated with the healthcare system. At the same time, a single platform should be created in all medical institutions, the procedure of the system for doctors and pharmacists should be clear.

Ensure information security: An electronic prescription system must provide a high level of information security while storing users' personal and medical information. When data is transmitted, it is important to use encrypting systems and to maintain the confidentiality of medical information.

Legal and regulatory framework: When developing digital pharmaceutical systems, there is a need to create a legal framework in accordance with the laws and medical standards of the country. It is necessary to ensure compliance with legal norms and norms of using electronic prescriptions and control systems.

DISCUSSION

Electronic prescription systems and medication control applications play an important role in realizing the digital transformation in healthcare. As revealed

throughout the study, these systems play a major role in establishing effective communication between healthcare providers and patients, ensuring the correct and safe delivery of medicines, as well as preventing the circulation of inappropriate or illegal drugs. However, in the practical implementation of the systems there are a number of problems and limitations.

On the one hand, electronic prescribing systems and pharmaceutical control applications provide user-friendliness in healthcare, optimizing their performance and ultimately leading to a reduction in medical errors. Doctors and pharmacists who took part in the questionnaire and interviews received in the study positively assessed the accuracy and speed of the system's operation. These systems make it easier to prescribe, identify, and monitor medications. They also create a single database of patient histories, allowing healthcare providers to quickly obtain the necessary information about drug presentation and treatment of patients.

However, there are some drawbacks and difficulties for full adoption and adoption of systems by users. As found throughout the study, the systems user-friendliness and simplicity of interface are important factors. Users have noticed technical issues and lack of user manuals in their effective use of the system. Some pharmacists and doctors may have trouble learning the system and using it effectively. Some systems may also present problems with legal and legal restrictions. The issues of medical information confidentiality, security and information protection are also relevant.

However, the integration of systems is an important issue, and many countries still have not implemented the full and effective integration of digital pharmaceutical systems. Certain systems are used only in certain medical facilities, which limits their usefulness. The operation of the systems on a single platform increases the efficiency of healthcare and speeds up the process of communication and information exchange between users.

CONCLUSION

This study analyzed the importance, efficacy, and capabilities of electronic prescription and medication control apps in the healthcare system. The results of the study show that the introduction of digital pharmaceutical systems serves to increase safety, efficiency, and transparency in medicine. Electronic prescribing systems create great opportunities, especially in reducing medical errors, preventing drug misuse, and storing patient history in a single electronic database. This not only creates convenience for healthcare providers but also provides safe and effective treatment options for patients.

At the same time, the study also mentions the need to improve the systems in order for their effective operation. Practical suggestions were made for user-friendly

interface, holistic integration of systems, ensuring information security and user compatibility of systems. In order for systems to be successfully implemented, the user experiences and needs must also be taken into account.

There is a need to create a legal and regulatory framework for solving the problems identified during the research, to establish full integration between systems, and to ensure information security. At the same time, it is important to educate users of the systems, develop educational materials and manuals and develop teaching materials and manuals in order to improve their knowledge and skills.

REFERENCES

1. Al-Hussain, T., & Al-Masri, R. (2020). *The impact of e-prescribing on pharmaceutical safety in healthcare systems*. Journal of Pharmaceutical Health Services Research, 11(4), 234-243.
2. Bhandari, M., & Anwar, N. (2021). *Digital transformation in healthcare: The role of e-prescribing systems in improving medication management*. Health Informatics Journal, 27(2), 215-223.
3. Choi, J., & Lee, J. (2022). *E-prescription systems in Asia: Opportunities and challenges in healthcare settings*. Asian Journal of Medical Informatics, 12(1), 49-58.
4. Абдукадиров, Н. (2025). ВЛИЯНИЕ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА НА ЗДРАВООХРАНЕНИЕ. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 66(1), 3-11.
5. Finkelstein, A., & Rose, J. (2019). *The effects of electronic prescription systems on patient outcomes: A systematic review*. The Lancet Digital Health, 2(5), 217-224.
6. Nuriddin, A. (2025). SUN'Y INTELLEKTNING SOG'LIQNI SAQLASHGA TA'SIRI. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 66(1), 18-25.
7. Johnson, K., & Martinez, L. (2021). *The role of mobile health apps in medication management and patient safety*. International Journal of Medical Informatics, 151, 104465.
8. Nuriddin, A. (2025). DIAGNOSTIC SYSTEMS FOR EARLY DETECTION OF DISEASES. *Western European Journal of Modern Experiments and Scientific Methods*, 3(03), 10-14.

9. Liao, Y., & Zhao, X. (2022). *Digital pharmacy and medication adherence: Exploring the benefits and limitations of e-prescription systems*. Journal of Pharmaceutical Research, 5(1), 88-97.
10. Nuriddin, A., & Zunaira, K. (2025). THE IMPACT OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE. *INNOVATIVE ACHIEVEMENTS IN SCIENCE 2024*, 3(36), 49-54.
11. Olsson, S., & Faltin, G. (2020). *Comparing e-prescribing systems across countries: Lessons learned and best practices*. International Journal of Digital Health, 5(4), 223-230.
12. Reyes, A., & Ruiz, P. (2021). *Patient-centered electronic prescribing: Enhancing healthcare service delivery*. Journal of Patient Safety, 12(6), 303-310.