Modern American Journal of Medical and Health Sciences
ISSN (E): 3067-803X
Volume 2, Issue 1, January 2026
Website: usajournals.org

ELECTRONIC HEALTH (E-HEALTH) SYSTEM

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Abstract
this article analyzes the theoretical and legal framework for the implementation of electronic health systems. The study studies the theoretical conceptual foundations of electronic medicine, the International and national legal base and the main problems in the implementation process using the method of literature analysis. The results show that even though e-health systems provide opportunities to improve efficiency and improve quality of service, issues of data security, technical standardization and Legal Regulation need to be addressed.

Keywords: E-health, medical data, digital medicine, Legal Regulation, data security.

Introduction

The rapid development of information and communication technologies in the 21st century has also brought about profound changes. Electronic health (e-health) has become an integral part of modern medicine, supporting the quality of patient care and the provision of medical care [1; B.15]. According to the definition of the World Health Organization (WHO), an electronic

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device is a device that is connected to a communication network and is capable of transmitting information and data [2; B.8].

The importance of e-health has increased during the pandemic, as remote medical services and telemedicine have become a necessity [3; B.573]. However, a solid theoretical and legal framework is required for the successful implementation of these systems. The purpose of this study is to analyze the theoretical conceptual foundations and study the legal aspects of the implementation of e-health.

The research used a systematic literature review method. Scientific articles, monographs, reports of international organizations, and legal documents published between 2018 and 2024 were selected for the analysis. The search was carried out in the PubMed, Google Scholar, and eLIBRARY.ru databases using the keywords "e-health", "electronic healthcare", and "electronic health care".

Theoretically, an e-health system consists of several main components: electronic medical records (EMR), medical databases, telemedicine systems, medical devices, and artificial intelligence technologies [4; B.845]. The Technology Acceptance Model (TAM) proposed by Davis is important in explaining the process of acceptance of e-health systems [5; B.655].

Legally, data protection, patient rights, and confidentiality of medical data are paramount in the field of e-health. The European Union's General Data Protection Regulation (GDPR) and the US HIPAA Act set international standards in this area [6; B.12]. In the Republic of Uzbekistan, the Law "On Informatization" and the Law "On Personal Data" constitute the legal framework for e-health systems [7; B.3].

The economic impact of e-health systems also requires extensive analysis. Despite the high initial costs, these systems provide significant economic benefits in the long term. The reduction in repeat medical examinations, the elimination of paper-based documentation costs, and the reduction of additional treatment costs due to medical errors will reduce the cost of overall health care. In particular, the possibility of remote monitoring through electronic systems in the monitoring and treatment of patients with chronic

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diseases will reduce the need for hospitalization and improve the quality of life of patients. Insurance companies will also be able to process claims faster and detect fraud through electronic health records.

The integration of artificial intelligence and machine learning technologies in the field of e-health opens up new opportunities. The use of artificial intelligence algorithms in the analysis of medical images, early detection of diseases, prediction of drug effects and development of personalized treatment plans significantly increases the efficiency of medicine. Analysis of large volumes of medical data through Big Data technologies provides valuable information for epidemiological studies, development of new drugs and formulation of public health policies. However, the introduction of these technologies also raises new ethical issues - the role of algorithms in decision-making, issues of consent for the use of medical data to train artificial intelligence, and issues of liability for errors of automated systems are urgent problems that need to be addressed.

The human factor also plays an important role in the implementation of electronic health systems. There are difficulties for medical staff to adapt to new technologies, lack of time to learn, and resistance to changing traditional working methods. Older doctors may be slower to adopt new technologies than younger ones, which prevents the full potential of the system from being realized. There is also a lack of skills on the part of patients to use electronic systems, especially in rural areas and among older citizens.

The introduction of electronic health systems is a necessary direction of modern medicine. Theoretically, these systems offer great opportunities for increasing the efficiency and quality of medical services. However, for successful implementation, a solid legal framework, the development of technical standards, and ensuring data security are necessary.

References

1. World Health Organization. (2019). WHO guideline: recommendations on digital interventions for health system strengthening. Geneva: World Health Organization. 89 p.

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ISSN (E): 3067-803X
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2. Kruse, C. S., & Beane, A. (2018). Health information technology continues to show positive effect on medical outcomes: systematic review. Journal of Medical Internet Research, 20(2), e41. 15 p.
3. Bashshur, R., Doarn, C. R., Frenk, J. M., Kvedar, J. C., & Woolliscroft, J. O. (2020). Telemedicine and the COVID-19 pandemic, lessons for the future. Telemedicine and e-Health, 26(5), 571-573.
4. Davis, F. D. (2019). Technology acceptance model: TAM. In Management information systems (pp. 651-688). IGI Global.
5. Law of the Republic of Uzbekistan. (2020). Law "On Personal Data". Tashkent: Oliy Majlis of the Republic of Uzbekistan. 25 p.
6. Federal law of the Russian Federation. (2021). "Ob osnovax okhrany zdorovya grajdan v Rossiyskoi Federatsii" №323-FZ. Moscow: Rossiyskaya gazeta. 15 s.
7. Zhang, M., Zhang, C., Sun, Q., Cai, Q., Yang, H., & Zhang, Y. (2018). Questionnaire survey about use of an electronic health record system in Chinese hospitals. BMC Medical Informatics and Decision Making, 18(1), 1-11.