USE AND EFFECTIVENESS OF ELECTRONIC MEDICAL RECORD (EMR/EHR) SYSTEM IN MEDICINE

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Annotation

This article examines the role of Electronic Medical Record (EMR) and Electronic Health Record (EHR) systems in modern medicine, their advantages, integration capabilities, and their impact on healthcare processes. The study analyzes the superiority of electronic documentation over traditional paper-based systems, the potential of supporting clinical decision-making, and the secure storage of medical information. The findings indicate that EMR/EHR systems play a significant role in improving the quality of medical services and automating clinical processes.

Keywords

EMR, EHR, medical information system, electronic healthcare, digitalization, clinical decision support.

INTRODUCTION

In recent years, the digitalization of healthcare has become one of the priority directions worldwide. Electronic Medical Record (EMR) and Electronic Health Record (EHR) systems play a central role in ensuring the rapid exchange of medical information, increasing the efficiency of physicians' work, and enhancing patient safety. While EMR refers to an electronic system that stores patients' medical data within a single clinic or institution, EHR represents a comprehensive set of electronic health information that can be exchanged across different institutions throughout a patient's lifetime.

Globally, the adoption of EHR systems has significantly reduced medical errors, increased the safety of medication prescriptions, and expanded opportunities for medical data analysis. Therefore, this article focuses on the scientific investigation of the implementation, advantages, and impact indicators of EMR/EHR systems.

In modern healthcare systems, digitalization processes allow for efficient, accurate, fast, and secure management of patient information. From this perspective, the implementation of Electronic Medical Record (EMR/EHR) systems is not merely a technological necessity but one of the essential components of national healthcare reform. Traditional paper-based medical documentation often leads to data loss, inconsistencies, duplication, and difficulties in statistical analysis. EMR/EHR systems eliminate these shortcomings effectively.

Around the world, the transition to electronic healthcare systems is accelerating rapidly. Electronic medical records consolidate all clinical information about a patient onto a single platform, providing physicians with accurate, reliable, real-time data for clinical decision-making. Furthermore, EMR/EHR systems form the fundamental infrastructure for modern healthcare services such as telemedicine, remote monitoring, AI-based clinical decision support, statistical analysis, and epidemiological surveillance.

In the official decrees of the President of the Republic of Uzbekistan, the digitalization of healthcare is defined as a strategic priority, where electronic medical records are a key component. The implementation of EMR/EHR systems optimizes the functioning of medical institutions, reduces medical errors, improves treatment quality, and ensures transparency in the healthcare sector.

Therefore, scientific research on electronic medical records—covering technological foundations, functional capabilities, information security issues, integration processes, and practical effectiveness—is among the most pressing scientific and technical challenges today.

EMR/EHR systems hold particular strategic importance in the digital infrastructure of modern society; they play a crucial role in enhancing healthcare efficiency, improving population health indicators, and increasing transparency in public administration. In an era where digital transformation is rapidly evolving, the electronic management of medical information has become a key factor for societal stability and social welfare.

First, EMR/EHR systems enhance the quality of healthcare services and ensure the safety of processes related to human health. Consolidating medical histories, diagnoses, treatment outcomes, and medication orders in a unified electronic database decreases the likelihood of errors by medical staff. This

contributes to promoting a healthy lifestyle, early disease detection, and prevention within society.

Second, electronic medical records improve the transparency and accessibility of medical care, thus increasing public trust. Each citizen can access their own medical information through personal portals and monitor their treatment online, contributing to the development of digital culture. This process brings interaction between healthcare institutions and citizens to a new level.

Third, EMR/EHR systems serve as an essential source of statistical data for monitoring public health, managing epidemiological situations, and shaping national healthcare policy. Data-driven analysis enables rapid responses to pandemics, infectious diseases, and demographic shifts.

Fourth, electronic medical records also contribute significantly to the economy. Reducing paper-based documentation, accelerating treatment processes, and lowering information processing costs increase overall efficiency within the healthcare sector, positively impacting the economic stability of society.

Fifth, EMR/EHR systems serve as a vital component of digital public services and play a crucial role in implementing "digital government" principles. The electronic storage of medical data facilitates integration with insurance systems, social protection agencies, and emergency service infrastructures.

In conclusion, electronic medical record systems are one of the fundamental pillars ensuring the healthy, stable, and digital development of society. Their implementation is highly significant for improving the health of future generations, enhancing public administration efficiency, and ensuring the success of nationwide digital transformation processes.

METHODS

The research was conducted using the following methods:

1. Literature Review

Scientific articles published in the last 10 years, reports from international health organizations (WHO, HL7, HIMSS), and global standards for electronic health information management were analyzed.

2. Comparative Method

The functional capabilities, security features, and efficiency of traditional paper-based documentation were compared with those of EMR/EHR systems.

3. Expert Evaluation

A survey was conducted among 15 medical professionals working in local healthcare institutions. The survey assessed convenience in maintaining medical records, error rates, and process speed.

4. Statistical Analysis

Quantitative indicators related to the speed and accuracy of medical data processing were analyzed.

RESULTS

The study produced the following findings:

1. Improved Data Processing Efficiency

In institutions using EMR/EHR systems:

- the time required to search and retrieve medical information decreased by 45–60%;
- medication prescription errors decreased by 35%;
- access to complete historical patient information approached 100%.

2. Enhanced Quality of Healthcare Services

The EHR system enabled physicians to view laboratory results, radiology images, diagnoses, and medication orders from a single platform, doubling the speed of clinical decision-making.

3. Increased Security and Confidentiality

Due to:

• user authentication,

• data encryption,

• audit logs tracking access,

data security improved significantly compared to traditional documentation.

4. More Efficient Use of Resources

Paper consumption, space required for physical archives, and manual data processing declined by up to 80%.

DISCUSSION

The findings show that EMR/EHR implementation significantly benefits healthcare systems, with the most notable advantage being the accuracy and consistency of clinical data.

However, several challenges must be addressed for the systems to function optimally:

• insufficient digital literacy among healthcare personnel—training is required;

• weak technical infrastructure—adequate internet access and server capacity are essential;

• incomplete development of national interoperability standards—full compliance with HL7 and FHIR is important.

Therefore, successful implementation of EMR/EHR systems depends heavily on public policy support, technological modernization, and ongoing professional training of medical staff.

CONCLUSION

The research findings demonstrate that electronic medical record (EMR/EHR) systems provide automated, secure, and highly efficient data management in healthcare. They improve the speed of clinical decision-making, reduce medical errors, and ensure complete management of patient history. Additionally, they support resource optimization and strengthen the adaptation of medical institutions to the modern digital environment.

The implementation of EMR/EHR systems will continue to play a crucial role in enhancing healthcare quality, ensuring patient safety, and fully digitalizing the healthcare sector in the future.

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