

## EFFICIENCY OF ELECTRONIC HEALTH RECORD (EHR) SYSTEMS

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**Abstract:** Electronic health (eHealth) systems play a vital role in modern medicine, enabling the digitization of patient data, improving service quality, and optimizing treatment processes. This article analyzes the integration of Big Data and Artificial Intelligence (AI) technologies into eHealth systems. Big Data plays a crucial role in analyzing patient medical records, genetic data, and real-time monitoring results, while AI is utilized in diagnostics, personalized treatment plans, and the automation of administrative processes. The article examines the advantages, limitations, and future possibilities of these technologies. In the future, directions such as genomics, pandemic preparedness, and global integration will further develop the healthcare sector. This research is aimed at increasing the efficiency of eHealth systems and contributing to human health.

**Keywords:** Electronic health; Electronic Health Record (EHR); Telemedicine; Mobile health (m-Health); Medical information systems; Digital medicine; Data; Artificial Intelligence; Medical diagnostics; Medical database; Health digitalization.

### Introduction

Today, the healthcare system is closely linked with digital technologies. Electronic health (eHealth) is a modern approach aimed at digitizing medical services, managing data effectively, and increasing the quality of service provided to patients. eHealth systems consist of a complex of technologies including electronic health records, telemedicine, mobile health (m-Health), online consultations, digital diagnostics, and more. Our goal is to analyze the main types of eHealth systems, their advantages, application areas, and existing problems.

### Components of e-health

E-Health is an integrated system aimed at improving medical service delivery through information and communication technologies. It includes the following components:

- ❖ EHR (Electronic Health Records).
- ❖ Telemedicine services.
- ❖ Mobile health (m-Health).
- ❖ Health Information Systems (HIS).
- ❖ AI-based diagnostic systems.
- ❖ Data security and cryptography.

The harmony of these components ensures that medical services are fast, accurate, and high-quality. EHR is a system for consolidating patient personal, clinical, and laboratory data on a single electronic platform. In global experience, critical information about patients has been read immediately through EHR in emergencies, resulting in prompt assistance and many lives being saved.

### Telemedicine and mobile health



Telemedicine is the provision of medical services from a distance and is implemented in the following forms:

- ❖ Video consultations.
- ❖ Remote diagnostics (tele-diagnostics).
- ❖ Tele-monitoring of diseases.
- ❖ Electronic prescriptions and oversight.

Telemedicine is particularly convenient for patients living in remote areas. Additionally, it simplifies continuous monitoring of chronic diseases. Mobile health allows for monitoring blood pressure, step count, physical activity, glucose levels, and heart rhythm through smartphones and smart devices. Through these, patients can independently monitor their condition, and doctors can supervise in real-time.

## Conclusion

In conclusion, the integration of Big Data and Artificial Intelligence into eHealth systems ensures great achievements in the healthcare field. This technology increases diagnostic accuracy, develops personalized medicine, and plays an important role in automating medical services, centralizing patient data, and managing resources effectively. While eHealth systems are becoming an integral part of modern medicine, issues such as data security, technical infrastructure, and staff qualification must be consistently resolved. In the future, eHealth systems are expected to integrate further with AI, Big Data, and IoT technologies to raise medical quality to a higher level.

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