DIGITAL HEALTH: ELEMENTS OF ELECTRONIC HEALTH AND THEIR IMPLEMENTATION

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Annotation

This scientific article discusses the elements of e-health and the application of new technologies in the health care system. When writing the article, the legal documents in the field of healthcare in the Republic of Uzbekistan were studied. The experience of foreign countries on the introduction of an electronic medical record has also been studied. At the end of the scientific article, conclusions and proposals were made for the effective implementation of new technologies in the field.

Keywords

Information technology, digital transformation, World Health Organization, e-medicine, electronic medical record.

Numerous studies and successful world experience have proven that a developed information technology (IT) sector contributes to an increase in the efficiency and competitiveness of the economy. According to the State Statistics Committee, in January-September 2022, the share of information and communication technology (ICT) services in the gross domestic product (GDP) reached 1.8%.[1] It should be noted that in the Republic of Uzbekistan, realizing the importance of ICT in the development of the country, an important document was adopted. The presidential decree of October 5, 2020 approved the Strategy "Digital Uzbekistan-2030", which provides for the implementation of over 280 projects for the digital transformation of regions and sectors of the country's economy.[2] Taking into account the experience of combating the pandemic, in 2021 it is planned to expand digitalization in the healthcare sector, complete the implementation of electronic polyclinic and telemedicine systems in the regions.

The digital transformation of the healthcare sector involves the development of telemedicine, the use of cloud technologies, the improvement of electronic document management, the creation of complex automation systems for organizations, electronic portals and mobile applications that guarantee a new level

of access to medical services for the population. The World Health Organization (WHO) and the International Telecommunication Union (ITU) are encouraging governments through their governing body resolutions to develop national eHealth strategies. According to WHO estimates, more than 60% of states have them, and such as the USA, Canada and EU countries are implementing their own medical informatization programs. According to the main document in this area, adopted in 2005 in Geneva at the 8th session of the World Health Assembly - Resolution on eHealth WHA 58.28, it refers to the cost-effective and secure use of information and communication technologies to support healthcare and related sectors of the economy , as well as improving the efficiency and accessibility of medical care. In many countries, a single information space is being created, innovative strategies in the field of digital medicine are being implemented. WHO analyzed the key elements that characterize the development of eHealth at the country level. The 2015 study included 47 of the 53 countries in the European Region, or 89% of the countries. Based on the results of the study, the main areas of digital transformation of healthcare were identified (Fig. 1). [3]

The main areas of digital transformation of healthcare include:					
information relevant to the health and well-being of the population, with a focus on indicators	increasing accessibility and improving the dissemination of information about e-medicine	strengthening health information networks	development of eHealth legislation	building institutional and human resources	communication and outreach

Fig. 1. Main areas of digital transformation of healthcare

Health information systems are characterized by a significant coverage of personal data and high dynamics of their use, which leads to a number of requirements for their development and operation. Based on this, we can note the modern directions for the development of digital healthcare:

Availability - a developed information structure and the availability of high-speed communication channels make it possible to receive electronic services regardless of the patient's location;

Comprehensiveness - the provision of a combination of various medical services;

Efficiency - the costs are covered by the cumulative economic and medical effect;

Education - a high level of computer literacy, both medical personnel and the population as a whole;

Adaptability – careful introduction of pilot projects, usually based on one or several medical organizations;

Sociality - the possibility of obtaining medical services for socially unprotected citizens (the elderly, categories of people with limited opportunities for self-care);

Involvement - wide involvement of key beneficiaries (medical workers, health managers at all levels, patients, the public) in the processes of development, implementation and development, implementation and development of information systems;
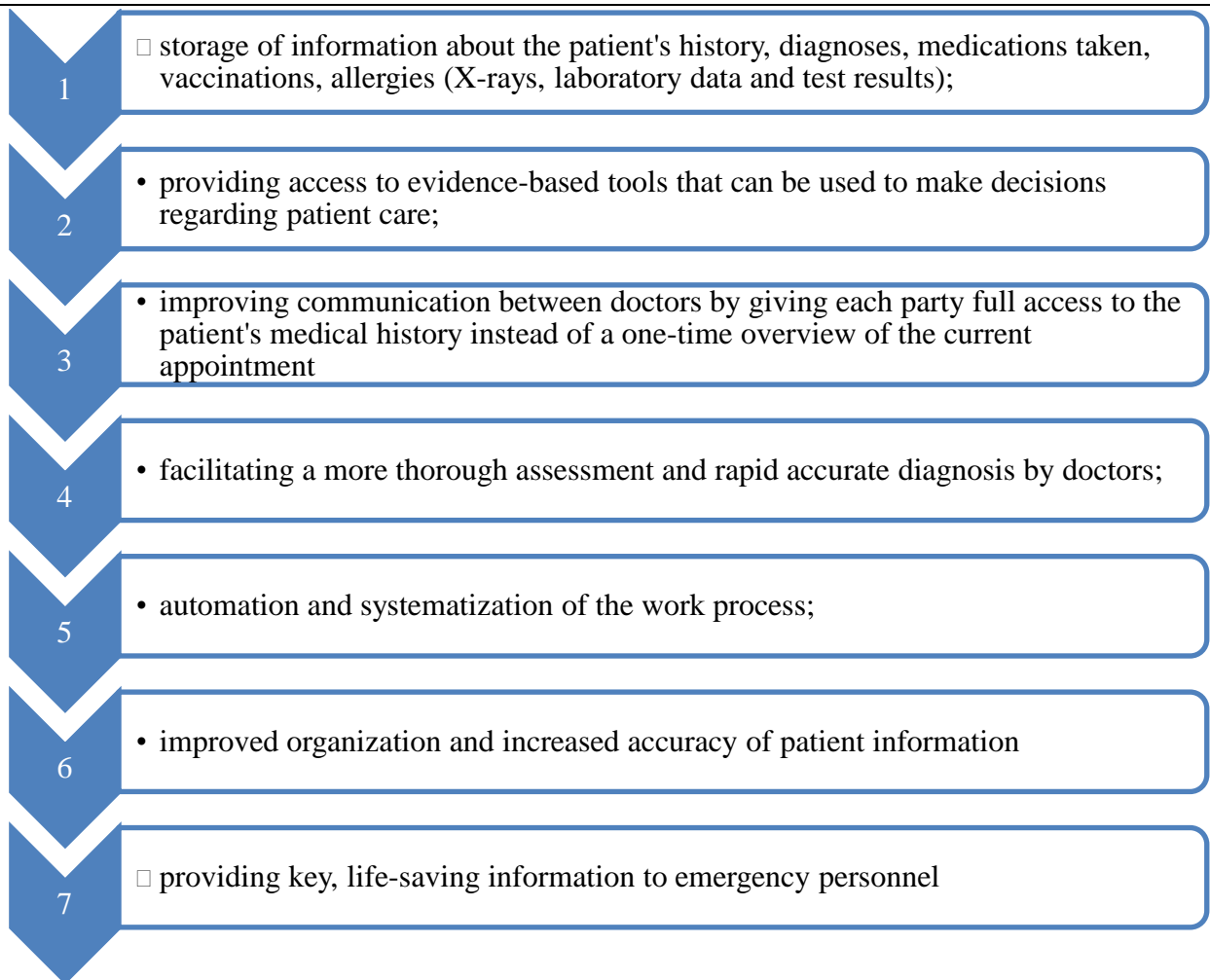
Sustainability - a long period of development of policy and regulatory legal framework for projects;

Security - secure storage of personal information.

When studying the materials, it can be said that the digitalization of the healthcare system is possible if there are a number of favorable factors. Such factors include the readiness of the country's information base for the development of this area, the impact of the digital transformation of healthcare on social and economic processes. Studying foreign experience in the development of e-health, we can conclude that in many countries the central element of the e-health concept is an integrated electronic medical record. It contains information in the form of structured electronic medical documents and is a complete and complete source of patient data. Common components of eHealth include e-prescription, data integration and exchange, and the importance of basic legal and technical infrastructures.

An electronic medical record (EMR) is the simplest digital (computerized) paper-based version of patient information. It can perform a variety of tasks that help provide care in accordance with clinical practice standards (Fig. 2). According to experts, there are significantly fewer errors in an electronic medical record than in a paper one. EHR is a medical record that is edited in real time and focused on the patient. Information from it is available instantly, whenever and wherever.

Possibilities of the electronic medical record (EMR)

1	☐ storage of information about the patient's history, diagnoses, medications taken, vaccinations, allergies (X-rays, laboratory data and test results);
2	• providing access to evidence-based tools that can be used to make decisions regarding patient care;
3	• improving communication between doctors by giving each party full access to the patient's medical history instead of a one-time overview of the current appointment
4	• facilitating a more thorough assessment and rapid accurate diagnosis by doctors;
5	• automation and systematization of the work process;
6	• improved organization and increased accuracy of patient information
7	☐ providing key, life-saving information to emergency personnel

Fig. 2. Possibilities of the Electronic Health Record

It should be noted that one of the main characteristics of the EHR is the possibility of its creation, management and consultation by all authorized medical workers and personnel simultaneously in different medical institutions.

A single EHR connects information from current and past physicians, emergency departments, schools and on-site clinics, pharmacies, laboratories and imaging facilities.

So what does EMC contain?

The electronic medical record contains the following information about the patient's health:

• administrative information and billing details;
• patient demographics;
• notes on the course of the disease;
• indicators of vital functions;

• anamnesis (Earlier diseases, existing chronic pathology of various organs and organ systems, operations, traumas. The patient's living conditions are also studied);

• diagnoses;

• medications;

• vaccination dates;

• the presence of allergies;

• x-rays;

• results of laboratory tests and analyses.

EHR systems are designed to share information with other healthcare professionals and organizations, including laboratories, imaging facilities, pharmacies, emergency rooms, schools, and on-site clinics. Thus, they combine the information received from all the doctors involved in the care of the patient.
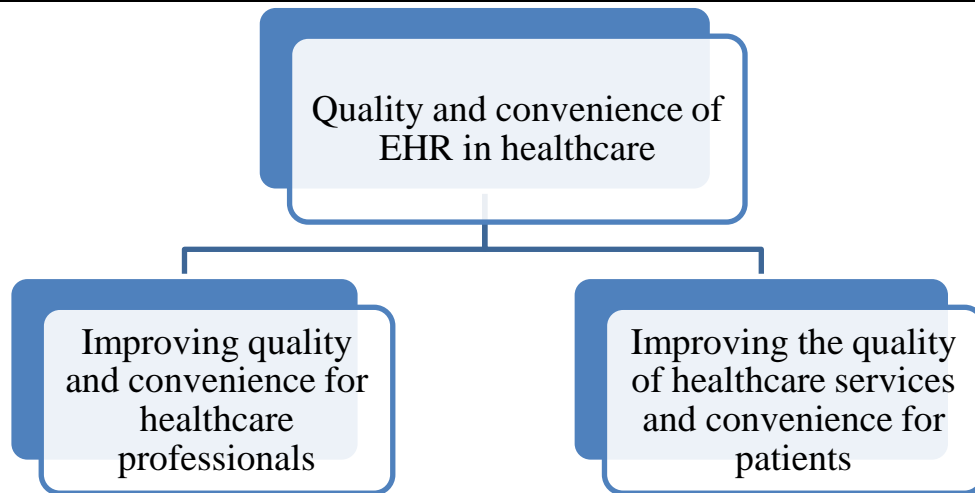
In a study of studies in the CIS countries, more than two-thirds (71%) of EHR users re-license an EHR system, [4] and about half of doctors who do not currently use EHR systems plan to purchase or use a previously purchased system within a year (Fig. 3).
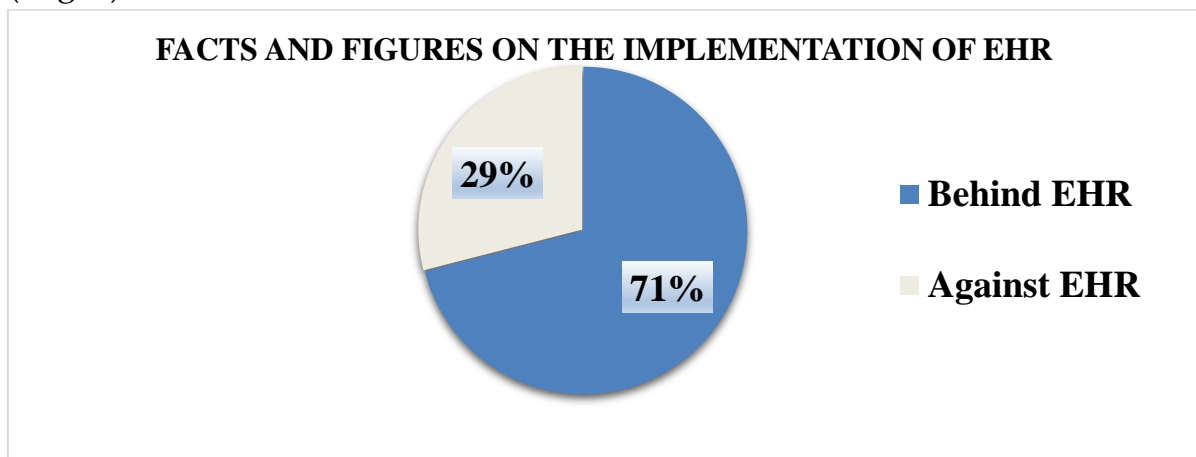
Fig. 3. Facts and figures on the implementation of EHR based on the results of the survey

The degree of satisfaction with electronic medical records among doctors working in their own offices, in percent:

An electronic health record improves the quality of healthcare services and makes the provision of medical care more convenient for both healthcare professionals and patients (Fig. 4).

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A[Quality and convenience of EHR in healthcare]
A --> B[Improving quality and convenience for healthcare professionals]
A --> C[Improving the quality of healthcare services and convenience for patients]
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Fig.4. Quality and convenience of EHR in healthcare

Now we will reveal what is included in this quality and convenience in more detail.

Improving quality and convenience for healthcare professionals:

• quick access to the patient's medical record in hospitals and in remote areas ensures the provision of more effective medical care

• effective decision support, alerts, reminders and storage of medical data

• tools that increase productivity, high-quality reporting in real time

• clear workflow that allows accurate coding of information and billing

• interface that provides communication with laboratories, registries and other EHRs

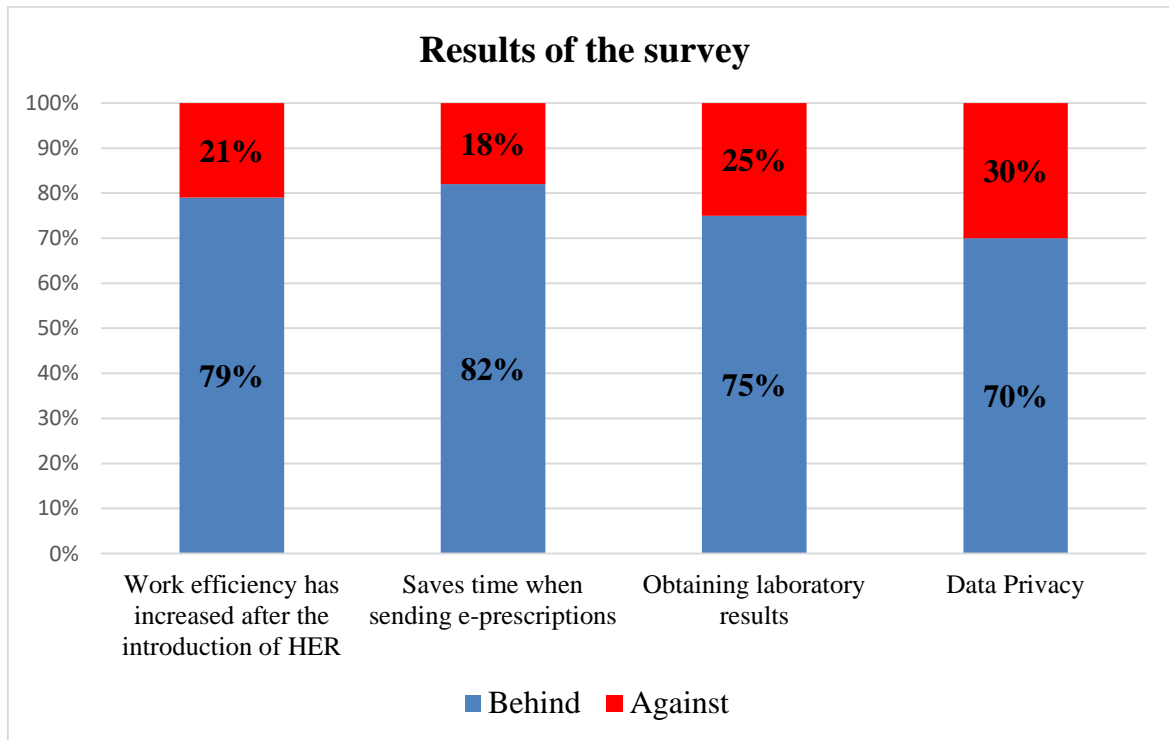• writing prescriptions in a safer and more reliable way

Improving the quality of healthcare services and convenience for patients:

• you don't have to fill out the same form at every doctor's appointment;

• Reliable information from the point of care and alerts, reminding health workers of important medical interventions;

• convenience of writing out electronic prescriptions - they can be sent directly to the pharmacy;

• portals for patients, allowing online interaction with medical professionals;

• electronic referrals providing easy access to specialist follow-up.

In medical practice, one can already see the effectiveness of cost savings when using electronic medical records. Many health care professionals find that an electronic health record helps them improve their care management through increased efficiency and cost savings.

As a result of a survey conducted in the CIS countries, conducted among doctors who are ready to use EHR, the following important data were obtained (Fig. 5):

Results of the survey

Category	Behind	Against
Work efficiency has increased after the introduction of HER	79%	21%
Saves time when sending e-prescriptions	82%	18%
Obtaining laboratory results	75%	25%
Data Privacy	70%	30%

Fig. 5. Results of the survey on readiness to use EMR

The results show that 79% of all health workers reported that their work efficiency increased after the introduction of EMR, 82% reported that sending electronic prescriptions saved them time (electronic prescribing), 75% began to receive results from laboratories faster and 70% reported improved data privacy. [4]

In our opinion, first of all, the savings are associated with the automation of several time-consuming paper procedures and labor-intensive processes, for example, as:

• reduction of data copying costs;

• reducing the cost of data recording, storage and re-entry of data;

• improving and improving the accuracy of drug reimbursement coding by simplifying the workflow for high reimbursement codes;

Reduction of medical errors due to improved access to patient data and alerts that warn of possible errors;

• improving health (improving the quality of medical care) through better treatment of diseases and education of patients.

Based on what we have learned, we can say that the EHR system helps to improve the efficiency of medical care, because it:

improves care management through the use of integrated scheduling systems that move from appointment to patient progress notes, automatic coding and complaint management;

• saves time by simplifying and centralizing work with records and requests for any disease;

improves communication with other physicians, laboratories, and coordination of treatment plans through easy access to patient data, tracking of emails to medical staff, other physicians, hospitals and laboratories, automatic verification of compliance with treatment plans, ordering and receipt of laboratory test results and diagnostic images, and links to public health systems, such as infectious disease registries and databases.

To implement EHR, it is necessary to assess the readiness of a medical institution: the first step is to assess the current medical practice, its goals, needs, financial and technical condition. After a thorough readiness assessment has been carried out, the development of an EHR implementation plan can begin, taking into account the needs of the institution. This:

1. Planning: planning is based on the information collected during the evaluation phase to create a plan for the implementation of EHR in medical practice

2. Selecting or upgrading a certified EHR: Choosing the right EHR system for your medical practice involves several steps. Healthcare professionals and hospitals that are ready to implement an EHR system must use certified EHR technology to fully operate the system and be able to cover the costs of its implementation.

3. Training and implementation of the EHR system: the implementation of the EHR includes the installation of the system and related activities - employee training, trial activities, testing its operation

4. Full use: the final stage of the implementation of the EHR includes a demonstration of its successful full operation and an assessment of the skills acquired during the training and daily use of the system

5. Continuous improvement of the quality of the system: continuous assessment of the goals and needs of the medical institution after the implementation of the system to improve work processes and solve individual problems of medical practice through the use of EHR.

LITERATURE REVIEW:

1. www.stat.uz - website of the State Statistics Committee of the Republic of Uzbekistan

2. Decree of the President of the Republic of Uzbekistan "On approval of the strategy "Digital Uzbekistan -2030" and measures for its effective implementation" UP-6079 dated October 5, 2020, Tashkent

3. Digitalization of the healthcare system: experience and prospects, science and innovation / No. 2 (204) / p. 38.

4. https://www.medznat.ru/ - What is an Electronic Medical Record (EMC)?