

APPLYING DIGITAL TECHNOLOGY IN MEDICAL EDUCATION IN TRAINING PHYSICIANS

<https://doi.org/10.5281/zenodo.7984716>

Zubaydullaeva M.T

Khalmukhamedov B.T

Karimova M.T

Tashkent Medical Academy,

Tashkent, Uzbekistan

Information and digital technologies are actively being introduced into various spheres of life, including health care, resulting in a fundamental change in the quality of people's lives.

The main areas of application of medical digital technologies are:

- advisory (information) support for doctors, patients and students as a promising direction in distance learning.

- Implementation of remote monitoring of the patient's condition, control of the effectiveness of treatment, adherence and accuracy of patients' compliance with treatment prescriptions;

- disease prevention and promotion of healthy lifestyles, which include combating bad habits, informing the population about possible risk factors and early markers of disease development;

- calculation of individual diagnostic indicators and physiological parameters (medical calculators);

The development of information and communication technologies and the increasing use of new automated medical devices and monitoring systems in clinics have led to a significant increase in the number of international, national, and corporate medical information systems (MIS).

Medical Information Systems (MIS) are systems that automate workflow in a medical institution and integrate electronic medical records, data from various examinations, patient monitoring using medical devices, and other information. The focus of any MIS is the Electronic Health Record (EHR). Medical information stored in the EHR is represented by a complex set of heterogeneous data, both textual, digital, and graphical, that originally reside in different systems. For successful synchronization of these data in different MIS, it is necessary not only to

transfer them through protocols, but also to perform their conversion to the form that is adopted in the other MIS, and back. [1].

At the beginning of the XXI century, developed countries began to implement national programs to create a unified information space in the field of health and social development. In many European countries, it is based on an integrated electronic medical record, which accumulates information in the form of structured electronic medical documents. The best known project for cross-border transfer of patient information and electronic prescriptions is the European project epSOS completed in 2014, the successor of which is the project [2].

The electronic medical record contains all the necessary sections for physicians to keep a patient's outpatient record and medical history (for hospitals) electronically.

A relatively new but very promising trend in the development of information technology is mobile health care (mHealth). It is characterized by the use of mobile devices, software packages, integrated information resources and wireless communication technologies for the purposes of medical monitoring, reference medical care, and support for a healthy lifestyle.

Patients who use mHealth technologies less frequently need to visit a medical institution and, if necessary, can receive consultations from specialists remotely. Moreover, mHealth technologies allow doctors to obtain data on a patient's health over a long period of time, which helps them make more informed decisions about treatment and significantly reduces the possibility of errors in making a diagnosis [3].

A promising area of mHealth development is the development and implementation of various mobile diagnostic devices that are attached to smartphones. Mobile diagnostic devices are almost as good as large-scale stationary systems. The differences include a reduced number of working modes and programs (only the most informative and important ones remain), small size, low weight, autonomy from power sources. Mobile radiographs, tomographs, electrocardiographs, ultrasound scanners, patient monitors and other diagnostic equipment are a great alternative to stationary ones. With their help, you can solve the most complex research tasks. They can be used in the ambulance or at the scene of an accident, helping medics act quickly and accurately. The recently released SmartHeart handheld device (AliveCor ECG, Penn State University) is capable of performing ECG in almost any environment. The device connects to a smartphone using wireless technology and can transmit the ECG recording to a physician for preliminary analysis [5].

Mobile telemedicine is a complex (telemedicine system) - a set of mobile and wearable software and hardware for use in home telemedicine, extreme medicine, disaster medicine, military medicine, as well as emergency and outpatient care and patient rehabilitation[1]. Telemedicine complexes provide wireless transmission of audio, video and other data about a patient from the scene, using available communication channels, to a telemedical center or any other medical institution for remote medical consultation and remote diagnosis.

Personal digital assistants and apps are commonly used by students to address medical issues, manage patients, and make treatment decisions. Medical apps for iPhone and Android devices are numerous. Some are used in the field of anatomy and physiology, the job of others is to help diagnose patients' conditions and treat them[4].

The use of computer technology for disease prevention includes the use of various mobile applications for maintaining a healthy lifestyle (wellness), for exercising and sports (fitness) with control of certain physiological and anthropometric indicators, combating bad habits, composing and adjusting diets. Most people know that exercise is good for their health, but only a small proportion of them follow the recommendation of 150 minutes of moderate-intensity physical activity per week.

In today's world, you can use apps on your phone, fitness trackers or social media to make exercise more fun. Best of all, research shows that there is a correlation between the use of exercise apps and increased activity among people in different countries. These apps have varying degrees of sophistication and can be used by the patient either on their own or in interaction with a physician.

There are also special applications for controlling individual anthropometric and physiological indicators, such as body mass index, waist circumference, hips, chest, etc. Of particular importance are applications that motivate people to give up bad habits, especially smoking. For example, REQ-Mobile (UK) Supports people who want to stop smoking [5].

Medical calculators are a convenient electronic tool that allows to automatically calculate various physiological and diagnostic parameters. For example, medical online calculators can help make calculations related to your health: to find out your body mass index, calculate the amount of protein and calories for weight gain, determine weight gain during pregnancy. There are universal calculators for calculating several parameters simultaneously. The most commonly recommended ones include Medscape, Calculate by QxMD, and MediCalc. [5].

Remote health monitoring is an effective mechanism for continuous monitoring of detected diseases and ensures that the attending physician receives timely information about the need for an emergency and urgent response in order to reduce risk factors and the likelihood of disease development.

Remote monitoring of health status and treatment is carried out on the basis of both software applications and telemedicine technologies. Special applications in the form of an electronic diary help patients to systematize the entire volume of subjective data and monitor the course of the disease. One of the most successful programs for diabetics (Glucool Lite, Glucose Buddy, Sugar Log, Diabetes Records, Diabetes Tracker, Diabetes Health, DiabControl, Diabetes risk, etc.) is GlucoSuccess (<http://glucosuccess.org/>), which allows patients to get information about diets and exercises, keep a food diary, share data on glucose measurements, and also remind users to take medication or undergo preventive examinations[7].

Thus, digital technology makes it possible to process and analyze large amounts of data and information. This is based on the great potential of modern computers as well as intelligent data processing methods. The main advantages of using digital technologies in medicine, as well as in other fields, are related to: 1) high accuracy in processing arrays of diverse data, recognizing signs (visual, audio, etc.) and evaluating numerical changes; 2) speed of obtaining results and making decisions; and 3) cost-effectiveness, which is important in mass patient care. In modern medical systems, these advantages combine to shape the level of quality of medical services through the provision of information resources and data processing tools.

LITERATURE:

1.Gogina, O. A. Basic standards and models for the integration of medical information systems \ \Journal Young Scientist. - 2017. - № 18 (152). - C. 8-11.

2.Gorbachev N.N., Ivanyukovich V.A., Nikolaenko E.A. Trends in the development of medical information systems.

3.Dudnik D.V. Technological trends in wearable electronics and mobile medicine in the world and in Russia \Economics and society, 2015.

4. Itinson K.S. Introduction of mobile technologies in medical education as a promising direction in training future doctors for professional activity.\ Baltic Humanitarian Journal. 2020.T9.№4 (33)

5.Nikitin P.V., Muradyants A.A., Shostak N.A. Mobile health care: opportunities, problems, prospects. \Journal Clinician 2015.

6. Tarasova, T.V. Telemedicine in the modern health care system / T.V. Tarasova. // Young Scientist. 2022. № 1 (396). C. 43-44.

7. Shaderkin I.A. Distant monitoring of human health and environment: opportunities and limitations. \ \ Russian Journal of Telemedicine and e-health 2022 8(3) P.45-54