

Simulation Education: Development Trends In Medicine

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Annotation. The article provides information about simulation education and its importance in medical education, development principles and the role of simulation training centers. At the same time, the stages of implementation of the simulation process in medical education in foreign countries, its specific aspects are covered. On the basis of didactic approaches, information is provided on the integration of the simulation process with the assessment system, its features and assessment indicators.

Key words: simulation, simulation education, simulation centers, didactic approaches, indicators, trends.

Relevance.

Over the years of independence in the Republic of Uzbekistan, a huge amount of work has been done to reform the entire education system, including the health personnel infrastructure. At the same time, an extremely important role in improving the quality of medical care and the formation of a highly qualified specialist is assigned to the issues of advanced training and retraining of doctors, the introduction of new pedagogical technologies and innovations, modern technical teaching aids using information technologies [4,12].

The level of development of each sector of the industry directly depends on the training of personnel in this direction. Installation of modern technology, introduce innovative technologies, the implementation of the reconstruction of buildings, the improvement of the modern management system, without qualified personnel training will not give serious positive changes [6,8]. Everywhere in the industry there is an acute shortage of highly qualified specialists, therefore, it is natural that one of the main directions in the field of higher medical education is the need to significantly strengthen the practical aspect of training future doctors, while maintaining the proper level of theoretical knowledge [9,11].

The weak level of training of doctors and specialists is one of the urgent problems of improving the quality of the provision of qualified medical care to the population. To strengthen the personnel, work is being carried out both within the republic and abroad.

In order to solve such problems in many countries, there have been global changes in priorities in medical education: from structure to process, and in the last decade - to educational result [1,7]. This was characterized by the active introduction of new learning technologies, such as problem-based, electronic, mixed, command, simulation and others. However, it is necessary not only to use innovative teaching technologies, but to achieve, thanks to them, specific measurable results that can be demonstrated by students [3,5].

In foreign educational practice, a methodology for teaching students of medical institutions on the basis of played situational tasks using modern innovative educational technologies, with the maximum approximation to real conditions, has appeared quite a long time ago [10, 12].

Thus, a distinctive feature of medical education is the compulsory development of practical (clinical) skills "at the patient's bedside" (case management, participation in clinical rounds, operations, manipulations, etc.). In this regard, a prerequisite for high-quality training of doctors is the integration of education and production, in this case, medical universities and clinics of leading centers. That is, leading medical institutions use medical universities as clinical bases. In teaching

students, not only university teachers are involved, but also researchers and experienced doctors [5,12].

A student - a future specialist must master and recognize well a large number of diseases. But he has no opportunity to see a sufficient number of patients in the clinic, spend sufficient time with them, communicate, observe certain symptoms. Also, medical students must cope with life-threatening conditions on their own, especially now, when, after the sixth year, they go out on an independent activity [4,7]. But in practice, a young specialist will not be given the opportunity to practice on patients and, accordingly, experienced doctors provide assistance to patients, while students remain, at best, in the role of observers, unable to master the skills and competencies associated with the provision of medical care. It is to solve these problems of medical education that simulation technologies are needed: so that all algorithms, practical skills can be worked out without harm to the patient's health, and students and doctors can be taught to act in emergency situations [6]. This is important, among other things, for the development of the currently developing minimally invasive methods of treatment, for the effective use of medical equipment. And a student must come to a sick person with already worked out practical skills - when the hand is placed, there are developed algorithms, certain skills that have grown into skills.

Thus, simulation training makes it possible to get acquainted with all the diseases provided for by the curriculum, regardless of whether there is a patient with pronounced symptoms in the clinic at that time or not. And most importantly, when teaching students using simulation technologies, there is the possibility of a planned practice for each of them. Simulation includes activities aimed at developing practical skills, algorithms and communications [1,9].

Thus, the priority area for the development of innovative technologies in the field of education in medical institutions is:

- the introduction of simulation technologies into the practical training of students of medical universities makes it possible to avoid mistakes in the process of providing medical activities;

- Strengthening the practical training of students should begin already from the first year and continue throughout the entire educational process, consolidating the knowledge gained in practice, especially those that are associated with an increased risk for the patient. Simulators allow you to repeat each skill many times in identical conditions, and, if necessary, recreate a specific clinical scenario;

- simulation training makes it possible to objectively control knowledge and skills, which makes it possible to compare theoretical knowledge with the quality of a specialist's practical work;

- interaction with foreign colleagues to exchange experience, improve the methodology of simulation training;

- will increase the attractiveness and effectiveness of educational events (courses, thematic improvements, master classes) for practical health professionals in the system of continuing medical education, as well as other contingent of students on the provision of first aid [11].

Justification of the importance of creating centers for simulation training. The main goal of the health system is to ensure health care in accordance with reference standards through an organized structure and improve health status at the lowest (optimal) cost. Achieving this goal requires a well-thought-out organization, ideally delineated by level of specialization and divided by administrative region, depending on size, demographic situation and available resources.

Medical education currently faces a number of challenges, including increasing student numbers, changing student preferences for learning styles, and the need to bridge the gap between theory and clinical practice. In addition, increasing attention is being paid to patient safety, ethical issues, increased responsibility of medical professionals, a high level of required professional qualifications and the rapid evolution of procedures and methods. All this requires the adaptation of educational programs using all available educational tools [2,3].

At the same time, traditional forms of medical education do not offer any specific process to ensure a completely safe and effective preparation before the medical professional begins to actively work with patients. In addition, current forms of monitoring the level of competence of doctors are mostly inconsistent or insufficient.

International experience and trends. To date, all over the world has already accumulated significant experience in the application of innovative educational technologies in medicine. Skills acquired in virtual reality are successfully transferred to a real clinical setting.

Simulation Center Mainz (AQAI GmbH (Germany)) is one of the largest private educational institutions in Europe today. AQAI makes a significant contribution to patient safety. For anesthesia, intensive care, emergency medicine, cardiology and endoscopy. In addition to the mainstream of emergency and incident management, comprehensive training and consulting services for the entire healthcare system, as well as the development of its own software. Development of new technical capabilities with all realistic scenarios and innovative learning concepts [10].

Acibadem University - CASE (Center for Advanced Simulation and Teaching) consists of Clinical Simulation and Advanced Endoscopic / Robotic Surgery Departments. With a variety of medical simulations and technological infrastructure, CASE makes a difference in both undergraduate and graduate education. In addition to medical simulation laboratories, CASE has a WetLab with nine stations for laparoscopic surgery, a training center for robotic surgery and a dissection laboratory for surgical training on cadaver material.

The Institute for Clinical Innovation Technology and Teaching in Ghent (ITCIT), located at the Heymans Medical Campus in Ghent, Belgium, brings together a skills laboratory for undergraduate, graduate, postgraduate, teaching and research in anatomical science. ITCIT focuses on research, development and implementation of innovative surgical technologies and training in a safe work environment. ITCIT is a supporting platform for existing teaching and research groups. ITCIT offers interdisciplinary and multidisciplinary training for medical students, graduate students, healthcare professionals, nurses, and patient technicians. It is designed to provide high quality preparation for daily practice.

Moscow International Medical Cluster, MMMK - located in Moscow on the territory of the Skolkovo Innovation Center, a complex of medical clinics, educational and interdisciplinary research centers.

The cluster was created in order to develop activities for the provision of medical care, improve its quality, promote the development of drugs, medical technologies and medical devices, develop educational activities and conduct scientific research in the field of health care based on the best world practices.

The educational center of high medical technologies AMTEC KAZAN, created in Kazan, is the first project in Russia aimed at postgraduate training of medical specialists in high-tech methods of diagnosis and treatment. Since 2008, the Center has been setting new standards in the training of medical personnel, laying the foundations for the development of the concept of continuing medical education in accordance with the best world experience and assisting in expanding the population's access to high-tech medical care.

High medical technologies create a need for competent and progressive specialists.

Simulators are designed to practice the actions of a full team of doctors: anesthesiologist, operating and assisting surgeons, resuscitator and nurse. On them, you can work out the course of the operation, both by the whole brigade, and separately to each of its members.

It is in the simulation training center that certain medical skills are practiced on mock-ups in virtual reality using special computer devices. And only after that, already having a certain experience, the students are allowed to approach the real patient.

The effectiveness of simulation training is confirmed by the inclusion in the USA, Canada, Norway, Sweden of training on simulators in the mandatory list of training programs for training doctors and nurses.

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Assessment criteria (indicators). The main criteria for assessing the effectiveness of educational organizations implementing innovative educational programs (additional professional programs using simulation technologies) are:

1. Practical effectiveness: a practical way out (focus on practical results) in relation to the medical environment - positive dynamics of indicators, productivity and efficiency of the institutions in general for the capital's health care in improving the quality of medical care.

2. Practice-oriented training: training of personnel for practical health care in a practice-oriented format in order to improve professional competencies, the formation of demanded knowledge, skills and practical experience for solving urgent problems in the field of providing the population with high-quality medical care.

3. Form of training: the implementation of educational programs of simulation content in full-time form contributes to the high-quality development of manual skills in conditions that realistically simulate the clinical situation, which in turn allows to achieve the desired positive effect from the organization of simulation training.

4. Labor intensity of training: the timing of the implementation of educational programs and the total labor intensity of the development of programs is calculated in academic hours, taking into account all types of classroom and independent extracurricular work of the student, quality control of the development of the program.

5. Objectivity of the assessment: conducting an objective examination of the professional competence of practical health care professionals (assessment of the quality of training of specialists based on the results of the development of educational programs).

6. Continuity: regular improvement of the professional level of medical workers in the capital's health care through the implementation of educational programs of simulation content in a highly realistic educational environment [4,5].

The quality of professional training of a healthcare specialist is primarily determined by the extent to which the specialist is able to apply the acquired knowledge in practice. Therefore, the leading direction in the field of medical education is a significant strengthening of the practical aspect of training healthcare professionals through the use of advanced educational technologies while maintaining the proper level of theoretical knowledge. The effectiveness of the educational process is an important indicator and is an integrated measure of the quality of training and control of skills formed during training.

To assess the effectiveness of simulation training for practical health care, it is necessary to take into account the following closely interrelated indicators:

- availability and individualization of training; correspondence of the structure and content of training to current needs and trends in healthcare;
- the level of technical equipment of the educational process;
- implementation of a multi and interdisciplinary approach;
- quality of methodological support of the educational process;
- indicators characterizing the results of control and evaluation activities;
- expected positive changes in the field of practical health care.

Thus, in modern conditions, a doctor as a specialist is presented with a large list of requirements enshrined both in departmental legal norms and in the rules of social behavior. The emergence of sophisticated medical equipment and technologies, the change in moral and legal conditions in the "doctor-patient" relationship have become one of the reasons for the modernization of the medical personnel training system. This is especially true for the segment of practical training of a specialist. In this sense, simulation technologies should take an important place in medical education, increasing the quality and efficiency of practice-oriented training of a specialist, reducing the risk of negative costs of the previous education system in medical universities.

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