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**EVALUATION OF THE EFFECTIVENESS OF THE
INTRODUCTION OF MODERN SIMULATION TECHNOLOGIES IN
THE EDUCATIONAL PROCESS OF MEDICAL INSTITUTIONS**

Resume: The rapid development in the modern world of high-tech medicine places high demands on the quality of medical services. The quality of medical care and the quality of life of patients should underlie the assessment of both the professional activities of individual specialists and institutions, and the level of healthcare in general. In the United States, 98 thousand deaths per year that occur due to medical errors.

Key words: medical education, simulation technology, computer simulation, virtual simulators, simulation technologies.

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**ОЦЕНКА ЭФФЕКТИВНОСТИ ВНЕДРЕНИЯ СОВРЕМЕННЫХ
СИМУЛЯЦИОННЫХ ТЕХНОЛОГИЙ В УЧЕБНЫЙ ПРОЦЕСС
МЕДИЦИНСКИХ ИНСТИТУТОВ**

Резюме: Развитие высокими темпами в современном мире высокотехнологичной медицины предъявляет повышенные требования к качеству оказания медицинских услуг. Качество медицинской помощи и качество жизни пациентов должны лежать в основе оценки как профессиональной деятельности отдельных специалистов и учреждений,

так и уровня здравоохранения в целом. В США 98 тыс. случаев смерти в год, которые происходят из-за врачебных ошибок.

Ключевые слова: медицинского образования, симуляционная технология, компьютерная симуляция, виртуальные тренажеры-симуляторы, симуляционные технологии.

Relevance. According to most authors, the experience of using simulators has shown an increase in the interest and quality of assimilation of the material by students [2,4,6]. According to Haskett Consulting, Inc., "people remember 20% of what they see, 40% of what they see and hear and 70% of what they see, hear and do" [7]. Therefore, constant training is necessary for effective learning and should be used in modern technologies for obtaining knowledge and skills. Today, the educational process assumes high activity and independence of students, which means higher requirements for software, including new information technologies [4]. It is obvious that in the future the range of computer simulations will expand according to the needs of the educational community.

A modern way to solve problems arising during the implementation of the experimental part of the educational process and during the organization of educational laboratories is the creation of virtual simulators. This method of training allows students to study complex medical equipment and skills to work with it with less material costs (due to the high cost of equipment and materials). In this regard, virtual simulator simulators currently occupy an increasing space in the educational process, since their use allows to increase the level of knowledge and effectiveness of teaching students and doctors new high-tech techniques, to assess the survival of acquired knowledge and the quality of acquired skills, to predict the course and results of upcoming real operations, to work out the sequence of actions in the process of performing operative interventions [1,5].

All this gives great opportunities to medical education in working to improve the quality of medical care, reduce the number of possible complications and medical errors, and also allows for the certification of students and doctors, objectively determining the level of their professional qualifications. This is especially relevant today in the working conditions of private medical companies, since the existing level of professional training of specialists often does not meet the requirements imposed on them by modern medical centers.

Today, it is obvious that the use of simulation techniques in training also allows to increase the effectiveness of patient-oriented communication, since a comprehensive assessment of the actions of students without the presence of the patient is possible [1,3,4].

The purpose of the study. Will introduce training based on simulation technologies into the educational process of a medical university.

Materials and methods of research. To solve the tasks, on the basis of the Andijan State Medical Institute, we used the following methods:

1. knowledge training simulators are electronic textbooks using multimedia tools, which significantly increases the digestibility of educational material;

2. control simulators - testing programs to test theoretical knowledge on the subject, topics of practical and laboratory work; used for self-study, self-preparation and as an admission to the workshop;

3. training simulators - multimedia animation simulators that reproduce the real work of technical devices, allow you to study the equipment in detail, to work out the skills of working with it.

The results of the study. The main advantages of using simulators are shown and determined, which allow a medical student to present the object of research and perform practical actions with it without his direct participation, independently set the initial parameters of the conducted research and register

the corresponding changes in the results of the experiment, analyze, identify patterns and draw conclusions, if necessary, repeatedly repeating attempts.

The results of the survey showed that 93.3% of respondents have experience in research projects, as managers of scientific projects – 6.7% of teaching staff. When asked about the importance of practical application of the results of scientific research in the educational process: 51.1% - noted that this is a defining moment for the application of a scientifically oriented approach in the educational process; 23.3% - answered that research in the educational process has "... purely scientific interest".

The results of the survey of students showed that students have a positive attitude to the use of simulation simulators and dummies in practical classes, prefer to conduct training in a special simulation center. At the same time, according to the results of the survey, 26% of students did not study at the simulation center. Of the students who have been trained in the simulation center according to the results of the survey, 73% of cases noted the importance of a high level of realism of simulation training. 81% of students believe that the skills acquired in the simulation center will be applied by them in clinical practice.

As part of the second stage, a structural unit of the simulation educational program has been developed - simulation educational training. Each training consists of several stages, including both passive and active forms of training. According to the plan of the scientific project, the developed trainings will be tested and implemented in the educational process of 2-3 year students of the specialty "General Medicine".

As part of the first stage, a search was conducted for evidence-based information on the development of research competencies of teaching staff and students, the effectiveness of simulation training in clinical training from various literary sources (databases, scientific journals, websites and manuals). For proper preparation for clinical practice, early involvement of students in the

professional environment is necessary, which will allow them to acquire appropriate clinical experience and competencies.

Conclusion. Thus, the simulation technology is certainly communicative, since it involves the establishment of contact and interaction between participants in the educational process. Information, penetrating into consciousness, initiates its active work and, as a result, triggers the reverse information process, response, action.

Properly organized simulation training is increasingly being introduced as an additional stage of medical education, which allows improving the quality of training of medical specialists. During simulation training, a professional skill can be repeated many times until its confident implementation is developed and errors are completely eliminated. And of course, the introduction of a simulation training system provides a number of advantages for healthcare and medical education in general. At the same time, it should be noted that simulation techniques will not be able to replace the entire scope of practical activities of medical students, especially its clinical part, which provides direct experience of interaction with patients. However, a reasonable combination of simulation training technologies and clinical work will increase the level of training and professionalism of future doctors, as well as the effectiveness of providing medical care to the population in the future.

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