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THE ROLE OF SIMULATION TRAINING IN THE FORMATION OF PROFESSIONAL COMPETENCE OF STUDENTS OF MEDICAL HIGHER EDUCATION INSTITUTIONS

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Annotation
Simulation training is a mandatory component in professional training, which provides each student with the opportunity to perform professional activities in accordance with professional standards and rules for the provision of medical care.In order to determine the effectiveness of the use of training simulators in the process of preparing students of a medical institute for practice, a study was carried out in two groups. Reliable results were obtained in students enrolled in the Clinical Skills Training Laboratory (simulation center) who performed practical skills more than three times on simulators - artificial respiration, airway patency restoration, pulse counting, auscultation of the heart, blood pressure measurement, closed heart massage up to 65 , 7%, as well as gastric sounding, setting a cleansing enema, bladder catheterization, digital rectal examination - 52.5%, and self-confidence in performing cardiopulmonary resuscitation was assessed - 38.2%.The use of phantoms, dummies and dummies in the educational process has a greater effect than just a lecture format of training and does not pose a risk to human life.

Keywords: simulation training, simulator, professional competence.

Relevance

Simulation training, as a mandatory component in professional training, is the development and improvement of technical and non-technical skills and abilities using a realistic model: biological, mechanical, electronic, virtual or hybrid (8, 9). In the case of the correct functioning of the simulation training system, all its participants will achieve their own goals (7).

The system of training personnel in the national health care system is undergoing significant changes today. The acquisition of professional skill by trial and error at the patient's bedside inevitably puts the patient's life and health at risk. For this reason, at present, there are less and less patients who are ready to take a passive part in the educational process, and simulation technologies are coming to the fore, with the help of which communication skills, diagnostic techniques, and algorithms for actions in unforeseen and emergency situations are mastered. Basic and advanced skills, skills in internal medicine, surgery, obstetrics, gynecology, urology and many other medical specialties with a practical component, trainings for team interaction are conducted (10, 11).

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Training in a simulation center from a little-known original educational technology, as it was only ten years ago, is rapidly turning into a leading teaching and assessment methodology, becoming a separate educational medical industry, and simulation centers - into a unique unit of medical higher educational institutions, with which the student, and then the specialist doctor is firmly connected from the very first year of his professional development - and for the rest of his life. One of the problems of training in a medical higher educational institution (HEI) e, is the broad theoretical training of today's graduates, combined with a low level of practical skills of the future profession. Most foreign universities see a way to eliminate this discrepancy in the widespread use of modern training simulators and virtual simulators (8, 9).

It must be admitted that at present, the majority of teachers of medical universities consider the use of simulators and training simulators as a desirable stage in the training of a doctor. Since the use of these methods in medical educational practice eliminates some of the problems arising during the acquisition of practical skills. At the same time, a number of authors point out that not a single most modern computer simulator can and will never replace working at the patient's bedside, independently performing new manipulations for oneself under the supervision of an experienced specialist. The importance and imperativeness of this stage of training - "from hand to hand" - is undeniable. However, the well-established opinion that one can acquire medical skills only in the course of independent work at the patient's bedside sharply contradicts the world and domestic statistics of medical errors committed by young specialists (4,5,7).

Thus, there is a contradiction between the traditional approach to teaching students practical skills and the reports of a number of authors about the advisability of using modern training simulators for these purposes, which determines the relevance of studying the possibilities of using training simulators for the formation of relevant professional competencies (1,2,8).

The aim of the study was to determine the effectiveness of the use of training simulators in the formation of professional competencies among students of a medical university in the process of their preparation for practice.

Materials and Methods

The object of the research is the process of teaching on the subject of propaedeutics of internal diseases, practical skills in the Laboratory for teaching clinical skills of the Bukhara Medical Institute, where training simulators, phantoms and dummies are concentrated on relevant topics.

The subject of the research is the formation of the professional competence of a future specialist.

The formation of the professional competence of a future doctor, understood as part of the readiness of a highly qualified specialist for future professional activities, will be effective if the model of competence formation includes the use of training simulators.

To achieve the goal and test the hypothesis, the following tasks were formulated:

1. To prove the effectiveness and efficiency of the formation of professional competence of a future medical specialist when using modern training simulators in the process of teaching practical skills.

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2. To prove the expediency of repeated execution of exercises in the formation of students' automatism in the implementation of practical skills, increasing professional competencies.

A questionnaire survey of students was used as one of the research methods, with the help of which they assessed their knowledge and skills before and after classes in the Clinical Skills Training Laboratory on a ten-point scale. To compare the results, the Wilcoxon signed rank test was used with a statistical significance of $p < 0.001$. The experiment involved 108 students of the medical, medical-pedagogical and pediatric faculties of the Bukhara State Medical Institute named after Abu Ali Ibn Sina, who were trained at the Department of Propedeutics of Internal Diseases during the 2019-2021 academic year. All students were trained in the following skills: a) counting respiratory movements; b) auscultation of respiratory sounds on the mannequin; c) carrying out pleural puncture; d) conducting peak flowmetry; e) performing artificial respiration; f) restoration of airway patency, g) pulse counting; h) the technique of performing auscultation of the heart; i) measuring blood pressure; j) closed heart massage, j) gastric sounding, k) setting a cleansing enema, m) catheterization of the bladder of a man and a woman, n) digital examination of the rectum; o) palpation of the thyroid gland. The students were divided into two groups. Participants were included in the study in representative groups by level of knowledge and topics of study. In the first group, the skills were performed twice, in the second group - more than three times.

Results and Discussions

The first subgroup of students was trained on simulators with varying degrees of reliability, the other subgroup, under the guidance of teachers, was trained on patients, on top of each other, or a traditional teaching format was used. Students studying on simulators according to the criterion of "own assessment of effectiveness" mastered the skills: counting respiratory movements, auscultation of respiratory noises, performing pleural puncture, peak flowmetry, performing artificial respiration, restoring airway patency, counting the pulse, the technique of performing auscultation of the heart, measuring blood pressure, closed heart massage, gastric sounding, setting a cleansing enema, catheterization of the urinary bladder of men and women, digital examination of the rectum, palpation of the thyroid gland.

The results of the study participants on the implementation of practical skills of both groups were compared. In the first group, where students had the opportunity to perform practical skills once on simulators and trained in traditional ways, not reliable results were obtained on the implementation of skills. Students were unable to show satisfaction and ability to perform these skills. The participants of this group showed the following results - on performing artificial respiration, restoring airway patency, counting the pulse, technique of performing auscultation of the heart, measuring blood pressure, closed heart massage 15.7%, as well as probing the stomach, setting a cleansing enema, catheterization of the male bladder and women, digital examination of the rectum - 22.5%, and confidence in their ability to perform cardiopulmonary resuscitation was assessed - 16.7%.

In the second group, where students practiced on the simulators more than three times, they showed higher satisfaction and confidence in the performance of skills. More reliable results were obtained on

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performing artificial respiration, restoring airway patency, counting the pulse, the technique of performing auscultation of the heart, measuring blood pressure, closed heart massage 65.7%, as well as probing the stomach, setting a cleansing enema, catheterization of the bladder of men and women, digital examination of the rectum - 52.5%, and confidence in their ability to perform cardiopulmonary resuscitation was assessed - 38.2%.

The questionnaire also included the question of the expediency of using training simulators to prepare students for practical activities.

The analysis of the research results showed a significant improvement in the knowledge and skills of students who were trained using training simulators for all studied manipulations. At the same time, the most significant dynamics was observed in the group of students with whom more than three classes were conducted. When asked about the expediency of using training simulators in preparing students for professional activity, 100% of the respondents answered positively.

To assess the competence of second-year students in mastering the above skills, we developed a questionnaire, which consisted of 6 parts: the first included an assessment of skills: counting respiratory movements, auscultation of respiratory sounds, performing pleural puncture, peak flowmetry, performing artificial respiration, restoring airway patency, counting pulse, the technique of performing auscultation of the heart, measuring blood pressure, closed heart massage, sounding of the stomach, setting a cleansing enema, catheterization of the urinary bladder of men and women, digital examination of the rectum, palpation of the thyroid gland, the second: assessment of the time of mastering practical skills in the Clinical Skills Training Laboratory (simulation center), third: evaluating the effectiveness of staying in the Clinical Skills Training Laboratory (simulation center) and practicing practical skills on phantoms and dummies, fourth: assessment of skills for practicing each skill to automatism , fifth: students' opinions on the effectiveness of simulators with varying degrees of reliability, and the last sixth part of the questionnaire included suggestions for improving the educational process.

In our study, students' confidence and the quality of acquired skills and abilities directly depended on the time spent in the Laboratory (simulation center) for teaching clinical skills - 61.4% of cases, students were in the center for more than 10 days. Lack of confidence in achieving the required level of competencies was noted by 21.2% of students.

Participants of the study, who practiced practical skills in the therapeutic departments of the hospital using traditional methods, only 36.5% of cases mastered the skills and 12.3% of the students mastered the technique of performing skills. At the same time, the following shortcomings were identified: students 'fear of patients, lack of communication skills in communicating with patients, patient dissatisfaction, lack of time to practice each skill, restriction of students' admission to treatment rooms, psychological fear of performing the procedure, high risk to the patient's health.

The majority of second-year students (84.2%) who participated in this study rated the experience of using simulators as useful, regardless of whether simulators were used with low or medium confidence. According to students, the use of phantoms, dummies and mannequins in the educational process has a greater effect than just a lecture format of teaching. The study also evaluated the effectiveness of each

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component of the exercise separately and applied debriefing afterwards. 94% of the participants decided that the most effective component of the exercise was to debrief the results.

The final stage of this research was the answers of students and teachers to the question whether training on simulators can be applied in real practice. At the same time, 100% of the cases, the teachers answered that the acquired skills would be useful during real practice, but less than half of the students participating in the study agreed with this.

Thus, the effective use of simulators with varying degrees of realism is a valuable teaching tool, as they provide an opportunity to acquire knowledge in a realistic environment without risking the health and life of the patient.

Conclusions

1. The results of the research confirm the expediency of using training simulators, dummies-simulators in the process of forming professional competence among students of medical institutes.
2. To increase the effectiveness of teaching practical skills, it is necessary to repeat the skills multiple times using training simulators more than three times, before its automatic implementation.
3. The use of training simulators contributes to the formation of professional competencies necessary for the effective passage of industrial practice.

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