



PROSPECTS OF SIMULATION TRAINING IN HIGHER MEDICAL EDUCATION

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| Article history: | Abstract: |
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| Received: February 11 th 2023 Accepted: March 11 th 2023 Published: April 14 th 2023 | The article deals with the importance of using phantoms, and mannequins (simulators) within the framework of the 4-step method in training cadets and trainees at a military higher medical educational institution. The purpose of the research is to compare the traditional (theoretical and practical) method of conducting practical training with the 4-step method of simulation training using phantoms, and mannequins (simulators) that are close to reality, and to evaluate their effectiveness. 54 cadets and listeners participated in this process, who were divided into 2 groups. The results confirmed that the effectiveness of simulation training within the framework of the 4-step method is much higher than traditional training. |

Keywords: phantom, mannequin, robot-simulators, 4-step method, simulation training.

INTRODUCTION

Highly realistic simulation using robot simulators and modern medical equipment in the educational process allows students to learn, consolidate and remember the algorithm of immediate actions required in life-threatening situations [2, 4].

Based on the current demand, it is very important to create simulation centers in higher medical education institutions and equip these centers with the latest modern phantoms, dummies, and robotic simulators. Practical training of all clinical sciences taught in institutions of higher medical education should be held in such modern simulation centers [3].

The training course for military doctors at the Department of Combat Surgical Pathology of the Military Medical Academy consists of IV and VI grade cadets in military field surgery, the training of secondary medical workers (students) who study "Organization of emergency medical care" and "Nursing work in surgery", as part of faculty medical staff training in the process of gaining expertise in practical skills, the effectiveness of simulation training was analyzed using phantoms, mannequins (simulators), using the traditional training method and the 4-step method.

The emergence of extreme situations that require the provision of emergency medical assistance requires military personnel in the field of medicine to act, timely, and effectively, relying on their knowledge and experience.

But the regular occurrence of extreme cases can cause a decrease in the level of knowledge or loss of practical skills of a medical worker. During the cycle,

trainees and trainees are trained using modern medical equipment that meets current international standards, extreme situations are brought closer to high reality with the help of robot simulators.

PURPOSE OF THE STUDY. Comparison of the traditional (theoretical and practical) method of conducting practical training with simulation training in the 4-step method using phantoms, mannequins (simulators) depicting reality, and evaluation of its effectiveness.

MATERIALS AND METHODS. Study groups were divided into the following categories: the total number of cadets is 22, of which 15 (68.2%) are fourth-level cadets and 7 (31.8%) are sixth-level cadets. The total number of secondary medical workers (students) is 32, of which 18 (56.2%) are unit paramedics and 14 (43.8%) are military hospital nurses. The average age of the trainees was 33.7 years. Among the survey group, the service experience was different, it was «up to 5 years» - 14 personnel (43.7%), 6-10 years - 7 personnel (21.9%), and «more than 10 years» - 11 personnel (34.4%).

At the first (initial) stage of the research, all trainees and their initial knowledge of first aid were tested in the form of a test.

In the second stage of the research, trainees were divided into two groups based on their level of knowledge. Group 1 (main, Group A) - 11 cadets and 16 secondary medical workers, 2nd group (N - control group) consisted of 11 cadets and 16 secondary medical workers.



Lectures on the organization of emergency aid were given to both groups. After the theoretical part, practical training was organized in the simulation room so that the trainees could try and practice these techniques. In the main group (Group A), unlike the control group (Group N), each trainee learned how to individually perform first aid actions in the sequence of a 4-step method for several situations in the simulation program using simulators and at the end of the practice, they were supervised according to the program conducted individually. After each scenario, an analytical debriefing was conducted with the audience of the main group.

At the end of the training, cadets and trainees were given tests to evaluate theoretical knowledge and practical skills algorithm execution tests.

RESULTS. During the traditional training in the control group (Group N), the cadets and trainees did not practice individually on phantoms and mannequins (simulators), so they could not fully apply the theoretical knowledge they received in the lecture in dealing with emergency situations. Their knowledge and actions showed that the skill acquisition rate did not increase significantly at the end of the cycle.

The main group (Group A) cadets and trainees individually practiced each skill on phantoms, and mannequins (simulators) in practical training (using the 4-step method by the training leader), and during the training, they sufficiently mastered all the elements of practical skills. The analytical debriefing conducted by the training leader showed that their theoretical knowledge and action algorithm indicators for performing practical skills increased significantly (table).

Table: Preliminary (first stage) of cadets and trainees and final control (second stage) indicators

| Groups | Research stages | |
|-------------------|-----------------|--------------|
| | first stage | second stage |
| Main group (A) | 67,5 marks | 87,5 marks |
| Control group (N) | 67,5 marks | 79,5 marks |

DISCUSSION. In the higher education system of many developed countries of the world, the 4-step method is widely used in conducting practical training using simulation tools. The process in the 4-step method is:

1) "Explain", 2) "Show what to do", 3) "Return as shown", 4) "Practice". That is, the practical teacher first explains a small work step (skill) to the trainees (listeners), and then shows what to do. Then the student should repeat (imitate) this work step as shown, followed by practice.

While the cadets (students) are repeating the skill the teacher corrects the mistakes made. After that, this step is repeated until the trainee (listener) has mastered it perfectly. This method activates the acquisition of practical skills by cadets (students) [1]. These methods were also expressed in July 2022 when the Ministry of Defense of the Republic of Uzbekistan visited a training center of the Military Medical Academy of the Armed Forces of the Republic of Korea along with a group of military medical personnel.

Currently, this method is successfully used on a large scale during practical training at the Department of Combat Surgical Pathology of the Military Medical Academy of the Armed Forces of the Republic of Uzbekistan.

The results obtained at the end of the cycles conducted in the course of the research were combined for the relevance and effectiveness of using simulation training in the 4-step method during practical training in higher military education.

Training in equipped simulation centers that meet standard requirements is currently considered an integral part of professional training, allowing each student to perform the activity of the course or its element by professional standards.

Nowadays, based on the reforms in medical education, modern educational and technical tools are used in the educational process. For example, the latest advances in computer technology, simulation robots, computer systems, and simulation programs in providing medical care are used. The inclusion of the "standardized patient" simulation system in the educational process is of particular importance and is considered one of the most important aids [3].

The analysis of data and research results obtained during further research within the framework of mutual cooperation with our Republic and foreign experts creates additional opportunities for an objective assessment of the effectiveness of the simulation teaching method.

CONCLUSIONS:

1. The organization of simulation training centers in military higher educational institutions, the widespread introduction of simulation-based education, and the application of modern robots and simulation systems to the educational process are important in the training of highly qualified specialists.

2. The introduction of simulation technologies for the training of cadets, students, and trainees allows them to effectively master the order of the sequence of providing emergency medical care to patients in emergency situations.

3. The widespread use of simulation technologies in the educational process helps to develop the theoretical knowledge and practical skills of cadets



and trainees, the development of emergency aid skills, and the ability to take effective actions and quick decisions in various situations.

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