

Medical simulation in the education of nurses in Poland

Symulacja medyczna w kształceniu pielęgniarek w Polsce

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Słowa kluczowe: symulacja, edukacja pielęgniarek, pielęgniarstwo w Polsce.

Abstract

Medical simulation is a rapidly growing branch of education of nurses in Poland. Simulation is a method used in education in order to develop students' skills and to enable them to gain experience through an exact reconstruction of the situation using specially prepared scenarios. Simulating real events, that students may encounter in clinical practice gives the opportunity to constantly repeat the practical skills, as well as their assessment and analysis. The main purpose of medical simulation is to educate and improve patient safety. The experience of many university centres in the world shows that medical simulation training gives the opportunity to prepare better medical staff for the profession in a shorter time than traditional education. The aim of the work is an introduction to modern methods of education – medical simulation. Medical simulation training provides great educational opportunities and allows the improvement of practical skills.

Streszczenie

Symulacja medyczna to dynamicznie rozwijający się dział edukacji w kształceniu pielęgniarek w Polsce. Symulacja jest techniką stosowaną w edukacji w celu rozwijania umiejętności i doświadczenia studentów poprzez wierne odtworzenie sytuacji i warunków realnych na podstawie specjalnie przygotowanych scenariuszy. Symulowanie rzeczywistych zdarzeń spotykanych w praktyce klinicznej umożliwia studentom ciągłe powtarzanie praktycznych umiejętności oraz ich ocenę i analizę. Głównymi celami symulacji medycznej są edukacja i poprawa bezpieczeństwa pacjentów. Doświadczenia wielu ośrodków uniwersyteckich na świecie dowodzą, że realizacja kształcenia metodą symulacji medycznej pozwala na lepsze przygotowanie personelu medycznego do zawodu, w krótszym czasie niż tradycyjna edukacja i dodatkowo wpływa wyraźnie na jakość opieki. Celem pracy jest wprowadzenie w tematykę nowoczesnej metody kształcenia – symulacji medycznej. Kształcenie metodą symulacji medycznej zapewnia ogromne możliwości edukacyjne i pozwala doskonalić umiejętności praktyczne.

Introduction

Practice makes perfect – this well-known saying is appropriate for medical professions, in which patient safety and the effectiveness of the therapeutic process depends to a large extent on the knowledge and skills of the staff. Theoretical preparation of future nurses, education, as well as practical skills and social competence are the goals of education of nurses for higher studies – both I (bachelor) and II degree (master). During the training, students gain knowledge covering basic sciences, social sciences, and humanities, learning the basics of nursing science in the field of specialist care, advanced nursing practice, research and development of nursing, and attending practical and professional practice [1].

Development

Intensive development of computer technology and availability of high-end electronic equipment, as well as the creation of a virtual environment, which largely imitates reality, allows the use of modern methods in the educational process in the fields of medicine [2–4]. The simulation is a technique used in education in order to develop skills and allow students to gain experience through learning based on real conditions and situations and conducted according to specially prepared scenarios. Scenarios are inspired by actual events that students process during which various using equipment is used. From simple educational training simulators, designed for learning simple skills (intubation, intravenous injection),

to patient simulators that mimic as closely as possible the person and their reactions depending on the treatment [5–8]. Classes conducted using simulation methods make it possible to continuously repeat the practical skills and their assessment and analysis. Students may follow the procedure several times, allowing them to achieve manual proficiency, as well as the ability to act in a given situation. Learners have the opportunity to use medical equipment in real conditions during simulated classes. A very important aspect of this method is the possibility to make mistakes and to present the consequences of those mistakes shown in simulated conditions. Often mistakes made unwittingly by medical personnel, resulting from a lack of skills or negligence, cause health consequences in patients. Nursing students during practical classes do not always have the possibility to take care of the patient in a particular health condition. The simulation is not limited by lack of access to patients with rare or complex diseases. Another advantage of the simulation method is the ability to cover educational objectives by all students due to the fact that the same scenario can be performed repeatedly. The opportunity to create training scenarios that are very close to the real situation allow medical students to gain their first professional experience [8–10].

The possibilities of medical simulation are increasing. Realisation of the intended learning outcomes can be based on simple trainers, simulators, and advanced computer technology, or contact with the real person in simulated conditions [9–14].

Simulators

Simulators used in medical simulation may be a simple equipment, e.g. an ear simulator for examination, an upper limb to perform vein puncture, or breast simulation for palpation. They allow assessment of both physiological and pathological features. Advanced trainers are also used in nursing education. They allow immediate assessment of performed skills e.g. an intramuscular injection simulator that signals an incorrect placement of an injection. The use of training simulators is more common during the initial preparation of nurses or doctors for performing medical procedures. In clinical practice, simulators can be used to acquire or improve new skills of medical personnel, as well as to verify their correct performance. Simulators are also invaluable in teaching and examination of nursing students [11].

Human patient simulator (HPS)

The Human Patient Simulator is an advanced phantom that allows the presentation of physiological conditions, such as human vital signs as well as a variety of diseases and pathological symptoms.

An academic teacher conducting classes using medical simulation method can activate an appropriate physiological response to administered medication, implemented treatment, or actions taken by nurses. Consequently, students may notice immediate effects of their actions and experience possible consequences that they would have to take responsibility for in a real-life conditions. Constant improvement of the features and capabilities of simulators allows more realistic imitation of physiological and pathological states of patients. Among the many capabilities of advanced simulators, it is worth mentioning the following: the reaction of pupils to light, and the possibility of cardiovascular, respiratory, or digestive tract auscultation. The student's task is to assess the patient's condition, taking into consideration realistic simulator reactions, such as bleeding, tears, and urine output. Learning in such conditions gives students the opportunity to take actions in an accurate imitation of clinical situation. The procedures that can be performed on the HPS include, e.g. intubation, any alternative ways to open the respiratory tracts, defibrillation, intravenous or intramedullary access, and many other invasive activities that most nursing students would not be able to experience during traditional training. It should be emphasised once again that a crucial advantage of medical simulation is the ability to present complex or rare clinical conditions. Cases such as subarachnoid haemorrhage, ketoacidosis diabetes, thyroid breakthrough, sepsis, splenic rupture, and cardiac tamponade, are just a few of the sudden life-threatening conditions that can be practiced using simulators. The use of HPS simulators allows students to repeat and improve basic and advanced manual skills [9, 11, 12].

Computer simulation

Computer simulation is an intensively developing area of simulation. Currently there are computer programs available for education units that can be used while learning basic (basic life support – BLS) or advanced (advanced life support – ALS) resuscitation. These programs use a combination of video and computer graphics to initiate scenarios, the aim of which is to assess students' critical thinking. The American Heart Association follows the principle of "Practice While Watching" during their training. This allows students to focus on the proper performance of activities and provides more efficient acquisition of knowledge. Computer simulation programs are becoming more innovative. They use virtual reality in order, for example, to recreate the history of the virtual patient with whom students interact during class. This area is constantly developing and will open up opportunities to improve the efficiency of medical education including nursing [9].

Standardised patients (SP)

Use of standardised patients is a very interesting and highly realistic medical simulation method. The role of a patient can be played by a layman or an actor (and sometimes medical personnel) who needs to be prepared to manifest the symptoms and evaluate students. The main objective of this kind of simulation is to develop or improve communication skills. Currently, there is an emphasis on “non-technical skills”, i.e. verbal communication and organisational skills. Communication and other non-technical skills are a very important part of the cooperation between the nursing staff and patients [9, 13, 14].

Integral part of medical simulation is pre-briefing and debriefing. Pre-briefing is an element of introduction to simulation, checking students' knowledge, and presenting learning objectives. Furthermore, an extremely important part of the simulation is to discuss the simulation session in comfortable and safe conditions, i.e. debriefing. At this stage of the simulation, participants learn about the elements that were performed properly and which need to be improved in the future. For this purpose the teacher often uses audio-video materials presenting a recorded scenario, which objectively shows the students' performance. Debriefing consists of several stages that allow students to express their opinions and to draw conclusions for the future. Analysing their own feelings and experiences of the activities that they performed has a significant influence on students' emotional sphere and allows them to formulate sometimes critical but constructive assessment [8].

Medical simulation in the education of nurses in Poland is now widely used in the studies of level I (bachelor's) and II (master's) degrees. Educational standards indicate the necessity of conducting nursing skills training in simulated conditions. Medical simulators as a method of teaching was introduced in Poland quite recently. The first human patient simulator appeared in 2009 in the Department of Anaesthesiology at the Hospital of the Medical University in Warsaw. The First Interdisciplinary Centre for Medical Simulation was founded in 2010 in Poznan. Subsequent years brought rapid development of this method of education. 2014 saw a breakthrough in the field of medical simulation in Poland. The largest European congress in the field of medical simulation was held in Poznan. The 20th Jubilee Conference of the European Society for Medical Simulation SESAM was addressed to all those interested in medical simulation – teachers, doctors of various specialties, nurses, paramedics, and many enthusiasts of this new, dynamically developing branch of medical education. During the conference, special attention was paid to the fast-growing Medical Simulation Centres and their increasing role in Poland. Currently, Medical Simulation Centres

have become an integral part of universities educating medical professionals [5].

The experience of many university centres in the world shows that the implementation of a medical education simulation method makes it possible to better prepare medical professionals in less time than traditional education. Additionally, medical simulation training affects the safety of patients [9, 15–17]. Simulation sessions provide students with good conditions for practicing and checking the level of acquired clinical skills, both technical and non-technical, without putting patients at risk. The use of simulation in medical education has many supporters, who emphasise the important role of this method of teaching and assessment before students start taking care of real patients [2, 8]. The simulation method is also a major step towards standardisation of education because the same scenario can be used for all students, under the same conditions and with the same controlled reaction of the simulator. In order to take advantage of educational opportunities through simulation, participation of well-educated instructors and professionally written clinical scenarios are necessary. Scenarios should be repeatable and consistent with the current standards of knowledge [12]. Currently, medical simulations occupy an important place in the education of nurses at both undergraduate and postgraduate level. Professionally active nurses have a chance to improve their performance of procedures through medical simulation. This especially applies to procedures that they do not perform frequently during their daily work. Lifelong learning, identifying one's own strengths and weaknesses, and establishing goals for self-improvement are directions of development, which begin during study and should be continued throughout professional work. The Association of American Medical Colleges (AAMC) states that “simulation has the potential to revolutionise healthcare and solve the issue of patient safety, provided the appropriate use and integrate it into the educational process and organisational improvement of medical personnel” [5, 18].

Conclusions

Medical simulation in the education of nurses in Poland is a new but rapidly growing and now widely used method of education. Medical simulation training provides great educational opportunities and allows the improvement of practical skills, as well as assessment of activities performed while taking care of the patient. Allowing students to make mistakes in simulated conditions increases the chance of ensuring the maximum safety of the patient in real conditions.

Conflict of interest

The authors declare no conflict of interest.

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