/yang.pdf (дата обращения: 21.01.2021).

23. Naughton G. Chardin / G. Naughton. – London, New York: Phaidon Press, 1996. – 126 p.

24. Richard M. Barnhart, Xin Yang, Chongzheng Nie, James Cahill, Hung Wu, Shaojun Lang Three Thousand Years of Chinese Painting. Yale University Press, London, 2002. – 402 p.

25. Wallace W. Michelangelo: The Artist, the Man, and His Times. – Cambridge; New York: Cambridge University Press, 2010. – 424 p.

MAIN ADVANTAGES OF THE SIMULATION-BASED MEDICAL EDUCATION

Shuper V.,
*PhD, Associate professor, department of internal medicine,
clinical pharmacology and occupational diseases,
Bucovinian State Medical University, Chernivtsi, Ukraine.*
Shuper S.,
*PhD, Associate professor, department of physical
rehabilitation and ergotherapy,
Yuriy Fedkovych Chernivtsi National University, Chernivtsi, Ukraine*
Liakhovych O.,
*PhD, Assistant professor, department of internal medicine,
clinical pharmacology and occupational diseases,
Bucovinian State Medical University, Chernivtsi, Ukraine*
Haidychuk V.,
*PhD, Associate professor, department of internal medicine,
clinical pharmacology and occupational diseases,
Bucovinian State Medical University, Chernivtsi, Ukraine*
Rykova Yu.,
*PhD, Associate professor, department of the human anatomy
Kharkiv National Medical University,
Kharkiv, Ukraine.*

Abstract

In this paper, we have described the advantages of the simulation-based medical education through the discussion about main characteristics and features of this modern variant of healthcare leaners progression. Clinical simulation is a learning strategy that influences professional abilities and skills which has to be improved and advanced in comparison to other methods. This method is interactively orientated towards the actual medical education being a modern self-study teaching method and group work. We concluded, that simulation-based medical education provides the transition from theory to practice and, as a result, leads to the actual practice of medicine. The implementation of simulation-based medical education is more effective when basic knowledge and concepts are taught by standard learning methods and then used to simulate practical skills.

Keywords: Simulation-based medical education, simulators, standardized patient, adult learners.

Introduction. Simulation-based medical education (SBME) now is highly recommended, as a modern educational strategy directing for improving patient safety [1, 13]. All over the world, simulation training, initially developed in the 18th century, has become a mainstream of medical education. Before the 1900's, medical education was primarily conducted by apprenticeship and mentoring. In the beginning of 1900's, students were educated on scientific principles and then on were measured against knowledge, skills and behaviors. In the end of the twentieth century, it was beginning of human patient simulation introducing. This characterized an important stage in the evolution of medical education. Simulators were firstly used in the training of students on the use of anesthesia. Since that time, simulators have been used progressively in medical education for skills training, decision making as well as individual and team training. The use of volunteers to be standardized patients was started in 1963 by a neurologist from the University of Southern California. Only in 1993, the Medical Council of Canada incorporated a standardized patient examination into licensure. The society for simulation in healthcare was established in 2004, and the first simulation meeting took place in January 2006 [6].

Both evidence-based medicine and procedural competency are important in attaining the goals of medical studying. Simulation, which spans from procedural training to case-based scenarios and beyond, has been implemented for all levels of learners. As shown by several reviews, this form of learning and team training is beneficial and can positively influence clinical outcomes and improve safety in the healthcare [7, 11].

The main part. SBME may be conducted in an off-site simulation (OSS) setting in simulation centers, which range widely from publically financed simulation centers at universities to simulation centers that are funded by sponsors and user payment. Introduced over the past 10 years in situ simulation (ISS) mainly com-

prises team-based activities that occur in the actual patient care units involving actual healthcare team members in their own working environment [9].

Important aspect for consideration is the type of simulation, which can be in different variants according to real or virtual object or person learners work with. Technology use refers to the application of digital media (hardware and software) to establish a learning environment. Role-plays, simulated team discussions, and interaction with standardized patients can be characterized as simulations without technology use, as no software or hardware is necessary to initiate the interaction. Screen-based simulations require computer-supported interfaces and some software, which allows the communication. Special type is interaction supported by combining some hardware with software, such as in a programmed mannequin. One more type that requires complex technology is virtual reality, which is likely to facilitate immersion [2].

Content of simulation centers may be different to achieve such goals of SBME. High-fidelity simulators are life-size mannequins that can simulate multiple human functions as well as being able to communicate with the learner through a remote operator interface. Low-fidelity simulators on the other hand, which are sometimes referred to as partial or table-top simulators, are typically designed to simulate a specific aspect of the human anatomy such as an arm to practice intravenous injections [5]. Mannequins play an important role as the «patient» and may allow invasive procedures, such as needle decompression of pneumothorax, external cardiac compression, intubation and intravenous injection. Mannequins are typically involved in team training for medical crises and resuscitation [12].

Standardized patient is another variant of SBME content. Standardized patients are typically professional actors or readily available students or volunteers trained to simulate a variety of medical problems in a consistent, reliable, realistic and reproducible manner. The use of human actors increases the realism of the training, particularly from the perspective of patient-caregiver interactions, and further immerses the learner into the feelings and emotion of the learning experience [3, 14]. Computer-based or virtual simulation opens up constraints regarding the organization of the simulation training sessions.

Regarding inter-professional team training in SBME, the focus is on communication, situation awareness, leadership and decision-making rather than only technical skills. Full-scale mannequin-based simulation lends itself well to such training. In a full-scale simulation, a computerized full-body mannequin provides realistic physiological response to learners' actions. Learners will interact with each other, with the environment and with the «patient» to successfully conducting their care plan in simulation [4, 6].

Adult learners study differently than children because of maturity and life experience. Therefore, the design of the education activity should take into account the nature and assumption of adult learning. There are some elements that can be used to create an effective learning environment for adults using full-scale simulation [15].: a team of learners interacts as in real situations; a real clinical environment; an equipment that they would use in real practice; learning experience that is close to real clinical encounters; learners need to feel safe to express themselves and receive timely feedback from different sources.

In addition, feedback to learner is the most critical component to ensure effective learning [10]. There are three key components for effective feedback:

1. Plan: simulation educators should plan how and when feedback will be provided. Flexibility should be allowed to examine unplanned learning objectives generated by learners.

2. Prebriefing: before going into a scenario, simulation educators should explain to learners the rules and expectations, such as confidentiality issues and being respectful to each other. Simulation environment and simulators are introduced to learners during prebriefing.

3. Providing of the feedback: feedback can be scripted in the simulation scenario so that learners' actions lead the simulator to provide feedback. Feedback and debriefing can be on-demand using pause and discuss during a scenario. The most common form of feedback in full-scale simulation is post-event debriefing [8].

Conclusions. Thus, simulation-based medical education focuses on improving apprenticeship skills and evaluating them in clinical skills and techniques, knowledge, communication, teamwork, and the practice of resuscitation code performance. Clinical simulation is a learning strategy that influences professional abilities and skills which has to be improved and advanced in comparison to other methods. This method is interactively orientated towards the actual medical education being a modern self-study teaching method and group work. Through a realistic scenario, it has a huge effect on increasing in therapeutic experience without any risk regarding the health and well-being of patients. Simulation-based medical education provides the transition from theory to practice and, as a result, leads to the actual practice of medicine. The implementation of SBME is more effective when basic knowledge and concepts are taught by standard learning methods and then used to simulate practical skills. In general, it should be mentioned that the use of simulations is more effective when used in conjunction with traditional methods.

REFERENCES:

1. Ataei M., Hamedani S.S., Zameni F. (2020). Effective methods in medical education: from giving lecture to simulation. Journal of Advanced Pharmacy Education & Research, 10 (S1), 36-42.

2. Chernikova O., Nicole Heitzmann N., Stadler M. et al. (2020). Simulation-Based Learning in Higher Education: A Meta-Analysis. Review of Educational Research, 90 (4), 499–541. DOI:https://doi.org/10.3102/0034654320933544.

3. Dunbar-Reid K., Sinclair P. M., Hudson D. (2015). Advancing renal education: Hybrid simulation, using simulated patients to enhance realism in haemodialysis education. Journal of Renal Care, 41(2), 134–139.

4. Gjeraa K, Moller TP, Ostergaard D. (2014). Efficacy of simulation-based trauma team training of non-technical skills. A systematic review. Acta Anaesthesiol Scand, 58, 775–787.

5. Goolsby C. A., Goodwin T. L., Vest R. M. (2014). Hybrid simulation improves medical student procedural confidence during EM clerkship. Military Medicine, 179, 1223–1227. https://doi.org/10.7205/MILMED-D-14-00072.

6. Kothari L. G., Shah K., Barach P. (2017). Simulation based medical education in graduate medical education training and assessment programs. Progress in Pediatric Cardiology, 44, 33-42. doi: 10.1016/j.ppedcard.2017.02.001

7. McGaghie W. C., Issenberg S. B., Petrusa E. R., Scalese R. J. (2010). A critical review of simulation-based medical education research: 2003-2009. Med Educ, 44(1), 50-63. doi: 10.1111/j.1365-2923.2009.03547.x

8. McMullen M., Wilson R., Fleming M. et al. (2016). "Debriefing-on-demand": a pilot assessment of using a "pause button" in medical simulation. Simul Healthc, 11, 157–163.

9. Riley W., Davis S., Miller K.M., Hansen H., Sweet R.M. (2010). Detecting breaches in defensive barriers using in situ simulation for obstetric emergencies. Qual Saf Health Care, 19 (3), i53–6.

10. Sajadi S.A., Farsi Z. (2014). Simulation-Based Education. Journal of Educational Studies, 2(6), 21-30.

11. Sanko J., Shekhter I., Rosen L., Arheart K., Birnbach D. (2012). Man versus machine: the preferred modality. The Clinical Teacher, 9, 387–391. https://doi.org/10.1111/j.1743-498X.2012.00593.x

12. So H.Y., Chen P.P., Wong G.K.C. et al. (2019). Simulation in medical education. J R Coll Physicians Edinb, 49, 52–57. doi: 10.4997/JRCPE.2019.112.

13. Sorensen J. L , Ostergaard D., LeBlanc V., et al. (2017). Design of simulation-based medical education and advantages and disadvantages of in situ simulation versus off-site simulation. BMC Medical Education, 17-20

14. Verma A., Bhatt H., Booten, P., Kneebone R. (2011). The Ventriloscope as an innovative tool for assessing clinical examination skills: appraisal of a novel method of simulating auscultatory findings. Medical Teacher, 33, 388–396. https://doi.org/10.3109/0142159X.2011.579200.

15. Wang E.E. (2011) Simulation and adult learning. Dis Mon, 57, 664–678.