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Who Needs High-Fidelity Human Patient Simulator Manikins and What Scope of Simulation-Based Training is Necessary for Nurses?

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Abstract

People and institutions teaching nursing are recently under the pressure of some high technology companies and educational organizations inclining to significant expenses and organizational changes related to implementation of so-called high-fidelity human patient simulator manikins (HPSMs). This is a very expensive equipment and its purchase forces to the time-consuming training of teaching staff or eventual additional hiring of educators.

Therefore the authors of this commentary analyze the available literature and refer to their own professional experience to assess for what purposes the use of these HPSMs is actually useful and to what extent these goals are consistent with the needs of nursing education at primary level.

The authors are convinced that HPSMs are useful only for training of the specialized "rescue- surgical- anesthesia- nursing" teams, especially in cases of multi-organ injuries.

The authors of the commentary are convinced that another new method of simulation teaching is worthy of attention. Therefore they discuss usefulness of implementation of so-called standardized patients in connection with the use of different audiovisual methods.

Introduction

Even half a century ago teaching medicine and nursing was based only on lectures, sometimes illustrated with images, pathology sections of the deceased persons, and practical exercises with patients. Even before half a century, resuscitation methods were not used. There was also no separate area of emergency medicine and medical rescuers.

In teaching nursing and midwifery "manikins exercises" have been used for a long time to prepare for such procedures as injections, bladder catheterization, receiving birth. Manikins exercises have spread with the development of rescue methods. Manikins have also been introduced for teaching preparation for endoscopic examination, intubation and some surgical methods. For over a dozen years medical simulation centers have been set up in medical departments [1-3].

For several years, as a result of accelerated technological development, the implementation of so called hight -fidelity human patient simulator manikins is intensively promoted [4,5]. They are offered by numerous companies, and their use is incorporated into the teaching programs of many contemporary institutions teaching nursing.

The considerable pressure of these companies and professional and governmental institutions managing the teaching of nursing to rapid involvement of large amounts of funding and organizational changes prompts the author of this commentary to objective consideration of publications of those authors who have already acquired some experience in implementing these new teaching methods. Such data is already published. The purpose of our brief commentary is to draw attention to the controversy and question marks involved in organizing teaching centers using these so-called high-fidelity manikins. This seems to us useful for those who are faced with the need to make the decision to implement such methods of medical simulation as well as for nursing students and

teachers who are faced with the need to be incorporated to such organizational projects.

Confrontation with Sophisticated Complexity

It is not enough to buy high-fidelity manekins. The attempt to implement such equipment for teaching involves the need to finance time-consuming training of a suitable team of teachers. Since the realization of teaching activities with the HPSMs is also very time-consuming it occurs usually that it is necessary to employ additional staff. Because we do not want to promote our own prejudices, so we quote some statements found in the recently published papers.

Al-Ghareeb et al. [6] write: "high-fidelity human patient simulator manikins (HPSMs) are widely available. As an innovative teaching tool, many nursing programmes are investing in high-cost approaches to high-fidelity HPSMs. Unfortunately, such approaches are undervalued and underused, with notable barriers to integration" [6]. These authors remark also that: ''simulation is not a new concept and nurse educators have used simulation for many years. However, the availability of sophisticated technology is new. Consequently, over the last decade nursing schools have begun purchasing costly equipment, in the belief that it will assist educators to better preparing nursing students for technologically advanced health care environments however, nursing programmes considering simulation technology will need to address faculty members' possible discomfort in using such technology".

Al-Ghareeb et al. [6] pointed out also "that the adoption of technology into teaching is complex and involves considerable time commitment, competence development and past experience. They conclude that: ''the integration of sophisticated high-fidelity HPSMs into nursing curricula can be daunting for both faculty and programmes due to the steep learning curve, complex operational requirements and high costs".

Fox-Yong et al. [7] write that: ''It is not enough to purchase equipment and request faculty use it. Adequate training, education and administrative support are needed. For this reason, administrators must be willing to become involved in the process and learn about incorporating simulation technology into programmes''

Jeffries [8] emphasize that "nursing administrators should therefore be prepared to develop an implementation plan for high-fidelity HPSMs, with involvement from all staff members and with the support of faculty directors".

It is eloquent that Kelly et al. [9] suggest that a new profession named as "simulation technician" should be formed. They are convinced that the sophistication of the equipment is too demanding for nursing lecturers and that its operation should be supported by somebody with engineering training.

There are even some authors, who doubt the effectiveness of teaching with help of high-fidelity HPSMs. Cheng et al write: "The use of high fidelity manikins for advanced life support training is associated with moderate benefits for improving skills performance at course conclusion" [10]. Such opinion is also shared by Donoghue [11].

In our opinion these doubts arise partly from misunderstandings related to the purpose of training realized with high-fidelity HPSMs. We touch this problem in next chapter.

What Skills are Essential for the Profession of Nurse

When we will enter the website of the company producing the high-fidelity manekin SimMan 3G, we can read that: "..it can help improve critical time management, decision making, communication and handovers between departments in order to meet new challenges and facilitate the growing demand for multidisciplinary training".

Such designation of the SimMan 3G mannequin denotes that it is likely to be useful for «emergency-surgical-anesthesia-nursing» rescue teams working under the pressure of time as a result of sudden and multi-organ injuries. Undoubtedly such teams are sometime created and trained.

However, such purpose of the planed training should be set together with the range of activities and skills needed for nurses who graduate from the basic level (Bachelor of Nursing). Nurse after during primary education acquire theoretical knowledge of anatomy, physiology, patho- physiology and diseases as well as practical skills in patient's care, including bedridden patients, including the ability to perform injections, bladder catheterization, performing dressings. Nowadays they should also know the methods of resuscitation. For such purposes useful and sufficient is the application of ordinary classical mannequins. Nowadays a nurse should also be able to examine physically the patients and to establish data on psychological functioning, mental state, scope of disability and quality of life. The high-fidelity SimMan 3G mannequin does not make it easy to acquire such skills.

Other New Forms of Simulation Teaching That do not use Manikins

There are modern forms of medical simulation teaching, which are developed without the use of manikins. We mean the inclusion in the teaching process of the so-called «standardized patients» [12]. There is already a separate field of considerations on this new method of simulation teaching [13]. It seems that this approach is closer to the acquisition of those skills that are essential to basic nursing teaching. Access to live people, what are so called «standardized patients» facilitate the teaching of medical history collection, mental health assessment, communication skills, and the ability to adopt a friendly, empathic attitude [14].

The «standardized patient» method is also helpful in teaching of physical examination [15]. Some authors also postulate the procedure for implementing the role of these «standardized

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patients» by students of nursing themselves. Practical exercises of physical examination of healthy people may be supplemented by access to audiovisual data files containing recordings of cardiac and pulmonary sounds [16]. The use of such audiovisual files has recently been developed through the implementation of so-called «Virtual reality» [17-19]. Digital technologies used in teaching are also related to the field of telehealth and eHealth [20].

Conclusion

a) The implementation of high-fidelity human patient simulator manikins requires early training of nursing instructors through the training of those skilled in the use of complex equipment. It is necessary to estimate the time and cost of training and working people who are able to implement this type of teaching.

b) High-fidelity human patient simulator manikins are not essential to teaching the basic range of nursing skills. They are rather useful for training, rescue-surgical-anesthesia-nursing team, under time pressure due to accident and multi-organ injuries.

c) To intensify the teaching of the basic range of nursing skills other new simulation teaching methods should be preferred as e.g. so-called «standardized patients» methods supplemented by various multimedia technologies.

References

1. Ryu WHA, Dharampal N, Mostafa AE, Sharlin E, Kopp G, et al. (2017) Systematic review of patient-specific surgical simulation: Toward advancing medical education. J Surg Educ 4(16): 30269-30270.
2. Stocker M, Laine K, Ulmer F (2017) Use of simulation-based medical training in Swiss pediatric hospitals: a national survey. BMC Med Educ 17(1): 104.
3. Borggreve AS, Meijer JMR, Schreuder HWR, Ten Cate O (2017) Simulation-based trauma education for medical students: A review of literature. Med Teach 39(6): 631-638.
4. http://www.laerdal.com/us/products/simulation-training/emergency-care-trauma/simman-3g/
5. Hirsch J, Generoso JR, Latoures R, Acar Y, Fidler RL (2016) Simulation manikin modifications for high-fidelity training of advanced airway procedures. A A Case Rep 6(9): 268-271.
6. Al-Ghareeb AZ, Cooper SJ (2016) Barriers and enablers to the use of high-fidelity patient simulation manikins in nurse education: an integrative review. Nurse Educ Today 36: 281-286.
7. Fox-Yong S, Brady S, Brealey W, Cooper S, McKenna L, et al. (2012) The perspectives of Australian midwifery academics on barriers and enablers for simulation in midwifery education in Australia: a focus group study. Midwifery 28(4): 495-501.
8. Jeffries A (2008) Getting in S. T. E. P. with simulation: simulations take educator preparation. Nurs Educ Perspect 29(2): 70-73.
9. Kelly MA, Hayes C, Abdipranoto A (2017) Need a simulation technician? Try your university's engineering internship program. Clinical Simulation in Nursing 13: 245-248.
10. Cheng A, Lockey A, Bhanji F, Lin Y, Hunt EA, et al. (2015) The use of high-fidelity manikins for advanced life support training - A systematic review and meta-analysis. Resuscitation 93: 142-149.
11. Donoghue A, Nishisaki A (2015) High-fidelity in simulation education: Only a part of the answer. Resuscitation 93: A3-A4.
12. MacLean S, Kelly M, Geddes F, Della P (2017) Use of simulated patients to develop communication skills in nursing education: An integrative review. Nurse Educ Today 48: 90-98.
13. McNauton N, Anderson M (2017) Standardized patients: It's all in the words. Clinical Simulation in Nursing 13(7): 293-294.
14. Goodman JH, Winter SG (2017) Review of use of standardized patients in psychiatric nursing education. J Am Psychiatr Nurses Assoc 1: 1078390317712697.
15. Krautter M, Diefenbacher K, Schultz JH, Maatouk I, Herrmann-Werner A, et al. (2017) Physical examination skills training: Faculty staff vs. patient instructor feedback -A controlled trial. PLoS One 2(7): e0180308.
16. Silveira MS, Cogo ALP (2017) The contributions of digital technologies in the teaching of nursing skills: an integrative review. Rev Gaucha Enferm 38(2): e66204.
17. De Gagne JC, Oh J, Kang J, Vorderstrasse AA, Johnson CM (2013) Virtual worlds in nursing education: a synthesis of the literature. J Nurs Educ 52(7): 391-396.
18. Ricard-Gauthier D, Popescu S, Benmohamed N, Petignat P, Dubuisson J (2016) Virtual reality simulation training in gynecology: review and perspectives. Rev Med Suisse 12(536): 1800-1804.
19. Taglieri CA, Crosby SJ, Zimmerman K, Schneider T, Patel DK (2017) Evaluation of the use of a virtual patient on student competence and confidence in performing simulated clinic visits. Am J Pharm Educ 81(5): 87.
20. Rutledge CM, Kott K, Schweickert PA, Poston R, Fowler C, et al. (2017) Telehealth and eHealth in nurse practitioner training: current perspectives. Adv Med Educ Pract 8: 399-409.

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