Simulation utilization in nursing education

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ABSTRACT: Simulation is a display that is close to real life which may be performed using computer software, role playing, case study or games and it engages the learners actively in the course content. Teaching with the use of simulation method is effective for creating a more realistic situation and the possibility of repeating the situation for the learners. This paper has been written using library sources, internet, and a literature search in databases such as pro Quest, pub med and Google scholar using the key words: simulation, health education, and nursing education. The research shows that the use of simulation method in nursing is increasing. In addition, simulation can increase the motivation of the learners. However, as simulators are the simplified type of real equipments and they create habits which aren’t exactly the response required in the real activity, they may have negative or dangerous results.

Keywords: Nursing Education, Simulation, Similator, Clinical Education

INTRODUCTION

Using simulation as a tool in teaching clinical skills has increased dramatically (Adamson, 2011). And using it in clinical skills is not a new phenomenon. Simulation designs situations which are close to real-life (Aebersold et al, 2012). Hwang and Kim came to the conclusion that teaching with lecture method, including group discussion and feedback between learners, learners and speakers cannot engage students in learning and the basics of problem solving (Alinier et al, 2006). But teaching using simulation for its creating realistic situations and the possibility of repeating the situation is more effective in the medical students’ learning (Booth and McMullEn-Fix, 2012). Ideally, simulation provides a clinical situation with complex variety in which the student can make decisions and prioritize problems and choose the best solutions and some of its benefits are: Mistakes without harming the patient, active learning, the opportunity for immediate feedback, controlled learning environment, promoting creative thinking and problem solving, timing the designed learning and intervening and manipulating the learning environment (Burke and Mancuso, 2012). In healthcare, patient simulators originated in the 1960s to train physicians in anesthesia programs; especially it was used extensively during the outbreak of sudden acute respiratory syndrome (sars) (Cooper et al, 2012). Successful simulation training depends on learners satisfaction and interest in this method (Fitzgerald et al, 2012). Study of Landry & Stockton’s (2008) found that students preferred to learn by simulation method rather than typical class exercises. Modern education, especially simulation based learning is used in many learning situations (Formea et al, 2013). But at the universities and hospitals simulation is not welcomed in clinical education and teaching is yet done using lecture method (Gatti-Pettio, 2011). Due to the complexity of the clinical procedure in patient care and nurses’ needs for higher quality clinical care, greater use of modern learning methods, especially the use of simulation may help nurses to have higher quality decisions and abilities in implementation of clinical care (Goldenberg et al, 2005). There are few number of studies on simulation and its impact on education of learners, especially nursing students (Granger et al, 2011). In this regard, writing review and research articles can be really helpful in identifying and explaining the use of simulators in clinical practice of nursing students and other medical sciences whose training are done in real environment for clinical patients. Therefore, this review has been written to examine the simulation in nursing education (Hovancsek, 2007). In this paper, different types of simulation, the advantages and disadvantages of using simulation in nursing education and challenges facing the use of this method are briefly explained.
METHOD

This paper is a review which examines the views associated with this domain using books and databases such as ProQuest, PubMed, and Google Scholar which were published between the years 2004 to 2013 using the key words simulation, health education, and nursing education.

Types of Simulation

Simulation is a copy of some real item or working situation. Simulation intends to display some behavioral aspects of a physical or abstract system by the behavior of another system (Howard, 2013). Simulation is used in many contexts, including the modeling of natural systems and human systems. In general, simulation is classified as below:

Physical Simulation

Simulation in Education (Equipment used in the real world can be costly or too dangerous to allow trainees to use them. In such situations, learners spend their time with valuable lessons in a real "safe" environment)

In clinical training simulation can be written, visual - auditory, use the patient actress and Human Patient Simulation. Training simulations typically are included in one of four categories:

a) Live Simulation (where real people use simulated equipment or dummy in real-world)
b) Virtual Simulation (where real people use simulated equipment in the stimulated world (or real environment)
c) Structural Simulation (where real people use simulated equipment in the stimulated environment)
d) Role Playing Simulation (Where the real people play the role of a real work) (Jensen et al, 2009).

e) Medical Simulation (simulators for teaching basic methods is vast and ranges from blood sampling to laparoscopic surgery and the care of trauma patients. Many of the medical simulators have a computer that is connected to a plastic replica of a similar actual anatomy)

2-) Flight simulation
3-) Simulation and Games
4-) Engineering Simulation
5-) Computer Simulation (Computer simulation is often used as a supplement or replacement for modeling systems in which analytical solutions are not simple) (JL et al, 2013).

Simulator and Simulation Technology

The past two decades, and especially the last ten years, have seen rapidly growing interest in application simulation for aims of improving patient safety and patient care through a type of applications (Jensen et al, 2009). This growth is due in part to the advances within digital technology. With the advancement in technology has come the ability to merge a number of learning strategies to bridge the gaps between learning theories and training initiatives (Lewis et al, 2012). Many of the earlier computer-based simulators had chance design. Historically, the computer science discipline was primarily concerned with issues concentrating on the content, outcomes, and hardware development, and not so much on user requirements, interfaces, or output (Formea et al, 2013). Overall, the attention to the users' requirements and adult learning style models were ignored until a group of cognitive scientists started evaluating the effectiveness of this new type of technology (Marchi-Alves et al, 2013). These researchers evaluated the products and recommended modifications of the systems design in order to better meet the users' requirements. In addition, pedagogical considerations were going to be strongly considered (Medley and Horne, 2005). The aeronautical industry gets most of the early credit for pioneering the computer-based simulator technology. Within the military, the needs of the 21st century are driving a more sophisticated and highly technical pilot capable of flying a plane that is either manned or unmanned. Similarly, the space program has made extensive use of simulators and has built scenario-based simulation training programs for their astronauts. In addition, they are using this technology as a means for testing equipment that may be used aboard the space station in years to come. The nuclear power industry, with its adverse experience of how bad things can be when they go wrong, such as at Three Mile Island and Chernobyl, is another business with a major investment and commitment in simulation training. Using simulators for training was logical for these groups because, for each of them, training in the “real world” would be too costly or dangerous (NEHRING and LASHLEY, 2004). The technological advances, made within the field of simulators, have allowed the medical profession an opportunity to better assess the use of simulators for their training programs (Neil, 2009).
The advantages of using simulation

Increased emotional and cognitive learning, excitement and entertainment, the rise of inclusive participation and motivation, as well as the retention of learning through simulation is longer in simulation method than traditional methods such as lectures (Fitzgerald et al, 2012). It increases linear and nonlinear methods of problem solving skills and decision making in which the learner can experience real-life without risk, learner can repeat the experience over and over again, and increase his/her confidence and self-esteem (Rauen, 2004). Other advantages of simulation are: enhancing safety and reducing harm to patients, reducing and correcting errors, improving clinical judgment and using in both training and evaluation (Rudman et al, 2010).

The disadvantages of using simulation

Need for adequate supervision of the instructor, space, equipment and supplies that can be time consuming and expensive. Simulation method is not suitable for subjects such as history and social sciences, in addition the need for skilled personnel trained in the use of simulation can be challenging (Schiavenato, 2009).

DISCUSSION AND CONCLUSION

The research indicates that the use of simulation in nursing is increasing. Simulation can also increase the motivation of learners. Simulation is used in complex situations such as the original procedure and practice on certain steps performed before the final stage. Simulation is mostly used with psychomotor skills rather than mental skills, so it’s better to perform simulation using other traditional methods such as lectures, but as stimulators are simplified type of real equipment and they create habits which aren’t exactly the response required in the real activity, they may have negative or dangerous results. However, as simulation enhances safety and reduces harm to patients, reduces and corrects errors, improves clinical judgment and is used in both training and evaluation, it is used as a popular method in teaching clinical skills.

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