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Effectiveness of Simulators in The Training of Nursing Students

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Abstract

Simulation facilitates the acquisition of skills in the health field, providing a safe environment to practice before real contact with patients. Methodology: This research follows a qualitative approach and a descriptive methodology, using a non-experimental design and a documentary-bibliographic analysis. It is based on a systematic examination of scientific works related to the topic, exploring written documents, theses and scientific articles as primary sources in the study population. Conclusion: Simulation stands out in optimal conditions with constant feedback, revealing its importance in nursing education. Teacher training in simulators and technologies is emphasized. Although beneficial, simulators have limitations, such as wear and tear and lack of exact replication of real situations. Virtual simulation improves skills, but should not completely replace interaction with real patients, and it is emphasized that it does not fully address the biopsychosocial complexity of the patient. Simulation is suggested as a complementary, not a substitute, tool in nursing training.

Keywords: Nursing, Education, Training, Simulators, Effectivity

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Introduction

Throughout the history of humanity, the constant development of skills and the ability to execute procedures effectively has symbolized a transcendent constant, leading countless tasks to what they are today. Within these occupations, skills focused on treating patients have always been categorized as vital given their constant need for application and updating, as well as the heartbreaking consequences of their poor techniques. The nursing profession stands out among the health professions for its eternal relationship with the patient on an emotional and psychological level, and at the same time, for its constant physical exchange both for care and for the application of any type of technique or administration of treatments.

This nature ends up logically inferring the need to facilitate practical development for students of this career. And as the World Health Organization¹ (WHO) highlighted in its nursing guidance summary: "Nurses provide life-saving care in each and every one of these circumstances. Now

more than ever, we need nurses to work taking full advantage of their theoretical and practical training.”

With the constant advancement of technology, there are multiple alternatives to promote this personal growth in the student, one of the main ones being the use of simulators. These tools exist in a variety of types, whether they are more practical, virtual or mixed, and for a wide variety of procedures and situations.²

Simulation helps professionals acquire skills and promotes education. It also offers a controlled environment for teaching and learning in simulators with real scenarios for students, allowing them to acquire and train their skills for professional practice.³

In the field of health, teaching-learning models have recently been redesigned and new technologies such as simulators have been introduced to study human health. It has been established as a tool to acquire clinical skills prior to actual patient contact and to learn skills to reduce the potential for error and improve patient safety in the management of disease complications.⁴

The practice of nursing was done in the past with real patients or also with corpses. This way of proceeding poses some limitations, such as, for example: the fact that the patient, apart from being treated in his normal process, became a kind of guinea pig. Although there are protocols for the intervention of nurses in training in real settings, the trial nature was not completely overcome. It is in this area that high-fidelity simulators offer a high guarantee of quality and safety in future patient care.⁵

In this instance, the question persists about the ethical and relational elements that direct contact embody with patients. This aspect should not be ignored in training, but on the contrary requires spaces for contemplation by specialists in the area.^{5,6}

The use of simulation in nursing education has several advantages, however, there are also potential drawbacks to consider. These include the cost of implementing the simulation, inability to replicate all elements of a clinical situation, and risk of students learning and developing poor techniques if the simulation is poorly designed.⁷

Furthermore, while simulation can provide standardization of cases and promote critical thinking, it cannot completely replace the experience of caring for real patients, and there may be reluctance or challenges in integrating simulation into all nursing education.^{8,9} Therefore, while simulation is a valuable tool, it is important to carefully consider its limitations and ensure that it is effectively integrated into nursing education. After the arguments made by the researchers, the general objective of the research is formulated to describe the effectiveness of simulators in the training of nursing students.

Methodology

This research uses a qualitative approach using a descriptive methodology and a non-experimental design, complemented by a documentary-bibliographic analysis. The study is based on a systematic, rigorous and exhaustive examination of scientific works related to the research topic. The research process involves a thorough exploration of written documents, including theses, peer-reviewed journals, and scientific articles, which constitute the primary sources within the study population.

Inclusion criteria

Original articles, degree theses, bibliographic reviews and magazines. Availability of information whether partial or complete. Written in Spanish, Portuguese or English. Published from 2019 onwards. Absence of conflicts of interest between the authors and the topic. Linked to the health and, mainly, nursing area.

Exclusion criteria

Duplicate articles. Topics outside the health area. Publications with inaccessible information. Languages other than Spanish, Portuguese and English.

Results & Discussion

Among the works consulted, the emphasis on teaching management in relation to simulators stood out, due above all to the various needs and interests that the teacher identifies in his students, and how he faces them during the educational process. One of the most notable situations was the need for training teachers in simulation processes and technological issues. As realism increases, the effectiveness of the simulation and scenario as a training tool increases, as does the difficulty of correct use and calibration of the equipment.⁸

Along with this, providing long-term maintenance to simulation equipment generates costs for universities, regardless of deterioration due to use, and given there is a link between the quality of the simulators and students correctly developing their skills, progressive deterioration is inevitable. In addition, this represents a kind of double edge given that the availability of practice will be limited by both the schedule of the building or practice area in relation to the demand of the course and by maintenance. In nursing, the ideal will be for the student to perfect their skills through trial and error.⁷

Despite this, it is undeniable that they offer an increase in the development of various skills in students, and thereby promote greater safety in the future patient.¹⁰

Simulation constitutes a methodology that strengthens the student's understanding through simulated practices, thus complementing the knowledge obtained theoretically. In this way, a complete understanding is achieved, since practical knowledge of how to perform a procedure or technique is acquired and its scientific foundation is deepened. Exploring the benefits and challenges associated with these practices, according to their execution, provides a solid basis for action in nursing, since care in this discipline is based on human well-being.¹¹

Evidence suggests that, compared to traditional education, virtual simulators can more effectively improve skills and at least as effectively improve knowledge. In this particular type of simulator, the skills that improved were clinical reasoning, procedural skills, and a combination of procedural and team skills. It is notable that this effectiveness was witnessed in both high-income and low- and middle-income countries, demonstrating the global applicability of virtual patients.¹²

Despite this, it is important to remember that no matter how well-trained students are, every time they are called upon to apply a skill in real time and conditions, they often become very stressed or “freeze”, unable to successfully complete the procedure. Therefore, schools are trying to update different simulation programs, investing in machinery or using actors in the role of patients, to add plausibility to their reactions.⁸

Simulation is a process that tries to resemble real life, but is not real. Its realism depends on the fidelity of the simulator, the setting and the description of the scenario. No matter how advanced simulation models are, there will always be imperfect imitation of human systems.^{7,8,13}

A simulation, no matter how ideal, will never be identical to a real case. Additionally, there is always the possibility of shock the first time the student experiences a non-simulated case. Along with this, simulators present limits in terms of their ability to emulate rare realities such as rare or unstudied pathologies during practical hours, absence of certain aspects that, although not involved with the diagnosis or procedure, do affect the biopsychosocial being.¹³

Some concerns have been raised about the educational use of virtual patients. Virtual patients should not replace but complement contact with real patients. There are concerns around the use of virtual patients that could result in less empathetic students.⁸

Simulation provides opportunities to acquire and apply knowledge and skills through the use of simulators, standardized patients, and virtual environments. However, it is impossible to approach the patient as a whole, as a biopsychosocial human being.⁸

Another limitation of simulation training is that sometimes not all variables related to an emergency in a real environment are included. Simulation training is carried out in a controlled environment managed by the educator, who can stop and restart a process, or unintentionally by the student when hesitating or thinking, which is impossible in real life.⁸

Simulation is a methodology that allows the student to consolidate the knowledge acquired through simulated practice with that obtained in the traditional or theoretical way, since on the one hand the knowledge of how a procedure or technique is carried out is acquired, while on the other hand, it allows us to know what their scientific basis is and what benefits and cons their practice confers depending on the way in which it is carried out. This gives a fundamental basis to nursing actions since the care of this science is based on human well-being.¹⁰

The integration of simulation in practice as an innovation that improves the quality of teaching since it integrates the experiential learning of students in real clinical environments with simulated ones, perfectly complementing both spheres.¹³ Therefore, the use of simulators as a learning training strategy significantly influences technical skills.¹⁴

Conclusions

As demonstrated, the importance of simulation as an educational methodology in the field of nursing is revealed. The need for training teachers in the use of simulators and associated technologies is highlighted. Although simulators offer important benefits in the development of skills, limitations are recognized, such as the progressive deterioration of equipment and the impossibility of faithfully replicating real situations. The application of virtual simulators is perceived as effective in improving skills and knowledge, but it is highlighted that they should not replace contact with real patients. Despite the improvements it provides, it is highlighted that simulation cannot address the patient as a biopsychosocial human being and that, in some cases, it can generate less empathy in students. In short, it is suggested that simulation be considered as a complementary tool and not a total substitute in nursing training.

Conflicts of interest

The authors declare that there is no conflict of interest in the planning, creation, editing and publication of this article.

Gratitude

To the social agents involved in any of the stages of the research process and to the authors of the works cited in this document.

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