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Implication Of Simulation In Nursing Education: With Reference To Nursing Students In Saudi Arabia

Mawaddah Mohammed Alhwiti[1], Mashael Eid Farg Alameani[2], Miqradi Mohammad Alabsi[3], Gadah Baker Yahya[4], Raseel Shuja Alghamdi[5], Abeer Mufarh Hassan Wadaani[6], Najwa Ali Yahay Alshaharni[7], Noorah Saad Alqahtiny[8], Atheer Nasser Ali Alqahtani[9], Yousef Shatwi Saud Al Yami[10], Ghazy Shatwi Saud Almakaeel[11], Areej Ahmed Mohammed Ganwi[12]

[1.] Nurse Specialist King Fahad Specialist Hospital Tabuk , Tabuk Health Cluster
[2.] Nurse Specialist Haql Hospital, Tabuk Health Cluster
[3.] Nurse Specialist King Abdulaziz University Hospital
[4.] Nurse Specialist King Saud Medical City, Riyadh First Health Cluster
[5.] Patient Care Technician Ngha , Pediatric Emergency Medicine Kasch
[6.] Nurse Specialist Prince Sultan Military Medical City In Riyadh
[7.] Nurse Technician Maternity & Children Hospital In Abha , Aseer Health Cluster
[8.] Nurse Technician Aseer Central Hospital , Aseer Health Cluster
[9.] Nurse Specialist Alhlami Primary Health Care Center , Aseer Health Cluster
[10.] Nurse Specialist Habuna General Hospital , Najran Health Cluster
[11.] Nurse Technation Aljaffah Primary Health Care Center, Najran Health Cluster
[12.] Nurse Specialist Farasan General Hospital , Jazan Health Cluster

Abstract
Existing processes for certifying and accrediting hospitals and other healthcare institutions were used to develop the simulation. But the Carnegie Foundation has also emphasized simulation as a useful teaching tool for nursing students. The training of student nurses presents a challenge to the advancement of nursing practice. The most important tool they bring to the clinical setting during their nursing profession is their education. As a result, the type of nurses they may become is reflected in their academic training. Nurses must be responsible for the results of their care in addition to having the necessary skills to deliver it effectively. This present study evaluates the scenario in terms of nursing students in selected hospitals of KSA. The study takes into account both the primary and secondary data. SPSS Ver. 22.0 was used to get the statistical results.
keyword: Saudi Arabia, Simulation, Implication, Nursing Students.

Introduction

Since the beginning of the modern era, simulation has been used by the military, nuclear power, and aviation sectors. Flight simulators are used in aviation to train pilots by simulating real-world situations, and in medicine, simulation is a key component of clinical skill development for trainees. For aspiring medical and nursing professionals, simulation is a crucial part of their education. In order to help auditors find any system flaws that can jeopardize patient safety and treatment quality, the Robert Wood Johnson Foundation and the Joint Commission on Accreditation of Healthcare Organizations developed a simulation training course between 2010 and 2012.

Existing processes for certifying and accrediting hospitals and other healthcare institutions were used to develop the simulation. But the Carnegie Foundation has also emphasized simulation as a useful teaching tool for nursing students. The training of student nurses presents a challenge to the advancement of nursing practice. The most important tool they bring to the clinical setting during their nursing profession is their education. As a result, the type of nurses they may become is reflected in their academic training. Nurses must be responsible for the results of their care in addition to having the necessary skills to deliver it effectively.

The goal of nursing education is to combine theoretical information from various sources—whether printed or in other media—into forms that are applicable and useful. In order to do this, it is necessary to address patient safety difficulties, ethical dilemmas, and even legal risks that affect nursing students' practice. Clinical education based on simulation is one way to solve these issues. Nursing students are given the chance to provide nursing care to patients while allowing for a margin of error through the use of several pedagogical approaches in simulation-based learning. Simulation can range from low fidelity to high fidelity, depending on the nursing procedure to be conducted and the needs of the students. It can be designed to adjust to the procedures performed and the students' learning needs.

With the use of high-fidelity simulation (HFS), students can experience the entire process in a realistic manner. claimed that HFS nearly perfectly mimics real-world therapeutic settings. Students are permitted to make mistakes throughout the simulated surgery without endangering the patient, and they can grow from their mistakes. Feedback systems, either offered by the simulator or through the nursing instructor's intervention, enable this.

At universities in the Gulf Cooperation Council, the number of teachers and students is out of proportion. As a result, there aren't many teachers who can give pupils individualized, practical instruction; this is why simulation-based training (SBT) is necessary. The study also underlined how simulation improves students' competence and expands their learning potential. According to the Kingdom of Saudi Arabia's Saudi Commission for Health Specialties, simulation raises the bar for patient care and enables its optimization. However, according to a report, different regions in Saudi Arabia have different simulation practices. More SBT was delivered in the center and western parts of Saudi Arabia than in any other part of the kingdom.

Source: https://www.ixrlabs.com/blog/virtual-reality-in-nursing-education/

Figure 1: Simulation in Nursing Education

The incapacity to offer equal coverage to all universities in the Kingdom of Saudi Arabia and other GCC countries, as well as the absence of mobile training facilities in some areas, are the causes of this discrepancy. According to a number of the analysts, the Middle East is seeing a significant increase in SBT due to well-funded projects. Numerous large-scale simulation centers that are being constructed in Oman, Saudi Arabia, the United Arab Emirates, and Qatar are either in the planning or construction stages, according to some of the researchers. In order to improve delivery, each of these institutions will implement simulation modalities linked to other contemporary media and tools.

The drive to grow and develop healthcare facilities and the region's healthcare staff is what is driving this growth. In addition to this demand, there is a need for experienced personnel to oversee these facilities, which calls for hiring experts and professionals from throughout the globe. Simulation is a widely accepted and used teaching and learning method that can be used to impartially verify the proficiency of the healthcare staff. Simulation has the potential to enhance patient safety procedures, encourage changes, support staff training, and aid in hiring new employees.

Research Process

In January 2024, a quantitative correlational study was initiated among nursing students at the University of Hail in Saudi Arabia. The study included one hundred male and female nursing students. The study was created with first-year and internship students in mind. Nevertheless, the polarities of this range were not included in the study because neither first-year nor internship students really took part. The main tool for the study was a questionnaire, which was given out along with an informed permission form before any data was actually collected. The primary survey instrument, called the Simulation Design Scale, could be downloaded from the National League of Nurses' (NLN) website.

First and foremost, the tool is designed to evaluate how students view the importance of the simulation's components that they are learning. The Likert scale, which ranged from 1 to 5, was used for the rating. The numbers 1 and 5 represent Strongly Agree and Strongly Disagree, respectively. The University of Hail's College of Nursing is run by the Ministry of Education, same as other Saudi Arabian government-funded colleges. The campuses where male and female students are physically located are separated by a few kilometers. In terms of both theoretical classroom instruction and hands-on, hospital-based training, female nursing students are exclusively taught by female nursing instructors; this also holds true for male students, who are taught solely by men. Both the male and female campuses contain simulation labs, rooms, and the necessary simulation tools, such as dummies and machines.

The University of Hail has been offering computer science and science courses since its founding in 2005. The institution began offering the Bachelor of Science in Nursing (BSN) program in 2009 in response to Royal Decree 135, which mandates that all nurses hold a bachelor's degree rather than a nursing diploma. In order to be eligible to take the nursing license exam administered by the Saudi Commission for Health Specialties, all hospital-employed nurses who had earned diplomas were required to return to school and complete two more years of coursework and an additional year of internship.

Building virtual laboratories was another innovation in universities to improve nursing education, in addition to the establishment of a College of Nursing to offer the BSN. These labs were originally designed to support students' learning needs and to apply nursing practices they had learnt. Through the use of these labs, students can familiarize themselves with the many nursing operations that are frequently carried out in actual clinical settings with actual patients. This gives pupils a way to learn their abilities while allowing for mistakes, which helps them practice more effectively. These mistakes highlight each student's unique areas for growth, promoting personalized learning competencies in various nursing operations.

The questionnaire was duplicated for the estimated 200 participants following the acquisition of an ethics approval from the university ethics committee. 200 questionnaires were given to all of the students on the male and female campuses of the College of Nursing after all necessary approvals had been secured and the participants' informed consent had been requested. Following distribution of the instrument and adequate time for students to complete it, 200 questionnaires were successfully gathered, and their accuracy was verified by ensuring that all questions had been addressed. As a result, 202 surveys in all were returned and subjected to statistical processing.

The instrument also inquired for the participants' demographic characteristics, including gender, year (from first-year to internship level or fifth year), and English proficiency (ranked high, moderate, minimal, or none), in addition to the informed consent portion. The questionnaire questioned individuals if they were bridging or regular students in order to determine their academic level. "Bridging students" are nursing diploma holders who were practicing nursing prior to the law's introduction, which required them to complete two additional years in order to earn a BSN degree.

After completing the questionnaire, every student was included in the study. At the designated times for data collection, all participants had access to a total enumeration sampling technique. The statistical calculation followed the collection, tabulation, and preparation of all data for Spearman's rank correlation statistical computation to ascertain the association between participant profiles and study design aspects. Results were accurately derived using the Statistical Package for Social Sciences (SPSS) Ver. 22.0. The accuracy, coherence, and completeness of the data were checked before SPSS calculated them.

General Findings

- • This study included 200 participants in total, all of whom were nursing students enrolled in the second semester of the 2024–2025 curriculum.

- 116 female students and 84 male students made up the student body of 200.
- No first-year students or interns participated, however 21 second-year students, 151 third-year students, and 28 fourth-year students did, representing 10%, 75%, and 14% of the total.
- None of the participants lacked English at all, although 21 students, or 10% of the total, were very competent in the language, 80 students, or 40%, were moderately fluent, and 99 students, or 50%, were minimally fluent.
- Of the 200 participants, 169, or 84%, were categorized as normal students and 31 (or 16%) as bridge students.

Researcher's Observation

The world at large and Saudi Arabia are both concerned about patient safety. The necessity to improve the knowledge and abilities of nurses and other allied health workers is reflected in the constant concern over professional competency. The public expects—if not demands—that nurses and other medical personnel who provide care to the general public be capable of fulfilling their obligations to patients in any situation. A key component of achieving this objective is nursing education. Universities and institutions that provide nursing degrees, like those in Saudi Arabia, must to improve their curricula and make sure that simulation is one of the primary teaching techniques for nursing ideas.

This strategy should be complemented by qualified academics, clinical teachers, and even administrators who share the goal of producing students who are proficient in their subject.

In addition to being used as a teaching language, English is also used for other materials such as books, instructional slides, portfolios, extra learning resources, and instructions for simulations. Because students must first complete and pass preparatory courses, including English, in order to be admitted to the college and enrolled in the BSN program, none of the study participants lacked proficiency in the English language. Before being admitted into the course, all students must take and pass an additional English proficiency exam.

Even though 50% of participants knew very little or nothing about English, this knowledge was adequate for the course, particularly for comprehending the principles and applications necessary for the many nursing courses, including simulation-based education. The administration of medication is one of the most important tasks that nurses perform in the clinical setting. According to some researchers, overdosing or dose errors account for 47.3% of drug errors in Saudi Arabia. The same study also pointed out that IV fluid delivery mistakes are widespread worldwide.

Researchers further asserted that a variety of circumstances, such as poor communication, landing mistakes, and ignorance of equipment use, contribute to improper dose delivery. If drug administration can be learnt and perfected through simulation, such mistakes might be prevented in the future. The accurate modeling of systemic medication-use errors in a mother-child hospital context was the focus of much of the field's expertise. The study discovered that in order to detect mistakes in the administration of medications, some steps in the procedure should be improved. They came to the conclusion that simulation by itself is a successful and efficient way to improve nursing students' acquired procedures.

Regardless of curriculum or teaching methods, nursing schools can utilize simulation as an instructional tool. The necessity of funding this endeavor cannot be understated, though, as research indicates that students who participated in simulation throughout their school years fared better in real-world clinical situations.

Conclusion

Student gender was significant to the simulation's goals and information at 0%, according to the statistical analysis of the participants' responses and demographic profiles; year level was significant to the support provided during the simulation process at 4% and to the feedback provided (realism) at 2%. English language proficiency was important for the simulation's goals and information at 5% and for the feedback it gave (realism) at 1%. Lastly, at 5%, student status had a considerable impact on problem solution. A 5% threshold of significance served as the foundation for the findings. Spearman's rank correlation was the statistical method used to derive the results.

To comprehend the previous discussion, it is important to remember that the questionnaire had 20 items, each of which aimed to capture the relevance of the simulated nursing procedure as seen by each student. To put it simply, the survey uses multiple-choice evaluations ranging from 1 to 5 or NA to determine how

each student feels about the activity in issue. Objectives and information (things 1–5), assistance (items 6–9), problem resolution (items 10–14), feedback or guided reflection (items 15–18), and fidelity or realism (items 19–20) are the five categories into which the 20 items are divided.

The demographic profile that has the strongest correlation with one of the questionnaire's five categories—goals and information—relates to the gender profile. The fact that simulation includes all learning activities that call for the use of skills and psychomotor abilities in their broadest sense could be one explanation for this. In the nursing profession, simulation is seen as a recreation of real-world, clinical circumstances, enabling learners to actively learn and practice skills, regardless of gender. A popular term for simulation is fidelity, which refers to how closely a simulation experience replicates or represents reality at a particular moment. Simulation technology comes in a variety of forms, such as high-fidelity or low-fidelity manikins that can display human physiological signs.

One explanation for the strong correlation between year level and the help and feedback provided during simulation could be because students learn in steps, becoming more specialized as their year level advances. Prior to a real patient interaction, students practice nursing processes and giving care through simulation. They can learn the skills before working with actual patients thanks to this system, which also gives them detailed feedback on their performance. The fact that simulation eliminates hospital distractions including family interactions, rigorous hospital procedures, and pressure from other medical and nursing personnel is another benefit of the program.

Both the information and feedback categories benefited from fluency in the English language. A strong grasp of the English language is a must for learning. Before being admitted to Saudi Arabian universities, students must pass an English language test. Students must acquire, study, and practice the language through a variety of methods in order to foster an effective comprehension of nursing principles. The results of this study show how important it is to use simulation in order to teach and learn in a scientific way. According to earlier research, inexperienced nurses are less attentive, integrate skills and knowledge less well, and may overlook crucial cues. These findings are broad and don't represent the skills of every student nurse. However, before actual nursing care begins, both the nurse and the patient are protected by skill development and allowing for the mastery of nursing procedures.

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