



Original Article

Effect of Simulation-Based Learning on Clinical Performance of Nursing Interns at a Private Hospital, Lahore, Pakistan

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ABSTRACT

Simulation-based learning offers experiences and activities that mimic clinical practices using patient mannequins and realistic circumstances in a controlled environment. Utilizing this immersive methodology, students engage in authentic clinical scenarios within a simulated hospital setting. Through useful applications, students can put their academic understanding to use and refine their abilities in addressing a range of clinical situations. Through practical application, students can apply their theoretical knowledge and hone their skills in dealing with a variety of clinical scenarios. This experience not only broadens comprehension but also boosts self-assurance and gets pupils ready for their future careers as healthcare experts. **Objective:** To investigate how simulation-based learning affects nursing interns' clinical performance in a private hospital in Lahore. **Methods:** A descriptive cross-sectional study design was employed to investigate the impact of simulation-based learning on nursing interns' clinical performance. A questionnaire was used to collect data from the 76 participating nursing interns. The study was carried out at a private hospital in Lahore. **Results:** Participants demonstrated that their clinical performance improved as a result of simulation-based learning. In a very short amount of time, they could handle the patient. **Conclusions:** According to the study's findings, clinical performance of nursing interns at a private hospital in Lahore was improved by simulation-based learning.

INTRODUCTION

Simulation-based learning is the type of learning in which learners get a reality-based experience to learn and practice their skills and knowledge in a simulated environment. It is essential for medical education and training for students and medical professionals to gain hands-on experience in a safe and controlled environment [1]. In addition, simulations are considered useful research tools that assist scientists in evaluating and examining the effectiveness of different medical procedures and protocols [2]. One of the fundamental skills that can be practiced by medical students in a simulated environment is intramuscular (IM) injection. Moreover, students can improve their intravenous (IV) therapy skills by using

mannequins mimicking genuine breath, heart, and bowel noises [3]. This approach can reduce mistakes and enables the medical professionals to take care of their patients in the best possible way as they are acclimatized with genuine physiological and pharmacological reaction through simulation-based learning [4]. Furthermore, learners do not have any fear of consequences in the real world while making mistakes in simulations as they provide a controlled and safe environment. This not only promotes critical thinking abilities and active engagement but also significantly improves the decision-making and problem-solving skills by posing real-world situations [5]. In addition, health practitioners can advance their knowledge

and decision-making abilities by simulating complex processes and scenarios in a safe setting [6]. Nursing students also benefit through simulation-based learning, as they can engage in patient care activities under the supervision of their teachers. In this type of learning environment, a mannequin can be used in place of a patient [7]. In nursing science, simulations are used to teach clinical skills and bolster students' critical thinking. They create an environment which resembles a hospital, and facilitate students in acquiring nursing experiences before they enter the professional realm. This method not only empowers them to apply theoretical knowledge, and handle challenges but also practice within a secure setting, enabling learning from mistakes without posing any harm to patients. Given the rising complexity of care and the scarcity of clinical placements, simulation is seen as a viable alternative to conventional face-to-face clinical experiences. [8]. Newly licensed registered nurses have little experience or critical thinking skills when they begin their work. Yet they are often assigned to clinical areas based not on their clinical interest or experience, but on the needs of the facility. The transition from student nurse to independent work can be stressful as they try to put what they have learned into practice. Because they do not have enough clinical experience, they are shocked by the complexity of patient care, the overwhelming workload and the technological advances [9]. Independent practice of nursing students is unsafe believing that allowing students to practice free of supervision would increase the medical malpractice rate and neglect patient safety. It is therefore evident that nursing students may cause conditions such as death, injury, disability or delayed treatment due to medical errors [10]. Simulation-based learning provides realistic ways to successfully prepare nursing students for clinical practice in the face of dynamic changes in healthcare and clinical nursing education [11]. The goals of this approach are to enhance patient safety, develop clinical skills, and become proficient in delivering high-quality nursing care [12]. It facilitates the shift from academic study to professional practice by assisting nurses as they advance from beginner to expert [13].

Health practitioners need experiential learning, but there are obstacles to overcome while transitioning from being a student to an independent practitioner. These obstacles include stress, a heavy workload, and worries about patient safety. With simulation-based learning, students can gain practical experience without sacrificing patient safety, making it a viable replacement for traditional clinical practices. The goal is to develop the clinical skills of nursing students with the ultimate goal of being proficient in providing high-quality nursing care. The present study was conducted to examine the effect of Simulation-Based

Learning on clinical performance of nursing interns at a private hospital Lahore.

METHODS

A descriptive cross-sectional study was conducted in the private hospital of Punjab Province Lahore from June to July 2023 after approval from ERC of FMH College of Nursing (ERC-FMH/355). Total 76 nurses were enrolled in current study by purposive sampling technique. Solvin's formula $n=N/1+Ne^2$ was used for sample size calculations. All the Nursing Interns were included and 1st year, 2nd year, 3rd year and final-year nursing students. Staff nurses and nurse managers were excluded. Data collection permission was taken from the Assistant Director Clinical of Fatima Memorial Hospital, Lahore. Informed consent was taken by the participants in the study. Data were gathered by questionnaires of simulation-based learning and clinical performance. Researchers collected data by using close-ended questionnaire consisting of Likert scale that was adapted from "A study of reliability and validity an attitude scale towards Simulation-Based Education" by Pinar et al [14]. It consisted of two parts. Part I: It consisted of demographic tool profile including Age, Gender and Marital status. Part II: It consisted of 15 questions having five options strongly agree, agree, neutral, disagree, strongly disagree scoring 1 to 5. SPSS (Statistical Packages of Social Sciences) version 23.0 was used for data entry and analysis.

RESULTS

Total 76 participants were enrolled in current study among which 69.7%, were 20-25 years old, 28.9% were 26-30 years old and 1.0% were 31-35 years old. 90.8% were single and 9.2% were married. The proportion of single participants was high. Table 1 presents feedback from 76 nursing interns on simulation-based learning. Key findings included high agreement (61.8% to 31.6%) on efficient clinical participation, understanding concepts, and increased confidence. The approach also received positive responses for reducing stress (40.8% strongly agree) and promoting accurate performance without harm (30.3% strongly agree). Participants expressed confidence in transitioning from novice to expert (47.4% agree, 22.4% strongly agree) and acknowledged the use of theoretical information (50% agree, 23.7% strongly agree). The simulation experience was perceived to reduce nervousness (38.2% agree, 32.9% strongly agree) and aid in recognizing deficiencies (44.7% agree, 22.4% strongly agree). There was optimism regarding patient safety improvement (52.6% agree, 21.1% strongly agree) and the enhancement of clinical performance through repeated practice (48.7% agree, 38.2% strongly agree). Confidence in skill acquisition received positive responses (47.4% agree, 26.3% strongly agree). The diverse learning

materials and activities were well-received (44.7% agree, 32.9% strongly agree), along with a perceived decrease in the risk of making mistakes during clinical practice (36.8% agree, 28.9% strongly agree).

Table 1: Effect of simulation-based learning on the clinical performance of interns

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SBL enhances clinical practice participation efficiently	1.3	1.3	3.9	61.8	31.6
SBL Enhanced clinical understanding	2.6	10.5	0.0	53.9	32.9
Boosts student confidence	1.3	3.9	22.4	38.2	34.2
Minimizes the stressful learning environment	0.0	6.6	23.7	40.8	28.9
Ensures accurate student performance	5.3	14.5	13.2	36.8	30.3
Transforms novices into expert nurses	0.0	6.6	23.7	47.4	22.4
Has a positive effect on my clinical success	1.3	3.9	18.4	44.7	31.6
Helps to use theoretical information during practices	0.0	5.3	21.1	50	23.7
Reduces clinical nervousness	3.9	5.3	19.7	38.2	32.9
Identifies learning gaps effectively	1.3	10.5	21.1	44.7	22.4
Improve patient safety	0.0	11.8	14.5	52.6	21.1
Improve the clinical performance of students	0.0	3.9	9.2	48.7	38.2
Confident in clinical skills	0.0	6.6	19.7	47.4	26.3
Diverse materials enhance performance	1.3	5.3	15.8	44.7	32.9
Decrease the risk of my making mistakes during clinical practice	1.3	9.2	23.7	36.8	28.9

DISCUSSION

Students with repeated simulation experiences were satisfied with their simulation experiences and felt that those simulation experiences helped in their self-confidence in performing required skills. In this study, the data did not show enough evidence to support the effect of simulation-based learning on enhancing clinical performance. However, the participants with more simulation experience reported higher levels of self-confidence than students with less simulation or no simulation. In the current study, 31.6% of the participants strongly agreed with the statement that Simulation-based learning allowed them to participate in clinical practices

efficiently but according to study conducted on students regarding their total perceived self-efficacy, it was (89.3%) in the study group immediately after teaching. After traditional teaching, no student in the control group felt they were capable of handling challenges [15]. In our findings, nursing students with more simulation experience were mostly satisfied and were less anxious in making clinical decisions. This current data support that effective simulation-based learning helps to effectively support new graduates during their transition phase from students to independently licensed nurses. In our study 32.9% participants strongly agreed with this statement that simulation-based learning helped them to better understand concepts in the clinical setting and 2.6% participants disagreed with this statement. These findings did not match with the findings of the study that was conducted by Al Enazi et al. The study reported that 18.27% participants have a positive perception toward simulation, and their highest agreement was that simulations helped them better understand concepts in clinical setting [13]. In our research, 34.2% participants strongly agreed that simulation-based learning helped to increase confidence level of students while dealing with real patients and 1.3% of the participants strongly disagreed with this statement. Nevertheless, these findings differed from another study examining the percentage distribution of students' self-confidence after teaching. In that study, 93.3% of students in the simulation-based teaching group felt confident, whereas 96.0% of students in the control group lacked confidence following traditional teaching methods [16]. Our study depicted that 22.4% participants strongly agreed with this statement that simulation-based learning help to make them novice to expert nurse and improve my professional behavior. The study aligns with previous research that identified simulation-based learning as an effective method for enhancing practical abilities. It is noted as beneficial for acquiring both knowledge and technical skills [17]. The findings of current study revealed that 23.7% of the participants strongly agreed with that simulation-based learning helped them to use theoretical information during practices and 5.3% participants are disagreed. The study aligns with previous research that identified simulation-based learning as an effective method for enhancing practical abilities. It is noted as beneficial for acquiring both knowledge and technical skills [18]. This current research study added additional evidence that supports previous results about students' perceived effect of simulation on clinical performance. 38.2% of participants strongly agreed with the statement that repeated practice of procedure in simulation-based learning would improve the clinical performance of students and 3.9% participants were not agreed. These

findings did not match with the study conducted in 2010 by Cant and Cooper where there is strong support in the literature indicating that simulation is highly acceptable to nursing students as a supplement to traditional clinical experience [19]. Our findings showed 28.9% of the participants strongly agreed with the statement that simulation-based learning decreased the risk of them making mistakes during clinical practice and 1.3% participants disagreed. Similar results were observed in the study conducted by Bremner et al., where the evaluation of novice nursing students' responses aimed to establish best practices for simulation in nursing education. The findings align, with students highlighting the benefits of learning in a risk-free environment and gaining hands-on practice (20 to 22%) [20].

CONCLUSIONS

Effect of simulation-based learning on clinical performance of nursing interns were further explored in this study. The findings showed that simulation-based learning can improve nursing interns' knowledge and clinical skills. The study reflected positive student feedback across simulation-based learning domains, prompting recommendations for further research and practice. Emphasizing the integration of Simulation-based learning into nursing school curriculums is necessary which involves faculty training, scenario design, and evaluating course outcomes.

Authors Contribution

Conceptualization: SS

Methodology: ZF

Formal analysis: STM

Writing-review and editing: SF, AG

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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