

# Satisfaction with Simulation-Based Education Among Undergraduate Nursing Students in Public Colleges of Peshawar

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## Abstract

**Background:** Simulation-based learning (SBL) is a critical component of nursing education, allowing students to practice clinical skills in a controlled environment.

**Objective:** This study aimed to assess the satisfaction levels of undergraduate nursing students with SBL in public nursing colleges of Peshawar.

**Methods:** A quantitative descriptive cross-sectional design was employed. Data were collected from 278 undergraduate nursing students, excluding first-semester students, across public colleges in Peshawar. An adopted questionnaire with 13 satisfaction items and 6 challenge items was used. Ethical approval was obtained, and data were analyzed using SPSS version 25.

**Results:** Of the 239 participants (20.9% males, 79.1% females), 100% reported overall satisfaction with SBL. Key satisfaction scores included: usefulness of patient simulators (Mean=4.28, SD=0.568), desire for more training (Mean=4.37, SD=0.483), and SBL making subjects more interesting (Mean=4.21, SD=0.597). Challenges identified were inadequate practice time (Mean=2.46, SD=0.671) and limited access to high-fidelity simulators (Mean=2.98, SD=0.534).

**Conclusion:** SBL is highly effective in nursing education, significantly enhancing student satisfaction, knowledge retention, and clinical decision-making skills. Addressing challenges such as increased access to simulators and practice time could further improve outcomes.

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## 1 Introduction

Over the past few years, there has been a significant increase in the use of simulation-based education to enhance patient safety. To foster the development of skills, knowledge, attitudes, and behaviors, simulation seeks to replicate a real-life task, event, or experience (1). A guided experience that evokes or replicates significant features of the real world in a fully interactive way is referred to as "simulation" and is used to supplement or enhance genuine encounters (2). This educational strategy provides nursing students with opportunities to hone their clinical and decision-making abilities without jeopardizing patient well-being (3). Moreover, simulation has long been valued as a crucial component of nursing curricula, allowing students to practice techniques in a safe setting before applying them to real patients (4). Despite the worldwide recommendations and proven benefits, many institutions still face challenges in integrating simulation methods into their curricula (5).

The use of simulation in undergraduate nursing education has become essential, and understanding the advantages and political implications of this transition is crucial (6). Simulations now offer knowledge by assisting students in developing necessary practical abilities, providing an environment where new skills can be learned without risking patient safety, thereby potentially increasing safety. Compared to actual clinical settings, the simulation environment can be controlled to a greater extent (7). According to the American Association of Colleges of Nursing, in 2019, nursing schools rejected more than 80,000 qualified applications due to a lack of clinical sites,

classroom space, and nurse educators. Simulation technology can alleviate this scarcity by enabling students to practice intricate, detailed operations and increasing opportunities for nurses to pursue training as educators (8).

New active teaching strategies are being implemented in nursing education, such as the study of clinical cases, the development of clinical scenarios, laboratory work, and simulation. These strategies are valued for their unique teaching qualities and the advantages they provide for students' education (9). A key goal of nursing simulation is the transfer of knowledge, which refers to the application of learned skills in clinical settings or examinations (10). Indicators of simulation's effectiveness as a training strategy include student satisfaction and self-confidence in the learning method (13). This study aims to assess nursing students' satisfaction with simulation-based learning and guide nursing educators in improving clinical teaching using simulation in the context of experiential learning. It seeks to ensure the implementation of simulation-based learning in nursing curricula by addressing students' satisfaction levels and identifying challenges faced during simulation-based training.

## 2 Material and Methods

This study was conducted at public nursing institutions in Peshawar from October 2022 to February 2023, employing a quantitative descriptive cross-sectional design. The sample size was determined to be 278, calculated using Rao soft software, taking into account a 5% margin of error and a 10% non-response rate. The random sampling technique was employed, including all undergraduate nursing students except for those in their first semester. Data were collected using an adopted questionnaire designed to measure student satisfaction and challenges associated with simulation-based learning (SBL). The questionnaire comprised 13 items related to satisfaction and six items addressing challenges.

Ethical approval for the study was obtained from the relevant authorities, ensuring compliance with the ethical principles outlined in the Declaration of Helsinki. Participants were informed about the study's purpose, and their consent was obtained prior to data collection. Confidentiality and anonymity were maintained throughout the study to protect the participants' identities.

Data collection involved distributing the questionnaire to the selected nursing students, who completed it during their scheduled classes. The questionnaire assessed various aspects of SBL, including its effectiveness, relevance, and the challenges faced by students in the simulation environment. The collected data were then analyzed using SPSS version 25. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize the participants' responses. The results were presented in the form of graphs and tables for clear visualization.

In analyzing the satisfaction data, the scoring for each item ranged from 1 (very dissatisfied) to 5 (very satisfied), with a mean score of more than 3 indicating satisfaction. The analysis revealed that 100% of the students expressed overall satisfaction with SBL, considering it a beneficial addition to their learning experience. Furthermore, students believed that more simulator training sessions were necessary, and they found SBL helpful in retaining knowledge, developing clinical decision-making skills, and feeling comfortable within the simulated environment.

The assessment of challenges identified several areas where students faced hurdles, with mean scores of less than 3 indicating significant challenges. These included limited access to practice in the skill lab, inadequate exposure to high-fidelity simulators, and inappropriate time allocation for the skill lab. The study highlighted the need for improvements in these areas to enhance the effectiveness of SBL in nursing education.

The results of this study provide valuable insights into the satisfaction levels and challenges faced by nursing students with SBL. These findings can guide nursing educators in refining their teaching strategies and incorporating SBL more effectively into the nursing curriculum, thereby enhancing the overall quality of nursing education.

## 3 Results

This study included 239 participants, comprising 50 (20.9%) males and 189 (79.1%) females. The distribution of participants across different institutes is presented in the table below:

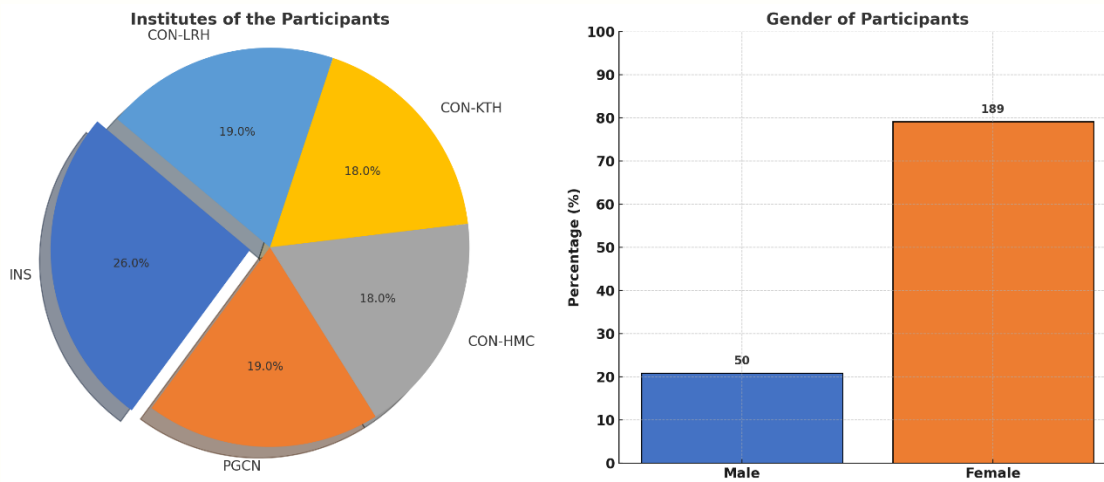


Figure 1 Gender and Institute of Participants

Table 1 Institute based students distribution

Institute	Number of Students	Percentage (%)
INS-KMU	62	29.9
PGCN	45	18.8
CON-HMC	44	18.4
CON-KTH	42	17.6
CON-LRH	46	19.2

Table 2 Satisfaction Item

Satisfaction Item	Mini	Max	Mean	Std. Deviation
Patient simulators are a useful addition to learning with real patients	3	5	4.28	0.568
I would like more training in simulation	4	5	4.37	0.483
I am familiar with the concept of simulation-based learning	3	4	3.27	0.444
Simulation-based learning made the subject more interesting	2	5	4.21	0.597
Simulation-based learning helps me to apply what I have learned	3	5	4.14	0.554
Simulation-based learning should be included in the course frequently	4	5	4.61	0.489
Simulation-based learning helped me retain knowledge	3	5	4.20	0.660
Simulation-based learning is a useful strategy	3	5	4.24	0.555
Simulation-based learning provided semi-realistic experiences	2	5	4.02	0.713
Simulation-based learning helped me in communication skills	2	4	2.90	0.636
I felt comfortable with the simulated environment	3	5	4.07	0.742
Simulation-based learning developed clinical decision-making	2	5	3.22	0.881
I found it difficult to treat the mannequin as a real patient	3	5	3.85	0.696
<b>N=239</b>				

Several challenges were identified where students faced hurdles, with mean scores below 3 indicating significant challenges. The detailed results are shown in the table below:

Table 3 Challenge Item

Challenge Item	Min	Max	Mean	Std. Deviation
The instructor allowed me to practice in the skill lab	1	4	2.46	0.671
I was allowed to see the high-fidelity simulator	1	4	2.98	0.534
I am satisfied with the role of the instructor in the skill lab	3	4	3.28	0.454
The time allocated for the skill lab is appropriate	1	3	2.97	0.223
Cooperation between students is important for skill lab practice	3	4	3.11	0.322
The skill lab facilities are adequate	3	4	3.05	0.235
<b>N=239</b>				

The study revealed that 100% of the students expressed overall satisfaction with Simulation-Based Learning. Students found SBL to be a helpful addition to their learning experience, aiding in the application of learned material and enhancing clinical decision-making skills. However, challenges were identified, particularly related to insufficient practice time in the skill lab, limited access to high-fidelity simulators, and inappropriate time allocation for the skill lab. These findings highlight areas that require improvement to enhance the effectiveness of SBL in nursing education.

## 4 Discussion

The findings of this study demonstrated a high level of satisfaction among nursing students with simulation-based learning (SBL), aligning with existing literature on the subject. Globally, similar studies have reported positive feedback from students regarding the effectiveness of SBL in enhancing clinical skills, decision-making abilities, and overall learning experiences. For instance, a study conducted in Saudi Arabia found that 85% of medical students were satisfied with SBL, noting improvements in communication, skills, and knowledge retention despite facing certain challenges (13). This consistency across different settings underscores the universal applicability and benefits of SBL in nursing education.

The study highlighted that students found SBL to be a valuable addition to their learning, aiding in the retention of knowledge and the development of clinical decision-making skills. These findings are in line with previous research, such as the work by Shin et al., which demonstrated the effectiveness of patient simulation in nursing education through a meta-analysis (3). Furthermore, the current study's results are supported by Mohamed and Fashafsheh, who reported that SBL in medical courses significantly improved communication skills, self-efficacy, and clinical competence (20).

Despite the overall positive response, the study identified several challenges faced by students, including insufficient practice time in the skill lab, limited exposure to high-fidelity simulators, and inappropriate time allocation for the skill lab. These issues were consistent with those reported in the literature, where logistical and resource-related barriers often impede the optimal implementation of SBL. For example, Berrigan highlighted the difficulties many institutions face in incorporating simulation methods into their curricula due to resource constraints (6). Addressing these challenges is crucial for maximizing the benefits of SBL and ensuring its effectiveness in nursing education.

One of the study's strengths was its robust sample size and the use of a well-validated questionnaire, which ensured the reliability and validity of the findings. Additionally, the random sampling method enhanced the generalizability of the results to the broader population of nursing students in public institutions in Peshawar. However, there were limitations, including the exclusion of first-semester students, which may have introduced a selection bias. Additionally, the study was conducted in public institutions only, limiting the applicability of the findings to private institutions.

In light of the identified challenges, several recommendations emerged from the study. Increasing access to high-fidelity simulators and extending practice time in the skill lab could enhance students' learning experiences and better prepare them for real-world clinical settings. Moreover, faculty development programs aimed at improving instructors' proficiency with simulation technology could further enhance the effectiveness of SBL. Future studies should consider including private institutions to provide a more comprehensive understanding of SBL satisfaction across different educational contexts.

Overall, this study reaffirmed the value of SBL in nursing education, highlighting both its strengths and areas for improvement. By addressing the identified challenges and implementing the suggested recommendations, educational institutions can further enhance the quality of nursing education and better prepare students for their professional roles.

## 5 Conclusion

The study concluded that simulation-based learning (SBL) significantly enhances nursing students' satisfaction, knowledge retention, and clinical decision-making skills, reaffirming its value as an educational strategy. Despite identified challenges, such as limited practice time and access to high-fidelity simulators, SBL's benefits underscore its importance in nursing education. Addressing these challenges through increased resources and faculty development can further optimize SBL's effectiveness. The implications for human healthcare are profound, as better-prepared nursing graduates equipped with enhanced clinical skills and decision-making abilities can contribute to improved patient care and safety in real-world clinical settings.

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**Disclaimers**

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<b>Trial Registration</b>	NA

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