

UNDERGRADUATE NURSING STUDENTS' SATISFACTION, SELF-CONFIDENCE WITH LOW FIDELITY SIMULATION-BASED LEARNING AND ITS ASSOCIATION WITH EDUCATIONAL PRACTICES

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Abstract

Background:

The conventional clinical education has been characterized by difficulty in accessing actual patients and the patient safety issue. Simulation-based learning (SBL) is an important pedagogical instrument in nursing education and is a skillful environment where students can practice clinical skills without endangering human life.

Objective:

The main goal of the study was to evaluate the association of satisfaction and self-confidence of undergraduate nursing students in terms of SBL and to assess the relationship among simulation design, educational practices and the previous student outcomes.

Materials and Methods:

The study design was a cross-sectional correlational study, which was conducted at Private Institute of Nursing in Lahore. The most significant convenience sampling method was used to select a sample of 165 Bachelor of Science in Nursing (BSN) students. The National League of Nursing (NLN) standardized instruments tool, which involved, Student Satisfaction and Self-Confidence in Learning Scale, the Simulation Design Scale, and the Educational Practices, this questionnaire were used to collect data. Statistical analysis involved Pearson correlation and descriptive statistics were done using SPSS version 29.

Results:

The research has discovered high mean scores of student satisfaction ($M = 3.99$), self-confidence ($M = 4.11$), and educational practices ($M = 3.96$). There was found to be a significant moderate positive correlation between student satisfaction and self-confidence ($r = 0.550$, $p < 0.01$). In addition, there were high correlations between educational practices and both satisfaction ($r = 0.697$) and self-confidence ($r = 0.612$). Elements of simulation design, especially problem solving and fidelity were also found to have a significant correlation with better student results. There were no significant differences, according to gender.

Conclusion:

Learning simulation is an efficient instructional approach that prominently boosts self-confidence and satisfaction of nursing students. Combining properly-designed simulation models and the active educational processes is key to equip nursing students with the ability to handle real life clinical problems.

Introduction:

Simulation-Based Learning (SBL) is a teaching method. It uses real-life clinical situations to provide help to those students who practice their clinical skills and make decisions easily in a safe environment. There are two basic form of simulation, high and low fidelity. High fidelity simulation use advanced technology while low-fidelity simulation uses simple equipment and basic skill-based scenarios. Student satisfaction refers to learners' perceptions according to their simulation based learning experiences, while self-confidence reflect as, the students' trust in their ability to perform clinical tasks effectively. Educational practices include the teaching strategies, support, and feedback session that are used during simulation, which significantly impact on students' satisfaction and self-confidence level.

SBL has become a transformative teaching strategy, especially in response to the changing needs of current healthcare systems. It concerns to the patient safety, an increase in student enrolment, and the increased complexity of patient care. There are many difficulties in traditional nursing education methods, which mostly depend upon classroom instruction and direct clinical exposure. These limitations put the nursing educators to look for creative instructional methods that assure the students to gain critical clinical skills while keeping high academic standards. In this attention, simulation-based learning has widely accepted as a successful teaching method that maintain the link between theory and practice (1, 2).

SBL refers to the use of organized, practical clinical scenarios, consistent patients, task leader, or essential simulation platforms to replicate real-life healthcare situations. The use of simulation has gained growing recognition as a valuable instructional method (3). By this method nursing students are able to practice psychomotor skills, clinical decision-making, communication, and teamwork in safe environment without taking the risk to harm the real patients. Modern evidence suggests that SBL supports experiential and active learning, allowing the students to incorporate with theoretical knowledge by doing hands-on practice. As a result, simulation has become an essential element of undergraduate nursing curricula worldwide, especially in high-risk areas

such as patients 'critical care, medication administration, and emergency nursing care (4, 5).

Affective learning outcomes related to simulation-based education have received more attention in recent years. It provide the support to the nursing student to gain positive attitude toward patient care (6). It is commonly acknowledged that student satisfaction, which reflects students' opinions of instructional activities, learning environments, and teaching strategies, is a significant degree of the quality of education. It increases motivation, engagement, and preparedness, that the students actively participate in learning processes which all linked to high levels of satisfaction. In a similar style, self-confidence is an essential quality for nursing students since it affects their capacity to carry out clinical operations with ability, interact with patients and healthcare teams in an effective manner, and make wise clinical decisions in challenging clinical situations. Studies continuously show that simulation-based learning greatly enhances nursing students' satisfaction and self-confidence (1, 7).

Even though the advantages of SBL are widely known, recent research highlights that the availability of high-fidelity equipment or cutting-edge technology is not the only factor that determines how much simulation is effective. Instead, learning outcomes are significantly shaped by the instructional strategies and design of simulation encounters. It is clearly stated that learning objectives, a suitable degree of fidelity, learner assistance, active participation, chances for problem-solving, and organized feedback and debriefing are all features of simulation design. Research from 2020 to 2025 shows that these design components are important indicators of nursing student satisfaction and confidence, often having bigger impact than fidelity only (8, 9).

Recent empirical studies conducted across various cultural and educational contexts further strengthen the global connection of SBL in nursing education. Research of Middle East, Europe, Africa, and East Asia demonstrates consistent positive associations between simulation participation and improved happiness and self confidence among undergraduate nursing students. For instance, studies in Saudi Arabia, Korea, Morocco, and

multinational settings report statistically significant increases in experiences yield comparable benefits across varied nursing education systems (2, 4, 9).

There are still gaps in our knowledge of how particular simulation design elements and instructional strategies affect student happiness and self confidence in various institutional and cultural contexts, despite the increasing amount of research that supports simulation-based learning. Research on the connections between simulation design, student satisfaction, and self confidence in undergraduate nursing educations is therefore still needed, especially in developing and resource-constrained contexts (8, 9).

Given above mentioned aspects, the goal of the study is how to find simulation design features affect nursing students' satisfaction and confidence in SBL. By combining recent data from 2020 to 2025, the study intends to contribute the figure of knowledge and provide evidence based insights to assist nurse's educator in creating effectiveness, learner centered experience. By increasing happiness and confidence through well-structured SBL, it is important to enhance clinical practice and deliver safer and better patient care. Changes are necessary, particularly in settings with limited resources. Enhancing the planning and execution of simulations would increase nursing students' confidence and self-assurance. Ongoing research is required for further study.

Literature Review:

SBL is now a crucial component of contemporary nursing training because it can provide safe, realistic, and structured clinical learning experiences. It helps nursing students form their clinical knowledge, deep thinking, and decision-making skills without compromising patient safety. Recent research indicates that SBL has a favorable influence on students' satisfaction and self-assurance which is essential for successful clinical results. Additionally, instructional tactics and simulation design have a big impact on students' educational outcomes. Understanding these components is crucial to making the most of simulation-based instruction. To determine current evidence and research needs for SBL in education domains, a review of literature is required.

This correlation cross-sectional study conducted in a nursing education setting evaluated the association between SBL, simulations design scale, educational practices, and nursing student satisfaction and confidence using a convenience sample of 110 students at Tunisia. Standardized questionnaires were used to gather data, and SPSS version 26 with Pearson's correlation was used for analysis. Following simulation-based learning, the results revealed high range of student satisfaction (mean = 21/25) and self-confidences (mean = 33.8/40). Maintenance was the biggest predictor of self-confidences ($r = 0.477$, $p < 0.001$) and the only feature of simulation design that was substantially correlated with satisfaction ($r = 0.468$, $p < 0.001$). Unlike learning approaches demonstrated the strongest associations with satisfaction ($r = 0.858$, $p 0.001$) and self-confidence ($r = 0.738$, $p 0.001$), indicating the significance of well-designed simulation and effective educational strategies in improving nursing student learning outcomes. All educational practice components were significantly correlated with both ($p 0.01$) (8).

This cross-sectional study evaluated the satisfactions and self-confidences of 117 final-year medical students at Jason University, Saudi Arabia, after participating in SBL sessions in critical care medicine. A self-administered questionnaire, which included the student satisfactions and Self-Confidences in Learning Scale, was used for gather data. The study population, which was primarily 24 years old, was made up of 61.5% females and 38.5% males. Students who rated their experience as "Good" scored higher (4.20 ± 0.77 for contentment and 4.20 ± 0.69 for self-confidence), with overall mean scores of 3.71 ± 0.88 for satisfaction and 3.70 ± 0.87 for self-confidence. Self-confidence and satisfaction were shown to be significantly positively correlated ($p < 0.001$). The results were linked with range of educational materials and the teachers' instructions. The results show that SBL positively increases medical student satisfactions and confidence (4).

This cross-sectional correlation study conducted, how simulation affected Moroccan undergraduate nursing student satisfactions and self-confidences. The educational practices questionnaires (EPQ), the simulation designs

scale (SDS), and the satisfactions and self confidence in learning scale (SSSCL) were used to collect data for the study, which included 151 third-semester nursing students. various linear regression was used to check the effects of techniques for instruction and simulation design, and Pearson's correlation was used. The findings showed moderately positive association ($r = 0.579$, $p < 0.001$) between the high mean ratings for contentment (4.41 ± 0.40) and self -confidence (4.50 ± 0.36). While active learning ($B = 0.146$, $p = 0.020$) and feedback ($B = 0.154$, $p = 0.035$) had a positive impact on self -confidence, different learning methods ($B = 0.112$, $p = 0.037$) and clarity of objectives/information ($B = 0.175$, $p = 0.040$) were significant positive interpreters of satisfactions. The study's findings encourage the use of simulation based training as an essential element of nursing education to prepare students for clinical practice since it successfully raises nursing students' happiness and self -confidences (9).

112 first-year nursing students at Al -Quds - University in Jerusalem, Palestine, participated in an uncontrolled before-and-after study was to assess the impact of simulation based instruction on communication skills, satisfactions, and self -confidence. Data was collected using the educational practices questionnaires and the student satisfactions and self -confidence in learning scales. Excellent desire with the simulation experiences was stated by 91.1% of participants. The fact that the posttest means scores for communication skills, satisfactions, and confidences were higher than the pretest results confirmed assessable change. A satisfactory correlation was found between simulation based educations and increased self-confidences, satisfactions, and communication skills.(7).

To assess nursing students' happiness and confidence with simulation based learnings, this analytical cross sectional study was conducted at a private institution in Karachi, Pakistan. A self-report questionnaire was used to collect data, and a total population sampling technique used in 230 nursing students. ANOVA express that the groups' mean satisfaction and self-confidence levels significantly ($p < 0.05$). The average self-confidence score was 32.59 ± 3.61 , whereas the average contentment score was

75.80 ± 8.93 . Self-confidences and satisfactions were found positively correlated with each other ($r = 0.725$, $p = 0.001$). (10).

SBL among third-year medical students was checked in a prospective exploratory study carried out at the University of British Columbia. The study goal was to assess student happiness with the simulation learning environment and investigate how it related to learning goal and self -confidence. A sample of 45 medical students who regularly participated in SBL. Pre and post simulation exams were used to measure learning achievement, and the simulations experiences scale (SSE) was used to measure satisfactions. Pre and post test results were compared using a paired t-test, and correlational analysis looked at the links between achievement, self -confidence, and satisfactions. The test scores increased from 72% prior to simulation to 89% simulation ($p < 0.0001$), showing improvement in student performance. Self confidence in managing basic life support (BLS) and treating acute cardiac patients was great (mean = 3.83 ± 1.02), but they showed high satisfactions with the simulation environments (mean = 4.47 ± 0.45 on a 5-point Likert scale). Additionally, bivariate analysis expressed a strong positives connection ($r = 0.80$, $p < 0.01$) between learning achievement and student happiness. The study concluded that SBL is a successful teaching method that improves student understanding, clinical proficiency, and self-assurance. (11)

A study conducted in Norway 2020. First-year nursing students at a university college, a cross-sectional study design was used for data collection. 187 of the 202 students in the sample who were selected to answered the questionnaires. The educational practices questionnaires, the simulation designs scales, and the student Satisfactions and self confidence in learning scales were used. The findings showed high levels in the both, with a mean score of 4.57 for student satisfactions and 4.16 for self-confidence. While both explicit learning objectives and active learning were highly related with self confidence in handling simulated patient situations, additional analysis using multiple linear regression showed that active learning significantly added to student satisfactions. The study concluded that active learning techniques and well defined goals to

SBL instruction can improve nursing student confidences and sense of fulfillment. (12)

The study was conducted in South Korea with the aim of assessing the efficacy of different simulator fidelity levels through meta-analysis and estimating the effect size of simulation based educational interventions. The National Assembly Library of Korea, EBSCO, Medline, Science Direct, ERIC, and RISS were among the electronic resources that the researchers looked. Forty of the 2,279 identified studies because they satisfied the inclusion criteria. With an overall standardized mean difference of 0.70, the results showed that SBL nursing education had a positive impact. Low-fidelity and mixture simulations displayed relatively modest effects, whereas medium-fidelity simulation showed the largest effect size (1.03), followed by high fidelity simulation (0.86) and standardized patients (0.86). The study concluded that the simulation based nursing educational interventions are very successful, in improving psychomotor skills.(13)

The purpose of the study, which was conducted in Turkey, was to find out what student nurses thought about the use of low fidelity simulation in nursing educations. This descriptive study was carried in the nursing skill department, development labs at a health sciences facility. 54 nursing students made up the sample, and information was collected through a questionnaire the researchers created. The results expressed that the students thought low fidelity simulation was a useful teaching strategy that improve learning opportunities and helped them develop their clinical abilities. The study showed that low-fidelity simulation has a positive impact on nursing education and suggested incorporating it into nursing education.(14)

The study's primary goal was to assess how SBL affected clinical skill performance, knowledge, self-confidence, learning satisfaction, and critical thinking disposition. A pre and posttest were used. The study includes a sample of 55 new nurses, of whom 28 were choose for the experimental group and 27 for the control group. Knowledge lectures, team learning exercises, skills training, team-based simulation exercises, and debriefing sessions, which ran from February 14–27, 2015. Using SPSS software, percentages of data, means, standard deviations, chi square test, and t-tests were used

to analyze the data for results. The findings showed that nurses in the experimental group only got standard lecture based instruction in terms of knowledge, clinical skill performance, self -confidence, deep understanding, and learning pleasure. The study found that engaging a low fidelity simulator for simulation education is a successful training methods.(15)

In 2017, the study was carried out at Acibadem Mehmet Ali Aydinlar University. The primary goal of the study was to determine how simulation based instruction affected students' performance, knowledge, satisfactions, and self -confidence regard to safe medicine administration techniques. The study included a sample of 58 nursing students, mean age of 20.69 ± 1.02 years, of which 51 (87.9%) were female, a medication practice checklist for oral drug administration, and pre and posttests were used. The findings showed that after winning in the simulation exercises, student knowledge levels improved statistically significantly ($p < 0.05$). For safe medication practices, the average performance score was 65.70 ± 5.83 . Furthermore, a weak but positive link was found between student performance, knowledge, and self -confidence scores and their pleasure with simulation. Additionally, a significant positive connection ($p < 0.01$) was found between knowledge levels and self -confidence.(16)

The goal of the study was to determine whether high fidelity simulator technological benefits balanced their expense, especially in educational settings. The course of three days of instruction, a sample of 101 undergraduate students were randomly chosen for the high fidelity SimNewB group or the traditional low fidelity Resusci Baby Basic group. The lectures were the same for both, but the sort of figure utilized in the hands-on instruction varied. The training procedure was standardized for each participant by five qualified and experienced teachers. Both groups' students finished written tests. After training, the three -month follow-up period, both groups' written examination and Megacode evaluation scores significantly improved, regarding increase in knowledge or skill performance, there was no important difference between the high fidelity and low fidelity groups. (17)

The literature study indicates that simulation-based learning is a successful teaching method that enhances the self-confidence and happiness

of nursing students. Research consistently shows that effective learning results are mostly dependent on well-designed simulation experiences and suitable teaching strategies, such as well-defined objectives, learner assistance, and structured questioning. However, differences in how simulations are implemented and how they are taught suggest that more research is necessary. In order to influence evidence based reforms in undergraduate nursing educations, it is crucial to investigate the relationship between low fidelity simulation with nursing student satisfaction and self -confidence, and its association with instructional practices. Pakistan is developing country in which low fidelity simulation use in nursing education. Further exploration is required.

2.1-Problem statement:

The complexity of healthcare is increasing, necessitating safer, more efficient, practical training approaches in the nursing industry. A creative approach called simulation-based learning (SBL) gives nursing students a secure setting in which to hone critical thinking, clinical skills, and decision-making abilities. In an effort to better prepare graduates for real-world clinical issues, nursing programs around the world are using SBL to improve students' practical competence, contentment, and self-confidence (1, 4).

Although it's wide acceptance, SBL is not always applied successfully in various nursing programs. Different student experiences and outcomes are caused by variations in simulation design, instructional strategies, and competency of teachers. This differences show that programs are not making the most of SBL's improvements, which results in changing in nursing student involvement, satisfactions, and self -confidence. The gap affects both the quality of education and the abilities of future nurses to deliver effective, safe care (8, 9).

It is necessary to look into and address the connections among nursing student satisfaction and self -confidence with low fidelity simulations. Although previous studies show the positive effects of low fidelity on these outcomes, there is a lack of actual proof on the ways in which different teaching methods and aspects of simulation design impact these associations,

especially for various and resource based educational settings. Understanding these changes is essential for improving simulation methods, increasing education options, and ultimately improving patient safety and care quality, this study aims to fill this gap.

2.2-Research Hypothesis:

• Null Hypothesis (H_0)

There is no association between low fidelity simulation based learning and educational practices in undergraduate of nursing students.

• Alternative Hypothesis (H_1)

There is association between low fidelity simulation based learning and educational practices in undergraduate of nursing students.

2.3- Purpose of study:

This study goal is to improve the nursing student satisfaction, enhance self -confidence level, and develop the positive educational practices related to the low fidelity SBL, in results the students was able to provide care in a safe environment by using standardized guidelines.

2.4-Aim of study:

To assess the association of undergraduate nursing student satisfaction, self -confidence with low fidelity SBL and its association with educational practices.

2.5-Objectives:

1. To examine the association between low fidelity and nursing student satisfaction.
2. To examine the association between low fidelity and nursing student self -confidence.
3. To determine the association between low fidelity and educational practices.

2.6-Research Questions

2.6.1-Primary question:

1. What is the association among low fidelity, nursing student satisfaction, self -confidence, and educational practices?

2.6.2-Secondary question:

1. Is there an association between low fidelity and nursing student satisfaction?
2. Is there an association between low fidelity and nursing student self -confidence?

3. Is there an association between low fidelity and educational practices in undergraduate nursing education?

MATERIAL AND METHODOLOGY

3.1-Study Design:

The correlational cross-sectional research design was used for this study.

3.2-Study duration:

The study was conducted a period of four months, from January 2026 - April 2026. After the approval of IRB (Instructional Review Board).

3.3-Study Setting:

The study was conducted at Private Institute of Nursing.

3.4-Sampling:

The criteria of sampling as following;

3.4.1-Target Population:

Target population was student of Private Institute of Nursing.

3.4.2-Study Population:

It included undergraduate BSN from 1st year to 4th year students of Private Institute of Nursing.

3.4.3-Sample Size:

3.4.3a) Subject:

(a) A sample of 165 students will be selected.

(b) The sample size was calculated for the known population using the slovin's formula (1960) and keeping the confidence interval 95% the margin of a level equal to 5%. Sample size of 165 undergraduate nursing students was selected from the total population of 281 BSN students.

3.4.3b) Calculation:

$$n \text{ (Yamane)} = \frac{N}{1+N(e)^2}$$

$$= \frac{281}{1+281(0.05)^2}$$

$$= \frac{281}{1+1.7025}$$

Sample size (n) = 165

3.4.4 Sampling Techniques:

A stratified probability sampling with proportional allocation was used.

3.4.5-Sampling Selection:

The sample selection was done as following criteria;

3.4.5a)-Inclusion Criteria:

- Undergraduate nursing students of Private Institute of Nursing.
- Students willing to participate in the study.
- Both male and female were included.
- Age (18y-27y)

3.4.5b)-Exclusion Criteria:

- Students with CGPA below <1.75/50-60%
- Students with no exposure to SBL.
- Those who were absent.
- Nursing interns were excluded as they are not participating regularly in SBL.

3.5- Study Variables:

INDEPENDENT VARIABLE:

1. Simulation-based learning

DEPENDENT VARIABLE:

1. Educational Practices
2. Students satisfaction and self confidence
3. Simulation based scale

3.6- Data Collection Tools:

The instruments was adapted from (NLN) National League for Nursing (18-20). The questionnaire was consisted of sections related to demographic data, educational practices (student version), student satisfactions, self -confidence, and simulation design scale.

These tools are widely validated and reliable for measuring the study variables.

• Scale:

Five points Likert scale was used in adapted questionnaires which will depend upon 1(strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree); total 35 items were used according to given below;

1-Education practices: (student version)

This instrument was depend upon 10 items to measure the active learning level of education practices related to SBL (18).

2-Student satisfaction and self -confidence:

This instrument was depending upon 10 items scale to identify the student satisfaction and self -confidence related to SBL. (5 items) for student

satisfactions and (5 items) for self-confidence (19).

3-Simulation design scale: (student version)

This instrument was consist of 15 item to assess the objective and information (5 items), problem solving (5 items), feedbacks and guided reflection (3 items), and fidelity (2items) concerning the simulation activity (20).

3.7-Data Collection Procedure:

The data collection was carried out after obtaining formal permissions from the concerned authorities of Private Institute of Nursing. The purpose of this study was explained to the participants, and informed consents were also being obtained. Questionnaires were distributed among the students and collected after completion.

3.8- Timeline:

ACTIVITIES:	Nov(2025)	Dec(2025)	Jan(2026)	Feb(2026)	Mar(2026)	Apr(2026)
Topics for discussions:						
Introduction & literature review & Methodology:						
Synopsis submission & IRB approval:						
Data Collections:						
Data analyze:						
Results:						
Submission :						

3.9: Ethical considerations:

Several steps were taken to protect the study participants.

- ❖ Written consent by the volunteer students was obtained.
- ❖ Personal communication with students was done.
- ❖ All the questions were answered on the spot regarding the explanation of any question that was confusing to them.
- ❖ It was reassured to them that the data will be used only for the research purpose and the information will be kept confidential.
- ❖ All participants may withdraw at any time.
- ❖ The purpose, benefits, and potential contribution of the study were clearly explained to all the participants. Ongoing contact were maintained with participants who may wish to be informed about the study findings.

3.10- Data Analysis:

- Data was analyzed by using statistical package for the social sciences (SPSS) version 29.0.
- To ensure the accuracy and completeness, statistical tests were used.

The distribution of the variables assessed by using the Kolmogorov-Smirnov test, for the checking of normally distributed data.

- Both descriptive and inferential statistics were applied.
- Quantitative variables including (SSCLS, SDS, and EPSS scores) were presented as means value along with their standard deviations.
- Pearson correlation coefficient was performed for assess the relationship among variables.

RESULTS

4.1 Introduction:

This chapter presents the analysis and interpretation of data collected from undergraduate nursing students to assess the association between SBL, educational practices, student satisfactions, and self-confidence. Data were analyzed using SPSS version 29. Descriptive and inferential statistics had been used, which involves frequencies, means, standard deviations, normality tests, Pearson correlation, and independent sample t-tests.

4.2 Demographic Characteristics of Respondents

Table 4.1: Distributions of respondents by gender (n = 165)

Gender	Frequency (n)	Percentage (%)
Males	77	46.7%
Females	88	53.3%

Interpretation:

The results express that female students represent a slightly larger percentage (53.3%), as compare to male students (46.7%). This is indicative of the general gender representation in nursing education wherein the number of females enrolling is generally higher. The

comparatively equal representation of both sexes in this research study increases the generalizability of the results as well as indicates that the results are not strongly biased towards one gender group. Additionally, this even distribution enables a significant comparison of male and female respondents in later analyses.

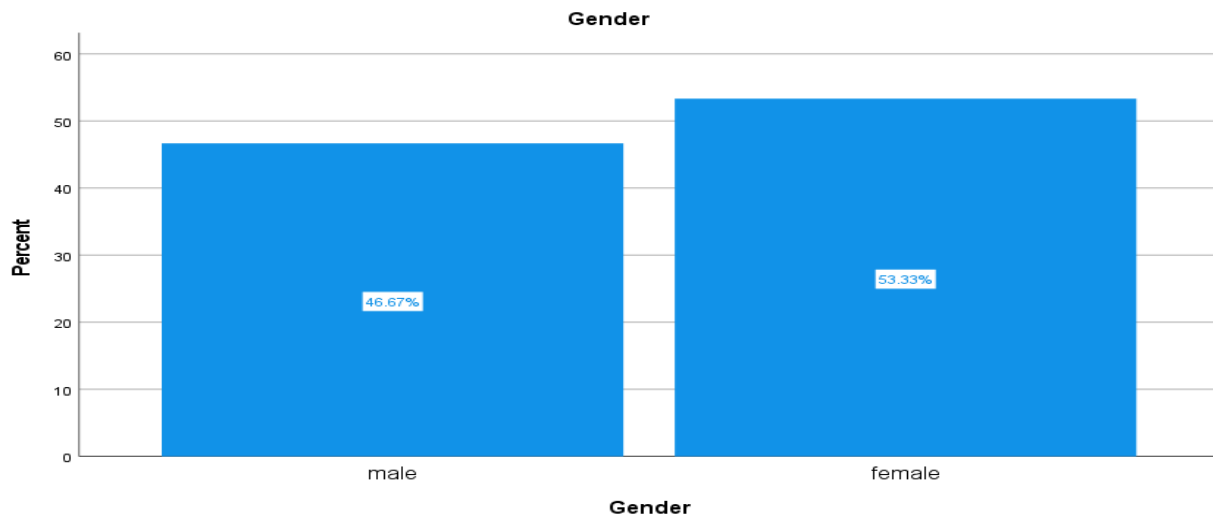


Table 4.2: Distribution of respondents by age group (n = 165)

Age Group (years)	Frequency (n)	Percentage (%)
18-20	96	58.2%
20-22	45	27.3%
22-24	22	13.3%
24-27	2	1.2%

Interpretation:

Most of the respondents (58.2) were aged 18-20 years, with 27.3 years at 20-22 years. The participation of students in the older age groups (22-24 years: 13.3% and 24-27 years: 1.2) was also limited. This distribution shows that the majority of respondents were fresh in their

studies, probably in their first steps of professional growth. Students at the younger stages might lack clinical experience; hence, simulated learning can be of great importance in improving their clinical knowledge, confidence, and satisfaction.

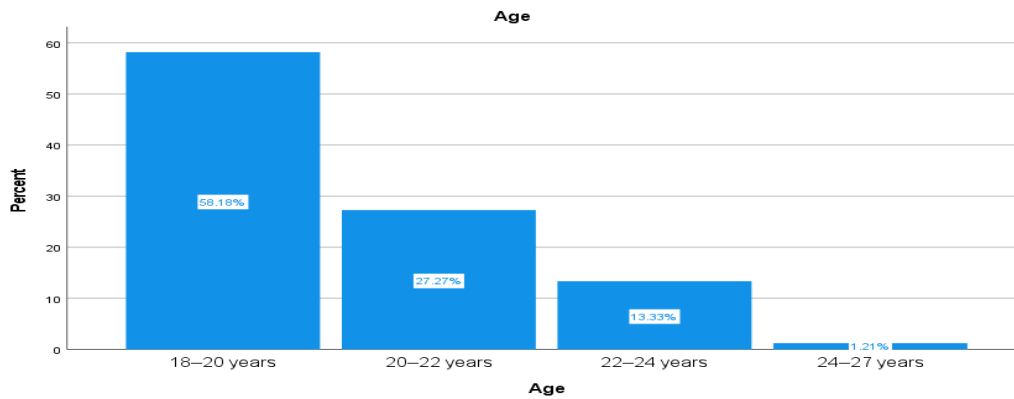


Table 4.3: Distribution of respondents by academic year (n = 165)

Academic Year	Frequency (n)	Percentage (%)
1st year (1st semester)	82	49.7%
1st year (2nd semester)	37	22.4%
2nd year (4th semester)	14	8.5%
3rd year	16	9.7%
4th year	16	9.7%

Interpretation:

Almost half of the respondents (49.7%) were in the 1st year (1st semester) and 22.4% in the 1st year (2nd semester). The proportion of the students in the higher academic years was lower. This implies that the researchers mainly used junior

students as the study sample. This distribution emphasizes the role of SBL in the initial years of nursing education because early-year students depend more on structured learning experiences like simulation because of limited clinical experience.

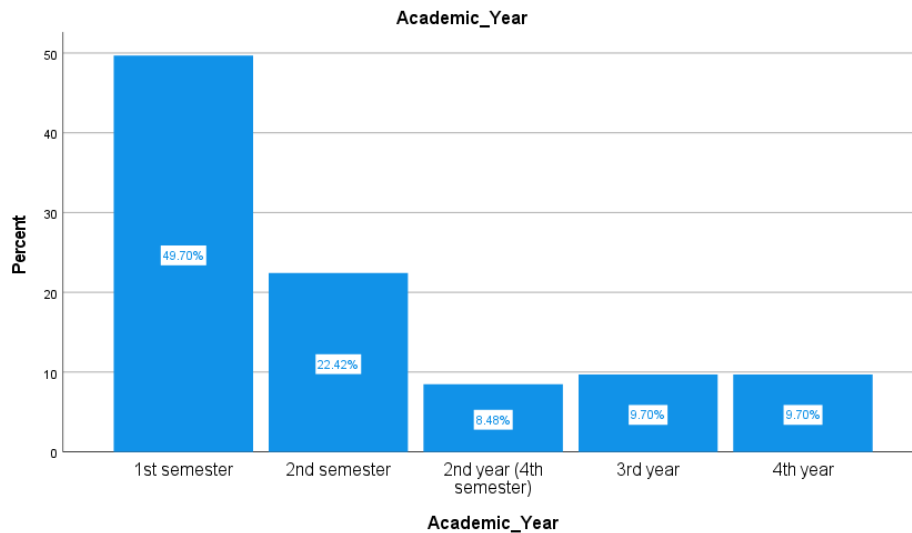


Table 4.4: Distribution by educational system (n = 165)

System	Frequency (n)	Percentage (%)
Annual	31	18.8%
Semester	134	81.2%

Interpretation:

Most students (81.2%) were students under the semester system with only 18.8% being under the annual system. This means that the semester system is the prevailing education system in the study environment. Continuous assessment and

high levels of academic interaction are inherent in the semester model, and they could have a positive impact on the interaction of students with simulation-based learning activities and their final learning results.

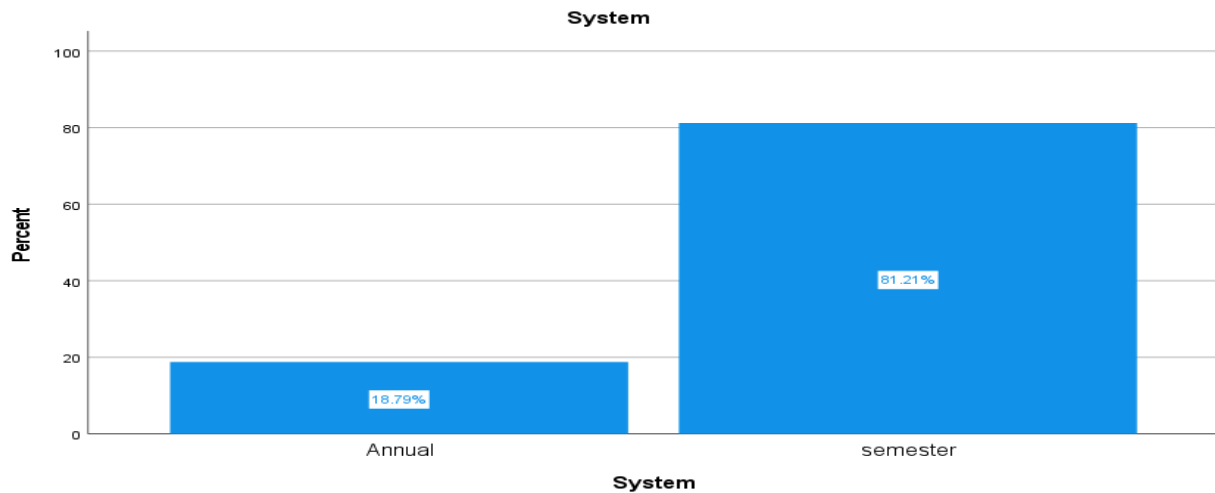


Table 4.5: Distribution by percentage (Annual system)

Percentage Range	Frequency (n)	Percentage (%)
50-60%	24	14.5%
70-79%	59	35.8%
80-89%	13	7.9%
Above 90%	7	4.2%



Interpretation:

The highest percentage of 35.8 is in the range of 70-79 percent, which indicates that among students taking the assessment at the end of the annual system, the highest proportion of students was found to have scored in the 70-79 percent range, indicating that students are performing averagely. The percentage of

students who scored high (80-89 and above) was lower and there were fewer high achievers in this group. The average level of academic achievement might indicate that the innovative methods of teaching like simulation are required to increase the learning process and improve academic performance.

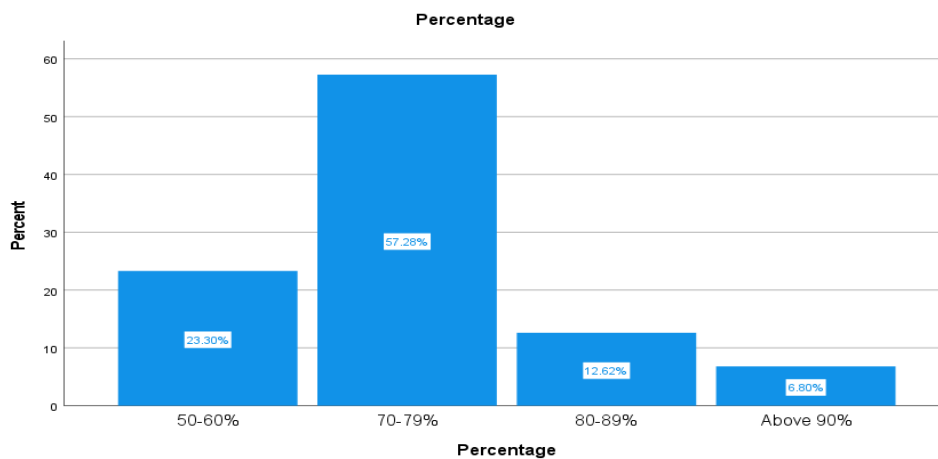


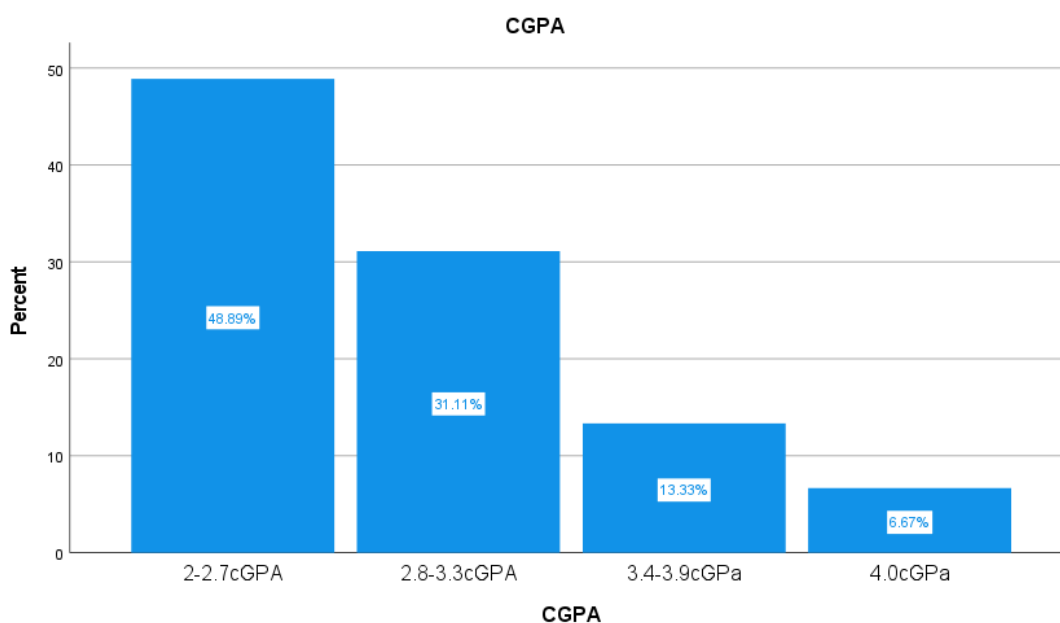
Table 4.6: Distribution by CGPA (Semester system)

CGPA Range	Frequency (n)	Percentage (%)
2.0-2.7	44	26.7%
2.8-3.3	28	17.0%
3.4-3.9	12	7.3%
4.0	6	3.6%

Interpretation:

Out of semester system students, most (26.7) students had CGPA in 2.0- 2.7 range with 17.0 students in the 2.8 3.3 range. Just a few students were able to attain increased CGPA. This shows

that the majority of students are in the average academic performance group. The result also highlights the relevance of SBL as a positive learning approach to enhance performances, knowledge, and confidence of students.



4.3 Assessment of Normality

Tests of Normality (n = 165)

Shapiro Wilk test results showed that all variables of the study had the p-value of less than 0.05, which showed a statistically significant un-normality test. This suggests that the data were not normally distributed. Nevertheless, with such a high sample size (n = 165), parametric

tests (e.g., Pearson correlation) became reasonable according to the Central Limit Theorem according to which large samples follow the normal distribution despite the underlying data distribution. As such, it was analyzed using parametric tests without partially undermining the validity of the outcomes.

4.4 Descriptive Statistics of Study Variables

Table 4.7: Mean and Standard Deviation of Study Variables:

Variable	Mean	Std. Deviation
Satisfactions	3.99	0.74
Active Learning	3.96	0.58
Self-Confidence	4.11	0.54
Simulation Design	4.00	1.01
Problem Solving	3.94	0.65

Variable	Mean	Std. Deviation
Feedback	3.98	0.65
Fidelity	4.03	0.79

Interpretation:

The descriptive analysis revealed that the mean scores of the all the variables were close to 4 on a 5 point Likert scale which is good to prove that the agreement between the respondents was at a high level.

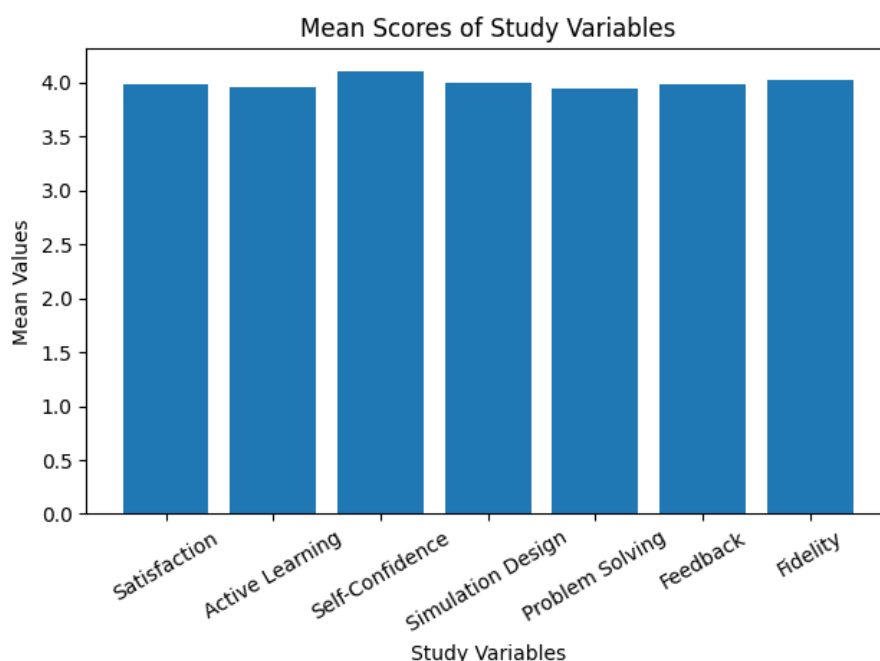
Mean scores on the self-confidence variable (M = 4.11) had the highest ranking in all the variables, indicating that students were confident in their clinical competences by the end of simulation-based learning.

- **Fidelity** (M = 4.03) and **Simulation Design** (M = 4.00) were also high in means meaning that students found simulation environment realistic and well-structured.

- **Satisfaction** (M = 3.99) and **Feedback** (M = 3.98) scores were also high, and they indicate that the student perceives these aspects of teaching method and support provided by the instructor as positive.

- **Active learning** (M = 3.96) and **Problem-Solving** (M = 3.94) also showed the high level of agreement, which means that simulation promoted engagement and critical thinking.

Altogether, these results will provide the idea that SBL proved to be effective to improve several aspects of student learning such as engagement, satisfaction, confidence, and perceptions of the quality of the education.



4.5 Correlation Analysis

Table 4.8: Pearson Correlation among Study Variables

Variables	Satisfaction	Active Learning	Self-Confidence
Satisfaction	1	0.494**	0.550**
Active Learning	0.494**	1	0.574**
Self-Confidence	0.550**	0.574**	1
Simulation Design	0.362**	0.328**	0.355**
Problem Solving	0.491**	0.567**	0.575**
Feedback	0.400**	0.537**	0.417**

Variables	Satisfaction	Active Learning	Self-Confidence
Fidelity	0.370**	0.513**	0.513**

Interpretation:

The analysis of the Pearson correlation showed that all study variables fell into statistically significant positive relationships ($p < 0.01$).

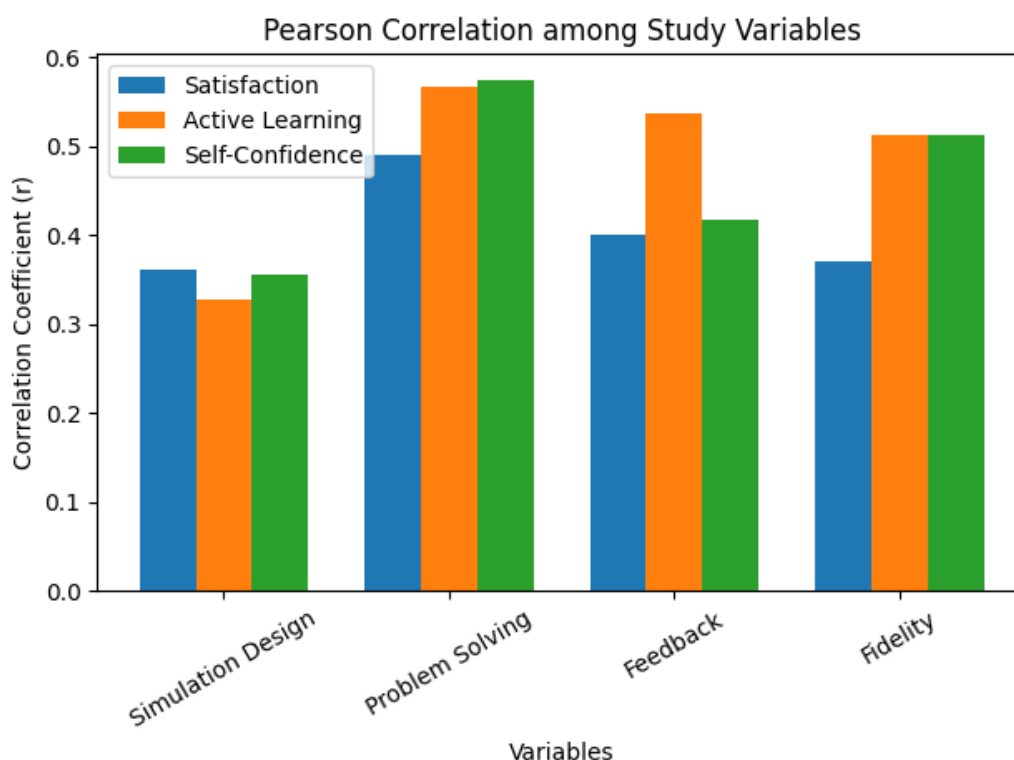
The results showed that there was a moderate positive correlation between satisfactions and self-confidence ($r = 0.550$), which means that the more satisfied students were with simulation-based learning, the higher their confidence levels were.

- **Active learning and self-confidence** ($r = 0.574$) demonstrated a strong positive association whereby more students engage in learning activities and have more confidence.
- **The correlation between simulation design and satisfaction** ($r = 0.362$) as well as self-

confidence ($r = 0.355$) was significantly positive indicating that well-designed simulations lead to improved learning outcomes.

Among simulation design elements:

- **Problem-solving** had the highest correlations with self-confidence ($r = 0.575$) and this indicates its importance in skills development.
- **Feedback:** There were also positive significant relationships between feedback and all variables, with the significance placed on timely feedback and simulation environments. By and large, these results suggest that, with better simulation design and new education practices, greater satisfaction and confidence increase among nursing students.



4.6 Hypothesis Testing

Null Hypothesis (H₀): There is no relationship between simulation based learning and educational practices.

Result: $p < 0.01$

Decision:

The correlation analysis revealed that the relationships between learning based on simulation and all the variables in the study had a positive correlation which was statistically significant ($p < 0.01$). Thus, the null hypothesis must have no association was rejected and it said no such association exists. The alternative

hypothesis was accepted and it proved that, SBL significantly correlates with educational

practices, student satisfactions, and self-confidence.

4.7 Comparison by Gender (Independent t-test)

Table 4.9: Comparison of Mean Scores by Gender

Variable	Male Mean	Female Mean	p-value
Satisfaction	4.00	3.97	0.808
Active Learning	3.91	4.01	0.267
Self-Confidence	4.09	4.13	0.633
Simulation Design	4.03	3.97	0.702
Problem Solving	3.92	3.96	0.702
Feedback	3.93	4.03	0.312
Fidelity	4.09	3.99	0.439

Interpretation:

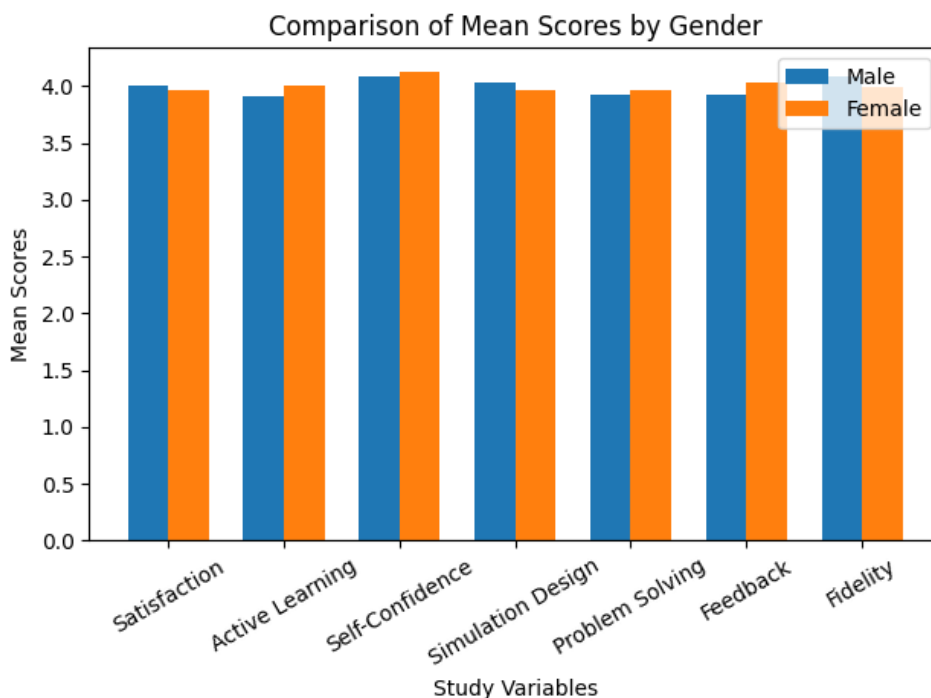
The independent samples t-test outcomes showed no statistically significant difference between male and female students in all the study variables ($p > 0.05$).

Although slight differences in mean scores were observed:

- Male students had a little more satisfaction and fidelity.
- Female students expressed a bit better active learning and feedback scores.

But these were not significantly different, and that means that gender does not affect the perceptions of students towards simulation based learning.

This implies that male and female students can gain the same learning benefits when using simulation-based learning and that, both male and female students can be homogeneous in terms of educational benefits.



4.8 Summary of Findings

The results of the study showed that:

- General Practices among students were also satisfactory, there was high level of confidences and satisfactions.

- Design of simulations had a important impact on all outcomes variables.
- There was a positive correlation between all variables.
- There were no differences between genders.

5-Discussions

5.1- Discussion:

The results of this study show that simulation-based learning (SBL), educational practices, student satisfactions, and self-confidence have a significant positive correlation among undergraduate nursing students. The average score of all the main variables which include the satisfaction (3.99), self-confidence (4.11) and educational practices (3.96) shows a high degree of consensus that SBL is an effective instructional methodology. It is worth noting that the self-confidence had the highest mean score, indicating that students believed that they were more capable of doing clinical tasks after they had gone through the simulation sessions. This is congruent with prior studies in Saudi Arabia and Morocco that also indicated statistically significant gains in student confidence with SBL. The moderate positive relationship between satisfactions and self-confidence ($r = 0.550$, $p < 0.01$) supports the thought of positive learning experience as a direct contributor to the belief of a student in the clinical competence (21, 22). Moreover, the research also points out that the elements of simulation design, especially problem-solving, have a significant influence on self-confidence ($r = 0.575$) which is why in nursing programs well-structured and realistic scenarios play a significant role in influencing self-confidence.

5.2- Outcomes and Utilization:

Key Outcomes:

High Student Confidence: Students expressed the most positive level of agreement of their self-confidence ($M = 4.11$), and feel that they are prepared to undertake the clinical tasks.

Positive Rating of Design: Design elements such as fidelity ($M = 4.03$), and structure ($M = 4.00$) had a positive rating, and it was determined that students considered realistic learning environments important.

Utilizations:

Gender Neutrality: The researchers did not find significant statistically significant difference in the perceptions or benefits of SBL by male and female students.

Curriculum Integration: The Private Institute of Nursing can utilize these findings to further incorporate SBL in the first and second-year BSN curriculum, in which students exhibited the most engagement.

Instructional Improvement: Educators can use the fact that there is a strong relationship between "Active Learning" and "Self-Confidence" to shift more classroom time towards practical simulation.

Recommendations:

Standardize Feedback: Feedback was significantly correlated with all the variables and as a result, institutions should establish structured timely debriefing sessions as a mandatory aspect of each simulation.

Improve Problem-Solving Scenarios: Since it has a high effect on confidence, educators can enhance problem-solving scenarios by making them more complex and independent problems that require students to apply their knowledge and skills to critical care.

Resource Allocation: There should be an attempt to maintain and upgrade low-fidelity equipment to see to it that high scores on the "fidelity" (realism) scale are maintained.

Implications on Future Research:

Longitudinal Studies: Future studies need to follow-up students who had the simulation experience into real clinical rotations to determine whether high self-confidence in the laboratory is related to clinical competence on the bedside.

Resource-Constrained Contexts: More research is required in specific areas such as how the optimization of low-fidelity simulation can be achieved in developing countries where the equipment required to support this simulation is unavailable.

Faculty Competency: A study should be conducted to determine the impact of the particular teaching style or level of experience of the instructor to the level of student satisfaction and achievement during SBL.

Strength of study:

Validated National League for Nursing (NLN) instruments: By using reliable and internally consistent instruments, the reliability and internal consistency of the data may be ensured.

Diverse Sample: Students in all four years of the BSN program took part in the study, and it will give a complete picture of the attitude of the student body.

Limitations:

Geographic and Institutional Scope: The study was carried out at the Private Institute of Nursing only, and this could be related to institutional peculiarities, but not to the general tendencies.

Data Distribution: Shapiro-Wilk tests showed that the data could not be considered normally distributed, but since the sample size was large, then the parametric test was possible with the help of the Central Limit Theorem.

Non-Experimental Design: Since it is a cross-sectional correlational study, they are only able to identify associations but not necessarily be able to prove that SBL did cause the increase in confidence.

Conclusions

The research paper finds that learning through simulation is a paradigm shift and the most effective teaching method to use with undergraduate nursing students. Making the environment safe, but realistic, SBL greatly increases the student satisfaction and develops self-confidence to engage in the clinical practice. The close relationships between simulation design, active learning and student outcomes indicate that the success of the program is not only in the technology employed, but in the systematic learning practices and feedback given to the students by the instructors. Finally, it is necessary to incorporate well-designed SBL in the nursing curriculum to produce qualified and

confident health care professionals and enhance patient safety.

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