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Analyses Knowledge and Attitudes of Nursing Faculty toward Simulation-Based Learning

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ABSTRACT

The current research set out to assess nursing professors' familiarity with and feelings toward simulation-based learning (SBL), a cutting-edge method of instruction that has gained praise for its ability to help students hone their clinical abilities in a risk-free setting. A quantitative research strategy was used, with 110 nursing faculty a self-structured knowledge questionnaire and a Likert scale were used to obtain data about attitudes. Using the test-retest procedure, we validated the tools' dependability and discovered that the instruments were very dependable for consistent measurement. The findings showed that whereas 57.5% of participants had a reasonable degree of understanding of simulation-based learning, just 5% displayed sufficient knowledge. When asked about their attitude, 82.7% of people gave a good answer, 17.3% were unsure, and 0% gave a negative one. Knowledge and attitude ratings were also not significantly related to certain socio-demographic factors. In order to improve learning outcomes and patient safety, the results highlight the need for training and development programs that specifically target faculty members to increase their knowledge of SBL. This helps ensure that SBL is effectively integrated into nursing education.

Keywords: Simulation, Knowledge, Attitude, Nursing, Education.

INTRODUCTION

More and more, in the dynamic field of nursing education, the need of moving away from more theoretical and toward more hands-on, technologically enhanced approaches cannot be overstated. One of the most effective new approaches to teaching is simulation-based learning, or SBL. Its goal is to help students make the transition from classroom theory to real-world clinical practice. Being a practice-oriented profession, nursing requires students to have a solid grasp of theory and show they can safely and effectively apply it to real-life patient care scenarios. Learners may practice collaboration, decision-making, critical thinking, and clinical situations in a secure, regulated, and risk-free environment using simulation-based learning.

A wide array of instruments, from task trainers and low-fidelity mannequins to high-fidelity patient simulators and virtual reality platforms, are used in nursing education simulation. Students may actively participate in difficult and demanding patient care scenarios via these simulations, which attempt to mimic clinical experiences as accurately as possible. In addition to gaining knowledge in technical areas, students also enhance their leadership, communication, and decision-making skills via this kind of instruction. This practical learning setting is essential for reducing the chances of clinical mistakes, which are of utmost importance in healthcare settings since patient safety is of the utmost importance.

In nursing education, SBL is especially useful since it allows students to practice making errors without putting patients at risk. In order to boost nursing students' self-esteem and sense of competence, this characteristic is essential. Important non-technical abilities, like teamwork, time management, and emotional resilience, are also fostered by SBL. Educators and institutions benefit from simulation because it facilitates standardized testing and allows for the recreation of complicated or uncommon clinical situations that students would not see in their clinical rotations.

The potential of SBL is enormous, making the involvement of nursing faculty members critical to its effective incorporation into the curriculum. The availability of technology and resources is important, but teachers' knowledge, comfort, and attitude toward using simulation as a teaching approach are even more crucial. Teachers who are well-versed in SBL and have a favorable outlook on it are more likely to include it into nursing curricula on a regular basis and to push for its adoption. Motivating students, improving teaching, and building a more dynamic and responsive learning environment are all possible outcomes of their active participation and infectious enthusiasm.

Although there are clear benefits, there are also some difficulties associated with using simulations in nursing education. Possible roadblocks to its widespread use include reluctance to adapt, ignorance of the technology, a lack of institutional backing, and doubts about the veracity of simulated situations. Furthermore, teachers may not have the necessary resources or proper training to make good use of simulation in the classroom. To identify the facilitators and deterrents of applying SBL in such settings, it is crucial to comprehend faculty knowledge and attitude toward the method.

Consequently, it is crucial to assess the present level of understanding and sentiments towards simulation-based learning among nursing staff. By conducting such an evaluation, educational institutions may gauge their teachers' level of simulation readiness, pinpoint areas for professional development, and design more efficient programs to support faculty growth. Researchers may learn a lot about the elements impacting faculty members' perspective and preparedness for SBL by looking at the correlation between demographic characteristics (such as gender, age, qualification, and years of experience) and faculty members' knowledge or attitude about SBL.

The current study used a quantitative research strategy to examine the familiarity with and feelings about simulation-based learning among nursing professors at a few different universities. Using purposive selection, forty nursing faculty members An attitude evaluation instrument based on Likert scales and a structured knowledge questionnaire were used to gather data. In order to improve the environment for simulation pedagogy and to increase faculty competence in it, educational methods should be informed by the results of this research.

The findings showed that 57.5% of the participants had a moderate understanding of simulation-based learning, with just 5% displaying good understanding. It is clear from these results that there is a need for more organized orientation and training programs to fill the information vacuum. Additionally, the findings of the attitude test were encouraging; 82.5 percent of respondents were enthusiastic about simulation-based learning, while 17.5 percent were indifferent. Notably, not a single responder showed any signs of negativity, suggesting that even those with little background information were generally receptive to the approach.

Some socio-demographic factors, including gender, age, education level, and years of experience, were not associated with knowledge or attitude ratings in the research. This data reveals that instructors' views on simulation are shaped more by their familiarity with the topic, their level of knowledge about it, and their training than by their personal traits. Consequently, educational institutions should create capacity-building programs that are welcoming to all faculty members and address their needs, regardless of their demographic makeup.

REVIEW OF LITERATURE

Grover, Anu et al., (2024) One new method that might help close the accomplishment gap in theory and practice is simulation-based education, which involves students actively participating in their own education. In a controlled environment, trainees may practice on standardized patients and other manikins, which mimic real-life situations. The key to an effective simulation session, according to teachers with expertise in simulation method, is thorough preparation.

Students may learn both technical and non-technical skills via simulations if they are well-prepared and follow the instructions. Consequently, the purpose of this study is to investigate the perspectives of faculty members on the use of simulation and their level of competence in this domain. Examining the demographics of nursing faculty in India who utilize simulation as a teaching tool and finding out how much they know and think about SBE are the main goals of this research.

This study utilized a descriptive cross-sectional design and was quantitative in nature. In order to get a better understanding of the issue, researchers in India questioned 150 nursing faculty members who were using simulation-based teaching. They used a self-structured knowledge questionnaire and a perception scale. With a standard deviation of 1.72, the average knowledge score for simulation-based education was 6.77.

The majority of participants (65.3%) had a favorable opinion of simulation-based teaching, while almost half (49.5%) had a reasonably competent understanding of the subject. There is a robust relationship between knowledge score and age and degree of schooling. Integrating simulations into lectures showed that teachers had a deeper grasp of the material. Educators in the field of Indian nursing who use simulation into their lessons have a good attitude about the effectiveness of this method, despite their little knowledge of it.

Dangol, Bhuwan et al., (2023) Through the use of simulation-based learning, students may acquire the necessary abilities to properly perform clinical tasks. In this study, we aimed to determine if nursing students' self-efficacy and competence in helping infants breathe (HBB) were affected by simulation-based instruction.

Our inquiry was conducted using a pre-experimental design. Forty third-year BSc nursing students were a part of it. To begin, information was gathered prior to the intervention. The research group then used a simulation-based intervention to teach infants how to breathe properly, in accordance with the HBB recommendations. Data was gathered four weeks after the intervention. The study of the data comprised both descriptive and inferential statistics; specifically, the paired t-test and the Wilcoxon test were used.

Within a minute of finishing the test, almost everyone was able to resume regular breathing. The results on the follow-up assessment were better after all the steps for correct ventilation had been taken. Specifically, the following metrics show a statistically significant improvement after the intervention: the time it takes to begin effective ventilation from the moment of birth (p=0.001), the ability to maintain effective ventilation (p=0.005), and the overall competency to perform HBB per minute (p=0.000).

People felt more confident in their abilities to perform HBB after the intervention. Students' post-test scores were significantly higher than their pre-test scores, indicating that the simulation-based instruction of Helping Babies Breathe (HBB) had a favorable effect on their skill capacities and perceived self-efficacy. This highlights the significance of HBB in class simulations for nursing students' skill development.

Basak, Tulay et al., (2019) According to the study, the main problem with teaching inhalers to nursing students is that it doesn't provide them enough practice with actual patients. The main obstacle to teaching nursing students how to provide inhaler training, according to study, is a lack of enough in-class practice. Focusing on inhaler medication administration for real patients, this study seeks to assess the effectiveness of theoretical lecture against standard patient (SP) use in improving nursing students' competencies in patient teaching. In this study, a randomized controlled trial with a single-blind intervention was used.

The SP group's score of 39.08 ± 5.49 is significantly different from the control group's overall patient teaching skill score of 26.73 ± 5.63 ($p < 0.01$). The average self-confidence score of the students in the SPs group was 8.48 ± 0.88, whereas in the control group it was 7.07 ± 1.33, a difference that was shown to be statistically significant ($p < 0.01$). Scores on tests measuring students' ability to educate patients were higher in the group that participated in simulated lessons using SPs than in the control group. While teaching a real patient how to use an inhaler correctly, students in the SPs group felt more confident.

Ajemba, Michael et al., (2024) while there is a growing body of literature praising the benefits of simulation-based teaching, there is insufficient quantitative evidence to back its broad use in medical schools. In medical settings, the efficacy of simulation-based training is being recognized increasingly often. There is a growing body of research looking at its effectiveness, but the available evidence is lacking in both quantity and quality. Finding out if medical education programs that employ simulation-based teaching are useful was the goal of this comprehensive investigation.

We included randomized controlled trials (RCTs) and quasi-experimental studies that compared simulation-based training to control groups or no intervention at all, as well as to more traditional training methods. Our key focus was on ensuring that individuals achieved and sustained competency in clinical skills. Their goal was to determine the efficacy of medical school simulations as a teaching aid. One of the best ways for medical students to acquire and retain clinical skills is via simulation-based training. It seems to be more effective than doing nothing or, in certain cases, using more traditional methods of training. The conclusions need to be validated by more high-quality research, nevertheless, since the data quality is uneven. Healthcare practitioners' ability to acquire and retain clinical skills via simulation-based training is the focus of this systematic study.

METHODOLOGY

110 faculty members were chosen for this research using a quantitative methodology and a purposive sample strategy Knowledge was evaluated using a self-structured questionnaire, while attitude was measured using a Likert scale. We used the test-retest approach to evaluate the tool's reliability, and we discovered that it is quite dependable.

RESULT

Table 1: Age of respondents

Age Group	Frequency (n)	Percentage (%)
24 – 34 years	53	48.2%
35 – 45 years	50	45.5%
46 years and above	7	6.3%
Total	**110**	**100.0%**

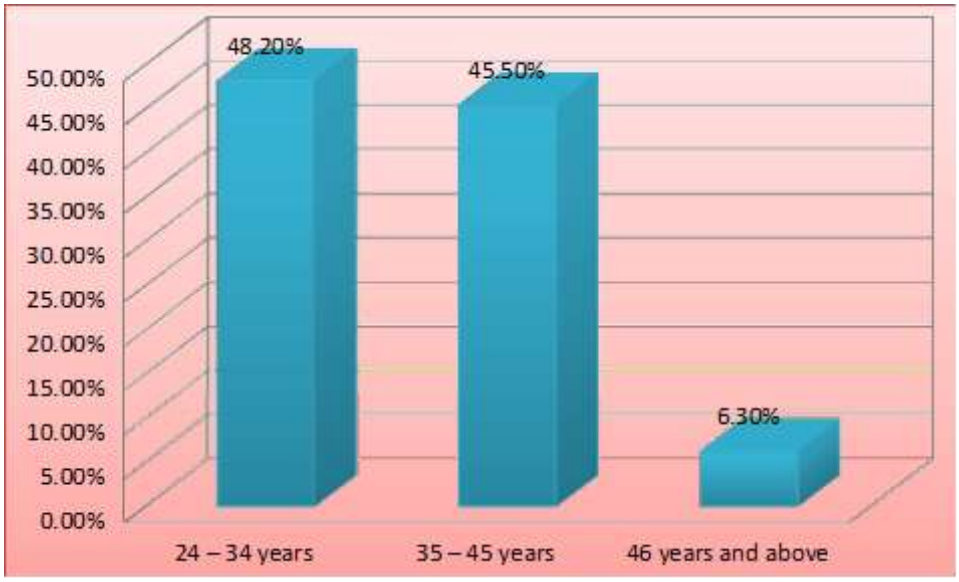

Figure 1: Age of respondents

The data presented in Table 1 highlights the age distribution of the 110 respondents who participated in the study. A significant proportion of respondents, accounting for 48.2%, fall within the 24 to 34 years age group, indicating that nearly half of the participants are in the early stages of adulthood or mid-career. This could suggest that the younger population is more accessible, available, or actively engaged with the subject of the study. Following closely is the 35 to 45 years age group, which comprises 45.5% of the total respondents. This reveals a substantial representation of mature adults who might bring more experience or a different perspective to the study topic. In contrast, respondents aged 46 years and above constitute only 6.3% of the total sample. This indicates a relatively low participation rate among older individuals, which could be due to various factors such as limited engagement with the study's theme, accessibility issues, or reduced willingness to participate. Overall, the distribution shows a strong concentration of participants in the age range of 24 to 45 years, suggesting that the findings of the study may be most relevant to this demographic segment.

Table 2: Gender of respondents

Gender	Frequency (n)	Percentage (%)
Male	28	25.5%
Female	82	74.5%
Total	**110**	**100.0%**

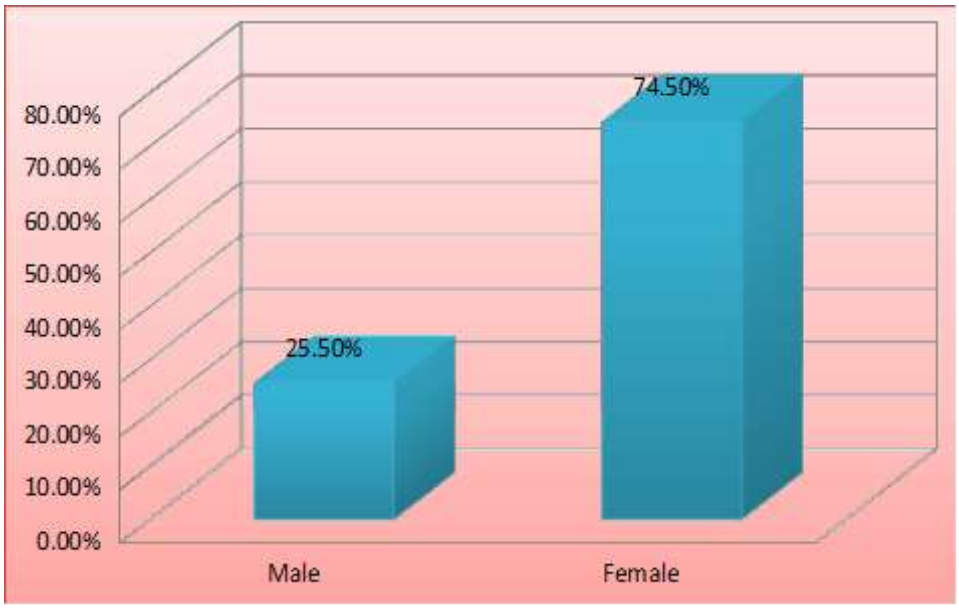

Figure 2: Gender of respondents

Table 2 presents the gender distribution of the 110 respondents involved in the study. The data reveals a clear gender disparity, with female respondents comprising 74.5% of the total sample, while male respondents account for only 25.5%. This significant difference suggests that the study population is predominantly female, which may reflect the gender composition of the target group or area under investigation.

Table 3: Qualification of respondents

Qualification	Frequency (n)	Percentage (%)
M.Sc. Nursing	80	72.7%
Pursuing Ph.D.	22	20.0%
Post Doctorate	8	7.3%
Total	**110**	**100.0%**

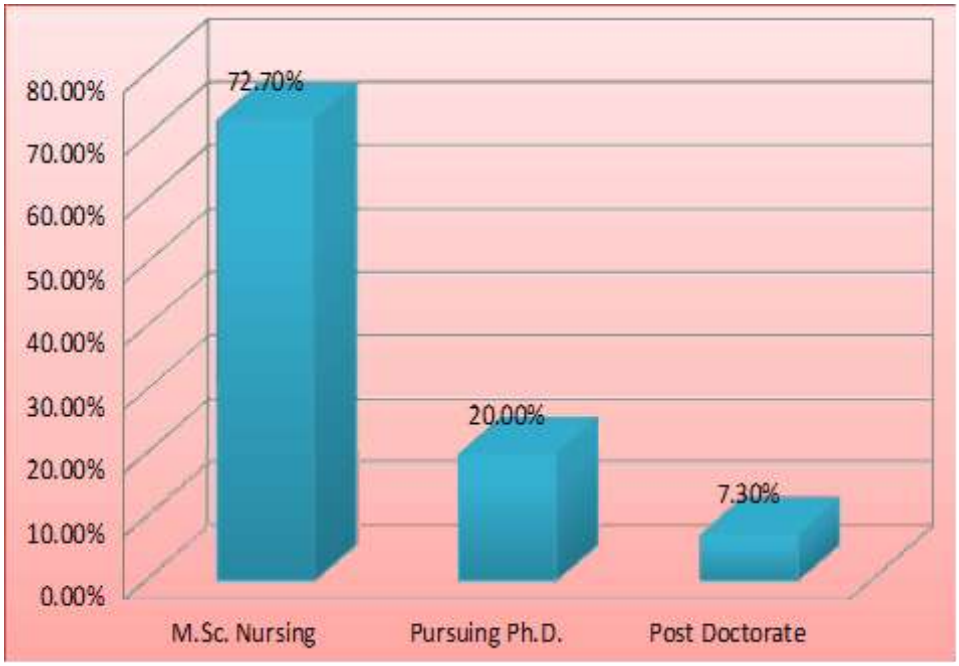

Figure 3: Qualification of respondents

Table 3 outlines the educational qualifications of the 110 respondents. A substantial majority, 72.7%, hold an M.Sc. in Nursing, indicating that most participants possess a strong postgraduate academic foundation in the field. This dominance suggests that the study largely draws insights from individuals with advanced clinical knowledge and training, which may enhance the relevance and depth of the findings in healthcare-related research. Respondents who are pursuing a Ph.D. constitute 20.0% of the sample. This indicates a considerable representation of individuals who are engaged in research and academic advancement, possibly contributing analytical or theoretical perspectives to the study. The presence of these doctoral scholars enriches the academic rigor of the dataset. A smaller segment, 7.3%, comprises post-doctorate respondents, reflecting a high level of specialization and expertise. Although limited in number, these participants bring advanced scholarly insights that may add value to the interpretation of complex concepts within the study.

Table 4: Experience of respondents

Experience	Frequency (n)	Percentage (%)
1 – 5 years	58	52.7%
6 – 10 years	28	25.5%
Above 10 years	24	21.8%
Total	**110**	**100.0%**

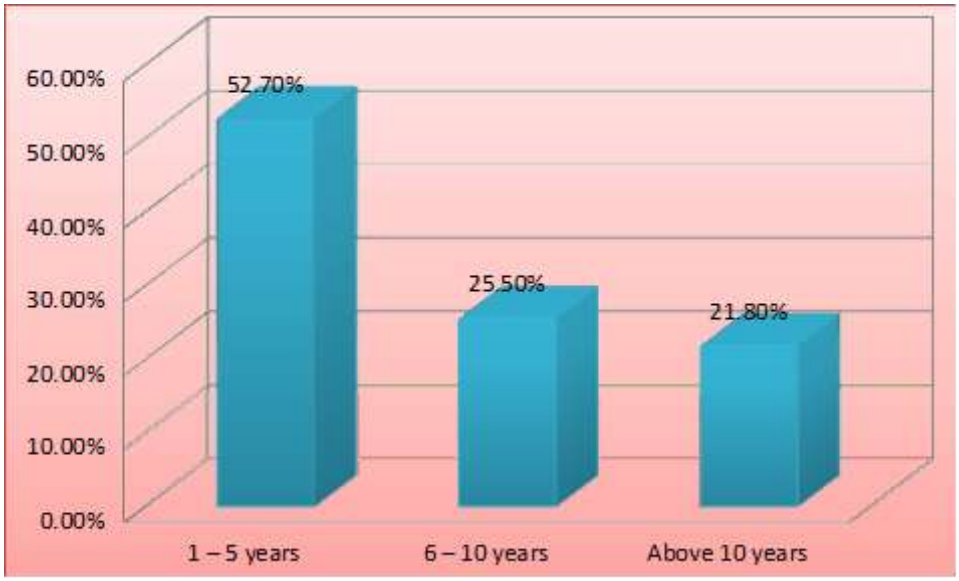

Figure 4: Experience of respondents

Table 4 illustrates the professional experience distribution of the 110 respondents. A majority, 52.7%**,** have 1 to 5 years of experience, indicating that over half of the participants are in the early stages of their careers. This suggests that the respondent pool largely consists of relatively newer professionals who may bring fresh perspectives and recent academic training into their practice. Respondents with 6 to 10 years of experience make up 25.5% of the total, representing mid-career professionals who likely possess a balanced mix of practical experience and continued professional development. Their input can offer insights grounded in real-world application over a sustained period. Those with more than 10 years of experience constitute 21.8%**,** reflecting a significant portion of seasoned professionals with extensive expertise. Although they form the smallest group, their contributions are valuable for understanding long-term trends, practices, and changes in the field.

Table 5: Knowledge Score among respondents

Level of Knowledge Score	Score Range	Frequency (N = 110)	Percentage (%)
Adequate Knowledge	13 – 19	6	5.5%
Moderate Knowledge	7 – 12	63	57.3%
Poor Knowledge	0 – 6	41	37.3%
Total	—	**110**	**100.0%**

Table 5 presents the distribution of knowledge scores among the 110 respondents, categorized into three levels: adequate, moderate, and poor. The majority of participants, 57.3%, fall into the moderate knowledge category, with scores ranging between 7 and 12. This suggests that more than half of the respondents possess a fair understanding of the subject matter, indicating a foundational level of awareness that may benefit from further training or exposure to improve comprehension and application. A significant proportion, 37.3%, scored in the poor knowledge range of 0 to 6, highlighting a considerable gap in understanding among a large segment of the respondents. This finding points to the need for targeted educational interventions or capacity-building efforts to address deficiencies and enhance competency levels, especially if the knowledge in question is crucial for professional or practical performance. Only a small percentage, 5.5%, achieved adequate knowledge with scores between 13 and 19, indicating that very few participants demonstrated a high level of understanding. This limited representation of well-informed individuals underscores the potential challenges in ensuring knowledge dissemination or retention among the wider group.

Table 6: Descriptive statistics of Knowledge

Variable	Mean	Median	Standard Deviation (S.D.)	Maximum	Minimum	Range	Mean %
Knowledge Score	8.3	8.0	3.12	17	2	15	43.68%

Table 6 presents the descriptive statistics for the knowledge scores of the 110 respondents. The mean score is 8.3, and the median score is 8.0, indicating that the distribution of scores is fairly symmetrical, with most respondents scoring around this central point. The standard deviation of 3.12 suggests a moderate level of variability in knowledge levels

among the participants, indicating that while many scores are clustered around the mean, there are noticeable deviations both above and below. The maximum score recorded is 17, while the minimum score is 2, resulting in a range of 15 points. This wide range highlights considerable disparity in the knowledge levels of the respondents, suggesting that while a few participants are quite knowledgeable, others have significant gaps in understanding. The mean percentage score of 43.68% reflects that, on average, respondents scored less than half of the total possible score, indicating a general trend of underperformance in knowledge assessment. This overall low mean percentage reinforces the earlier finding that the majority of respondents possessed only moderate or poor knowledge.

Table 7: Attitude Score among respondents

Level of Attitude Score	Score Range	Frequency (N = 110)	Percentage (%)
Positive Attitude	47 – 60	91	82.7%
Neutral Attitude	34 – 46	19	17.3%
Negative Attitude	20 – 33	0	0.0%
Total	—	**110**	**100.0%**

Table 7 displays the distribution of attitude scores among the 110 respondents, categorized into positive, neutral, and negative levels. A substantial majority of participants, 82.7%, exhibited a positive attitude, with scores ranging from 47 to 60. This overwhelming majority suggests that the respondents generally hold a favorable outlook toward the subject under study, which could influence their willingness to engage, adopt, or support related practices or interventions. A smaller proportion, 17.3%, demonstrated a neutral attitude, scoring between 34 and 46. These individuals may not have strong opinions or feelings toward the topic, indicating a potential area where awareness and motivational strategies could be applied to shift perceptions toward a more positive direction. Importantly, none of the respondents fell into the negative attitude category (score range 20–33), which is an encouraging outcome. The absence of negative attitudes indicates that there is no significant resistance or opposition among the participants regarding the issue being examined.

Table 8: Descriptive statistics of Attitude

Variable	Mean	Median	Standard Deviation (S.D.)	Maximum	Minimum	Range
Attitude Score	50.72	52	4.85	59	38	21

Table 8 provides the descriptive statistics for the attitude scores of the 110 respondents. The mean attitude score is 50.72, while the median is 52, indicating that the majority of participants scored in the upper range of the scale, reflecting a generally positive outlook. The closeness between the mean and median suggests a symmetrical distribution, with most scores clustering around the higher end. The standard deviation of 4.85 shows that there is moderate variability in the attitude scores. This implies that while most respondents exhibited similar positive attitudes, a few scored lower, possibly representing those with neutral views. The maximum score recorded is 59 and the minimum is 38, giving a range of 21 points. This range reflects the span between the most and least positive attitudes, with no respondents showing negative attitudes, as corroborated by Table 7.

CONCLUSION

The present study aimed to assess the knowledge and attitude of nursing faculty toward simulation-based learning (SBL), an innovative and experiential teaching strategy that enhances clinical competence in a safe, controlled environment. The findings revealed that while a majority of the faculty members held a positive attitude toward SBL, their knowledge levels were predominantly moderate, with only a small percentage demonstrating adequate understanding. This discrepancy highlights the need for structured training and faculty development programs to bridge the knowledge gap and empower educators to effectively implement simulation in their teaching practices.

Despite the positive attitude among faculty, the absence of a significant association between knowledge or attitude scores and socio-demographic variables suggests that exposure and training play a more crucial role than age, experience, or qualification in shaping faculty readiness for SBL. Therefore, institutions must focus on providing accessible and consistent opportunities for professional development, hands-on training, and resource allocation. Overall, this study underscores the critical role of faculty in the successful integration of simulation-based learning in nursing education. By enhancing their knowledge and maintaining positive attitudes, nursing educators can foster a more engaging, realistic, and safe learning environment for students, ultimately leading to improved patient care and reduced clinical errors in real-world practice.

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