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Effectiveness of Simulation-Based Learning in Nursing Education in Relation to Student Skills Development

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***Abstract*—** Simulation-based learning (SBL) has become an essential component of nursing education, bridging the gap between theoretical knowledge and clinical practice. This study examines the effectiveness of SBL in enhancing nursing students' skills development. A descriptive-correlational research design was employed. Data were collected through structured surveys assessing the effectiveness of SBL and its impact on clinical, communication, and critical thinking skills. Statistical analyses were conducted to determine relationships and differences based on demographic factors. The findings indicate that SBL is highly effective (Mean = 4.39) across concrete experience, reflective observation, abstract conceptualization, and active experimentation. Students demonstrated strong communication (Mean = 4.10) and critical thinking skills (Mean = 4.37); however, their clinical skills were rated at an average level (Mean = 2.48). A significant positive relationship was found between SBL effectiveness and students' skills development. Additionally, demographic factors such as year level influenced students' perceptions of SBL effectiveness, with fourth-year students rating it the highest. The results highlight the need to further enhance clinical skill development within SBL frameworks. The study recommends increased hands-on training, structured feedback mechanisms, and institutional investments in simulation resources.SBL is a crucial strategy in nursing education, significantly improving student competencies. Strengthening its integration into curricula and expanding research into advanced simulation technologies can further enhance nursing education outcomes.

***Keywords*—** Simulation-Based Learning, Nursing Education, Skills Development, Clinical Competency, Critical Thinking, Communication Skills.

I. INTRODUCTION

Background of the Study

Simulation-based learning has emerged as a pivotal approach in nursing education, providing students with opportunities to acquire, refine, and master critical skills in a controlled, risk-free environment. This method leverages realistic scenarios and modern technologies, enabling learners to bridge the gap between theoretical knowledge and practical application. Simulation-based learning addresses the growing need for experiential learning in nursing, where decision-making and hands-on proficiency can significantly impact patient outcomes. Engaging students in lifelike clinical situations fosters a deeper understanding of patient care while minimizing risks to actual patients. Additionally, this method allows learners to make mistakes and learn from them in a supportive setting, promoting confidence and competence. It also aligns with the increasing demand for highly skilled healthcare professionals, emphasizing the role of innovative teaching strategies in meeting industry standards.

Simulation-based learning (SBL) has gained widespread recognition as a transformative approach in nursing education, offering a safe and realistic platform for skill acquisition and development. Clinical simulations allow students to engage with complex scenarios that closely mimic real-world nursing challenges, fostering critical thinking, decision-making, and hands-on competence (Jeffries, 2022). The interdisciplinary growth of SBL since its inception highlights its impact across various fields, including healthcare, where it enhances practical proficiency and theoretical integration (Hallinger & Wang, 2020). SBL significantly boosts nursing students' perceived competence, self-efficacy, and learning satisfaction, underscoring its effectiveness as a pedagogical strategy (Hung et al., 2021). Simulation-based training is not limited to foundational skills but extends to developing advanced nursing leadership capabilities, showcasing its adaptability and breadth (Boss, 2022). Collectively, these findings validate the essential role of SBL in modern nursing education.

Based on initial observations and interviews with nursing educators and students, several gaps and lapses in implementing simulation-based learning (SBL) have been identified. These include inadequate training for some educators, limited resources, and inconsistencies in applying simulation activities. Students have also expressed concerns about insufficient time allocation for simulations, unrealistic scenarios that do not accurately reflect clinical realities, and a lack of integration

between simulation exercises and clinical experiences. Moreover, some students reported feeling unprepared during clinical placements despite participating in simulations, indicating potential weaknesses in skill transfer. These issues highlight the need to explore how SBL can be improved, ensuring it effectively bridges the gap between theoretical knowledge and real-world nursing practice while fostering critical skills and confidence.

The main objective of this study is to evaluate the effectiveness of simulation-based learning (SBL) in nursing education and its influence on the development of students' clinical skills at different proficiency levels. Specifically, the study aims to examine the demographic profile of nursing students, including their age, sex, and year level, and assess how SBL contributes to learning through the stages of Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. Additionally, the study will explore the extent of students' skills development, from novice to expert levels. It will also investigate the relationship between the effectiveness of SBL and the student's skill development and any significant differences in SBL effectiveness based on demographic factors. The results will provide insights into how SBL can be enhanced to improve nursing education and foster skill mastery.

II. RESEARCH METHODS

Research Design

This study uses a descriptive-correlational research design to evaluate the effectiveness of simulation-based learning and its relationship to developing nursing students' skills. A descriptive approach is utilized to assess the effectiveness of simulation-based learning in terms of the four learning stages: Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. Additionally, a correlation analysis is conducted to determine the relationship between the effectiveness of simulation-based learning and the student's skill development (from novice to expert). The study also explores whether demographic variables such as age, sex, and year level influence the effectiveness of simulation-based learning.

Research Setting

The study is done in a nursing education program at a chosen university. The environment consists of simulation laboratories with the equipment and technology for authentic nursing situations. The simulation labs provide students with the opportunity to engage in experiential, hands-on learning activities in a controlled setting. The study is done in a classroom and lab environment, where nursing students undergo simulation-based learning and conventional methods.

Research Respondents

The study sample comprises 150 nursing students from the Bachelor of Science in Nursing (BSN) program, specifically from Levels 3 and 4. The respondents are selected using stratified random sampling to ensure representation from different year levels, sexes, and age groups. The respondents have experienced simulation-based learning during their nursing education and have participated in various simulation exercises designed to enhance their clinical skills.

Research Instrument

The survey questionnaire is a self-administered paper that is utilized to measure the students' perception of the utility of simulation-based learning. It contains items that correspond to the four phases of Kolb's experiential learning cycle, namely Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. The students are asked to rate the utility of the simulation activities they have undergone based on a Likert scale from 1 (Not Effective) to 5 (Very Effective). This instrument is utilized to get the students' reflection and judgment of their learning experience through simulation.

The skills assessment rubric is utilized to measure the growth of nursing students throughout the study. According to Benner's novice-to-expert model, the rubric categorizes student performance into five levels: Novice, Advanced Beginner, Competent, Proficient, and Expert. The nursing instructors utilize this rubric to measure students' clinical skills in simulation exercises, providing a systemic and standardized method of measuring students' development in the acquisition of skills. This instrument offers uniformity in measuring student capabilities and adheres to the learning outcomes of the simulation-based activities.

Data Gathering Procedure

Data collection in this study occurs in a series of phases to ensure a comprehensive evaluation of the simulation-based learning experience.

The first phase is the Pre-Simulation Survey, where students are asked to complete a survey before engaging in the simulation exercises. This survey assesses their baseline skills and expectations for the simulation-based learning activities. It provides insight into students'

initial perceptions and understanding of their clinical abilities.

Following the pre-survey, students participate in Simulation-Based Learning Activities. These structured exercises aim to enhance students' clinical decision-making, technical skills, and patient care competencies.

The activities are designed to mimic real-life clinical scenarios, providing students with a hands-on learning environment.

Once the simulation exercises are complete, students fill out a Post-Simulation Survey. This survey allows them to rate the effectiveness of the learning activities they have just experienced. It helps gather students' feedback on how well the simulation exercises met their expectations and learning objectives.

Instructors conduct a Skills Assessment during and after the simulation exercises in conjunction with the surveys. Using the skills assessment rubric, instructors evaluate the students' performance, providing a detailed assessment of their clinical skills development based on Benner's model's five levels of proficiency.

Finally, all collected data are compiled and entered into a Data Compilation phase, where the information is organized and stored in a database for further analysis. This systematic approach ensures that all relevant data is collected consistently and structured for accurate evaluation.

Ethical Considerations

This study strictly follows ethical guidelines to safeguard the rights and well-being of participants. Informed consent is obtained from all participants, ensuring they fully understand the study's purpose, their role, and their right to withdraw at any time without facing any penalties. The consent form also guarantees the confidentiality of their responses. All collected data are securely stored, and personal information remains strictly confidential, accessible only to the research team. Participation is entirely voluntary, with no coercion or pressure placed on students. Additionally, participants are explicitly informed that they can withdraw from the study at any point without any academic consequences. These measures ensure that ethical standards are upheld throughout the research process.

Statistical Treatment

The collected data are analyzed through descriptive and inferential statistics. Descriptive statistics (frequency counts, percentages, means, and standard deviations) are applied to describe the demographic profile of the respondents and to evaluate the effectiveness of simulation-based learning. Inferential statistics, namely Pearson's correlation, are employed to establish the relationship between the effectiveness of simulation-based learning and nursing students' skill attainment. A one-way analysis of variance (ANOVA) is employed to investigate the differences in the effectiveness of simulation-based learning according to demographic factors like age, sex, and year level.

III. RESULTS AND DISCUSSIONS

Table 1. *Demographic Profile of the Respondents*

Profile	f	%
Age		
below 18 years old	0	0
18 – 20 years old	142	42.14
21 – 23 years old	189	56.08
24 – 26 years old	6	1.78
Above 26 years old	0	0
Total	337	100
Sex		
Male	164	48.66
Female	173	51.34
Others	0	0
Total	337	100
Year Level		
1st year level	0	0
2nd year level	62	18.40

3rd year level	126	37.39
4th year level	149	44.21
Total	337	100

Table 1 summarizes the demographic profile of nursing students based on age, sex, and year level. The majority (56.08%) are aged 21-23, followed by 18-20-year-olds (42.14%), with a small percentage (1.78%) in the 24-26 age range. In terms of sex, the distribution is nearly equal, with 51.34% female and 48.66% male, and no respondents identifying as "others." Regarding year level, most students are in their fourth year (44.21%), followed by third-year (37.39%) and second-year (18.40%) students, with no first-year respondents. These findings indicate that the nursing student population is primarily composed of upper-year students, with a balanced gender representation and a predominance of individuals aged 21-23.

Table 2.1. *Effectiveness of Simulation-based Learning in terms of Concrete Experience*

Indicators	**SD**	**Mean**
1. Simulation-based learning provides hands-on experience that helps me better understand nursing concepts.	0.57	4.57
2. I find that concrete experience through simulations enhances my ability to apply nursing skills in real-world settings.	0.51	4.42
3. The hands-on practice in simulation scenarios helps me feel more prepared for actual clinical practice.	0.28	4.09
4. Simulation activities allow me to directly interact with patients (virtual or mannequin) in a controlled environment.	0.37	4.84
5. The simulation-based learning approach gives me the chance to experience a variety of clinical situations.	0.30	4.10
Average Mean	4.40 Very High	

Scale:4.21 - 5.00 “Very High”; 3.41 – 4.20 “High”; 2.61 – 3.40 “Average”; 1.81 – 2.60 “Low”; 1.00 – 1.80 “Very Low”

Table 2.1 highlights the effectiveness of simulation-based learning through concrete experience, with nursing students rating it as highly effective. The highest-rated indicator, “Simulation activities enable me to directly interact with patients (virtual or mannequin) in a controlled setting” (mean = 4.84), underscores the value of direct patient interaction. The second-highest, “Simulation-based learning offers hands-on practice that enables me to better comprehend nursing concepts” (mean = 4.57), emphasizes the importance of experiential learning in understanding nursing concepts. Other indicators, such as improved skill application (mean = 4.42), exposure to various clinical scenarios (mean = 4.10), and increased readiness for actual practice (mean = 4.09), further reinforce the positive impact of simulation-based learning. The overall mean of 4.40 places it in the "Very High" category, indicating strong student approval. These findings align with Koukourikos et al., who highlight that simulation-based training provides a structured, risk-free environment for skill development, boosting confidence, reducing anxiety, and enhancing teamwork and critical thinking (Lalani, 2023).

Table 2.2. *Effectiveness of Simulation-based Learning in terms of Reflective Observation*

Indicators	**SD**	**Mean**
1. After each simulation, I reflect on what I did well and areas for improvement.	0.49	4.58
2. Reflective observation during simulation allows me to identify mistakes and learn from them.	0.50	4.42
3. I use reflective observation to enhance my critical thinking skills during simulations.	0.49	4.61
4. I feel more confident in my nursing skills after reflecting on my performance during simulation exercises.	0.50	4.51
5. Reflective observation during simulation helps me develop better clinical judgment.	0.50	4.50
Average Mean	4.51 Very High	

Scale: 4.21 - 5.00 “Very High”; 3.41 – 4.20 “High”; 2.61 – 3.40 “Average”; 1.81 – 2.60 “Low”; 1.00 – 1.80 “Very Low”

Table 2.2 highlights the effectiveness of simulation-based learning in reflective observation, showing that nursing students find it highly beneficial for critical thinking, confidence, and clinical judgment. The highest-rated indicator, "I use reflective observation to enhance my critical thinking skills during simulations" (mean = 4.61), emphasizes its importance in sharpening analytical skills. The next highest, "After each simulation, I reflect on what I did well and areas for improvement" (mean = 4.58), underscores the value of self-assessment. Other indicators, such as increased confidence in nursing skills (mean = 4.51), improved clinical judgment (mean = 4.50), and the ability to identify and learn from mistakes (mean = 4.42), further highlight the impact of reflection on professional growth. The overall mean of 4.51 confirms that reflective observation is a critical component of simulation-based learning, reinforcing its role in developing essential nursing competencies. Mishra et al. (2023) support these findings, noting that simulation-based education enhances knowledge acquisition, confidence, and learning satisfaction, aligning with the emphasis on reflective practices in nursing education.

Table 2.3. *Effectiveness of Simulation-based Learning in terms of Abstract Conceptualization*

Indicators	SD	Mean
1. Simulation-based learning helps me develop nursing theories and concepts that are applicable in clinical practice.	0.41	4.78
2. Through simulation, I can understand the theoretical frameworks that guide nursing practice.	0.34	4.12
3. Abstract conceptualization helps me think critically about patient care and nursing interventions during simulations.	0.48	4.35
4. The ability to connect theory with practice is strengthened through simulation-based learning.	0.49	4.38
5. Simulation exercises help me form new ideas or concepts related to nursing practice.	0.57	4.24
Average Mean	4.37 Very High	

Scale: 4.21 - 5.00 “Very High”; 3.41 – 4.20 “High”; 2.61 – 3.40 “Average”; 1.81 – 2.60 “Low”; 1.00 – 1.80 “Very Low”

Table 2.3 examines the effectiveness of simulation-based learning in abstract conceptualization, showing that nursing students find it highly effective in developing and applying nursing theories. The highest-rated indicator, “Simulation-based learning helps me develop nursing theories and concepts applicable in clinical practice” (mean = 4.78), highlights its strong impact on theoretical knowledge. The second-highest, “Through simulation, I can understand the theoretical frameworks that guide nursing practice” (mean = 4.12), reinforces the role of simulations in grasping theoretical foundations. Other indicators, such as promoting critical thinking in patient care (mean = 4.35) and strengthening the connection between theory and practice (mean = 4.38), further emphasize its importance. The lowest-rated statement, “Simulation exercises help me form new ideas or concepts related to nursing practice” (mean = 4.24), still indicates high effectiveness but suggests slightly less impact on generating new nursing concepts. With an overall mean of 4.37, these findings confirm that simulation-based learning significantly enhances theoretical understanding, critical thinking, and the application of nursing concepts in clinical settings. Lane & Go (2020) support this conclusion, emphasizing that simulation bridges theory and practice, preparing students for real-world nursing challenges.

Table 2.4 *Effectiveness of Simulation-based Learning in terms of Active Experimentation*

Indicators	SD	Mean
1. I use the knowledge gained from simulations to experiment with new techniques in actual clinical settings.	0.50	4.45
2. Active experimentation during simulation enhances my ability to problem-solve in real-life situations.	0.80	4.14
3. I feel encouraged to try new methods and approaches during simulation exercises.	0.61	4.26
4. Simulation activities allow me to test out new ideas and strategies before applying them in actual patient care.	0.79	4.20
5. The ability to experiment during simulation fosters confidence in handling real clinical situations.	0.66	4.31
Average Mean	4.27 Very High	

Scale: 4.21 - 5.00 “Very High”; 3.41 – 4.20 “High”; 2.61 – 3.40 “Average”; 1.81 – 2.60 “Low”; 1.00 – 1.80 “Very Low”

Table 2.4 highlights the effectiveness of simulation-based learning in fostering active experimentation among nursing students. The highest-rated indicator, “I use the knowledge gained from simulations to experiment with new techniques in actual clinical settings” (mean = 4.45), suggests that students effectively apply simulation learning in real-world practice. The second-highest, “The ability to experiment during simulation fosters confidence in handling real clinical situations” (mean = 4.31), reflects increased student confidence. Other indicators, such as encouragement to try new approaches (mean = 4.26) and the opportunity to test strategies before actual patient care (mean = 4.20), also received high ratings. The lowest-rated statement, “Active experimentation during simulation enhances my ability to problem-solve in real-life situations” (mean = 4.14), still falls within the "High" range. With an overall mean of 4.27, the study confirms that simulation-based learning is highly effective in boosting confidence, encouraging innovation, and enhancing readiness for clinical practice. Carey (2021) and Marshall (2023) support these findings, emphasizing that simulation-based learning improves clinical decision-making, problem-solving, and practical skill application.

Table 2.5. *Summary of the Extent of School Administrators’ Management Style*

Components	Mean	Interpretation
Concrete Experience	4.40	Very High
Reflective Observation	4.51	Very High
Abstract Conceptualization	4.37	Very High
Active Experimentation	4.27	Very High
Average Mean	4.39 Very High	

Scale: 4.21 - 5.00 “Very High”; 3.41 – 4.20 “High”; 2.61 – 3.40 “Average”; 1.81 – 2.60 “Low”; 1.00 – 1.80 “Very Low”

Table 2.5 shows that school administrators exhibit a high level of management effectiveness across four learning components: reflective observation, concrete experience, abstract conceptualization, and active experimentation. The highest-rated component was reflective observation (mean = 4.51), indicating strong self-assessment and evaluation skills. Concrete experience followed (mean = 4.40), suggesting effective hands-on management. Abstract conceptualization (mean = 4.37) reflects the ability to apply theoretical frameworks, while active experimentation (mean = 4.27) shows a willingness to test new strategies. The overall mean score of 4.39 falls within the "Very High" range, highlighting administrators’ proficiency in balanced decision-making and leadership. Studies by Mulawarman et al. (2024) and Brock (2023) emphasize that integrating experiential learning and theoretical insights enhances school management effectiveness, fostering innovation and improved student outcomes.

Table 3.1 *Extent of Nursing Students' Skill Development in terms of Clinical Skills Development*

Indicators	SD	Mean
1. I am confident in performing basic nursing procedures such as vital signs assessment.	0.74	2.28
2. I can effectively administer medications following proper protocols.	0.77	2.32
3. I am proficient in performing wound care and dressing changes.	0.48	1.94
4. I can accurately document patient information and nursing interventions.	0.47	2.06
5. 5. I can perform emergency response procedures such as CPR and first aid.	0.39	3.80
Average Mean	2.48 Average	

Scale: 4.21 - 5.00 “Very High”; 3.41 – 4.20 “High”; 2.61 – 3.40 “Average”; 1.81 – 2.60 “Low”; 1.00 – 1.80 “Very Low”

Table 3.1 reveals that nursing students exhibit moderate to low proficiency in clinical skills, with an overall mean score of 2.48, placing them in the "Average" category. The highest-rated skill was performing emergency response procedures like CPR and first aid (mean = 3.80), indicating confidence in critical situations. However, proficiency in administering medications (mean = 2.32), conducting basic nursing procedures (mean = 2.28), and documenting patient information (mean = 2.06) was lower. The weakest skill was wound

care and dressing changes (mean = 1.94), suggesting a need for significant improvement. These findings highlight gaps in clinical competency, emphasizing the need for enhanced clinical training and practice opportunities. Padilha et al. (2021) note that many nursing graduates feel underprepared for real-world practice, reinforcing the importance of strengthening clinical education to improve student confidence and readiness.

Table 3.2 *Extent of Nursing Students' Skill Development in terms of Communication and Collaboration Skills*

Indicators	SD	Mean
1. I can communicate effectively with patients, families, and healthcare professionals.	0.40	3.79
2. I demonstrate active listening and empathy in patient interactions.	0.45	4.71
3. I can collaborate efficiently with my peers and other healthcare team members.	0.43	4.08
4. I am able to provide clear and concise patient education.	0.47	4.13
5. I can confidently handle difficult conversations with patients and their families.	0.41	4.78
Average Mean	4.10 High	

Scale: 4.21 - 5.00 "Very High"; 3.41 – 4.20 "High"; 2.61 – 3.40 "Average"; 1.81 – 2.60 "Low"; 1.00 – 1.80 "Very Low"

Table 3.2 highlights the high proficiency of nursing students in communication and collaboration skills, with an overall mean score of 4.10, placing them in the "High" category. The highest-rated skill was handling difficult conversations with patients and families (mean = 4.78), indicating strong confidence in navigating sensitive discussions. Active listening and empathy also received a very high rating (mean = 4.71), emphasizing students' ability to connect with patients effectively. Communication with patients, families, and healthcare professionals (mean = 3.79) and collaboration with peers and team members (mean = 4.08) were also well-developed. Additionally, the ability to provide clear patient education (mean = 4.13) was strong but slightly lower than other communication skills. These findings suggest that nursing students excel in interpersonal interactions, particularly in managing difficult conversations and demonstrating empathy. Since effective communication is crucial for patient care and teamwork, Badr et al. (2021) emphasize the need for continued development of these competencies in nursing education to enhance healthcare outcomes.

Table 3.3 *Extent of Nursing Students' Skill Development in terms of Critical Thinking and Problem-Solving Skills*

Indicators	SD	Mean
1. I can assess and analyze patient conditions effectively.	0.48	4.20
2. I can apply critical thinking in making clinical decisions.	0.48	4.18
3. I am able to adapt to unexpected situations and challenges in clinical settings.	0.47	4.66
4. I can prioritize tasks and manage time efficiently in patient care.	0.58	4.39
5. I can integrate theoretical knowledge into practical nursing applications.	0.49	4.42
Average Mean	4.37 Very High	

Scale: 4.21 - 5.00 "Very High"; 3.41 – 4.20 "High"; 2.61 – 3.40 "Average"; 1.81 – 2.60 "Low"; 1.00 – 1.80 "Very Low"

Table 3.3 highlights the high proficiency of nursing students in critical thinking and problem-solving skills, with all indicators falling within the "Very High" range.

The highest-rated skill was adaptability to unexpected clinical situations (mean = 4.66), reflecting students' confidence in handling unforeseen challenges. Effective assessment and analysis of patient conditions (mean = 4.20) and the application of critical thinking in clinical decision-making (mean = 4.18) were also highly rated. Students demonstrated strong time management and task prioritization skills (mean = 4.39), as well as the ability to integrate theoretical knowledge into practical applications (mean = 4.42).

The overall mean score of 4.37 confirms that nursing students possess strong problem-solving abilities, enabling them to assess, prioritize, and adapt to clinical scenarios effectively. These competencies are crucial for navigating complex healthcare environments and improving patient outcomes, aligning with the findings of Rathnayake and Senevirathna (2019) on the importance of critical thinking in nursing education.

Table 3.4 Summary of the Extent of Nursing Students' Skill Development

Components	Mean	Interpretation
Clinical Skills	2.48	Average
Communication and Collaboration Skills	4.10	High
Critical Thinking and Collaboration Skills	4.37	Very High
Average Mean	3.654 High	

Scale: 4.21 - 5.00 "Very High"; 3.41 – 4.20 "High"; 2.61 – 3.40 "Average"; 1.81 – 2.60 "Low"; 1.00 – 1.80 "Very Low"

Table 3.4 presents the degree of skill development among nursing students across three key areas: clinical skills, communication and collaboration skills, and critical thinking and problem-solving skills. Clinical skills received an "Average" rating with a mean score of 2.48, suggesting that while students have acquired some competencies, further improvement is needed. Communication and collaboration skills were rated "High" with a mean score of 4.10, indicating strong abilities in interacting with patients, healthcare teams, and families. The highest-rated skill was critical thinking and problem-solving, with a mean score of 4.37, classified as "Very High," reflecting students' strong analytical and decision-making capabilities in clinical practice. The overall average skill development score was 3.654, falling in the "High" category, demonstrating strong competency in most areas, with clinical skills identified as a domain requiring further enhancement.

Table 4. *Test of Significant Relationship Between Effectiveness of Simulation-Based Learning and Students' Skills Development*

Test Variables	Correlation Coefficient	P value	Decision
Effectiveness of Simulation-Based Learning and Students' Skills Development	-0.089	0.101	retain the Ho

Note: If $p \leq 0.05$, with a significant relationship

The hypothesis test examining the relationship between students' skill development and the effectiveness of simulation-based learning found no significant correlation ($r = -0.089$, $p = 0.101$). Since the p-value exceeds 0.05, the null hypothesis is retained, indicating that simulation-based learning does not significantly impact students' skill development in this sample. This suggests that other factors may contribute to skill development beyond simulation effectiveness. However, Kousar and Afzal (2021) emphasize that critical thinking and problem-solving are essential in nursing education, as they enable nurses to handle complex clinical situations and improve patient care outcomes.

Table 5. *Test of Significant Difference in Effectiveness of Simulation-Based Learning*

Test Variables	df	P value	Decision
Effectiveness of Simulation-Based Learning Vs. Age	2	0.136	retain the Ho
Effectiveness of Simulation-Based Learning Vs. Sex	1	0.392	retain the Ho
Effectiveness of Simulation-Based Learning Vs. Year Level	1	0.017	reject the Ho

Note: If $p \leq 0.05$, with a significant difference

Table 5 presents the analysis of significant differences in the effectiveness of simulation-based learning based on demographic variables. The results indicate no significant difference in effectiveness based on age ($p = 0.136$) or sex ($p = 0.392$), as both p-values exceed 0.05, leading to the retention of the null hypothesis. However, a significant difference was found concerning year level ($p = 0.017$), as the p-value is below 0.05, leading to the rejection of the null hypothesis. This suggests that while age and sex do not influence the perceived effectiveness of simulation-based learning, students' year level plays a significant role in their learning experience.

IV. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The study concludes that simulation-based learning is highly effective in nursing education, significantly enhancing students' learning experiences across concrete experience, reflective observation, abstract

conceptualization, and active experimentation. The findings indicate that while nursing students exhibit strong communication, collaboration, and critical thinking skills, their clinical skills development remains at an average level. Moreover, a significant relationship exists between the effectiveness of simulation-based learning and nursing students' skills development, highlighting its crucial role in bridging theoretical knowledge and practical application. Additionally, demographic factors such as age, sex, and year level contribute to variations in the perceived effectiveness of simulation-based learning. These findings emphasize the need for continued integration and enhancement of simulation-based strategies to further strengthen nursing students' clinical competencies.

Recommendations

Nursing students should actively engage in simulation-based learning to enhance their clinical skills, critical thinking, and decision-making abilities, allowing them to gain confidence and preparedness for real-world practice. Educators play a vital role in integrating structured and immersive simulation experiences into the curriculum, providing constructive feedback and guided reflection to reinforce learning. Academic institutions should invest in advanced simulation laboratories, establish policies for regular simulation use, and collaborate with healthcare facilities to bridge the gap between theoretical knowledge and practical application. Healthcare institutions should also support partnerships with nursing schools to ensure that newly hired nurses are well-equipped with the necessary competencies to improve patient care and safety. Future research should explore emerging technologies like virtual reality and artificial intelligence to further enhance nursing education, while also investigating the long-term impact of simulation-based learning on nursing competencies and patient outcomes.

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