



The effects of Simulation-Based Learning on satisfaction and self-confidence among Nursing Students in the Emergency Nursing Practicum

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Simulation-based learning (SBL) is an evidence-based educational strategy that provides nursing students with opportunities to develop clinical competencies in a safe and controlled learning environment. This quasi-experimental study employing a one-group pretest-posttest design was conducted to examine the effects of SBL on nursing students' satisfaction and self-confidence during the Emergency Nursing Practicum. A total of 67 third-year nursing students enrolled in the Emergency Nursing Practicum at the Police Nursing College during the second semester of the 2025 academic year participated in the study. Participants engaged in a high-fidelity simulation scenario involving the emergency management of patients experiencing cardiac arrest. Data were collected using the student satisfaction scale and the self-confidence in learning scale and were analyzed using descriptive statistics and paired-samples t-tests.

The results revealed that, following the SBL intervention, nursing students demonstrated significantly higher levels of satisfaction and self-confidence. The mean satisfaction score increased from 12.45 (SD = 2.26) to 23.51 (SD = 2.45) ($t(66) = -27.76, p < .001$), whereas the mean self-confidence score increased from 19.79 (SD = 3.81) to 36.45 (SD = 4.52) ($t(66) = -22.40, p < .001$). The findings support the integration of SBL into emergency nursing education as an effective pedagogical approach for enhancing students' preparedness to deliver safe and effective clinical care.

Keywords: simulation-based learning, nursing students, emergency nursing practicum, satisfaction, self-confidence

Introduction

Nursing education is a professional discipline that integrates theoretical instruction with clinical practice to develop competent and practice-ready graduates. A wide range of student-centered pedagogical strategies, including simulation-based learning, problem-based learning, case-based learning, and clinical practicums, are employed to foster meaningful learning experiences and enhance students' professional competencies. These educational approaches are intended to prepare nursing graduates who can effectively meet the demands of contemporary healthcare systems and societal expectations.

Simulation-Based Learning (SBL) is increasingly recognized as an evidence-based educational strategy in nursing and medical education, as it enables learners to acquire knowledge and develop clinical competencies in a safe and supportive environment.¹ By recreating authentic clinical situations through carefully designed simulated experiences, SBL provides opportunities for learners to integrate theoretical knowledge with clinical practice and to develop clinical reasoning, decision-making, and psychomotor skills.² Given the increasing limitations associated with direct patient care experiences,

including restricted access to suitable clinical cases and concerns about patient safety, simulation has become an essential pedagogical approach for preparing healthcare students for clinical practice.³

Clinical practice with real patients remains a fundamental component of nursing education, as it provides students with authentic exposure to diverse clinical situations and opportunities to develop and refine their professional competencies. However, clinical education frequently involves high-acuity and high-risk situations in which errors may have serious consequences for patient safety and well-being.⁴ At the Police Nursing College, the Emergency Nursing Practicum is a two-credit course comprising 90 hours of clinical training in the emergency and trauma department for third-year nursing students. The course is designed to facilitate the application of theoretical knowledge to the care of patients experiencing emergency conditions in real-world clinical settings. Despite these educational objectives, opportunities for nursing students to actively participate in emergency patient care and clinical decision-making are often limited. In emergency departments, most patient care activities are performed by registered nurses because patients with emergency conditions require timely, accurate, and effective interventions. Consequently, allowing nursing students to independently provide care or make clinical decisions in such situations may pose potential risks to patient safety. As a result, nursing students frequently assume supportive or observational roles rather than engaging as active participants in emergency nursing care. Consequently, nursing students often have limited opportunities to engage in hands-on emergency care and clinical decision-making, resulting in a gap between theoretical knowledge and authentic clinical practice.

Simulation-Based Learning (SBL) has been increasingly integrated into Bachelor of Nursing Science curricula as an evidence-based pedagogical approach to enhance nursing students' clinical competencies, promote patient safety, and minimize errors in patient care.⁵ In the context of emergency nursing education, SBL provides learners with opportunities to assume professional nursing roles and engage in complex clinical situations that are infrequently encountered or difficult to practice in authentic clinical settings. By offering a safe and controlled learning environment, SBL enables nursing students to develop and refine emergency nursing

competencies without compromising patient safety. Unlike real clinical practice, errors committed during simulation do not result in harm to actual patients.⁶ Furthermore, SBL facilitates the transfer of theoretical knowledge to clinical practice and promotes experiential learning through immediate feedback and reflective debriefing. The educational outcomes associated with SBL include knowledge acquisition, learner satisfaction, and self-confidence. Knowledge refers to the cognitive gains achieved in accordance with the intended learning outcomes and educational experiences provided to learners. Learner satisfaction reflects students' perceptions of and responses to the learning activities and educational environment. Self-confidence is a critical attribute that underpins effective clinical decision-making and high-quality nursing practice. Participation in SBL has been shown to enhance learners' confidence in analytical thinking and problem-solving, thereby improving their ability to perform nursing interventions accurately and appropriately.⁶ Previous studies have consistently demonstrated that simulation-based instruction significantly improves nursing students' knowledge, satisfaction, and self-confidence in the management of patients requiring resuscitation and emergency care.^{7,8}

SBL comprises several essential components, including scenario preparation, scenario design, and the implementation of structured learning activities. The SBL process is generally organized into three sequential phases: pre-briefing, scenario implementation, and debriefing. The pre-briefing phase involves learner orientation and clarification of the simulation procedures and expectations. During this phase, instructors familiarize students with the simulation environment, laboratory protocols, high-fidelity simulators, equipment, and assigned roles to facilitate psychological safety and preparedness for participation. The second phase, scenario implementation, engages students in a structured and immersive simulated clinical encounter in which they are required to apply theoretical knowledge, clinical reasoning, decision-making, and psychomotor skills within the context of a predetermined clinical scenario. The final phase, debriefing, consists of a guided reflective discussion that encourages learners to critically examine their experiences, consolidate learning, and integrate theoretical concepts with clinical practice. According to the Nursing Education Simulation Framework, SBL contributes to a broad

range of educational outcomes, including knowledge acquisition, skill performance, learner satisfaction, critical thinking, and self-confidence.^{6,9,10} Evidence from previous studies has demonstrated that participation in SBL significantly improves students' satisfaction and self-confidence, with post-intervention scores being significantly higher than baseline measurements ($p < .05$).⁵ Similarly, another study reported that third-year nursing students who participated in SBL exhibited significantly greater self-confidence in caring for patients with emergency conditions following the intervention ($p < .001$).¹¹

Given the growing body of evidence supporting the effectiveness of SBL in nursing education and its potential to enhance learning outcomes in emergency nursing, this study was undertaken to investigate nursing students' satisfaction and self-confidence following participation in SBL during the Emergency Nursing Practicum. The study was conducted among third-year nursing students enrolled in the Bachelor of Nursing Science Program who registered for the Emergency Nursing Practicum during the second semester of the 2025 academic year. The findings of this study are expected to provide empirical evidence regarding the effectiveness of SBL in facilitating the attainment of course learning outcomes and enhancing nursing students' ability to apply knowledge and clinical skills in the management of patients experiencing emergency conditions in real-world practice. Furthermore, improving nursing students' satisfaction and self-confidence through SBL may contribute to the development of competent and practice-ready nursing graduates capable of delivering safe and effective emergency care. Therefore, the purpose of this study was to evaluate the effects of simulation-based learning by comparing nursing students' satisfaction and self-confidence before and after participation in the Emergency Nursing Practicum.

Materials And Methods

A quasi-experimental study employing a one-group pretest-posttest design was conducted among third-year nursing students enrolled in the Emergency Nursing Practicum course at the Police Nursing College during the second semester of the 2025 academic year. All eligible students were invited to participate, resulting in a final sample of 67 participants. The exclusion criteria included (1) refusal

to provide written informed consent and (2) unavailability during the data collection period.

The Research Instruments

The research instruments consisted of two components: (1) instruments used in the intervention and (2) data collection instruments.

1. The intervention consisted of two components: (1) Clinical Simulation Scenario. A clinical simulation scenario focusing on the nursing management of patients experiencing cardiac arrest in emergency situations was developed by researchers based on an extensive review of the literature. The scenario incorporated clearly defined learning objectives, a high level of fidelity, clinical cues to facilitate nursing assessment and decision-making, and a structured debriefing session designed to promote reflection and consolidate learning. (2) Simulation Laboratory. The simulation sessions were conducted in a simulation laboratory designed to replicate an authentic clinical environment. The laboratory was equipped with hospital beds, high-fidelity patient simulators, clinical equipment and supplies, and other supporting materials to create a realistic setting that facilitated experiential learning and the development of clinical competencies.

2. The data collection instruments consisted of three components: (1) Demographic Questionnaire. Participants' demographic characteristics were collected using a self-administered questionnaire comprising four items: sex, age, grade in the Emergency Nursing course, and cumulative grade point average (GPA). The questionnaire consisted of checklist and closed-ended questions. (2) Nursing Students' Satisfaction Scale. Nursing students' satisfaction with simulation-based learning was measured using the Thai version of the Student Satisfaction Scale from the National League for Nursing (NLN) Student Satisfaction and Self-Confidence in Learning Scale developed by Jeffries (2005).¹² The instrument consists of five items rated on a five-point Likert scale ranging from 1 (very low satisfaction) to 5 (very high satisfaction). Total scores range from 5 to 25, with higher scores indicating greater satisfaction with simulation-based learning. Satisfaction levels were classified as follows: low (5–11 points), moderate (12–18 points), and high (19–25 points). (3) Nursing Students' Self-Confidence in Learning Scale. Nursing students' self-confidence in

learning through simulation was assessed using the Thai version of the Self-Confidence in Learning Scale from the National League for Nursing (NLN) Student Satisfaction and Self-Confidence in Learning Scale developed by Jeffries (2005).¹² The instrument consists of eight items rated on a five-point Likert scale ranging from 1 (very low self-confidence) to 5 (very high self-confidence). Total scores range from 8 to 40, with higher scores indicating greater self-confidence in learning. Self-confidence levels were classified as low (8–18 points), moderate (19–29 points), and high (30–40 points).

Validity And Reliability Of The Instruments

1. Clinical Simulation Scenario. The content validity of the clinical simulation scenario was evaluated by a panel of three experts, including an emergency physician, an expert emergency nurse, and a nursing instructor specializing in emergency nursing. Based on their feedback, the simulation scenario was revised and subsequently pilot-tested in the simulation laboratory with faculty members from the Adult and Older Adult Nursing Department who taught the Emergency Nursing Practicum (alpha testing) and with faculty members from other nursing departments (beta testing). Following further refinement, the final version of the simulation scenario was implemented with the study participants. The content validity index (CVI) of the clinical simulation scenario was 1.00, indicating excellent content validity.

2. Nursing Students' Satisfaction and Self-Confidence in Learning Scales. The Thai versions of the Student Satisfaction Scale and the Self-Confidence in Learning Scale were pilot-tested with 30 fourth-year nursing students at the Police Nursing College who had previous experience with simulation-based learning in the Emergency Nursing Practicum. The internal consistency reliability of the instruments was evaluated using Cronbach's alpha coefficient. The Cronbach's alpha coefficients were .86 for the Nursing Students' Satisfaction Scale and .94 for the Nursing Students' Self-Confidence in Learning Scale, indicating satisfactory reliability.

Data Collection

The data collection was conducted by the research team on January 7, 2026, from 8:00 a.m. to 5:00 p.m. at the Simulation Laboratory, Fourth Floor, Police Nursing College. The data collection procedures were

undertaken in the following sequence. First, the researchers provided a detailed explanation of the study objectives, procedures, potential benefits, and participants' rights. Written informed consent was subsequently obtained from all participants prior to their enrollment in the study. Second, participants completed the Nursing Students' Satisfaction Scale and the Self-Confidence in Learning Scale as baseline assessments before participating in the SBL intervention involving the emergency nursing management of patients experiencing cardiac arrest. Third, all 67 participants attended a 60-minute orientation session designed to familiarize them with the simulation environment, learning activities, and expectations for participation. Fourth, participants were randomly allocated into ten groups of six to seven students through a lottery procedure based on their student identification numbers. Each group participated in an SBL session focusing on the emergency nursing management of patients experiencing cardiac arrest. Each session lasted 30 minutes and comprised three sequential phases: a 5-minute pre-briefing session, a 10-minute simulation scenario, and a 15-minute debriefing session. Within each group, one participant assumed the role of team leader, whereas the remaining participants served as team members. Students awaiting their simulation sessions remained in the third-year classroom, whereas those who had completed the simulation activities served as observers in the nursing laboratory. Following completion of all simulation sessions, participants attended a 60-minute reflective debriefing session during which they critically reflected on their learning experiences and integrated theoretical knowledge with clinical practice. Immediately after the intervention, participants completed the Nursing Students' Satisfaction Scale and the Self-Confidence in Learning Scale for post-intervention assessment. Completion of the questionnaires required approximately 10 minutes. Finally, the researchers reviewed all questionnaires for completeness and accuracy before coding and preparing the data for statistical analysis.

Statistical Analysis

Descriptive statistics were used to summarize participants' demographic characteristics and study variables and were presented as frequencies, percentages, means, and standard deviations. Changes in satisfaction and self-confidence scores from pre- to

post-intervention were analyzed using paired-samples *t*-tests. All statistical tests were two-tailed, and a *p*-value of less than .05 was considered statistically significant.

Results

Participants' Characteristics

A total of 67 third-year nursing students participated in the study, of whom 97.0% were female and 3.0% were male. The mean age of the participants was 21 years ($SD = .83$). Approximately half of the students achieved a grade of B in the Emergency Nursing course (49.25%), followed by a grade of C+ (32.84%). The cumulative grade point average (GPA) ranged from 1.33 to 3.74, with a mean of 3.04 ($SD = .32$).

2. The levels of students' satisfaction in learning through the SBL intervention Before receiving the SBL intervention, most students reported a moderate level of satisfaction (73.1%), followed by a low level of satisfaction (19.4%). After receiving the SBL intervention, the majority of students reported a high level of satisfaction (98.5%), while only 1.5% reported a moderate level of satisfaction.

The levels of students' self-confidence in learning through the SBL intervention

Before receiving the SBL intervention, most students reported a moderate level of self-confidence (58.2%), followed by a low level of self-confidence (38.8%).

After receiving the SBL intervention, the majority of students reported a high level of self-confidence (94.0%), whereas only 6.0% remained at a moderate level.

The comparison of nursing students' satisfaction and self-confidence before and after learning through the SBL intervention

Paired-samples *t*-tests were conducted to examine differences in nursing students' satisfaction and self-confidence before and after participation in the simulation-based learning intervention. The findings revealed a statistically significant increase in nursing students' satisfaction following the intervention. The mean score of nursing students' satisfaction after receiving the SBL intervention ($M = 23.51$, $SD = 2.45$) was significantly higher than before receiving the SBL intervention ($M = 12.45$, $SD = 2.26$), $t(66) = -27.76$, $p < .001$. Similarly, nursing students' self-confidence significantly improved after participation in the SBL intervention. The mean score of nursing students' self-confidence after receiving the SBL intervention ($M = 36.45$, $SD = 4.52$) was significantly higher than before receiving the SBL intervention ($M = 19.79$, $SD = 3.81$), $t(66) = -22.40$, $p < .001$. Overall, the findings indicate that participation in simulation-based learning was associated with significant improvements in nursing students' satisfaction and self-confidence during the Emergency Nursing Practicum (Table 1).

Table 1: Comparison of nursing students' satisfaction and self-confidence scores between before and after receiving the SBL intervention (n = 67)

Variable	Before		After		95% CI		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Lower	Upper	
Nursing students' satisfaction	12.45	2.26	23.51	2.45	-11.86	-10.26	-27.76**
Nursing students' self-confidence	19.79	3.81	36.45	4.52	-18.14	-15.17	-22.40**

** *p*-value < .001-statistically significant

Discussion

The present study examined the effects of SBL on nursing students' satisfaction and self-confidence during the Emergency Nursing Practicum. The findings demonstrated that participation in the SBL

intervention was associated with statistically significant improvements in both outcomes. Following the intervention, the majority of nursing students reported high levels of satisfaction and self-confidence, and the mean post-intervention scores for

both variables were significantly higher than their respective pre-intervention scores.

The significant increase in nursing students' satisfaction may be attributed to the pedagogical characteristics of SBL. Simulation provides an immersive and authentic learning environment that closely approximates real clinical situations, enabling learners to actively engage in patient care scenarios and apply theoretical knowledge in a meaningful context. The opportunity to assume professional nursing roles and participate in realistic emergency situations may enhance learner engagement, motivation, and perceived relevance of the learning experience. Furthermore, the structured debriefing process facilitates reflective learning and encourages nursing students to critically analyze their performance, thereby promoting deeper understanding and greater satisfaction with the learning process. These findings are consistent with previous studies demonstrating that simulation-based instruction significantly improves learner satisfaction among nursing students.^{5,7,8}

The findings also revealed a significant improvement in nursing students' self-confidence following participation in the SBL intervention. Self-confidence was an essential attribute that underpins effective clinical decision-making, timely intervention, and competent nursing practice, particularly in emergency situations characterized by uncertainty and high acuity. The improvement in self-confidence observed in this study may be explained by the opportunities afforded through simulation to repeatedly practice clinical skills, exercise clinical judgment, and receive immediate feedback in a psychologically safe learning environment. Because simulation permits nursing students to make mistakes without jeopardizing patient safety, learners may experience reduced anxiety and increased willingness to participate actively in clinical decision-making and nursing interventions. Consequently, repeated exposure to simulated emergency scenarios may strengthen nursing students' confidence in their ability to perform effectively in actual clinical situations. These findings are congruent with previous studies reporting significant improvements in nursing students' self-confidence following participation in simulation-based learning experiences.^{5,6,11}

The findings of this study can also be interpreted within the context of the Nursing Education Simulation Framework, which proposes that well-designed simulation experiences positively influence multiple educational outcomes, including learner satisfaction, self-confidence, knowledge acquisition, critical thinking, and skill performance. The SBL intervention implemented in this study incorporated several essential elements of effective simulation, including high-fidelity scenarios, learner preparation through pre-briefing, active engagement in realistic clinical situations, and reflective debriefing. The integration of these educational components may have collectively contributed to the observed improvements in nursing students' satisfaction and self-confidence.

From an educational perspective, the findings support the integration of SBL into emergency nursing curricula as an effective pedagogical strategy for bridging the gap between theoretical instruction and authentic clinical practice. Given the limited opportunities for nursing students to independently participate in emergency patient care due to concerns regarding patient safety, SBL offers a viable alternative for developing clinical competencies, enhancing clinical decision-making, and fostering self-confidence in a safe and controlled environment. Consequently, incorporating SBL into emergency nursing education may contribute to the preparation of competent, confident, and practice-ready nursing graduates capable of delivering safe and effective emergency care.

Future research should employ more rigorous study designs, such as randomized controlled trials or multi-site studies with larger samples, to enhance the external validity of the findings. In addition, future investigations should examine the effects of SBL on other educational outcomes, including knowledge retention, clinical competence, critical thinking, and long-term performance in emergency nursing practice.

Conclusion

The SBL was associated with significant improvements in nursing students' satisfaction and self-confidence during the Emergency Nursing Practicum. The findings support the use of SBL as an effective pedagogical approach for bridging the gap between theoretical instruction and clinical practice and for enhancing students' preparedness to deliver safe and effective emergency nursing care.

Acknowledgement

The authors sincerely thank all third-year nursing students who participated in this study. The authors are also grateful to the Commander of the Police Nursing College for approving and facilitating the conduct of this research. This study was financially supported by the Police Nursing College, and the authors gratefully acknowledge this support.

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