Original article

Evaluating the pilot implementation of simulation-based teaching in undergraduate nursing education at Hai Duong Medical Technical University: A mixed-methods study

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Abstract

Background: Simulation-based teaching is an effective educational approach in nursing education, enabling students to develop clinical skills, clinical reasoning, and self-confidence within a safe learning environment. This study aimed to assess undergraduate nursing students' evaluation of simulation-based teaching and explore their experiences and perspectives of this educational approach.

Materials and Methods: An explanatory sequential mixed-methods design incorporating quantitative and qualitative approaches was employed. Seven simulation scenarios, developed with the support of European experts through the PreVinf project, were implemented in a nursing practice course involving 133 first- and second-year nursing students. Quantitative data were collected using standardized simulation evaluation instruments to assess simulation design, educational effectiveness, students' satisfaction, and self-confidence in learning. Qualitative data were collected through focus group discussions to gain a deeper understanding of students' perspectives and experiences regarding simulation-based teaching.

Results: Students reported positive perceptions of the simulation design (74.3%) and the effectiveness of simulation-based teaching for skills training (72.8%). Overall, 67.0% of students were satisfied with the simulation-based teaching approach, while some students (32%) did not report positive self-confidence when learning through this method. Focus group discussions identified three major themes: (1) psychological experiences during simulation-based teaching; (2) Perceived benefits for learning and clinical preparation; and (3) preparation and recommendations for simulation-based learning.

Conclusion: Students generally reported positive evaluations of simulation-based teaching during its early implementation. However, anxiety and lack of confidence were reported by some students. Structured pre-briefing and adequate student preparation may help support students' engagement in simulation-based learning.

Keywords: *simulation training; students; nursing.*

1. BACKGROUND

Simulation-based teaching has increasingly become an important pedagogical approach in nursing education. A growing body of evidence has demonstrated the benefits of simulation-based teaching, including: (1) providing a safe learning environment with diverse clinical scenarios; (2) enabling students to practice realistic clinical situations in a controlled setting; (3) offering opportunities to integrate clinical skills, communication, teamwork, physical assessment, and critical thinking within authentic healthcare contexts without compromising patient safety; (4) allowing students to make mistakes and learn from them without causing harm to patients; and (5) facilitating repeated practice of essential clinical skills to enhance competency development [1, 2].

These educational advantages have been reflected in positive post-simulation student evaluations. In the cited study [3], 85.6% of participants agreed that the high-fidelity patient simulation scenarios helped develop organizational skills, while 81.1% agreed that the scenarios increased their confidence. These figures represent single-timepoint post-simulation agreement rates rather than pre–post improvements. Another study suggests that students trained through simulation demonstrate marked improvements in communication skills, self-confidence, and clinical competence [4]. Furthermore, recent evidence has demonstrated statistically significant differences in clinical competence and nursing care performance between students who participated in simulation-based teaching and those who received traditional clinical education, with simulation-trained students generally achieving superior learning outcomes [5]. Collectively, these findings support the integration

of simulation-based teaching into nursing curricula as an effective strategy for strengthening students' clinical preparedness and professional competence.

Despite the growing international adoption of simulation-based teaching, its implementation in nursing education in Vietnam remains limited, and evidence regarding nursing students' experiences with this approach is still scarce. At Hai Duong Medical Technical University, simulation-based teaching is being progressively introduced into the nursing curriculum. Faculty members of the Nursing Faculty have participated in various training programs and projects related to simulation-based teaching, including the project "Capacitating Asia's Nursing Students on Innovative and Sustainable Prevention and Control of Healthcare-associated Infections (PreVinf)", in which simulation-based teaching was a mandatory educational strategy and a key project outcome. In addition, the faculty has engaged in multiple professional development programs on the design and implementation of simulation-based teaching conducted by experts from Health Volunteers Overseas (HVO).

The simulation-based teaching activities implemented in this study were guided by the National League for Nursing (NLN) Jeffries Simulation Theory [6]. The simulation design incorporated clearly defined learning objectives, appropriate levels of scenario complexity, facilitator guidance, participant and observer role assignments, and structured briefing and debriefing processes to support student learning. Accordingly, this pilot study focuses on students' evaluations and experiences of the early implementation of simulation-based teaching in this local context; it does not evaluate causal educational effectiveness. Therefore, this study aims to assess undergraduate nursing students' evaluation of simulation-based teaching in terms of simulation design, effectiveness, satisfaction, and self-confidence; and to explore their experiences and perspectives regarding participation in simulation-based teaching activities.

2. MATERIALS AND METHODS

2.1. Study design

An explanatory sequential mixed-methods design incorporating quantitative and qualitative approaches was employed. The quantitative component was conducted first to assess students' evaluations of simulation-based teaching. After completion of the quantitative component, the qualitative component was conducted to explore students' perspectives and experiences of participating in simulation-based teaching activities and their recommendations for effective implementation. The qualitative findings were used to provide additional interpretation of students' evaluations obtained from the quantitative component. The study was carried out between September 2022 and June 2023 at Hai Duong Medical Technical University, Vietnam. A convenience sample of seven groups of undergraduate nursing students (n = 133), with approximately 15–18 students per group, from the first and second years of the nursing program was recruited to participate in seven simulation scenarios. Each group participated in one specific simulation scenario out of seven preclinical scenarios (including stroke care, community-acquired pneumonia care, post-operative ureteral stone care, surgical site infection care, acute diarrhea surface infection control, hospital-acquired pneumonia prevention, and safe injection practices). To avoid repeated-measurement bias, each student completed the evaluation questionnaire immediately after their designated simulation scenario session. The inclusion criteria were: (1) enrolment as a first- or second-year undergraduate nursing student; (2) completion of and/or current enrolment in courses related to fundamental nursing, infection prevention and control, and medical–surgical nursing care; and (3) willingness to participate in the study. Students were excluded if they were absent from the university during the data collection period, on sick leave, or had suspended their studies.

The simulation sessions were facilitated by experienced nursing educators who underwent preparation to familiarize themselves with the study procedures, scenario implementation, and debriefing process through prior training provided by PreVinf and HVO. To promote consistency, all seven scenarios were delivered using standardized learning objectives, facilitator guidance, and teaching procedures. While the clinical content differed across scenarios, each session followed a uniform format comprising briefing, simulation activities, and debriefing.

2.2. Measurements

Students' evaluations of simulation-based teaching were assessed using standardized instruments developed and validated by Pamela R. Jeffries and Mary Anne Rizzolo [7-9]. The instruments measured three key domains. Domain 1 assessed students' evaluations of simulation design characteristics using 20 items across 5 subscales including objectives/information, support, problem-solving, feedback, and fidelity and score range 20–100. and the reported reliability was 0.92. Domain 2

assessed the effectiveness of simulation-based skills training using 14 Likert-scale items across 4 subscales including active learning, collaboration, diverse learning, and expected outcomes, with score range 14 - 70. The scale reported reliability of 0.91. Domain 3 assessed students' satisfaction and self-confidence in learning through simulation using 13 Likert-scale items across 2 subscales including 5 items for satisfaction and 8 items for self-confidence; and score range 13 - 65; Cronbach's alpha = 0.94 for satisfaction and 0.87 for self-confidence respectively. All items were measured using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Higher scores indicated more positive evaluations of simulation-based teaching. For descriptive analysis, responses were categorized into two levels: positive evaluation, including agree and strongly agree, and non-positive evaluation, including strongly disagree, disagree, and neutral. Neutral responses were included in the non-positive category to identify unequivocally positive evaluations and were not interpreted as negative responses.

To ensure the suitability of the instruments for the Vietnamese context, a rigorous process of translation, validity assessment, and reliability testing was undertaken. The original English version was translated into Vietnamese following Brislin's translation model as described by Jones [10]. Content validity was evaluated by a panel of five nursing educators holding master's or doctoral degrees and possessing more than 10 years of experience in nursing education. The item-level content validity index (I-CVI) ranged from 0.83 to 1.00, while the scale-level content validity index (S-CVI/Ave) was 0.94. According to established criteria, a CVI value greater than 0.75 indicates satisfactory content validity [11]. Internal consistency reliability was assessed in a pilot sample of 15 nursing students who were not included in the main study. Cronbach's alpha coefficients were 0.94 for Educational Practices Questionnaire, 0.85 for Simulation Design Scale, and 0.71 for Student Satisfaction and Self-confidence scale. As all values exceeded the recommended threshold of 0.70 [12], the instruments were considered to have acceptable reliability for evaluating simulation-based teaching.

In addition to the quantitative instruments, qualitative data were collected through focus group discussions (FGDs) reported in accordance with Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines to provide a deeper understanding of students' experiences and perceptions of simulation-based teaching. The focus group discussion guide was developed as part of the PreVinf project. The guide consisted of eight open-ended questions addressing three main topics: (1) students' perceptions and experiences of simulation-based teaching; (2) differences between simulation-based teaching and traditional teaching methods; and (3) recommendations for enhancing the effectiveness of simulation-based teaching at the university.

2.3. Data collection procedure

Data collection was conducted immediately following completion of each simulation session. Seven convenience-selected groups of first- and second-year nursing students (approximately 15 – 18 students per group) participated in the seven simulation scenarios using standardized patient and were invited to the focus group discussion at the end of the session. Each simulation session lasted approximately 2 hours and consisted of three phases: briefing, simulation action, and debriefing. During the briefing phase, teachers delivered a mini-lecture outlining the learning objective, reviewing relevant knowledge, and assigning participant roles and questions for observers, which aligned with learning objectives. A structured debriefing was conducted through asking a set of questions and organizing in three phases: the reaction (descriptive) phase, the analysis phase, and the application phase. Prior to data collection, students were provided with information regarding the study objectives, the questionnaires, the topic of the discussion, asking permission for the recording of the discussion, and the right to decline to answer questions at any time during the study. Participants were invited to sign a consent form after an opportunity to ask further questions. Following completion of the questionnaires, all seven groups (n = 133) participated in focus group discussions, with approximately 15 – 18 students in each group to discuss their experiences, perspectives, and recommendations regarding simulation-based learning.

Each focus group discussion was conducted in a private room and lasted approximately 45–60 minutes. The discussions were audio-recorded and supplemented with field notes. One researcher moderated the discussion, while another researcher acted as secretary and recorded the discussion content. Audio recordings were transcribed for analysis. At the conclusion of each discussion, a summary of the main points was presented to participants, who were invited to verify the accuracy and completeness of the information. This member checking process was conducted to enhance the credibility and trustworthiness of the qualitative

findings.

2.4. Data analysis

Quantitative data were analysed using IBM SPSS Statistics version 23.0. Descriptive statistics, including frequencies, percentages, means, minimum values, and maximum values, were used to summarize participants' characteristics and evaluate students' perceptions of simulation-based teaching. Qualitative data obtained from the focus group discussions were analysed using the inductive content analysis approach proposed by Elo and Kyngäs [13]. The analysis comprised three steps: (1) transcripts were read carefully to understand participants' perspectives, and responses with similar content were coded; (2) responses with similar content were grouped into smaller categories; and (3) smaller categories with similar meanings were combined into larger categories or groups to describe students' perspectives on simulation-based practice. The agreement was established through consensus discussions between researchers. Data from all seven focus group discussions were analysed. Data saturation was considered to have been reached when no new categories or themes emerged from the analysis.

2.5. Ethical consideration

The study protocol and data collection instruments received ethical approval from the Scientific and Ethics Committee of Hai Duong Medical Technical University with No.19/QD-DHKTYTHD. All participants were fully informed about the study objectives, data collection procedures, and their rights as research participants. Participation was entirely voluntary, and informed consent was obtained from all participants prior to data collection. Confidentiality and anonymity were maintained throughout the study, and all collected information was used solely for research purposes.

3. RESULTS

3.1. Characteristics of the study participants

Table 1. Characteristics of the study participants (n = 133)

Characteristics		n (%)
Gender	Female	127 (95.5)
	Male	6 (4.5)
Year of study	First year	53 (39.8)
	Second year	80 (60.2)
Academic performance	Poor	6 (4.5)
	Average	24 (18.1)
	Above average	60 (45.1)
	Good	43 (32.3)
Simulation scenarios for Adult Medical Nursing Preclinical Practice II	Care of patients with stroke	18 (13.5)
	Care of patients with community-acquired pneumonia	16 (12.0)
Simulation scenarios for Adult Surgical Nursing Preclinical Practice II	Assessment and care of patients following ureteral stone surgery	16 (12.0)
	Assessment and care of patients with surgical site infection	14 (10.6)
Simulation scenarios for Infection Prevention and Control Subject	Environmental surface infection control for patients with acute diarrhea	18 (13.5)
	Prevention of hospital-acquired pneumonia in patients with stroke	33 (24.8)
	Safe injection practice	18 (13.5)
		Median (Min - Max)
	Age	20 (18 - 21)

Most participants were female (95.5%), with a median age of 20 years (range: 18 - 21 years). The majority of students achieved an above average (45.1%) or good (32.3%) academic performance. Students participated

in seven simulation scenarios from the courses Adult Medical Nursing Preclinical Practice II (25.5%), Adult Surgical Nursing Preclinical Practice II (22.6%), and Infection Prevention and Control (51.9%).

3.2. Student's evaluation of simulation-based teaching

3.2.1. Simulation design characteristics and the effectiveness of simulation-based skills training

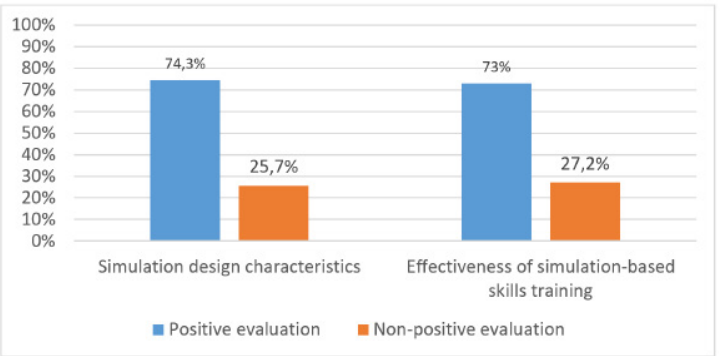


Figure 1. Students' evaluation of simulation design and skills training through simulation-based teaching (n = 133)

A total of 74.3% of students reported positive evaluations of the simulation design, while 72.8% expressed positive evaluations of the effectiveness of simulation-based teaching for skills training.

3.2.2. Students' satisfaction with simulation-based teaching

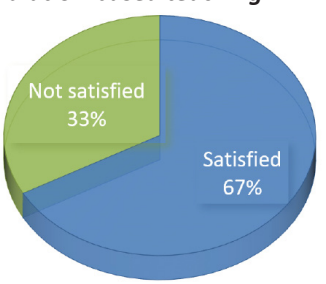


Figure 2. Overall student satisfaction with simulation-based teaching (n = 133)

Overall, 67.0% of students reported being satisfied with simulation-based teaching.

3.2.3. Students' self-confidence in learning through simulation

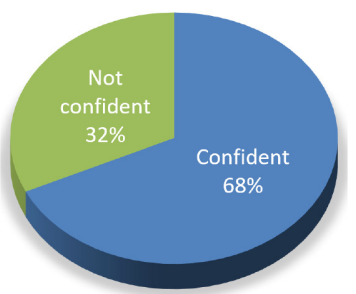


Figure 3. Students' self-confidence in learning through simulation (n = 133)

While most students reported confidence in learning through simulation, 32% indicated that they lacked confidence when participating in simulation-based practice.

3.3. Student's perspectives on simulation-based learning

Analysis of all seven focus group discussions revealed three major themes: (1) *Psychological experiences during simulation-based teaching,* (2) *perceived benefits for learning and clinical preparation*, and (3) *Preparation and recommendations for simulation-based learning.*

Psychological experiences during simulation-based teaching

Students described a noticeable psychological transition throughout their participation in simulation activities. Prior to and during the simulation sessions, many students reported feelings of anxiety, nervousness, confusion, and embarrassment. However, these feelings gradually evolved into interest, enjoyment, and enthusiasm after completing the simulation experience.

One participant described the initial emotional response as follows: "*This was my first time directly participating in a simulated patient-care scenario. I felt very anxious and nervous*." (FGD 1)

Despite these initial concerns, students generally expressed positive attitudes toward simulation after completing the activity. As one student noted: "*Participating in simulation practice was interesting. I would recommend it to my classmates if they had the opportunity to participate*." (FGD 2)

Perceived benefits for learning and clinical preparation

Students expressed a range of perspectives regarding the role of simulation-based teaching in their education. Participants emphasized the value of simulation practice in enhancing learning outcomes and developing essential competencies for nursing care, including communication, teamwork, self-directed learning, and information-seeking skills. Students also highlighted the role of simulation-based teaching in bridging theoretical knowledge and clinical practice, thereby facilitating preparation for future clinical placements.

One student explained: "*As a participant directly involved in the simulation scenario, solving a realistic clinical problem helped me remember the knowledge for a longer time*." (FGD 3)

Students also perceived simulation as valuable preparation for real-world patient care. One participant shared: "*Today I learned how to communicate with a difficult patient through the simulation scenario. If I encounter a similar situation during clinical placement, I think I will be able to handle it better*." (FGD 2)

In addition, students reported that simulation facilitated the development of multiple professional competencies. Participants emphasized that simulation-based learning provided valuable opportunities to practice and strengthen teamwork and communication skills: "*Simulation practice helped me improve my communication skills and become more confident when interacting with patients*." (FGD 3)

Furthermore, participants described simulation-based teaching as promoting self-directed learning. Students explained that the requirement to prepare before simulation sessions encouraged them to independently seek information and review relevant materials: "*Before the simulation session, the instructor assigned preparatory reading. I had to actively read, search for information, and prepare at home before attending the class*." (FGD 2)

Preparation and recommendations for simulation-based learning

Students proposed several recommendations to enhance the effectiveness of simulation-based teaching.

Firstly, students should prepare thoroughly before simulation sessions and actively participate in the debriefing. Participants emphasized that adequate preparation before simulation sessions was essential for maximizing learning outcomes, including reviewing course materials, reading assigned resources, and watching instructional videos. Such preparation not only strengthened knowledge but also increased confidence during the simulation experience. One participant explained: "*The pre-reading materials helped me prepare both academically and psychologically before the simulation. They helped me understand the content, feel more confident, and know what to expect during the simulation. As a result, I was able to participate more effectively*." (FGD1)

Secondly, students should be psychologically prepared for simulation. Many students reported feeling anxious and overwhelmed when participating in simulation activities, particularly during their first experience. Consequently, students recommended that future participants mentally prepare themselves and maintain a calm attitude during simulation sessions. One student stated: "*It was my first time participating in a simulation, and the instructor was acting as the patient. I felt extremely nervous and anxious, which caused me to become confused and forget what I had learned. I think it is important to prepare psychologically and remain calm when participating in simulation activities*." (FGD 2)

Thirdly, students expressed strong interest in simulation-based learning and indicated a desire for more simulation activities within the nursing curriculum. As one participant remarked: "*Simulation is very useful and provides an interesting learning experience. I would recommend it to my classmates, and we hope to have more opportunities to learn through simulation*." (FGD 3)

4. DISCUSSION

4.1. Students' evaluation of simulation-based teaching

The present study found that most students reported positive perceptions of both simulation design (74.3%) and the effectiveness of simulation-based teaching for skills development (72.8%). These quantitative findings were complemented by the qualitative data, in which students described simulation as facilitating the integration of theoretical knowledge with clinical situations and supporting communication, teamwork, and self-directed learning. These findings suggest that the simulation scenarios were generally well structured and perceived as relevant to students' learning needs. A possible explanation is that simulation-based learning provides opportunities for students to apply theoretical knowledge in a safe and realistic environment, thereby promoting active learning, skill acquisition, and clinical competence [14]. This finding highlights the important role of instructors in facilitating effective learning experiences. According to the NLN Jeffries Simulation Theory, facilitator support, instructional guidance, and debriefing are among the key factors influencing learners' engagement, satisfaction, self-confidence, and achievement of learning outcomes [6].

In the present study, 67.0% of students reported overall satisfaction with simulation-based learning. More than 70% of participants perceived simulation as a useful and effective learning strategy, indicated that the pre-simulation reading materials were relevant to the scenarios, and agreed that the teaching approach aligned well with their learning needs. These findings suggest that students generally valued simulation-based learning as an educational strategy that promoted active engagement and facilitated the integration of theoretical knowledge into practice. The positive level of satisfaction observed in this study is consistent with previous research demonstrating that simulation-based education enhances students' learning experiences and satisfaction. A recent randomized controlled trial conducted by Tong et al. (2024) reported that nursing students perceived simulation-based learning as an engaging and effective educational strategy for developing clinical competence and practical skills [15]. Likewise, a systematic review by Shah et al. (2026) concluded that simulation-based education generally resulted in higher levels of learner satisfaction and improved educational outcomes compared with traditional teaching methods [5]. According to the NLN Jeffries Simulation Theory, facilitator guidance, learner support, and structured debriefing are fundamental elements influencing student satisfaction and learning outcomes. Inadequate facilitation may reduce the effectiveness of otherwise well-designed simulation activities and negatively affect students' engagement and confidence [6].

Regarding self-confidence, although 68.0% of students reported confidence in learning through simulation, 32.0% did not report confidence. The qualitative findings provided further context for this result, as students described anxiety, nervousness, and confusion, particularly during their initial simulation experiences. Together, these findings indicate that psychological readiness should be considered during the early implementation of simulation-based teaching.

Evidence from these previous studies suggests that exposure to realistic patient-care situations through simulation may support learners' self-confidence and readiness for clinical practice such as a study conducted by Mai Thi Lan Anh and colleagues, who found that simulation significantly improved students' confidence in learning ($t = -29.45$, $p < 0.001$) [16]. Similarly, McRae (2017) demonstrated that simulation-based training significantly increased nurses' confidence in performing clinical skills following participation in simulated clinical scenarios [17]. These findings suggest that exposure to realistic patient-care situations through simulation enables learners to gain experience, make decisions, and receive feedback without compromising patient safety, thereby enhancing self-confidence and readiness for clinical practice.

In the context of the initial implementation at Hai Duong Medical Technical University, these findings provide descriptive data that can inform further refinement of simulation-based teaching. Practical directions identified from the study include strengthening structured pre-briefing, fostering a psychologically safe learning environment, improving faculty support, observation, and debriefing, preparing learning materials before sessions, clarifying expectations, and providing students with gradual opportunities to engage in simulation. Because this pilot study used descriptive student evaluations and qualitative perspectives, the findings do not provide a basis for causal claims that simulation improved students' competence, skills, or self-confidence.

4.2. Students' Perspectives on Simulation-Based Learning

The qualitative findings revealed three major themes: (1) *psychological experiences during simulation-based teaching*; (2) perceived benefits for learning and clinical preparation; and (3) *preparation and recommendations for simulation-based learning.*

First, students described a psychological transition from anxiety and nervousness before and during the simulation experience to enthusiasm and enjoyment after completion of the activity. This finding suggests that although simulation may initially create stress for novice learners, participation in realistic clinical scenarios can ultimately foster engagement and positive learning experiences. Similar findings have been reported in previous studies showing that nursing students frequently experience anxiety and stress during simulation activities, particularly when participating in unfamiliar clinical situations and being observed by faculty members and peers. However, this initial anxiety appears to decrease as students become familiar with the simulation environment and gain confidence in managing clinical situations [5, 18]. Students reported that simulation enhanced their confidence in communicating with patients, improved teamwork skills, and supported clinical decision-making. These findings are consistent with previous studies demonstrating that simulation-based learning provides opportunities to develop competencies that are often difficult to practice during clinical placements, including self-confidence, clinical skills, critical thinking, decision-making, and problem-solving abilities [19, 20].

Second, students highlighted the educational value of simulation-based learning in bridging the gap between theory and practice. Participants emphasized that simulation helped them integrate theoretical knowledge into clinical situations while simultaneously developing communication skills, teamwork, self-directed learning, and information-seeking behaviours. These perceptions are consistent with existing evidence indicating that simulation-based education enhances knowledge acquisition, communication skills, self-confidence, clinical competence, and clinical decision-making ability [21]. Recent evidence has further suggested that simulation-based learning facilitate the integration of theoretical knowledge into clinical practice through active and experiential learning [18].

Finally, students proposed several recommendations to improve the effectiveness of simulation-based learning. Participants emphasized the importance of adequate preparation before simulation sessions, including reviewing learning materials and watching instructional videos. Students also indicated that preparation helped reduce anxiety and contributed to more effective participation during simulation activities. Furthermore, students highlighted the need for psychological readiness before simulation sessions, as feelings of anxiety and uncertainty were common, particularly among first-time participants. This finding is supported by previous studies showing that preparatory activities and pre-briefing enhance learners' readiness, confidence, psychological safety, and engagement during simulation-based learning [17, 20]. Practically, these findings suggest that institutional implementation should prioritize three key strategies: (1) establishing structured, mandatory pre-briefing sessions to orient students and build psychological safety; (2) providing clear pre-reading and video resources to guide independent preparation; and (3) strengthening faculty competency in debriefing and formative feedback**.** Lastly, students expressed a strong desire for more opportunities to engage in simulation-based learning, reflecting their overall positive perception of this educational approach.

Limitations

This study represents the first evaluation of pilot simulation-based teaching in nursing education at Hai Duong Medical Technical University. However, several limitations must be acknowledged. First, the study evaluated a pilot implementation involving first- and second-year undergraduate nursing students at a single institution, limiting the generalizability of findings to other healthcare disciplines (e.g., medicine, medical imaging, physical therapy) or other educational settings. Second, the study employed a convenience sampling strategy without a randomized control group, which precludes drawing causal conclusions regarding the direct impact of simulation on long-term clinical competence. Third, the quantitative evaluation relied on self-reported survey instruments administered immediately post-simulation, which may be subject to response bias. And finally, focus group discussions conducted immediately after simulation may have been influenced by social desirability and group dynamics, which should be considered when interpreting the qualitative findings.

5. CONCLUSION

Most undergraduate nursing students positively evaluated the design and educational value of

simulation-based teaching. Despite these positive evaluations, some students reported anxiety and did not report positive self-confidence during simulation, particularly during their initial experiences. The findings provide initial descriptive evidence on students' evaluations and experiences of simulation-based teaching at Hai Duong Medical Technical University and should not be interpreted as evidence of causal improvement in competence, skills, or self-confidence. To support implementation, educators should provide structured pre-briefing, foster a psychologically safe learning environment, strengthen faculty support and debriefing, and encourage adequate student preparation before simulation sessions.

Disclosure: The authors declare no conflicts of interest in this work.

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