



Self-Confidence among nursing students following pediatric health care simulation at Nam Dinh University of Nursing

Nguyen Thi Nhat Le¹, Mai Thi Lan Anh¹, Pham Thi Thu Mui¹

¹Nam Dinh University of Nursing

ABSTRACT

Objectives: To describe self-confidence among nursing students after pediatric health care simulation practice at Nam Dinh University of Nursing in 2025 and identify associated factors. **Methods:** A cross-sectional descriptive study was conducted at the Preclinical Practice Center of Nam Dinh University of Nursing from March to September 2025. A total of 236 nursing students enrolled in the Pediatric Health Care course were recruited using convenience sampling. Data were collected using a structured questionnaire and the 8-item Self-Confidence in Learning scale (Cronbach's alpha = 0.91). Descriptive statistics and multivariable linear regression analysis were applied. **Results:** The mean age of participants was 25 ± 5.8 years; 86% were female and 61% were full-time undergraduate students. Most students had Ordinary to Good academic performance classification, and 56.8% had no prior experience with simulation or pediatric patient care. The mean self-confidence score after simulation was high (4.32 ± 0.41). The regression model demonstrated good fit ($R^2 = 0.67$; $p < 0.05$). Six factors were significantly associated with self-confidence, with pre-simulation briefing showing the strongest effect ($\beta = 0.409$). **Conclusions:** Simulation-based education should be more widely integrated into nursing curricula, particularly in pediatric clinical education.

Keywords: Self-confidence; simulation-based practice; pediatric health care; nursing students.

INTRODUCTION

In the context of increasingly complex health care systems, strengthening nursing students' self-confidence has become essential to ensure the quality and safety of patient care. Self-confidence, defined as an individual's belief in their ability to successfully perform specific tasks, plays a critical role in enabling nursing students to implement clinical interventions accurately, competently, and establish effective

therapeutic relationships with patients ¹.

However, evidence indicates that nursing students often experience anxiety and lack confidence when first exposed to clinical environments due to insufficient practical knowledge and caregiving skills². This challenge is particularly pronounced in pediatric health care, a field considered demanding not only for students but also for experienced nurses ³. According to Gibson et al ⁴ (2023), most students report

feelings of anxiety, limited confidence, and perceived inadequacy in clinical competence prior to pediatric placements. Therefore, nursing educators must continuously identify, implement, and evaluate effective educational strategies to foster students' self-confidence and professional development⁵.

Simulation-based education has been widely recognized as an effective pedagogical approach, enabling nursing students to engage in realistic clinical scenarios within a safe and controlled environment⁶. Previous studies have demonstrated that simulation practice significantly enhances students' self-confidence^{7,8}. At Nam Dinh University of Nursing, simulation-based training has been formally integrated into the undergraduate curriculum since 2016 and is implemented at the Preclinical Practice Center. This approach allows students to rehearse clinical roles and responsibilities in a structured and safe setting before direct patient contact. Therefore, this study was conducted to describe the level of self-confidence among nursing students after participating in pediatric health care simulation sessions at Nam Dinh University of Nursing in 2025 and to identify associated factors.

PARTICIPANTS AND METHODS

Participants: The study population consisted of undergraduate nursing students enrolled at Nam Dinh University of Nursing.

Inclusion Criteria: Students who were enrolled in the Pediatric Health Care course during the study period, completed all required simulation-based practice sessions at the Preclinical Practice Center, and provided informed consent to participate in the study.

Exclusion criteria: Students who failed to complete required simulation sessions

or course assignments, were concurrently enrolled in a similar training program that could influence study outcomes, or had health conditions preventing full participation in the evaluation process.

Study setting and period: The study was implemented at the Preclinical Practice Center, Nam Dinh University of Nursing, Vietnam from March to September 2025.

Study design: A cross-sectional descriptive study was conducted.

Sample size: The required sample size was calculated using the formula for estimating a single population proportion:

$$n = Z_{1-\alpha/2}^2 \frac{p \cdot q}{d^2}$$

Where: n: the minimum required sample size; p: the estimated proportion of students with improved self-confidence after simulation practice ($p = 0.721$), based on a previous study⁹;

$$q = (1-p) = 1-0.721 = 0.279;$$

d: precision (0.06); Z: the standard normal value corresponding to a 95% confidence level ($Z = 1.96$).

Substituting into the above formula, we can calculate $n = 215$.

Substituting these values into the formula yielded a minimum sample size of 215 students. To account for a potential 10% non-response or incomplete data rate, the final target sample size was increased to 236 students.

Sampling method: Convenience sampling was employed to recruit eligible students who met the inclusion criteria during the study period.

Data collection methods: Data collection was conducted in three phases:

-Phase 1: Pilot testing: The questionnaire was pilot-tested with 30 nursing students to assess clarity, comprehensibility, and internal consistency. Based on feedback, wording and item structure were refined prior to formal administration.

- Phase 2: Investigator training

Two lecturers were trained regarding the study objectives, survey procedures, and standardized data collection processes to ensure consistency.

- Phase 3: Data collection

Formal data collection was conducted after students completed six simulation sessions. Written informed consent was obtained prior to participation. Questionnaires were anonymized using coded identifiers to ensure confidentiality. Collected data were entered, checked for accuracy, coded, and securely stored.

Data collection instruments: Two self-administered questionnaires were used for data collection.

Demographic and academic characteristics questionnaire: This researcher-developed questionnaire collected information on gender, age, grade point average from the previous academic year, prior simulation experience, and experience caring for pediatric patients..

Student self-confidence scale: Self-confidence was measured using an instrument developed by Jeffries (2005) and publicly available through the National League for Nursing (2018) ¹⁰.

The scale consists of 8 items rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Total scores range from 8 to 40, with higher scores indicating greater self-confidence.

The original instrument demonstrated strong reliability, with a reported Cronbach's alpha of 0.87 ¹⁰. In the present study, pilot testing with 30 eligible nursing students yielded a Cronbach's alpha of 0.91, indicating excellent internal consistency.

Data analysis: Data were analyzed using descriptive and inferential statistics. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize participants' demographic and academic characteristics as well as overall self-confidence scores.

Multiple linear regression analysis was performed to identify independent factors associated with students' self-confidence while controlling for potential confounding variables. Variables considered theoretically and empirically relevant were included in the multivariable model. Statistical significance was set at $p < 0.05$. The internal consistency reliability of the self-confidence scale was assessed using Cronbach's alpha coefficient..

Ethical considerations: The study was approved by the Institutional Ethics Review Board of Nam Dinh University of Nursing (Approval No. 589/GCN-HDDD, dated March 5, 2025).

All participants were fully informed about the study objectives, data collection procedures, and their rights and responsibilities prior to participation. Written informed consent was obtained from each student. Participation was entirely voluntary, and students had the right to withdraw at any time without academic or personal consequences. All collected data were anonymized and treated with strict confidentiality.

RESULT**Table 1. Personal characteristics of the participants**

Characteristics		n	%
Age (years)		Min - Max: 21 - 42 X ± SD: 25 ± 5.8	
Gender	Male	33	14
	Female	203	86
Type of training program	Full-time undergraduate program	144	61
	Bridging undergraduate program	92	39
Academic performance classification	Excellent	6	2.5
	Very Good	45	19.1
	Good	85	36.0
	Ordinary	100	42.4
	Poor	0	0
Previous experience in pediatric health care simulation or real pediatric clinical care	Yes	102	43.2
	No	134	56.8

The mean age of the participants was 25 ± 5.8 years (range: 21–42 years). Female students accounted for the majority of the sample (86.0%). Most participants were enrolled in the full-time undergraduate program (61.0%). Regarding academic performance classification, most students were categorized as Ordinary (42.4%) or Good (36.0%), while a smaller proportion achieved Very Good (19.1%) and Excellent (2.5%) levels. No students were classified as Poor. More than half of the participants (56.8%) reported having no previous experience in pediatric health care simulation or real pediatric clinical care, whereas 43.2% had prior exposure in these areas.

Table 2. Perceived characteristics of simulation by nursing students

Characteristic		n	%
Pre-simulation briefing (provision of objectives, procedures, and practice content)	Adequately provided	164	69.5
	Not adequately provided	72	30.5
Quality of simulation scenarios	Realistic and reflective of clinical situations	180	76.3
	Not sufficiently reflective of clinical situations	56	23.7
Facilities and equipment for simulation practice	Adequate	138	58.5
	Inadequate	98	41.5

Characteristic		n	%
Practice intensity (number of simulation scenarios practiced)	One scenario	102	43.2
	Two or more scenarios	134	56.8
Peer support during simulation activities	Yes	96	40.7
	No	140	59.3
Lecturer support during simulation activities	Yes	140	59.3
	No	96	40.7

Most students (69.5%) reported receiving adequate pre-simulation briefing regarding learning objectives, procedures, and practice content. The majority (76.3%) perceived the simulation scenarios as realistic and reflective of clinical practice. More than half of the participants (58.5%) evaluated the facilities and equipment as adequate. Regarding practice intensity, 56.8% engaged in two or more simulation scenarios. Lecturer support was reported by 59.3% of students, whereas only 40.7% indicated receiving peer support during simulation activities.

Table 3. Mean self-confidence scores of students after simulation-based practice in pediatric health care

Items	Mean \pm SD
Understanding the practice content delivered	4.32 \pm 0.47
Practice content aligned with the curriculum.	4.39 \pm 0.49
Development of skills and achievement of required knowledge	4.29 \pm 0.45
Effective use of learning resources by the lecturer.	4.32 \pm 0.47
Acquisition of essential skills through practice.	4.32 \pm 0.47
Seeking assistance when not understanding the content	4.33 \pm 0.47
Applying practice to enhance understanding of nursing knowledge.	4.31 \pm 0.43
Lecturer's responsibility in guiding practice.	4.25 \pm 0.44
Overall self-confidence score	4.32 \pm 0.41

The findings indicate a high level of self-confidence among students following simulation-based practice in pediatric health care, with an overall mean score of 4.32 \pm 0.41.

The highest mean scores were observed for alignment of practice content with the curriculum (4.39 \pm 0.49) and seeking assistance when encountering difficulties (4.33 \pm 0.47). The lowest mean score was reported for the lecturer's responsibility in guiding practice (4.25 \pm 0.44).

Table 4. Model summary and ANOVA results of the multiple linear regression

Model	R	R²	Adjusted R²	F	p-value
	0.816	0.67	0.652	37,769	< 0.05

The multiple linear regression model demonstrated a strong correlation between the independent variables and students' self-confidence ($R = 0.816$). The coefficient of determination ($R^2 = 0.670$) indicated that 67.0% of the variance in self-confidence was explained by the predictors included in the model. The adjusted R^2 value of 0.652 suggested a good model fit after controlling for the number of variables. The ANOVA results confirmed that the overall model was statistically significant ($F = 37.769$, $p < 0.05$), indicating that at least one independent variable was significantly associated with self-confidence. Approximately 33% of the variance remained unexplained by the model.

Table 5. Multiple linear regression analysis of factors associated with students' self- confidence

Variables	B	β	p-value
Constant	3,428		
Age	0.009	0.122	
Previous experience	0.032	0.039	
Facilities and equipment	0.336	0.404	> 0.05
Practice intensity	0.032	0.039	
Peer support	-0.54	-0.065	
Lecturer support	0.102	0.123	
Gender	0.119	0.101	
Type of training program	0.161	0.192	
Academic performance classification	0.146	0.296	< 0.05
Pre-simulation briefing	0.364	0.409	
Simulation quality	0.361	0.375	
Clinical practice competence	0.036	0.204	

Six factors were significantly associated with students' self-confidence ($p < 0.05$), including gender, type of training program, academic performance classification, pre-simulation briefing, simulation quality, and clinical practice competence. All significant predictors demonstrated positive associations with self-confidence. Among these variables, pre-simulation briefing had the strongest effect ($\beta = 0.409$). The regression equation was expressed as:

Self-confidence = 3.428 + 0.101 (Gender) + 0.192 (Type of training program) + 0.296 (Academic performance classification) + 0.409 (Pre-simulation briefing) + 0.375 (Simulation quality) + 0.204 (Clinical practice competence)

DISCUSSION

This study demonstrated a high level of self-confidence among nursing students following simulation-based pediatric health care practice (4.32 ± 0.41). Pre-simulation briefing emerged as the strongest predictor of self-confidence, while gender, type of training program, academic performance, simulation quality, and clinical practice competence were also significantly associated.

Participant characteristics

The mean age of participants (25 ± 5.8 years) was higher than that reported by Tran Thi Hoang Oanh¹¹, Koo Huyn Young¹², and Toquan¹³. This difference may be attributed to the inclusion of bridging undergraduate students, who are generally older and may possess greater clinical exposure. The inclusion of both full-time and bridging students enhanced sample heterogeneity

and allowed broader assessment across educational backgrounds.

Female students accounted for the majority of participants (86%), compared with 14% male students, consistent with findings reported by Tran Thi Hoang Oanh¹¹ (98.4%) and Koo Huyn Yoo¹² (90%). This distribution reflects the typical gender structure of the nursing profession, which predominantly attracts female students due to the caregiving nature of the field.

The study included both full-time undergraduate students (61%) and bridging students (39%), allowing for a more comprehensive assessment of self-confidence following simulation-based learning. Differences in educational background and prior clinical exposure between these groups suggest the need to adapt simulation design, instructional strategies, and evaluation methods to accommodate varying learner characteristics.

Regarding academic performance, most students were classified as Ordinary (42.4%) or Good (36.0%), which is comparable to the findings of Toquan¹³ (69.3%). In contrast, Koo Huyn Yoo¹² and Kholoud¹⁴ reported higher proportions of students achieving Very good or Excellent levels. These discrepancies may be attributable to differences in grading systems and academic evaluation standards across institutions.

More than half of the students (56.8%) had no prior experience in pediatric health care simulation, a proportion higher than that reported by Toquan¹³ (29.3%). This variation may reflect differences in the

degree of simulation integration across nursing programs. Limited prior exposure to simulation may influence baseline self-confidence and underscores the importance of structured simulation implementation in nursing education.

Students' self-confidence following pediatric health care simulation

The high self-confidence score observed in this study (4.32 ± 0.41) is consistent with previous findings. Gabbouj ¹⁵ (2024) and Tran Thi Hoang Oanh ¹¹ (2021) reported slightly lower mean scores of 4.22 ± 0.59 and 4.11 ± 0.46 , respectively, whereas Toquan ¹³ documented a higher mean score of 4.47 ± 0.44 . Despite these variations, the consistently elevated mean values across studies suggest that simulation-based learning exerts a positive influence on students' self-confidence in clinical practice.

These findings are further supported by Labragu¹⁶ and Almeida¹⁷, who demonstrated that high-fidelity simulation reduces anxiety and enhances self-confidence, particularly in teamwork and clinical decision-making. From an educational perspective, simulation provides a psychologically safe learning environment that promotes experiential learning, knowledge integration, deliberate practice, and structured feedback. Such pedagogical mechanisms are fundamental to the development of self-confidence within competency-based nursing education.

However, our study indicated that self-confidence levels were not uniform across all dimensions, particularly in relation to lecturer guidance during simulation activities. This finding is consistent with

Makarem et al ¹⁸ (2019), who reported that nursing students demonstrated lower self-confidence in situations requiring direct guidance or immediate feedback from lecturers. Similarly, Abdal et al ¹⁹ (2015) argued that self-confidence is strongly influenced by the learning environment and the level of encouragement provided by lecturers. Therefore, although simulation enhances self-confidence, human interaction within the educational process including remains essential for sustaining and further developing professional confidence.

Factors associated with self-confidence following pediatric health care simulation

The findings of this study identified several significant predictors of students' self-confidence following simulation-based practice.

Gender was significantly associated with self-confidence, with male students reporting higher confidence levels than female students. This finding is consistent with previous research indicating that female students tend to demonstrate greater confidence in communication and empathic skills, whereas male students often report higher confidence in managing clinical situations and problem-solving tasks ²⁰. In contrast, Alsadi ²¹ (2023) found no significant association between gender and self-confidence, possibly due to cultural differences or variations in gender distribution across samples. These results suggest that simulation programs should incorporate gender-sensitive instructional strategies to ensure equitable learning opportunities and to support students

in overcoming potential gender-related stereotypes in clinical practice.

Type of training program was also a significant predictor, with bridging students demonstrating higher self-confidence than full-time undergraduate students. This difference may be explained by greater clinical exposure and practical experience among bridging students, whereas full-time students may rely more heavily on theoretical knowledge despite having limited real-world practice ¹⁴. These findings imply that simulation design should be tailored to learner background: foundational skill reinforcement and structured feedback may be more beneficial for full-time students, while complex scenario management and critical thinking exercises may better support bridging students.

Academic performance classification demonstrated a positive association with self-confidence, indicating that students with higher academic achievement tended to report greater confidence. This result aligns with findings by Nguyen Thi Hong Hanh ²² (2024) and Alharbi ¹⁴ (2022). However, Oliveira ²³ (2022) reported no significant relationship, which may be attributable to differences in study design or participant characteristics. Academically stronger students may possess better knowledge integration and cognitive preparedness, thereby enhancing their perceived readiness during simulation. These findings highlight the importance of targeted academic support for lower-performing students to reduce disparities in confidence levels.

Pre-simulation briefing emerged as the strongest predictor of self-confidence.

Students who received adequate briefing demonstrated significantly higher confidence levels than those who did not. Clear orientation regarding learning objectives, procedures, and scenario context may reduce uncertainty, alleviate anxiety, and enhance cognitive readiness before entering the simulation environment. This finding is consistent with Kim et al ²⁴ (2021), who reported significantly higher confidence among students who received structured preparatory information prior to simulation. These results underscore the critical role of well-designed pre-briefing sessions and suggest that concise, goal-oriented preparation combined with structured debriefing may optimize learning outcomes and strengthen students' confidence.

Simulation quality was positively associated with self-confidence, indicating that perceived realism plays a central role in enhancing learners' engagement and belief in their clinical capabilities. High fidelity and contextually meaningful scenarios, particularly those involving emotional, ethical, or risk related components in pediatric care, may facilitate immersion, promote authentic responses, and reinforce perceived competence ²³. Therefore, investment in realistic scenario development and comprehensive feedback processes is essential to maximize the educational impact of simulation.

Finally, clinical practice competence demonstrated a positive association with self-confidence. This finding is consistent with Wojcieszek ²⁵ (2025), who reported that the application of acquired knowledge and

skills in simulated clinical contexts not only strengthens competence but also enhances perceived readiness and professional confidence. The reciprocal relationship between competence and confidence suggests that simulation-based education should be designed to simultaneously develop technical proficiency and psychological readiness, rather than focusing exclusively on skill acquisition.

Strengths and limitations

This study provides important practical implications for nursing education at Nam Dinh University of Nursing. Currently, simulation-based pediatric health care training at the Preclinical Practice Center focuses on key clinical scenarios, including pediatric assessment, management of febrile seizures, pneumonia, dehydration due to diarrhea, and renal conditions in children. Students participate in all phases of the simulation process, including orientation to objectives, pre-simulation briefing, scenario enactment, and structured debriefing. The high level of self-confidence reported by students suggests that the simulation-based approach is aligned with the institution's educational orientation and contributes to improving graduate preparedness. These findings support the role of structured simulation in strengthening competency-based nursing education and meeting national professional standards established by the Ministry of Health.

However, several limitations should be acknowledged. First, the cross-sectional design precludes causal inference between simulation-based learning and self-

confidence. Second, the use of convenience sampling at a single institution limits generalizability. Third, the absence of a control group restricts comparative evaluation of the intervention effect. Additionally, self-confidence was measured using students' self-reported assessments, which may introduce response bias and limit objectivity.

Although a standardized instrument, such as Jeffries' self-confidence scale, was employed, certain items may not have been fully contextualized to the pediatric setting, potentially affecting measurement precision. Future studies should consider refining the instrument for contextual relevance and incorporating multisource assessment approaches, such as objective performance evaluation or instructor rated competence, to enhance validity and reliability.

CONCLUSION

Simulation-based pediatric health care education significantly enhances nursing students' self-confidence, particularly when supported by structured pre-briefing, realistic scenarios, and systematic debriefing. Gender, training program type, and academic performance classification were associated with variations in self-confidence, highlighting the importance of learner-centered and differentiated instructional strategies. The findings support the effectiveness of the structured simulation model implemented at the Preclinical Practice Center of Nam Dinh University of Nursing, where simulation activities are systematically integrated to bridge theoretical knowledge and clinical practice.

This approach contributes to strengthening students' professional readiness and competency development. Nevertheless, limitations related to study design, sampling scope, and measurement tools should be considered when interpreting the findings. Future research should employ larger and more diverse samples, refine measurement instruments to enhance contextual validity, and incorporate multi-source evaluation methods to improve reliability and practical applicability in nursing education.

REFERENCES

1. Ramezanzade Tabriz E, Sadeghi M, Tavana E, al e. Approaches for boosting self-confidence of clinical nursing students: A systematic review and meta-analysis. *Heliyon*. Mar 30 2024;10(6):e27347. doi:10.1016/j.heliyon.2024.e27347
2. Yu JH, Chang HJ, Kim SS, al. e. Effects of high-fidelity simulation education on medical students' anxiety and confidence. *PLoS One*. 2021;16(5):e0251078. doi:10.1371/journal.pone.0251078
3. Kim E, Song S, Kim S. Development of pediatric simulation-based education - a systematic review. *BMC Nurs*. Aug 28 2023;22(1):291. doi:10.1186/s12912-023-01458-8
4. Gibson-Young L, Lambert AW, Yordy M, Wang CH. Exploring outcomes from an innovative, pediatric-focused intervention with undergraduate nursing students. *J Pediatr Nurs*. Jan-Feb 2023;68:30-34. doi:10.1016/j.pedn.2022.09.002
5. Boso CM, van der Merwe AS, Gross J. Critical thinking disposition of nursing students: A quantitative investigation. *Nurse Education Practice*. Aug 2021;55:103167. doi:10.1016/j.nepr.2021.103167
6. Harrington DW, Simon LV. *Designing a Simulation Scenario*. StatPearls StatPearls Publishing. Copyright © 2025, StatPearls Publishing LLC.; 2025.
7. Hilleren IHS, Christiansen B, Bjørk IT. Learning practical nursing skills in simulation centers - A narrative review. *Int J Nurs Stud Adv*. Dec 2022;4:100090. doi:10.1016/j.ijnsa.2022.100090
8. Elendu C, Amaechi DC, Okatta AU, et al. The impact of simulation-based training in medical education: A review. *Medicine (Baltimore)*. Jul 5 2024;103(27):e38813. doi:10.1097/md.00000000000038813
9. Tawalbeh L, Tubaishat A. Effect of Simulation on Knowledge of Advanced Cardiac Life Support, Knowledge Retention, and Confidence of Nursing Students in Jordan. *Journal of Nursing Education*. 01/01 2014;53:38-44. doi:10.3928/01484834-20131218-01
10. Jeffries PR, Rodgers B, Adamson K. NLN Jeffries Simulation Theory: Brief Narrative Description. *Nurs Education Perspective*. Sep-Oct 2015;36(5):292-3. doi:10.5480/1536-5026-36.5.292
11. Oanh TTH, Hoai NTY, Thuy PT. The relationships of nursing students' satisfaction and self-confidence after a simulation-based course with their self-confidence while practicing on real patients in Vietnam. *J Educ Eval Health Prof*. 2021;18:16. doi:10.3352/jeehp.2021.18.16

12. Koo HY, Lee BR. Development and evaluation of a pediatric nursing competency-building program for nursing students in South Korea: a quasi-experimental study. *Child Health Nurses Res.* Jul 2022;28(3):167-175. doi:10.4094/chnr.2022.28.3.167
13. Toqan D, Ayed A, Khalaf IA, Alsadi M. Effect of High-Fidelity Simulation on Self-Satisfaction and Self-Confidence Among Nursing Students. *SAGE Open Nursery.* Jan-Dec 2023;9:23779608231194403. doi:10.1177/23779608231194403
14. Alharbi K, Alharbi MF. Nursing Students' Satisfaction and Self-Confidence Levels After Their Simulation Experience. *SAGE Open Nursery.* Jan-Dec 2022;8:23779608221139080. doi:10.1177/23779608221139080
15. Bdiri Gabbouj S, Zedini C, Naija W. Nursing Students' Satisfaction and Self-Confidence with Simulation-Based Learning and Its Associations with Simulation Design Characteristics and Educational Practices. *Adv Med Educ Pract.* 2024;15:1093-1102. doi:10.2147/amep.S477309
16. Labrague LJ, McEnroe-Petitte DM, Bowling AM, Nwafor CE, Tsaras K. High-fidelity simulation and nursing students' anxiety and self-confidence: A systematic review. *Nurs Forum.* Jul 2019;54(3):358-368. doi:10.1111/nuf.12337
17. Almeida R, Mazzo M, J Jorge, et al. Self-confidence in the care of critically ill patients: before and after a simulated intervention. *Rev Bras Enferm.* 2019;72(6):1618-1623. doi:10.1590/0034-7167-2018-0758
18. Makarem A, Heshmati-Nabavi F, Afshar L, Yazdani S, Pouresmail Z, Hoseinpour Z. The Comparison of Professional Confidence in Nursing Students and Clinical Nurses: A Cross-Sectional Study. *Iran J Nurs Midwifery Res.* Jul-Aug 2019;24(4):261-267. doi:10.4103/ijnmr.IJNMR_102_17
19. Abdal M, Masoudi Alavi N, Adib-Hajbaghery Mea. Clinical Self-Efficacy in Senior Nursing Students: A Mixed-Methods Study. *Nurs Midwifery Stud.* Sep 2015;4(3):e29143. doi:10.17795/nmsjournal29143
20. Bock A, Wagenknecht N, Winnand P, et al. Improvement of students' communication skills targeted through training and the use of simulated patients in dental education-a prospective cohort study. *BMC Med Education.* Jul 30 2024;24(1):820. doi:10.1186/s12909-024-05818-z
21. Alsadi M, Oweidat I, Khrais H, Tubaishat A, Nashwan AJ. Satisfaction and self-confidence among nursing students with simulation learning during COVID-19. *BMC Nursing.* 2023/09/22 2023;22(1):327. doi:10.1186/s12912-023-01489-1
22. Nguyen THH, Tran TTH. Satisfaction, confidence, and experience of nursing students at Duy Tan University during practical simulation training. *Journal of Nursing Science.* 08/28 2024;7(05):6-18. doi:10.54436/jns.2024.05.826
23. Oliveira Silva G, Oliveira FSe, Coelho ASG, et al. Effect of simulation on stress, anxiety, and self-confidence in nursing students: Systematic review with meta-

analysis and meta-regression. *International Journal of Nursing Studies*. 2022/09/01/2022;133:104282. answer:<https://doi.org/10.1016/j.ijnurstu.2022.104282>

24. Kim HK, Ryu S, Jang KS. Effect of structured pre-simulation preparation and briefing on student's self-confidence, clinical judgment, and clinical decision-making in simulation. *Contemp Teacher*.

Aug-Oct 2019;55(4-5):317-329. doi:10.1080/10376178.2019.1641420

25. Wojcieszek A, Kurowska A, Wróbel A, Bodys-Cupak I, Kamińska A, Majda A. Analysis of high-fidelity simulation effects and their connection with educational practices in early nursing education. *BMC Nursing*. 2025/04/24 2025;24(1):457. doi:10.1186/s12912-025-03077-x