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The Relationship Between Laboratory Learning and Nursing Students' Self-Confidence During Preceptorship

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ABSTRACT

The gap between classroom knowledge and clinical practice remains a problem in nursing professional education. This gap creates a fear of making mistakes and a lack of self-confidence in nursing students. Laboratory learning is expected to be a solution that makes students more confident in providing health care. This correlational research design aims to analyze the relationship between laboratory learning and nursing students' self-confidence during clinical practice. The population in this study were all final-year students of the Faculty of Nursing, University of North Sumatra, totaling 196 students. The sample size was determined using the Slovin formula with α=0.05, resulting in a sample size of 132 students. The sample was selected randomly. The instrument used was developed based on theory, then validity and reliability tests were conducted to ensure its content was appropriate and suitable for use. The research data were analyzed using Spearman correlation due to the non-normal distribution of the data. The results of the data analysis showed a significant relationship between laboratory learning and student self-confidence. The coefficient value was positive (+0.417), which means that the better the laboratory learning, the higher the students' self-confidence, with a moderate strength of relationship.

Keyword: Laboratory Learning, Nursing Students' Self-Confidence, Preceptorship

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1. Introduction

The gap between classroom knowledge and clinical practice or preceptorship remains a growing challenge as knowledge advances. (Duncan et al., 2026) stated that simulation-based learning offers a safe and structured approach to developing student readiness for practice. Simulation-based learning, for example, is implemented in a laboratory. Laboratory learning is expected to enhance student skills and reduce the gap between classroom theory and clinical practice. As students become more proficient, their confidence is expected to increase.

Self-confidence is a key factor in nursing practice because it is related to the ability to make decisions and engage in therapeutic communication so that patients receive quality care (Paula et al., 2023). Research by (Yulistika & Etlidawati, 2022) found that low self-confidence in nursing students is influenced by time constraints, conflicting clinical supervisor schedules with teaching activities, and a lack of mentoring support.

Furthermore, variations in practice methods, differences between theory and practice, and limited facilities also exacerbate students' low self-confidence in preparing for professional education.

Research by (Thi et al., 2021) at the University of Medical Technology and Pharmacy Vietnam found that students had moderate to high levels of self-confidence with a mean ± SD of 3.19 ± 0.62. This confirms that students need to be accompanied by a supervising lecturer or supervisor when practicing with patients so they can perform actions correctly, without hesitation, and with greater confidence. (Sari et al., 2024) added that 82.4% of nursing students at the University of Indonesia Maju lacked good self-confidence. Students often felt anxious, afraid to express their opinions, reluctant, and uncomfortable when dealing with new people, so they were still unable to demonstrate a confident attitude in learning.

This is also in line with research by (Farda & Handayani, 2024) who also found differences in self-confidence levels between cohorts. As many as 50.9% of students in the 2021 cohort mostly had high self-confidence, while 50.8% of students in the 2022 cohort mostly had moderate levels. This is because students from the class of 2021 already have more learning experience and are therefore more confident.

(Altinbas et al., 2025) research found that nursing laboratory training is essential for strengthening students' clinical competency and readiness for professional practice or preceptorship. A safe and controlled environment for developing clinical skills can enhance nurses' competence, confidence, and preparedness. Furthermore, research by (Lombu & Setiawan, 2018) also supported this finding, showing that 79.0% of professional students at the USU Faculty of Nursing experienced moderate levels of stress due to ineffective clinical areas, such as minimal interaction with the healthcare team, rude nursing staff, and lack of instruction from clinical supervisors. Furthermore, ward readiness also supports the emergence of this sense of self-confidence (Nurhidayah & Revi, 2021).

Nursing students with high levels of self-confidence will have a positive impact on the academic process, such as encouraging students to be more active in expressing opinions and being prepared for exams, thus influencing their academic achievement (Paula et al., 2023). Furthermore, students with self-confidence will have better communication skills, be able to make their own decisions, improve their skills, and believe in their own ability to provide real-life nursing care to patients during their professional education.

To enhance student confidence, all students are required to participate in laboratory practicals. However, despite participating in laboratory instruction, many nursing students still lack confidence in professional training or preceptorship. This occurs because they are often confused and hesitant about performing direct patient care (Suryadi et al., 2025). Another reason for this confusion, according to (2024), is the gap between theory and practice during laboratory learning and real-world activities in the practice setting.

Meanwhile, another study by (Abdelkader et al., 2021) found that most nursing students have low to moderate levels of self-confidence. This occurs because the teaching and learning process is an interconnected whole. If teaching support is inadequate, learning becomes less effective, and students experience doubt, fear, and uncertainty about their skills in performing direct nursing care on patients. Based on this background, we are interested in examining the relationship between laboratory learning and nursing students' self-confidence in participating in preceptorship.

2. Methods

This research is a non-experimental quantitative study with a correlational design (Sugiyono, 2023). which aims to analyse the relationship between laboratory learning and nursing students' self-confidence in preparation for preceptorship. The population in this study were all final year students of the Faculty of Nursing, Universitas Sumatera Utara, totalling 196 students. The sampling technique used the Slovin formula with a 95% confidence level. Thus, the sample size was 132 students. The sample was selected by random sampling.

The research instruments used were questionnaires. First, the laboratory learning questionnaire consisted of 40 questions. This questionnaire was adopted from (Holilah & Pohan, 2018), This questionnaire was adopted from Holish and has been tested for reliability with Cronbach's Alpha, obtained a = 0.979, meaning this questionnaire is considered reliable and suitable for use to measure laboratory learning variables. Second, the self-confidence questionnaire consisted of 20 questions, developed jointly by the researchers. Its content was validated by two experts, and its reliability was tested using Cronbach's Alpha, obtaining a value of α = 0.791.

Data collection was conducted by distributing questionnaires via Google Forms, simplifying the data analysis phase. Data analysis was conducted in two stages. The first was a univariate analysis to obtain an

overview of clinical learning and student confidence in participating in preceptorship. The second stage was a bivariate analysis with correlation tests. The research data were analyzed using computer applications.

3. Results

Based on the results of the incoming data collection, the total sample size was 132 final semester students, Faculty of Nursing, Universitas Sumatera Utara. The majority of the sample was female (n=125; 94.6%) and males (n=7; 5.4%) as seen in the figure 1.

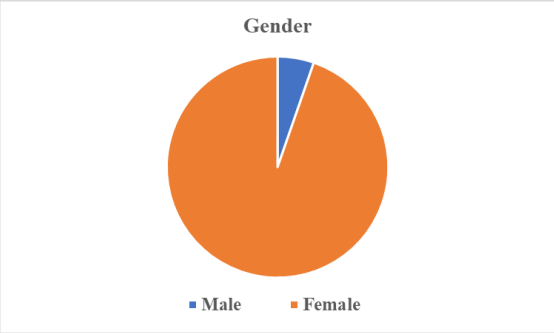

Figure 1 *Sample Distribution by Gender*

Laboratory learning conditions were categorized into three categories: good, fair, and poor, as shown in Table 1. The majority of students felt that laboratory learning was good, namely 71.21%, even though there are 5 samples (3.79%) of them who feel poor.

Table 1 Overview of Student Laboratory Learning

Characteristic	Frequency	Percentage
Good	94	71.21
Fair	33	25.00
Poor	5	3.79

Description of student self-confidence is grouped into 3 categories, namely, good, fair and poor as seen in table 2. The majority of students have a fairly good level of self-confidence (59.09%), although some students (52; 39.39%) already have good self-confidence.

Table 2 Overview of Student Self-Confidence

Characteristic	Frequency	Percentage
Good	52	39.39
Fair	78	59.09
Poor	2	1.52

Before conducting bivariate data analysis, a normality test was conducted for all research data variables. It turned out that the data distribution was not normal. Therefore, the correlation test used was the Spearman correlation test. The results of the correlation between laboratory learning and student self-confidence are shown in Table 3. It can be seen in the table that there is a correlation between laboratory learning and nursing student self-confidence.

Table 3 Correlation Between Laboratory Learning and Nursing Students' Self-Confidence

		Self-Confidence	Laboratory Learning
Self-Confidence	Correlation Coefficient	1.000	0.417
	Sig (2-tailed)		0,000
Laboratory Learning	Correlation Coefficient	0.417	1.000
	Sig (2-tailed)	0.000	

4. Discussion

Clinical learning, or preceptorship, is a key component of nursing education that integrates theory with practice in a healthcare setting. This learning process, through the guidance of a clinical instructor or preceptor, strengthens clinical expertise, professional skills, and critical thinking skills in providing standardized nursing care.(Mhango et al., 2021). The success of clinical learning is determined by factors including the role of the supervisor, learning methods, and the practice environment. Clinical instructors (CIs) act as facilitators and role models who, through active supervision, effective communication, and emotional support, can improve students' skills and confidence in clinical practice (Aufar et al., 2021). Furthermore, a conducive clinical environment with adequate facilities, supportive guidance, and good interpersonal relationships can reduce stress and increase student motivation and confidence. While a less supportive environment can potentially hinder the learning process (Suryadi et al., 2025).

4.1. Laboratory Learning

Laboratory learning is an important preparatory stage for nursing students, developing psychomotor skills, knowledge, attitudes, and confidence before participating in clinical practice or preceptorship. Laboratory learning can also improve students' readiness to provide nursing care to patients and help build their self-confidence (Holilah & Pohan, 2018). Laboratory learning is influenced by internal factors including physiological and psychological conditions, such as physical condition, concentration, motivation, attitude, mindset, interests, talents, and mental readiness to participate in practicums, and external factors such as the environment, infrastructure, learning methods, and support from lecturers or instructors (Elfi, 2022)

Based on Table 1, it can be seen that laboratory learning in the Faculty of Nursing Universitas Sumatera Utara is good (71.21%). The sub-variables of laboratory learning instruments include human resource management, facilities and infrastructure, learning methods, and funding. Human resources include the competence of teaching staff or facilitators during learning, laboratory staff or laboratory assistants, and the learning process ranging from briefings in large classes to one-on-one student guidance in small groups. Research (Fertier et al., 2020) reveals that the nursing skills laboratory helps develop students' psychomotor skills, build self-confidence, and overcome fear in performing nursing procedures. (Toriente Relloso et al., 2021) also found that lecturer support and adequate facilities are important factors in the success of nursing laboratory learning.

Laboratory learning in the Faculty of Nursing has generally been effective and structured. This is supported by good human resource management and infrastructure, such as scheduling and learning documentation. The laboratory has been designed to resemble a small hospital, thus resembling a real clinical setting. However, 3.79% of students still reported poor learning outcomes. This is related to limitations in lecturer guidance and the completeness of facilities, leading some students to feel they lack sufficient learning time, even though they may wish to retake the course. In reality, students who feel they have not mastered a particular competency are allowed to retake the course in groups by making an appointment with the laboratory assistant, thus avoiding disrupting the established schedule.

Good laboratory learning management includes the management of human resources, infrastructure, methods, and funding, where the quality of interactions between lecturers, laboratory staff, and students, as well as the lecturer's guidance as a supervisor, plays a crucial role in creating effective learning and increasing student confidence (Holilah & Pohan, 2018). The availability of adequate facilities that mimic real clinical conditions supports an efficient and professional learning process, while the application of methods such as demonstrations, simulations, and audiovisual media has been shown to improve students' mastery of psychomotor skills, procedural understanding, readiness, and self-confidence, despite certain limitations. Furthermore, proper planning and management of funding are determining factors for optimal and sustainable laboratory learning.

4.2. Self-Confidence

Self-confidence refers to a person's belief in their own ability to overcome challenges, make decisions, and solve problems. Self-confidence is closely related to self-esteem needs in Maslow's hierarchy of needs theory, which encompasses self-respect and recognition from others. This aims to foster independence, increase the courage to express opinions and active participation, and encourage the development of students' potential, motivation, and abilities in facing academic and social challenges.

Based on Table 2, the self-confidence variable shows that the majority of nursing students at the University of North Sumatra (59.09) have a fair level of self-confidence, meaning that most nursing students' self-confidence needs to be improved. Hesitation in taking initiative, low optimism, and anxiety about the demands

of practice and patient safety are factors that influence this condition. This finding is in line with research by (Alam et al., 2025) which states that nursing students' self-confidence is generally in the moderate category and is influenced by anxiety and worry during practice. Therefore, ongoing guidance and support, a more intensive mentoring program, and positive psychological support are needed to help students overcome doubts, increase self-confidence, and prepare themselves professionally for professional education and the world of nursing work. (Harefa et al., 2023).

Each person's self-confidence is influenced by internal factors, including self-concept, self-esteem, physical condition, and life experiences (Rahmadani et al., 2023). External factors include education, the social and learning environment, and social support. A positive self-concept and environment can increase self-confidence, while less supportive conditions can decrease it, which is then reflected in an individual's attitudes and behaviour (Alkhofiyah, 2021). Self-confidence is reflected through several aspects: belief in one's abilities, optimism, objectivity, responsibility, and the ability to think rationally and realistically. These aspects help individuals act steadily, manage challenges fairly, and take responsibility for decisions, thus forming a mature, stable, and adaptive personality in academic and social life (Wati & Supriatna, 2023).

4.3. The Relationship Between Laboratory Learning and Nursing Student Self-Confidence

The correlation analysis in Table 3 shows a positive and significant relationship between laboratory learning and nursing student self-confidence ($r = 0.417$; $p = 0.000$), with moderate and positive strength. This means that the better the laboratory learning, the better the students' self-confidence will be. This finding suggests that laboratory learning plays a significant role in building student self-confidence through the management of human resources (Man) and infrastructure (Material), such as structured learning management, a laboratory environment that mimics real clinical conditions, and the safe and repeatable application of simulation and hands-on practice methods.

This finding aligns with research by (Kaliyaperumal et al., 2021) and (Altinbas et al., 2025), which reported a strong to very strong relationship between laboratory learning and nursing student self-confidence. However, limitations remain, including aspects of lecturer guidance and the availability of facilities, which may impact the optimization of self-confidence (Alsadi et al., 2023). Therefore, improving the quality of mentoring, learning methods, and the suitability of laboratory facilities to clinical conditions is necessary to strengthen students' self-confidence before entering professional education (Sah & Gachhadar, 2023).

5. Conclusion

The results of the study indicate that laboratory learning in the Faculty of Nursing has generally been running well, although a small number of students still perceive it as lacking. However, the self-confidence of most nursing students is still in the moderate range, so it needs further optimization. Based on the correlation results, it is proven that good laboratory learning has a positive impact on increasing student confidence in participating in clinical education or preceptorship. Therefore, laboratory learning is one of the keys to improving student confidence.

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