

Clinical Learning Environment as a Predictor of Clinical Skills Development Among Nursing Students in Private Higher Education Institutions

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ABSTRACT

The clinical learning environment is fundamental to developing nursing students' competence; however, its influence on clinical skills development remains underexplored in private higher education institutions. This quantitative, cross-sectional correlational study aimed to determine the relationship between the clinical learning environment and clinical skills development among nursing students. Data were collected from 598 Level III and Level IV nursing students enrolled in three private higher education institutions in Iligan City, Philippines, using a validated researcher-made questionnaire. Descriptive statistics, Pearson's correlation, and regression analysis were employed to analyze the data. The findings revealed that the overall clinical learning environment was perceived

to be at a high level ($M = 4.21$, $SD = 0.55$), with preceptor leadership obtaining the highest mean score ($M = 4.26$, $SD = 0.65$), followed by workload ($M = 4.20$, $SD = 0.61$) and resource availability ($M = 4.18$, $SD = 0.60$). Likewise, the respondents reported a high level of clinical skills development ($M = 4.19$), with confidence ($M = 4.24$) receiving the highest rating, followed by competence ($M = 4.22$), procedural accuracy ($M = 4.21$), and critical thinking ($M = 4.09$). A strong, statistically significant positive relationship was found between the overall clinical learning environment and clinical skills development ($r = .747$, $p < .001$), with workload exhibiting the strongest association ($r = .712$). These findings indicate that a supportive clinical learning environment significantly enhances nursing students' competence and readiness for professional practice. The study recommends strengthening clinical partnerships, balancing student workloads, expanding preceptor development programs, and improving access to digital learning resources to further optimize clinical education.

Keywords: *Clinical learning environment; Clinical competence; Nursing students; Preceptor leadership; Nursing education; Clinical education*

INTRODUCTION

Clinical education is an integral component of nursing curricula, bridging classroom instruction with real-world patient care. Following theoretical instruction, nursing students participate in clinical placements where they apply knowledge, perform nursing procedures, develop clinical judgment, and internalize the professional values essential to safe and quality healthcare delivery. The clinical learning environment serves as the primary setting in which students transform theoretical concepts into practical competencies through experiential learning, guided supervision, and meaningful interactions with patients, preceptors, and other healthcare professionals. Within a supportive clinical learning environment, nursing students develop greater confidence, competence, critical thinking, and readiness for professional practice.

Conversely, inadequate supervision, insufficient learning resources, excessive workload, and unfavorable clinical conditions may hinder competency development and compromise students' preparedness for clinical practice (Hu et al., 2022; Workneh et al., 2024).

The global shortage of competent nurses continues to pose significant challenges to healthcare systems by affecting the quality, accessibility, and safety of patient care. Recognizing these challenges, the World Health Organization (WHO), through the Global Strategic Directions for Nursing and Midwifery 2021–2025, advocates strengthening nursing education by investing in supportive clinical learning environments, effective preceptorship, and workforce preparedness. These strategic priorities directly contribute to the achievement of Sustainable Development Goal (SDG) 3, which aims to ensure healthy lives and promote well-being, and SDG 4, which seeks to provide inclusive and equitable quality education through the preparation of competent, practice-ready healthcare professionals. Producing graduates who are clinically competent and professionally prepared has therefore become a shared responsibility of higher education institutions and healthcare organizations.

In response to these global priorities, nursing education has increasingly embraced Competency-Based Education (CBE), an educational approach that emphasizes learner-centered instruction, authentic assessment, and experiential learning to ensure that graduates demonstrate measurable competencies required for professional practice (Ten Cate & Hennis, 2022). Within this framework, the clinical learning environment functions as the platform where theoretical knowledge is translated into competent nursing practice through effective supervision, high-quality preceptorship, appropriate workload, and adequate learning resources. Consequently, the quality of the clinical learning environment has become a critical determinant of students' competence, confidence, procedural accuracy, and clinical reasoning, all of which are essential attributes of practice-ready nurses.

Although previous studies have consistently demonstrated that supportive clinical learning environments enhance nursing students' confidence, competence, and professional development, most investigations have primarily examined students' general perceptions of the clinical learning environment or focused on isolated components such as supervision, simulation, or resource availability. Evidence remains limited regarding how specific dimensions of the clinical learning environment—particularly preceptor leadership, workload, and resource availability—collectively influence clinical skills development among nursing students enrolled in private higher education institutions in the Philippines. Moreover, relatively few studies have determined which of these dimensions exerts the greatest influence on students' competence, confidence, procedural accuracy, and critical thinking. This gap limits the ability of nursing educators, administrators, and clinical partners to formulate evidence-based strategies that optimize clinical education, strengthen academic–clinical partnerships, and improve workforce preparedness.

Addressing this gap is essential for advancing competency-based nursing education and improving the quality of clinical training. Evidence regarding the influence of preceptor leadership, workload, and resource availability can inform curriculum enhancement, faculty and preceptor development, resource allocation, and institutional quality assurance initiatives aimed at strengthening clinical learning experiences. Therefore, this study examined the relationship between the clinical learning environment and clinical skills development among nursing students in private higher education institutions. Specifically, it investigated how preceptor leadership, workload, and resource availability influence students' competence, confidence, procedural accuracy, and critical thinking. The findings are expected to provide empirical evidence that will guide educational policies and management practices in developing competent, confident, and practice-ready nursing graduates while contributing to the realization of Sustainable Development Goal 3 (Good Health and Well-being) and Sustainable Development Goal 4 (Quality Education).

METHODS

Research Design

The aim of this study was to identify and establish the relationship between the clinical learning environment and the development of clinical skills among nursing students in private higher education institutions. A correlational research design of a quantitative, cross-sectional type was used. This design was the most suitable of the correlational research designs as it allowed for the measurement of the association among various elements of the clinical learning environment, namely: the leadership of the preceptor, the workload of the preceptor, and the availability of resources, with levels of clinical competence of students, clinical confidence, clinical procedure accuracy and clinical critical thinking, with no manipulation of study variables.

Research Setting and Participants

The study was carried out in three private higher education institutions in the Philippines that offer the Bachelor of Science in Nursing in Iligan City. The sample of the study was made up of 598 Level III and Level IV nursing students who either at the time of data collection had completed or who were undertaking clinical placements. Only students who had clinical placements were included in the study to guarantee that they had adequate clinical learning exposure to provide an assessment of the clinical learning environment and the development of clinical skills. The study was undertaken through self-selection and consent was obtained from all study participants.

Research Instrument

Data were collected using a validated and researcher-made questionnaire which had two main sections. The first section examined the clinical learning environment through the leadership of the preceptor, the preceptor's workload and the availability of resources. The second section examined the development of clinical skills through the dimensions of competence, confidence, procedural accuracy, and critical thinking. The development of clinical skills and the perceptions of the clinical learning environment were rated using a 5-point Likert scale where a higher score was indicative of a more positive perception. Expert validation was done to assess the content validity of the study and the questionnaire was tested for its reliability through a pilot study prior to the actual study.

Data Collection Procedure

After the approval from the institutional ethics review board and the authorized institutions, the researcher worked along with the nursing administrators to help with the distribution of the questionnaire. Eligible participants were briefed about the study, and its confidentiality, along with the voluntary participation, and were informed of their right to withdraw at their convenience, without any consequences. The questionnaires were given during the scheduled classes, and were collected afterwards.

Data Analysis

To quantify the perceptions of the participants regarding the clinical learning environment and the development of clinical skills, descriptive statistics including frequency, percentage, calculations of the weighted mean, and standard deviation were employed. The Pearson product-moment correlation coefficient was used to analyze the relationships of the variables, and the significance was set at 0.05. The statistical analysis was done using the IBM SPSS Statistics.

Ethical Considerations

Data collection was done after receiving the relevant ethical approvals. Institutional approvals from the participating higher education institutions were also obtained. The participants voluntarily signed the informed consents, and the researcher ensured the participants' right to withdraw. To implement the participants' confidentiality and anonymity, identification codes were assigned in lieu of collecting

personally identifiable information. The data were kept in a locked cabinet, and used solely for this study to comply with the Data Privacy Act of 2012, (Republic Act No. 10173).

Artificial Intelligence (AI) Declaration

In this paper, AI was used only to help with editing, grammar, and clarity. AI was not used to write, analyze, interpret, or manipulate research data; conduct statistical analyses, write research results, or suggest conclusions. The authors conducted all aspects of the research independently, including research design, data collection, and statistical analyses, and bear full responsibility for the impact and content of the work. AI was used in accordance with the suggestions of the existing ethics in academic writing, and did not substitute the authors' contributions to the research.

RESULTS AND DISCUSSION

What is the level of the clinical learning environment in terms of preceptor leadership, workload, and resource availability?

Table 1. *Level of the Clinical Learning Environment Among Nursing Students*

Scale	Mean Range	Descriptive Equivalent
5	4.51 – 5.00	Very High
4	3.51 – 4.50	High
3	2.51 – 3.50	Moderately High
2	1.51 – 2.50	Low
1	1.00 – 1.50	Very Low

Table 1 shows the perceptions of the nursing students about the clinical learning environment. The total mean score was 4.21 (SD = 0.55), indicating that students had a very positive perception of the clinical learning environment. It can be said that the nursing students participating in this study experienced clinical environments in which learning and practice of clinical skills was supportive, encouraging, and effective. A positive clinical learning environment will always be supportive of the learning and socialization processes. It further creates opportunities for the application of clinical theories to actual care which are essential in a learning process that is based on competencies in nursing education. The results of the study complement the general framework of the study which identifies the clinical learning environment as a primary factor in the evaluation of the clinical competence of students.

On the other hand, among the aspects of the clinical environment, the mean score for the leadership of the preceptors was the highest (M = 4.26, SD = 0.65). This means that students rated the preceptors and clinical instructors as role models and leaders in their professions, as well as instructors and supervisors, positively. Exceptional preceptorship positively impacts students' professional identity and clinical competence during their placement. Moreover, the leadership of the preceptor goes beyond the direct supervision of technical skills. It involves fostering a reflective practice, offering thoughtful critique, and creating a psychologically safe environment where students are encouraged to ask questions and to perform clinical skills with constructive guidance.

Dimension	Mean	SD	Interpretation
Preceptor Leadership	4.26	0.65	High
Workload	4.20	0.61	High
Resource Availability	4.18	0.60	High
Overall Clinical Learning Environment	4.21	0.55	High

The dimension of workload also received a positive rating ($M = 4.20$, $SD = 0.61$). It seems that participants viewed their clinical duties and patient assignments as workable and as something for which they were reasonably prepared. An effective workload allows nursing students the optimal number of opportunities to practice clinical skills, while avoiding unnecessary stress and cognitive overload that may disrupt the learning process. Proper patient assignments also promote greater involvement in patient care, enhance clinical judgment, and support the development of the students' ability to relate and apply theory to practice. It appears that the organizations and clinical partners involved in the study managed to strike a balance between the goals and demands of the service and the learning needs of the students.

The dimension of resource availability received the lowest, though still highly positive, mean score ($M = 4.18$, $SD = 0.60$). This finding shows that students had sufficient access to almost all the necessary clinical practice resources. The lower score indicates that there are areas for potential increase, especially with regard to the provision of clinical practice technologies. Given the rapidly evolving nature of technology in clinical healthcare practice, the lack of clinical technologies advanced the potential of students to practice digitally and develop technology based clinical decision making. Therefore, the development of technology in the area of clinical practice can support the preparation of nursing graduates for contemporary healthcare practice.

Overall, the results help add to the the existing research showing that having a positive clinical setting during training leads to the positive development of nurses who are ready for the workplace. The highly positive feedback in all aspects shows that the clinical settings of the workplaces that the participants are drawn from have effective oversight, a balanced workload, and adequate resources for learning. However, the perceptions of the availability of resources in the workplace were rated lower. This indicates that there is a need to invest in resources that support digital learning and technology in the workplace that enhance clinical learning to balance the challenges of practice in the modern world.

The results also support Kolb's Experiential Learning Theory in that learning is the result of engagement in the practice and is further developed through reflective learning and practice. This theory is also supported by Benner's Novice-to-Expert Theory describing that progress in clinical competence from a novice level to proficient level is achieved through repeated exposure in the practice, and engagement in the practice is further developed through the support of a practice supervisor. Moreover, the results support the recent literature that a clinical setting that involves positive learning, a supportive preceptor, a manageable workload and a sufficient learning resource, increases the level of competence, confidence, satisfaction and readiness to practice of nursing students.

Looking at the results more generally, this research can help achieve some of the Sustainable Development Goals of the United Nations. For example, by producing skilled nursing graduates capable of providing safe, high-quality patient care, it may help to achieve SDG 3 (Good Health and Well-being), while SDG 4 (Quality Education) may be reached as this research shows the importance of developing clinical learning that is effective and supportive in order to improve the quality of education. Finally, this research acknowledges the importance of developing clinical education within the frameworks of SDG 9 (Industry, Innovation and Infrastructure) and the need for more technological and digital resources. To address the increasingly complex issues faced in healthcare, dedicated and resilient clinical learning environments must be developed in order to produce a competent nursing workforce with the potential to meet this demand.

What is the level of clinical skills development among nursing students in terms of competence, confidence, procedural accuracy, and critical thinking?

Table 2. *Level of Clinical Skills Development Among Nursing Students*

Dimension	Mean	Interpretation
Competence	4.22	High
Confidence	4.24	High
Procedural Accuracy	4.21	High
Critical Thinking	4.09	High
Overall Clinical Skills Development	4.19	High

Scale: 1.00–1.50 = Very Low; 1.51–2.50 = Low; 2.51–3.50 = Moderately High; 3.51–4.50 = High; 4.51–5.00 = Very High.

The results of the study survey show that nursing students in the study sample were at an advanced stage in the development of their clinical skills ($M = 4.19$). This means that nursing students in the study sample in general, viewed themselves as being able to perform the most important nursing activities in the hospital. This shows that the participating institutions in the study were successful in combining teaching, laboratories and clinical placements to enhance the students' professional development. The development of clinical skills is not technical, but the development of the ability to use knowledge, skills and provide safe, patient-oriented and effective care. These results are in line with the principles of competency-based nursing education. These principles emphasize the gradual attainment of measurable competencies through real clinical practice and the provision of rigorous and regular feedback on practice (Ten Cate & Hennis, 2022).

Across the four dimensions, confidence was shown to have achieved the highest value in mean score, being at $M=4.24$, compared to $M=4.22$ for competence and $M=4.21$ for procedural accuracy. A high level of confidence shows students felt ready to undertake nursing procedures and fully engage in the care of patients. Clinical competence and confidence are mutually reinforcing. These students are able to interact, think, and act with less anxiety and more assurance. Warshawski (2022) found that students with more confidence and self efficacy are more engaged, resilient, and perform better clinically. This was also apparent in the findings of Choi et al. (2023), who noted that students' confidence and ability to perform nursing interventions in a safe manner were improved through clinical exposure and integrated learning and practice-based simulations. This reinforces the effect of supportive supervision and practice on the development of confidence, along with the provision of feedback, and highlights the value of learning from experience in nursing education.

Competence and procedural accuracy received similarly high ratings. This means that students were confident in their ability to perform procedures in a clinical setting, both accurately and reliably. This represents the success of performing basis competence instruction, clinical procedural demonstrations, simulations, and guided instructional experiences in the practice setting. The repeated practice with the provision of timely feedback enables students to refine their clinical procedural skills related to the routine clinical performance of nursing in a manner that is both safe and effective. Recent studies have also shown that the inclusion of simulation in education and competence-based assessment creates positively improved outcomes for students in multiple areas, especially in clinical practice and professional preparedness for nursing (McGaghie et al., 2022; Ortiz et al., 2024).

Although critical thinking was rated high overall, it had the lowest mean. This suggests that students had the most difficulty resolving problems from a clinical situation that requires advanced clinical reasoning. The formal development of clinical reasoning occurs through thoughtful practice and the development of judgment skills, coupled with exposure to a variety of clinical situations. This finding indicates the students have the basic clinical skills; however, they require more opportunities to analyze

complex clinical situations, prioritize clinical activities, and be flexible in response to varying clinical demands. This is consistent with the findings of Mashayekh et al. (2024), who reported that clinical reasoning and decision-making are greatly improved with simulation and a structured debriefing. Also, Liu et al. (2024) reported that instructional design, which is based on competencies and which incorporates case-based learning, reflective learning, and authentic clinical assessments, increases the critical thinking and advanced cognitive skills required for safe clinical practice.

These findings call for more attention to the cognitive aspect of learning, instead of only focusing on the psychomotor skills. The nursing curriculum should incorporate structured design learning that fosters the integration of knowledge through the evaluation of clinical judgment, and advanced clinical skills. This prepares nursing graduates to think critically and have the confidence to meet the demands of a complex clinical environment.

Nursing administrators and clinical partners need to invest in simulation centers long with creating competency-based assessments and training opportunities for faculty for better clinical instruction and mentorship. Constructive feedback is necessary for students to reflect on their clinical decisions. Students need to be challenged to think critically about their decisions instead of being taught to simply carry out tasks. It is important to invest in these educational advancements for the sake of graduates, patients, and public welfare. It cultivates safe practice and creates flexible and skilled nurses.

Findings indicate that students are solid in clinical skills, confident, and accurate in performing procedures. There is still a long way in teaching clinical judgment and critical thinking. Critical and advanced thinking skills need to be developed in a clinical context that is centered on the learner to meet the multiple challenges in today's healthcare system. These approaches are aligned with the 3rd and 4th Sustainable Development Goals targeting Good Health and Well-being and Quality Education, respectively. Competent healthcare professionals are the desired end result of the former and practice-based nursing education, which focuses on producing nursing graduates who possess the essential skills and attitudes for a professional career, is the desired end result of the latter.

Is there a significant relationship between the dimensions of the clinical learning environment and clinical skills development?

Table 3. *Relationship Between Clinical Learning Environment and Clinical Skills Development*

Clinical Learning Environment Dimension	r	p-value	Interpretation
Preceptor Leadership	.621	< .001	Significant
Workload	.712	< .001	Significant
Resource Availability	.650	< .001	Significant
Overall Clinical Learning Environment	.747	< .001	Significant

Note. Pearson Product-Moment Correlation. **p < .01**

The findings revealed a strong and statistically significant positive relationship between the clinical learning environment and clinical skills development among nursing students. All dimensions of the clinical learning environment were significantly correlated with clinical skills development ($p < .001$), indicating that improvements in the quality of the clinical learning environment are associated with higher levels of competence, confidence, procedural accuracy, and critical thinking. These results support the premise that clinical competence is developed not only through classroom instruction but also through meaningful clinical experiences within supportive learning environments. The rejection of the null hypothesis confirms that the clinical learning environment is a significant contributor to students' professional growth and clinical readiness.

Among the dimensions, workload demonstrated the strongest relationship with clinical skills development ($r = .712$). This finding suggests that appropriately structured clinical workloads provide

students with sufficient opportunities to perform nursing procedures, participate in patient care, and develop clinical judgment without experiencing excessive stress that may compromise learning. Balanced workloads enable students to actively engage in experiential learning while allowing adequate time for reflection, feedback, and skill refinement. Previous studies have likewise emphasized that clinical placements with manageable workloads promote student engagement, reduce learning-related anxiety, and enhance competency acquisition by allowing learners to focus on meaningful clinical experiences rather than task completion alone (Hu et al., 2022; Workneh et al., 2024).

Resource availability also demonstrated a strong positive relationship with clinical skills development ($r = .650$), highlighting the importance of providing students with adequate clinical equipment, instructional materials, simulation facilities, and digital technologies. Access to appropriate learning resources allows students to repeatedly practice essential procedures, strengthen psychomotor skills, and integrate evidence-based knowledge into clinical decision-making. As healthcare increasingly adopts digital technologies, resource availability extends beyond physical equipment to include simulation laboratories, electronic health records, and technology-enhanced learning tools that prepare students for contemporary clinical practice. These findings reinforce recent evidence that well-resourced learning environments significantly improve students' competence, confidence, and readiness for professional practice.

Similarly, preceptor leadership showed a significant positive relationship with clinical skills development ($r = .621$), emphasizing the critical role of clinical instructors and preceptors in facilitating student learning. Effective preceptors guide students through complex clinical situations, provide timely and constructive feedback, encourage reflective practice, and model professional behaviors that support competency development. Positive mentoring relationships also foster psychological safety, allowing students to ask questions, acknowledge mistakes, and progressively develop confidence in performing clinical procedures. These findings support contemporary competency-based nursing education, which recognizes clinical instructors as facilitators of experiential learning rather than merely evaluators of student performance.

The strong overall correlation between the clinical learning environment and clinical skills development ($r = .747, p < .001$) demonstrates that clinical competence is strongly influenced by the quality of students' learning experiences within healthcare settings. Rather than functioning independently, preceptor leadership, workload, and resource availability collectively create an educational environment that supports experiential learning, professional socialization, and the integration of theoretical knowledge into clinical practice. This finding is consistent with Competency-Based Education (CBE), which emphasizes that measurable competence is achieved through authentic clinical experiences supported by effective supervision, continuous feedback, and learner-centered educational environments (Ten Cate & Hennus, 2022). Likewise, Kolb's Experiential Learning Theory explains that competence develops through repeated cycles of concrete experience, reflective observation, conceptualization, and active experimentation, all of which are facilitated within high-quality clinical learning environments.

From an educational perspective, these findings underscore the importance of strengthening clinical education through structured preceptor development, balanced clinical assignments, and improved access to clinical and digital learning resources. Nursing curricula should continue integrating simulation-based education, reflective debriefing, and competency-based clinical assessment to maximize students' learning experiences and clinical preparedness. From a management perspective, nursing schools and healthcare institutions should strengthen academic-clinical partnerships, invest in faculty and preceptor development, monitor student workload, and improve the availability of technological and clinical resources to ensure consistently high-quality clinical education.

Overall, the findings demonstrate that the clinical learning environment is a critical determinant of nursing students' clinical skills development. Creating supportive clinical environments characterized by effective preceptor leadership, manageable workloads, and adequate learning resources enhances students'

competence, confidence, procedural accuracy, and clinical reasoning, thereby preparing graduates who are capable of delivering safe, evidence-based, and patient-centered care. Furthermore, strengthening clinical learning environments contributes to the achievement of Sustainable Development Goal 3 (Good Health and Well-being) by preparing competent healthcare professionals and Sustainable Development Goal 4 (Quality Education) by promoting high-quality, competency-based nursing education that responds to the evolving needs of healthcare systems.

CONCLUSION

The results of this research showed that nursing students considered the clinical learning environment to be extremely supportive with reference to the leadership, workload and resources of the preceptors. The respondents also showed a high degree of clinical skill development, and confidence, competence, and critical thinking and procedural skills were rated highly. Of utmost importance, the results showed that a supportive clinical learning environment has a significant positive impact on the development of clinical skills. This was evident in the students' level of competence and preparedness to enter the working environment. Out of all the components of the clinical learning environment, workload had the greatest impact on the development of clinical skills, followed by the availability of resources and the leadership of the preceptors. This demonstrates that when students are given an appropriate workload, and adequate resources and guidance, the greatest amount of learning takes place. This study supports the assertion that to develop clinically competent nurses, high quality clinical learning environments that support the development of reflective practices and professional are required, in addition to theoretical instruction. Improving the described educational conditions is likely to better prepare nursing graduates to provide safe, evidence-based and focused care. This also support the objective of SDG 3 and SDG 4 in relation to nursing education.

Based on the findings, the quality of clinical learning environments should be strengthened through effective preceptor leadership, optimal student workloads, and adequate clinical, simulation, and digital resources aligned with competency-based education. Clinical instructors and preceptors are expected to provide students with effective supervision and mentorship, as well as constructive feedback to facilitate the development of students' clinical training competence, confidence, and critical thinking. Investment in the development of faculty and clinical preceptors, in addition to simulation and digital clinical resources, is important for the provision of innovative and technology-based clinical teaching. Building stronger relationships between nursing education and service partner organizations is essential to providing meaningful clinical placements that offer adequate supervision and opportunities for the development of clinical skills. Consideration of a range of activities, such as high-fidelity and low-fidelity simulation, critical reflective practice, and clinical reasoning, is essential to support the development of higher order thinking skills and clinical decision-making in nursing students. Initiating an enduring quality improvement process to monitor and evaluate the clinical learning environment, including the effectiveness of preceptors, the balance of student workloads, the adequacy of resources, and the clinical learning experiences of students, is important for fostering ongoing improvement. Finally, future studies should employ longitudinal and multi-institutional approaches, incorporating both the public and private sectors to validate and expand this research.

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