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Evaluating the Impact of Clinical Supervision on the Development of Core Clinical Competencies in Undergraduate Nursing Students: A Mixed-Methods Study

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Abstract

Background:
Integrating theoretical education and applied nursing skills relies fundamentally on clinical supervision during education programs. Adequate supervision produces qualitative assessments that help students develop core competencies, including communication and critical thinking skills and practical abilities for delivering safe patient care. However, the development of competencies faces barriers due to minimal available resources, large class sizes, and inconsistent supervisory methods, specifically in the under-resourced environments of Pakistan.

Aim: This study examined how clinical supervision methods affect the development of core clinical competencies for medical nursing students in Swat.

Methodology: A convergent parallel mixed-methods design integrated quantitative data sets with qualitative measurements to conduct the research. One hundred eighty undergraduate nursing students participated in the study as part of the stratified random sampling process from years 2 to 4. Survey data were collected through the Clinical Competency Self-Assessment Scale (CCSAS) and Clinical Supervision Evaluation Tool (CSET), and interviews were conducted with twelve students. Descriptive statistics, Pearson correlation, Chi-square tests, and thematic analysis methods were utilized for data analysis.

Results: The research data showed that clinical supervision positively affects competency development ($r = 0.61$, $p < 0.001$). Fourth-year students achieved the highest scores in competency tests (mean = 3.8) as their academic level increased. Educational staff highlighted the significance of supervisor assistance and meaningful feedback within a positive learning context yet faced challenges from inadequate staffing and insufficient allocated time.

Conclusion: Proper clinical supervision effectively improves nursing students' clinical competencies. Supervisors should receive training as an essential part of their job, while sufficient resources and periodic evaluations of teaching quality will enhance nursing education results.

Keywords: Clinical supervision, nursing students, nursing education, clinical competencies, mixed-methods.

Introduction

Clinical supervision involves structured professional development that helps future nurses acquire clinical abilities while building professional competence and assurance in actual practice settings (1). Experienced clinicians use purposeful clinical supervision practices to support students when they engage in genuine patient care experiences. (2). The basics of nursing practice refer to necessary abilities combined with essential facts and professional stance that students must learn before delivering safe, ethical, and competent medical care. (3). Communication, critical thinking, decision-making, technical skills, and professional behavior are necessary for nursing care delivery. (2).

The transition from theoretical nursing education to applied clinical learning represents the most challenging obstacle nursing students encounter on their education journey. (4). The main advantage for patient care emerges from clinical placements when students connect academic knowledge to real-world healthcare settings. Students struggle to develop fundamental safety skills because they do not obtain proper mentoring support throughout their clinical training. (5). Patient learning outcomes achieve maximum results when the quality and consistency of clinical supervision meet expectations. Evaluating how clinical supervision affects student competency development remains crucial for enhancing nursing education and healthcare service quality. (6).

Nursing education adopts a competency-based curriculum because students must complete theoretical knowledge and demonstrate practical clinical abilities. (7). This process requires essential supervision elements that combine feedback, role modeling effects, emotional support provisions, and reflective practice opportunities. (8). The healthcare field utilizes two main supervision approaches: individual mentoring programs and peer supervision, which are conducted through group reflection activities. (9). Research about core competency development through these supervision models produces inconsistent findings due to minimal findings and a focus on low-resource settings alongside diverse cultural contexts. (10).

Nursing education clinics in Pakistan face numerous obstacles due to limited resources, high student-to-faculty ratios, and inconsistent teacher supervision methods. (11). Current obstacles prevent nursing students from fully participating in clinical training activities. Medical supervision is crucial for nursing student competency development, yet scientists have not conducted robust empirical investigations into how this practice influences clinical sites locally. (12). Research must immediately focus on improving clinical supervision methods to improve education standards. (13).

The study needs a mixed-methods research approach because this methodology enables a thorough investigation of the subject matter. (14). Quantitative data measurement examines supervisor practice effects on student competency levels combined with qualitative results, which extract essential information from both supervisor and student subjective reports. (13). The analysis incorporates two methods to measure statistical patterns and establish connections between actual nursing practice numbers of importance. (15).

This study adds to worldwide healthcare advancement through quality services and patient safeguards. A health system requires skilled nurses to produce meaningful patient outcomes since the quality of nursing care directly impacts treatment results. (16). The strategic development method of clinical supervision enhances competence in early-stage nurse education programs. The research findings will help establish supervisory policies and development programs that will improve educational standards within nursing programs through standardized curriculum design. (17).

Methodology

This research examined how clinical supervision practices influence core clinical competencies development in undergraduate nursing students through a convergent parallel mixed-methods design. Both quantitative and qualitative data collection methods were combined to achieve a complete understanding of the effects clinical supervision practices have on competency growth. The research took place at different Nursing Colleges in Swat. The research participants were undergraduate nursing students in the second, third, and fourth years of the Bachelor of Science in Nursing (BSN) program. First-year students were excluded because of their minimal clinical experience.

The study required 180 participants based on Raosoft calculations for 95% confidence and 5% error margin. The researcher employed stratified random sampling to guarantee that students from all academic years and both institutions were represented proportionally. The research period was extended six months between April 2024 and September 2024. This investigation investigated the quantitative connection between clinical supervision and students' core clinical competency perceptions and the qualitative assessments of student supervision experiences during clinical placements. The researched information will help establish better supervision models for better nursing education results and practice outcomes.

Data Collection Procedure

The data collection process happened across various Nursing colleges in Swat. A structured questionnaire was used to collect participant data for different survey outcomes. These included demographic characteristics alongside validated instruments like the Clinical Competency Self-Assessment Scale (CCSAS) and Clinical Supervision Evaluation Tool (CSET). The questionnaires were distributed during clinical rotations. A purposive sub-sample of 12 students, including 3 participants each from the nursing colleges, underwent semi-structured interviews regarding their clinical placement experiences with supervisory oversight. Students faced clinical supervision challenges and shared their understandings and practical experiences through interview sessions.

Each study participant received written information documents together with consent forms before researchers obtained their permission to collect data. The researcher maintained consistent data collection throughout the study by working with the same interview team. A small preliminary participant group later excluded from the primary research conducted a pre-testing session of quantitative assessment tools to verify their clarity and reliability. All participants were allowed audio recordings as their consent, while researchers recorded verbatim transcriptions for analysis.

Data analysis procedure

The research team processed the collected numeric data using version 27 of SPSS software. The researchers employed descriptive statistical measures to present data on demographics and clinical competency assessments, including frequencies, percentages, means, and standard deviations. The relationships between clinical supervision practices and competency development were evaluated through Chi-square tests and Pearson's correlation—a p-value of less than 0.05 determined statistical significance.

A thematic data analysis approach was used to evaluate the qualitative findings. Multiple readings of transcripts produced codes that identified consistent patterns. Students reported their clinical supervision experiences by generating themes regarding supervisory support, communication, feedback, and learning environment. The interpretive stage combined quantitative and qualitative findings to match numerical results against their qualitative counterparts, strengthening the numeric findings through contextual understanding.

Ethical Considerations

The research study tightly followed all necessary ethical guidelines for human participant studies. Approval for ethical research came from the Institutional Review Board (IRB) of Zalan College of Nursing, Swat, with reference number ZCN/IRB/24/08/012. Before study activation, researchers explained the research objectives, execution methods, safety information, and positive aspects of participant engagement through speech and paper materials. Students were free to participate or leave the study at any point during the research period without adverse academic or personal effects.

Each participant received a unique code for confidentiality protection, and data analysis and reporting did not contain identifying details. The principal investigator held sole access to interview recordings and questionnaires, which were securely maintained. All participants received protection through autonomy and beneficence combined with non-maleficence and justice throughout the study. All research outcomes will be presented to avoid any breach of participant confidentiality or violation of their rights.

Analysis and Result

Demographic Characteristics of Participants

The demographic data revealed males were the dominant demographic group at 86.1% in contrast to females who comprised 13.9% of the participants. Students enrolled in their 3rd year (36.1%) outpaced those in their 2nd year (33.3%), while the 4th years represented (30.6%). Students between 22 and 24 years old formed the most significant subject group at 40.0%, followed by students between 25 and 27 who comprised 37.8%, and students between 28 and 30 who comprised 22.2%. The educational setting houses a young student body that consists primarily of males throughout their 1st to 4th years of study. (Table 1)

Table 1: Demographic Profile of Participants (n = 180)

Variable	Frequency (n)	Percentage (%)
Gender		
Male	155	86.1%
Female	25	13.9%
Year of Study		
2nd Year	60	33.3%
3rd Year	65	36.1%
4th Year	55	30.6%
Age Group		
22–24 years	72	40.0%
25–27 years	68	37.8%
28–30 years	40	22.2%

Figure 1: Descriptive Statistics of Clinical Competency Scores by Year of Study

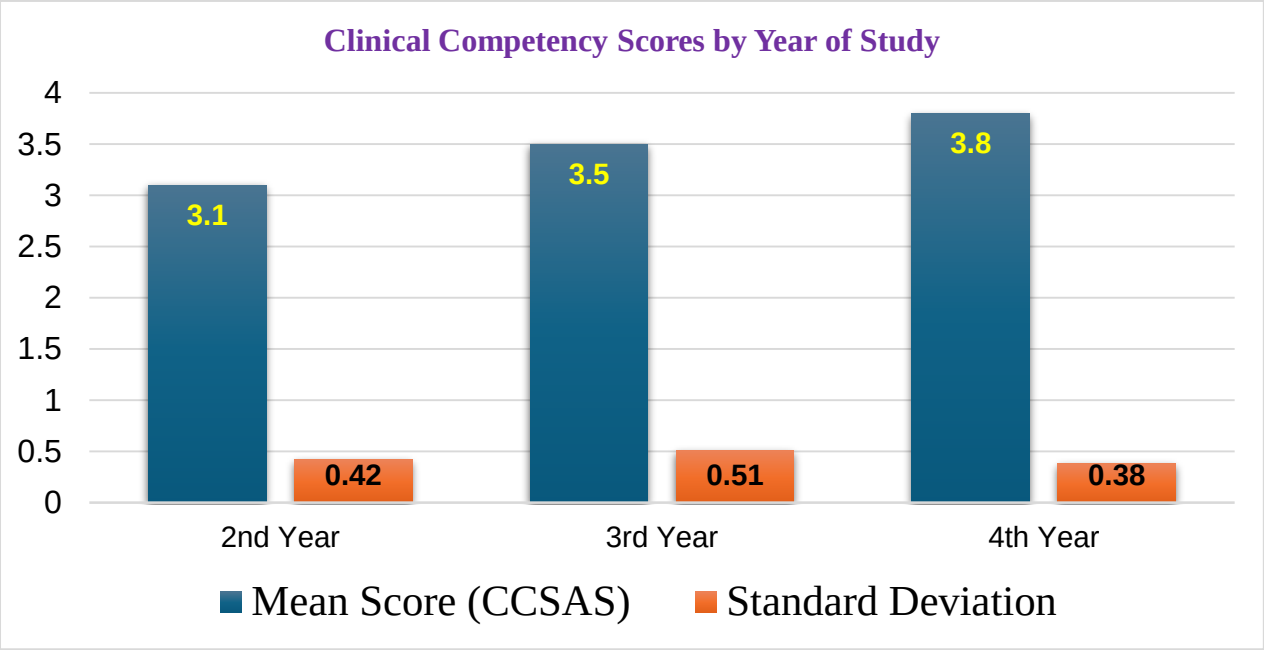

Figure 1 shows that the students demonstrated enhanced clinical competence skills based on their academic progression. Second-year students showed the lowest mean CCSAS score at 3.1, while fourth-year students demonstrated the highest score at 3.8. Fourth-year students achieved the highest mean score of 3.8 among all study years, yet second-year students achieved the lowest score of 3.1. Student nursing education contributes to increased clinical competency as students' progress through their program.

Correlation Between Clinical Supervision and Clinical Competency

The relationship between clinical supervision and competency scores proves positive through the Pearson correlation coefficient ($r = 0.61$). The p-value shows statistical significance at < 0.001 level. Better clinical supervision practices among nursing students lead to increased competency development. (Table 2)

Table 2: Pearson Correlation Between Clinical Supervision and Clinical Competency Development

Variable	Pearson's r	p-value
Clinical Supervision (CSET) × Competency (CCSAS)	0.61	< 0.001

Demographic Variables and High Clinical Competency Scores

The Chi-square analysis showed that gender and clinical competency scores formed a statistically significant connection ($\chi^2 = 4.72$, $p = 0.030$), and year of study established a similar connection with competency scores ($\chi^2 = 9.65$, $p = 0.008$). The results showed that the institution where students studied had no impact on their competency scores as measured by $\chi^2 = 1.85$, $p = 0.174$. The study results indicate that gender differences and academic year affect clinical competency assessment outcomes to a greater extent than which college students attended. (Table 3)

Table 3: Chi-Square Test between Demographic Variables and High Clinical Competency Scores

Variable	χ^2 (Chi-Square)	df	p-value
Gender	4.72	1	0.030
Year of Study	9.65	2	0.008
Institution	1.85	1	0.174

The qualitative findings

The qualitative study uncovered essential topics that nursing students experienced during clinical supervision. Students found support from supervisors valuable because it combined encouragement with accessibility, which brought guidance into their practice. Students demonstrated better confidence and learning through effective feedback communications, which included immediate error detection. Realistic and safe simulation labs and positive educational settings helped improve practical skill competence. Staff shortages and time constraints were hindering factors that negatively affected the quality of supervision in specific instances.

Table 4: Thematic Summary of Qualitative Interview Findings (n = 12)

Theme	Sub-Themes	Illustrative Quote
Supervisory Support	Availability, Encouragement	"My supervisor always made time for questions; that helped me a lot."
Communication and Feedback	Constructive criticism, Real-time correction	"Getting immediate feedback during practice boosted my confidence."
Learning Environment	Safe space, Resource availability	"The simulation lab felt real and safe to learn from mistakes."
Barriers in Supervision	Time constraints, Staff shortages	"Sometimes supervisors were too busy to give proper feedback."

Discussion

A study implemented mixed methodology to investigate clinical supervision methods that advance undergraduate student competency growth during clinical training. The analyzed research data demonstrates that students receiving structured guidance within supportive clinical supervision achieve superior competency in clinical training.

The study participants were mainly male students (86.1%) aged 22 to 27 in their third year of studies. Students specializing in advanced nursing education between the ages of twenty and twenty-four focus their time on clinical practice activities that help them reach better skill development targets. (18). Students improve their confidence and develop their perceived competence through increased clinical exposure during academic progression.

Based on the results of descriptive statistics, student competency performance values increased steadily from first- to fourth-year students until fourth-year students displayed the highest average score of 3.8. Students gain natural competence advancement through clinical experience and multiple patient encounters in health care settings. Clinical involvement across multiple semesters enables students to improve their competence since their skills grow. (19).

Testing showed that both researchers concluded that clinical supervision quality leads to better clinical competency assessment with a correlation value of $r = 0.61$ at $p < 0.001$ significance levels. The student learning process substantially improves through clinical supervisors who maintain accessibility and constructiveness and exhibit communicative communication behaviors. Through supervised clinical training, students gain instructions and feedback to turn theoretical understandings into practical applications that boost the development of core clinical competency. (20).

The Chi-square test established meaningful qualitative connections between clinical competency and gender ($p = 0.030$) and academic year ($p = 0.008$) according to mathematical outcomes. Students view their abilities differently because of the individual characteristics they possess in demographic terms. The experience of multiple real-life clinical scenarios leads students in higher academic levels to develop confidence. Students work at different clinical sites where gender-related differences emerge because of their individual student involvement and learning methods. (21).

The participative findings of the semi-structured interviews furnished students with beneficial information about their clinical supervision interactions. Student competence development in nursing primarily depended on site supervision levels, quality feedback, and secure clinical environments. Students favored supervisors who showed genuine interest in student connection and delivered concrete and valuable guidance while performing operative procedures. Student learning experienced increased effectiveness when they encountered learning areas that provided substantial material resources alongside positive psychological environments. (22).
The nursing program participants mentioned healthcare worker shortages and supervisor availability problems, which hindered their ability to learn effectively during clinical practice sessions. Staff members identified insufficient support time as their main concern because it became a primary reason for lousy supervision, directly affecting clinical instruction quality. The research findings underline the importance of industry-reforming efforts to sustain sufficient nursing staff employment while building adequate student educational areas. (23).
The research shows competent supervisory support leads nursing students to enhance their core abilities during clinical training. Students' professional development and competency building occur through time-sensitive feedback systems that operate inside structured clinical supervision environments in encouraging educational settings.

Conclusion

This research used a mixed-methods methodology to investigate undergraduate nursing students' core clinical competency development through clinical supervision practices. The study showed a direct and affirmative connection between successful clinical supervision and increased clinical competency results. College nursing students who experienced positive leadership supervision with prompt evaluation in supportive clinical settings achieved enhanced performance and improved clinical self-assurance. The qualitative research supported the statistical findings by showing how accessible supervisors and open communication within maintaining a positive clinical environment benefit students' education. Academic-year data revealed a steady growth of competency skills, thus demonstrating why established clinical exposure programs remain crucial to student success. Staff shortages and time limitations proved to be obstacles that diminished the effectiveness of optimal supervisory support. Resolving these challenges in clinical environments will enhance student preparation for future healthcare practice.

Recommendation:

The proposed recommendations derive from the results of the study. Clinical supervisors need training on effective mentoring combined with skills for communication and feedback to improve their student supervision during placements. Every nursing student should get proper support and guidance throughout their clinical rotations through an adequate allocation of clinical supervisors by nursing institutions. Establishing simulation labs within psychologically safe educational facilities improves patient practice readiness and student confidence. Students should practice reflective writing after their clinical experiences because it allows them to gain experiential learning and enhance competency development. The assessment of clinical supervision quality must be performed regularly through evaluation and student feedback collection to determine improvement needs. Academic institutions and clinical settings must collaborate to maintain enough clinical educators and suitable student-to-supervisor ratios.

Limitation:

The research focused exclusively on two nursing colleges in Swat; thus, the findings remain restrained from generating broader applications to other geographical regions and educational institutions. Students risk distorting their clinical competency assessments via self-report because they might inflate or decrease their performance evaluations. The cross-sectional design of the quantitative study section blocks researchers from establishing time-dependent cause-effect relationships. The research included insufficient participants through the

qualitative process, with only twelve students, creating limitations for data generalization across the entire student population. The six-month research period set limits on observing how competency development advanced over time. The variations in clinical teaching methods, hospital connections, and curriculum execution systems between colleges may have affected the study outcomes.

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