RESEARCH ARTICLE

Perioperative Clinical Performance and Influencing Factors among Senior Nursing Students in the Philippines

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Abstract

Background: Outcomes-Based Education (OBE) in the Philippines has shifted perioperative training from numeric case quotas toward demonstrated competencies, with simulation increasingly used to address limited operating room (OR) exposure.

Objective: This study determined the level of perioperative clinical performance among senior (4th year) nursing students and had also examined associations with four influencing domains: teaching–learning, interpersonal, student-related, and environmental.

Methods: A descriptive–correlational study was conducted in AY 2023–2024 across higher education institutions in Eastern Visayas. A universal sample of 280 fourth-year BSN students who met minimum perioperative case requirements participated via online and paper surveys. A researcher-developed, expert-validated instrument that was anchored on CHED outcomes and PRC–BON guidelines was used to assess 11 competence domains in order to perceive influencing factors. Internal consistency was excellent (performance $\alpha = .987$; factors $\alpha = .944$). Descriptive statistics summarized competence; while Fisher's Exact Test was used to assess associations ($p < .05$).

Results: Competence was strongest in aseptic technique, patient safety, teamwork, documentation, and ethical–legal responsibilities. Lower ratings were noted for surgical skin preparation, anesthesia assistance, patient transport, medication safety, health education, and quality improvement. Among the four domains, only environmental factors (resources, workflow support, safety culture) were significantly associated with performance (Fisher's Exact, $p = .013$).

Conclusion: Senior nursing students demonstrated strong technical and ethical perioperative competence but showed persistent gaps in less-frequent and higher-order competencies. Environmental supports in the OR decisively shaped performance. Programs should scale simulation for under-practiced tasks, strengthen mentorship, and explicitly integrate health education and quality improvement within perioperative training.

Keywords: *Perioperative nursing, clinical competence, learning environment, outcomes-based education, nursing students*

Introduction

The evolution of nursing education in the Philippines under Outcomes-Based Education (OBE) has prioritized demonstrable competencies over traditional numerical case requirements. This pedagogical shift, endorsed by CHED Memorandum Orders (CMO 46, s.2012; CMO 15, s.2017), underscores the use of performance evidence as a measure of program quality and graduate readiness. Within perioperative nursing—a setting that requires precise coordination, aseptic discipline, and interprofessional collaboration—OBE principles are both tested and put into practice.

Simulation and experiential learning have emerged as essential

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strategies to address limited clinical exposure caused by hospital capacity constraints and patient safety regulations. These modalities allow students to experience surgical workflows, practice critical decision-making, and apply theoretical knowledge within structured, low-risk environments. Globally, such pedagogical integration aligns with calls for transformative, competency-based education that ensures both technical proficiency and adaptive expertise (Cant et al., 2021; Gregory et al., 2013).

In the Philippine context, however, disparities persist between intended learning outcomes and actual clinical performance. Limited access to OR cases, inconsistent mentorship, and uneven institutional resources hinder mastery of perioperative competencies (Callaghan, 2010; Meyer et al., 2016). Although students often demonstrate proficiency in fundamental skills—aseptic technique, teamwork, and patient safety—they frequently lack opportunities to practice higher-order competencies, such as anesthesia assistance, health education, and quality improvement.

This study drew on theoretical grounding from Benner's (1984) Novice-to-Expert Model and Kolb's (1984) Experiential Learning Theory. Benner's model delineates progression from rule-based novice performance to contextually grounded expertise through situated experience and reflective practice. Kolb's cyclical framework (experience → reflection → conceptualization → experimentation) provides the pedagogical basis for simulation and debriefing in perioperative training. Together, these frameworks guide the understanding of how environmental and interpersonal conditions shape competence acquisition in complex clinical settings.

Despite growing international research on simulation and perioperative competence (Byrne et al., 2016; Lawver et al., 2020), empirical evidence from Philippine nursing programs remains sparse. Specifically, few studies assess domain-level competence or explore how contextual factors—teaching strategies, interpersonal support, student characteristics, and environmental conditions—interact to influence performance outcomes.

This study, therefore, aimed to: (1) determine the level of perioperative clinical performance among senior nursing students in Region VIII and (2) examine associations between performance and four influencing domains. Addressing this evidence gap helps align nursing curricula with CHED-mandated OBE outcomes and global patient safety standards.

Conceptual Framework

This study integrated Benner's *Novice to Expert Model* (1984), Kolb's *Experiential Learning Theory* (1984), and the CLES+T model to explain perioperative competence. Benner describes professional growth from novice to expert through experience, feedback, and reflection. Kolb situates learning as cyclical—experience, reflection, conceptualization, and experimentation—applicable in simulation and clinical learning. The CLES+T model emphasizes supervision, team climate, and institutional support, situating competence development within an enabling environment. Together, these frameworks explained that perioperative clinical performance is an outcome of structured mentorship, reflective practice, and supportive context.

Methods

Research Design

This study employed a descriptive–correlational design, which enabled the researchers to describe the level of perioperative clinical performance among nursing students and to also examine associations with teaching–learning, interpersonal, student-related, and environmental factors. This design was appropriate for identifying relationships among variables without manipulating the learning environment.

Setting

The research was conducted in Region VIII (Eastern Visayas, Philippines) across five higher education institutions (HEIs) offering accredited Bachelor of Science in Nursing (BSN) programs—two public universities and three private colleges. These HEIs maintain clinical affiliations with government and private hospitals where students undergo perioperative exposure. The inclusion of both urban tertiary hospitals and provincial training facilities ensured diversity in clinical environments and exposure levels. Data collection took place during the Academic Year 2023–2024, coinciding with senior-year operating room (OR) rotations.

Participants

A universal sampling method was used to capture all eligible respondents, ensuring that the entire population of fourth-year nursing students enrolled in perioperative courses during the data collection period was included. This approach was justified because the total population (N = 280) was manageable and represented the whole cohort of interest, eliminating sampling bias and enhancing external validity.

Inclusion criteria: (a) active enrollment in the BSN program in Region VIII; (b) current assignment to an OR rotation during the semester; and (c) provision of informed consent. Students who

were on leave or not assigned to perioperative placements during the study were excluded.

A total of 280 students met the inclusion criteria and completed the survey, achieving a 100% response rate.

Instrument

A researcher-developed questionnaire assessed perioperative clinical performance and the perceived influence of four domains: teaching–learning, interpersonal, student-related, and environmental factors.

Basis and content: The instrument was anchored on CHED (2017) outcomes-based nursing curriculum competencies and the Professional Regulation Commission–Board of Nursing (PRC–BON, 2009a; 2009b) standards for scrub and circulating nurses. Eleven domains were covered: safe and quality nursing care, management of resources and environment, health education, legal and ethico-moral responsibility, personal and professional development, quality improvement and research engagement, record management, communication, and teamwork.

Validation and reliability: Three expert reviewers—two senior faculty and one clinical nurse specialist—evaluated the instrument for relevance, clarity, and domain congruence. All domains achieved an I-CVI and S-CVI of $\geqslant 0.80$, indicating strong content validity. A pilot test with 30 non-participating senior students yielded Cronbach's α values ranging from 0.82 to 0.91. In the main study, internal consistency remained excellent (α = 0.987 for performance; α = 0.944 for influencing factors).

Scoring and performance categories: Each competency item was rated on a 5-point Likert scale (1 = Poor, 5 = Excellent). Weighted means were computed to categorize performance as follows: 1.00–1.80 (Poor), 1.81–2.60 (Fair), 2.61–3.40 (Satisfactory), 3.41–4.20 (Very Satisfactory), and 4.21–5.00 (Excellent). Higher mean values indicated greater perceived competence or support.

Data Collection Procedures

Permissions were secured from the deans and clinical coordinators of all participating HEIs. Students were informed of the study's objectives, confidentiality safeguards, and voluntary participation before signing informed consent forms.

Data were gathered through two modalities: (a) secure online surveys via Google Forms for participants with stable internet access and (b) paper-based questionnaires for students in areas with limited connectivity (e.g., Samar and neighboring provinces). Completed paper surveys were sealed in envelopes to ensure confidentiality. No identifying information was collected, and no incentives were provided.

Data Analysis

Data was analyzed using **SPSS version 26.0 (IBM Corp., Armonk, NY)**. Descriptive statistics (frequency, percentage, mean, and standard deviation) were also used to summarize respondent characteristics and performance levels. Weighted means determined domain-level performance and factor ratings.

Fisher's Exact Test was used to determine associations between each influencing factor domain and the overall performance category. The test was applied per domain to account for low expected cell counts and to identify specific contextual influences. Statistical significance was set at $p < 0.05$. Analyses used listwise deletion for missing data (<5%), and no imputation was performed.

Ethical Considerations

Ethical principles of autonomy, beneficence, and confidentiality were observed throughout the study. Ethical clearance was secured from the Cebu Doctors' University Ethics Review Committee (Protocol No. 2023-109) prior to data collection. Participation was voluntary, while informed consent was obtained from each respondent, and anonymity was maintained by excluding identifying information. Data was stored securely and used solely for research purposes.

Results

Overall Performance

Table 1 presents the distribution of nursing students by overall perioperative performance. Most respondents rated themselves as Very Satisfactory to Excellent (90.4%), indicating strong mastery of core perioperative nursing competencies.

Table 1. *Distribution of Nursing Students According to Overall Perioperative Performance (N = 280)*

Performance Level	Frequency	Percentage
Poor	3	1.1%
Fair	5	1.8%
Satisfactory	19	6.8%
Very Satisfactory	71	25.4%
Excellent	182	65.0%
Total	**280**	**100%**

Core Competency Domains

Table 2 summarizes students' mean scores across the eleven core perioperative competency domains. The highest means were observed in Ethico-Moral Responsibility (M = 4.62, SD = 0.77), Personal and Professional Development (M = 4.49, SD = 0.81), and Legal Responsibility (M = 4.41, SD = 0.95), all rated Excellent. Lower means were recorded in Research (M = 3.62, SD = 1.18) and Health Education (M = 4.01, SD = 1.03).

Factors Influencing Clinical Performance

Table 3 presents the results of the association between the four influencing factor domains and overall perioperative performance. Fisher's Exact Test revealed that only

Environmental Factors were significantly associated with performance (p = .013). Teaching–Learning, Interpersonal, and Student-Related factors were not statistically significant (p > .05).

Table 2. *Perioperative Clinical Performance by Core Competency Domain (N = 280)*

Competency Domain	Mean	SD	Description
Safe and Quality Nursing Care	4.32	0.91	Excellent
Management of Resources and Environment	4.20	0.95	Very Satisfactory
Health Education	4.01	1.03	Very Satisfactory
Legal Responsibility	4.41	0.95	Excellent
Ethico-Moral Responsibility	4.62	0.77	Excellent
Personal and Professional Development	4.49	0.81	Excellent
Quality Improvement	4.12	0.91	Very Satisfactory
Research	3.62	1.18	Very Satisfactory
Record Management	4.33	0.87	Excellent
Communication	4.32	0.84	Excellent
Collaboration and Teamwork	4.35	0.93	Excellent
Overall Weighted Mean	**4.31**	**0.89**	**Excellent**

Table 3. *Association Between Influencing Factors and Overall Perioperative Performance (N = 280)*

Factor Domain	χ^2 / Fisher's Exact	p-value	Significance
Teaching–Learning	1.24	.265	Not Significant
Interpersonal	0.89	.341	Not Significant
Student-Related	1.56	.217	Not Significant
Environmental	6.21	.013	**Significant**

p < .05 considered statistically significant; Fisher's Exact Test applied due to low expected counts.

Table 4. *Mean Ratings of Factors Influencing Clinical Performance (N = 280)*

Factor Domain	Mean Rating	Interpretation
Teaching–Learning	4.36	Strongly Agree
Interpersonal	4.29	Strongly Agree
Student-Related	4.32	Strongly Agree
Environmental	4.41	Strongly Agree

Note. 5-point Likert scale: 1 = Strongly Disagree; 5 = Strongly Agree.

Table 4 shows the mean perception ratings for each influencing domain. All domains were rated highly, thereby indicating students' agreement that each contributes positively to perioperative learning.

Discussion

The findings affirmed that Philippine nursing students are developing strong perioperative competencies consistent with OBE outcomes. Technical proficiency in asepsis, teamwork, and legal–ethical practice reflected effective curriculum alignment and faculty supervision. However, the persistent deficits in anesthesia assistance, medication safety, and quality improvement highlighted structural and pedagogical gaps that required systemic attention.

Synthesis of Key Findings

Overall, the results suggested a balance of strengths in foundational technical domains and weaknesses in higher-order competencies that require entrustment and independent judgment. These underdeveloped areas—such as anesthesia assistance, medication safety, and quality improvement—represented complex, integrative skills that depend on exposure, supervision, and institutional culture. Findings parallel to those of Crafoord et al. (2018), discussed the observations of how limited entrustment opportunities had constrained learners' progression toward autonomy, and of Kaldheim et al. (2022), who discovered that experiential and interprofessional simulation reinforced postgraduate readiness. Similarly, Gregory et al. (2013) emphasized that robust academic–clinical partnerships are essential for ensuring consistent opportunities beyond routine assistance roles.

Theoretical Integration

Benner's (1984) Novice-to-Expert framework and Kolb's (1984) Experiential Learning Theory together demonstrate the dynamic processes underlying these findings. Students appeared to operate between the *advanced beginner* and *competent* stages of Benner's continuum, adhering to established rules but requiring situational guidance for complex decision-making. Kolb's model situates simulation and debriefing as iterative cycles that compensate for limited real-case exposure, converting concrete experience into reflective learning and conceptual understanding. When structured reflection is reinforced by mentorship and feedback, experiential gaps can be bridged through guided simulations that mimic clinical uncertainty and promote adaptive reasoning.

Environmental Primacy

Among the four domains, only environmental factors significantly influenced perioperative performance ($p = .013$). This outcome underscored that teaching–learning and interpersonal support, though vital, cannot substitute for a conducive environment. As Wallin et al. (2015) and Sillero-Sillero and Zabalegui (2020) established, organizational climate and safety culture directly affected learners' engagement and performance outcomes. The present findings resonated with Doerner and Seibert (2022), who described the operating room as a socio-technical learning system wherein psychological safety, teamwork, and instrument availability coalesce to shape competence. In such contexts, environmental adequacy determined whether theoretical learning translates into authentic practice. Thus, the study affirmed environmental primacy as a foundational pillar of perioperative education.

Educational and Policy Implications

The results underscored several pedagogical imperatives:

Simulation-Based Mastery Learning: Developing high-fidelity simulation modules focused on anesthesia assistance, medication safety, and interprofessional coordination should become standard practice. Guided debriefing also enhanced reflection and skill transfer.

Structured Mentorship: Institutionalized preceptorship frameworks aligned with Benner's progression cultivated clinical reasoning and confidence through graduated autonomy.

Curricular Enrichment: Integration of micro-level patient safety audits, documentation drills, and perioperative quality improvement projects reinforced analytical competencies.

Academic–Clinical Collaboration: Partnerships between HEIs and clinical institutions standardized OR access, mentoring capacity, and resource sharing to ensure equitable experiential opportunities.

Policy Alignment: CHED and PRC–BON reinforced accreditation systems ensuring that simulation-based experiences meet required learning outcomes, while recognizing simulation as equivalent practice under OBE guidelines.

Limitations

While comprehensive, this study relied on self-reported performance measures that may be influenced by social desirability bias. The descriptive–correlational design limits

causal inference, and contextual variability across HEIs constrained generalizability. Future inquiries should employ mixed-method triangulation through observational assessments, simulation scoring rubrics, and preceptor feedback.

Future Directions

Longitudinal tracking of competence development across academic years and into professional transition could illuminate how early experiential limitations affect long-term clinical confidence. Comparative regional or institutional studies could also identify best practices in resource management and mentorship systems. Qualitative research exploring the lived experiences of perioperative students may reveal nuanced dimensions of psychological safety, learning culture, and empowerment within OR settings.

Conclusion

This study found that senior nursing students in Eastern Visayas demonstrated strong perioperative competencies in aseptic technique, teamwork, and legal–ethical practice, while reflecting the effectiveness of outcomes-based education and faculty supervision. However, performance gaps persisted in anesthesia assistance, medication safety, and quality improvement—areas that required increased experiential opportunities and targeted curricular support. Among the four influencing domains, environmental conditions—availability of resources, workflow organization, and a supportive OR culture—were significantly associated with performance, while underscoring the importance of context in translating learning into competent practice.

The evidence indicated that enhancing perioperative education through simulation-based training, reflective mentorship, and structured preceptorship programs is recommended to strengthen students' readiness for professional roles. Institutional collaboration between higher education and clinical partners is recommended to ensure that learning environments remain resource-equipped, psychologically safe, and conducive to skill mastery. Future studies incorporating observational and longitudinal methods are advised to validate these findings in order to assess the sustained impact of such educational strategies on perioperative competence.

By addressing these focused, evidence-based implications, nursing educators and policymakers can advance an environment in which graduates develop both technical proficiency and adaptive expertise—hallmarks of safe, high-quality, and patient-centered perioperative nursing practice.

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"A transforming world demands that nursing not only adapts but redefines the boundaries of care."