

Nurses' Level of Competency in Hospital-Acquired Infection Prevention Measures in the Philippines and Its Relationship with Selected Demographic Variables

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ABSTRACT

This descriptive-correlational study evaluated the infection prevention competency of 63 registered nurses in Philippine post-surgical wards—who were primarily aged 31–35 (38.1%), male (50.8%), and experienced for 1–2 years (60.3%)—revealing a very high level of competency across the domains of attitude ($M=3.44$, $SD=0.50$), knowledge ($M=3.43$, $SD=0.50$), and skills ($M=3.42$, $SD=0.49$). Pearson correlation analysis indicated that age ($r=.270$, $p=.032$) and educational attainment ($r=.272$, $p=.031$) had significant positive relationships with competency, whereas gender and length of clinical experience showed no statistical significance. Ultimately, the study concludes that nursing competency is driven by personal maturity and advanced education rather than sheer years on the ward, highlighting the need for continuous, structured training programs to sustain evidence-based practice and optimize patient safety.

Keywords: Infection prevention, nursing competency, infection control, professional development, standard precautions.

INTRODUCTION

Hospital-acquired infections (HAIs) are a major global health concern that increase patient morbidity, mortality, and healthcare costs, affecting roughly 7% of patients in high-income countries and up to 15% in low- and middle-income nations (WHO, 2022). In the Philippines, the Department of Health identifies HAIs as a leading cause of post-operative complications, exacerbated by resource limitations and staffing shortages (DOH, 2022). Because infection prevention relies heavily on nursing competency—spanning knowledge, skills, and attitudes—evaluating how demographic factors influence these capabilities is essential for developing targeted clinical interventions.

Statement of the Problem

This study assessed nurses' competency in HAI prevention measures in the Philippines and examined its relationship with selected demographic variables. It specifically answered the following questions:

1. What is the demographic profile of the respondents in terms of age, gender, highest educational attainment, length of clinical experience, and training attended?
2. What is the level of competency of nurses in HAI prevention and control in terms of: (2.1) Knowledge, (2.2) Skills, and (2.3) Attitude?
3. Is there a significant relationship between the nurses' level of Competency in Hospital Acquired Infection prevention measures and their selected demographic variables?

4. Based on the findings of the study, what training program can be proposed?

Scope and Delimitations

The study was limited to registered nurses (N=63) assigned to post-surgical wards at a selected hospital in Metro Manila, Philippines, with at least 6 months of active clinical experience. Data collection occurred from May to June 2026. The study focused strictly on individual competencies and selected demographic variables, excluding environmental or institutional factors like nurse-to-patient ratios or supply availability.

Review of Related Literature

Highly competent nurses significantly improve compliance with standard precautions, thereby minimizing pathogen transmission through precise technical skills such as sterile field maintenance and proper PPE use (Alhumaid et al., 2021; Alshammari et al., 2023). Although high workloads and staffing shortages often hinder the translation of knowledge into practice in resource-limited settings like the Philippines (Labrague et al., 2021), strict adherence to infection protocols remains directly linked to reduced infection rates (Cruz et al., 2023). Because variations in individual nurses' compliance drive hospital-acquired infections in both well-resourced and resource-limited environments, conducting regular competency assessments remains necessary (Al Kuwari et al., 2022).

Theoretical Framework

Integrated together, these frameworks demonstrate that hospital-acquired infection (HAI) prevention relies on a dynamic, multi-faceted approach. Florence Nightingale's Environmental Theory asserts that clean, well-managed clinical environments are fundamental to preventing the transmission of infection (WHO, 2022). Complementing this, Dorothea Orem's Self-Care Deficit Theory positions nursing interventions as essential to compensate for the vulnerability of dependent post-surgical patients (Labrague et al., 2021). Finally, Patricia Benner's Novice to Expert Theory explains that nursing competency develops progressively through clinical exposure and education (Alshammari et al., 2023). Ultimately, successful HAI mitigation depends on the interaction of a safe patient environment (Nightingale), proactive care (Orem), and high clinical expertise (Benner).

Conceptual Framework

Using an Input-Process-Output (IPO) model, the **Input** comprises nurses' demographic profiles and baseline competency levels. The **Process** involves quantitative data collection via validated questionnaires and statistical analysis using frequency distribution and Pearson's correlation. The **Output** is a proposed targeted infection prevention training program based on identified demographic correlations.

METHODOLOGY

This qualitative, descriptive-correlational research study examined the impact of gamification and baseline competencies on student engagement and nursing practice environments in educational and healthcare contexts in the Philippines.

Research Design

This study utilized a quantitative descriptive-correlational research design to systematically describe the variables and analyze the strength and direction of relationships between nurses' infection prevention competency and selected demographic profiles without establishing direct causality.

Research Steps

Following an extensive literature review, the research instrument was adapted and validated by an expert panel. After securing institutional review board approval, questionnaires were distributed to eligible respondents, and the collected data were electronically compiled, coded, and statistically analyzed.

Data Collection and Sample Selection

Using purposive sampling, 63 registered nurses with ≥ 6 months of post-surgical ward experience were selected. Data were collected using a validated, researcher-adapted instrument comprising a demographic profile sheet and a 4-point Likert scale assessing infection-prevention knowledge, skills, and attitudes.

Data Analysis Methods

Data were analyzed using statistical software. Demographic profiles were summarized using frequency and percentage distributions, while competency levels (knowledge, skills, and attitude) were determined using weighted means and standard deviations. Pearson's correlation coefficient (r) tested the null hypothesis and analyzed relationships at a 0.05 significance level.

Research Hypotheses and Validation

The null hypothesis (H_0), stating that no significant relationship exists between nurses' infection prevention competency and their demographic profiles, was tested by correlating composite competency scores with demographic characteristics. H_0 was **rejected** for age and educational attainment, which showed significant positive relationships with competency. Conversely, the study **failed to reject** H_0 for gender and length of clinical experience.

Study Limitations and Ethical Considerations

The study obtained prior institutional ethical clearance and secured informed consent from all participants, guaranteeing absolute anonymity, confidentiality in accordance with the Data Privacy Act, and the right to withdraw without penalty. Limitations include a single-center setting and a small sample size ($N=63$), requiring caution when generalizing findings to the broader national nursing population.

RESULTS AND DISCUSSION

The 63 respondents were primarily aged 31–35 (38.1%), nearly balanced by gender (50.8% male, 49.2% female), and mostly had 1–2 years of experience (60.3%). A 4-point Likert scale revealed a very high level of competency across all domains: attitude ($M=3.44$, $SD=0.50$), knowledge ($M=3.43$, $SD=0.50$), and skills ($M=3.42$, $SD=0.49$), confirming an excellent grasp of basic infection control. Pearson correlation analysis showed that age ($r=.270$, $p=.032$) and

educational attainment ($r=.272$, $p=.031$) had significant positive relationships with competency, meaning that capabilities increase with maturity and advanced schooling. Conversely, gender ($r=.052$, $p=.685$) and clinical experience ($r=.062$, $p=.627$) showed no significance. Thus, the null hypothesis was rejected for age and education but not for gender and experience, proving that infection control adherence was driven by academic advancement and maturity rather than total years on the ward.

SUMMARY

This descriptive-correlational study of 63 registered nurses in the Philippines revealed a "Very High Competency" level in preventing hospital-acquired infections across all domains: professional attitude ($M=3.44$), knowledge ($M=3.43$), and clinical skills ($M=3.42$). Although the sample was primarily composed of young professionals with 1–2 years of experience, their understanding and practice remained optimal. Correlational testing showed that advanced age and higher educational attainment are significant positive drivers of infection prevention capabilities, whereas gender and clinical duration showed no statistically significant association with practice execution.

CONCLUSIONS

Registered nurses in Philippine post-surgical settings possess a very high level of competency in infection prevention, exhibiting strong knowledge, proficient skills, and positive attitudes. This competency is driven by personal maturity (age) and academic advancement (educational attainment) rather than years of service. Consequently, continuous training and higher education are more critical to maintaining clinical safety standards than mere time in clinical practice.

RECOMMENDATIONS

Based on the findings, the following recommendations are suggested:

- **Targeted Training:** Develop programs focusing on advanced PPE use, updated surgical wound care, and evidence-based isolation practices.
- **Higher Education:** Incentivize graduate studies (Master of Arts in Nursing), as advanced education directly boosts infection control competence.
- **Clinical Audits:** Implement routine, objective clinical monitoring to ensure very high self-reported competencies translate into daily bedside practice.
- **Future Research:** Replicate the study across multiple sites using larger samples and unannounced clinical observations.

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AI DECLARATION STATEMENT

AI-supported tools helped with grammar, structural synthesis, and overall layout formatting during the creation of this manuscript. No AI tools were used to collect, analyze, or interpret the empirical data; all authors maintain full accountability for the academic and scientific contributions of this study.

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