

A Quantitative Assessment of Infection Control Practices and Healthcare-Associated Infections in a Tertiary Government Hospital

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ABSTRACT

Healthcare-Associated Infections (HAIs) remain a significant concern in modern healthcare systems due to their impact on patient safety, healthcare costs, and institutional credibility. This quantitative study assessed the prevalence, contributing factors, and compliance with infection control protocols in selected tertiary hospital in Iloilo City. Utilizing a structured Likert-scale questionnaire distributed among 100 healthcare professionals, the study examined four key dimensions: awareness of current HAI prevalence, infection control practices, contributing factors to HAI occurrence despite protocols, and the relationship between compliance and infection rates. Results indicated a generally high awareness of HAI prevalence, with "Agree" and "Strongly Agree" responses dominating across most statements. Infection control practices such as hand hygiene, PPE usage, and waste disposal protocols were reportedly well-implemented, although inconsistencies and resource limitations persisted. Moreover, findings demonstrated a strong perceived relationship between high compliance with infection control practices and reduced HAI incidence. The study concludes with recommendations to reinforce hospital-wide infection control training, ensure adequate staffing and resource availability, and enhance monitoring mechanisms. These steps are critical in reducing HAIs and safeguarding both patients and healthcare workers.

Keywords: healthcare-associated infections, infection control, compliance, hospital protocols, quantitative research

INTRODUCTION

Healthcare-associated infections (HAIs) are among the most pressing challenges confronting modern health systems worldwide, particularly in developing nations where resource constraints and system inefficiencies exacerbate risks. These infections, acquired during the course of receiving treatment for other conditions, can significantly prolong hospital stays, increase medical costs, and raise morbidity and mortality rates. In the Philippines, HAIs continue to burden both public and private healthcare institutions, despite national guidelines being in place. While infection control programs exist, the increasing patient load, limited infrastructure, and varying compliance levels have made HAIs a persistent threat that requires closer scrutiny and a more data-driven approach to inform responsive protocols (World Health Organization [WHO], 2023).

STATEMENT OF THE PROBLEM

1. What is the demographic profile of the healthcare workers in terms of: age, gender, position or designation, years in service, and department or unit assignment?
2. What is the perceived prevalence and monitoring status of healthcare-associated infections (HAIs) in the selected tertiary hospital?

3. What infection control practices are being followed by healthcare workers in terms of: hand hygiene, use of personal protective equipment, disinfection of equipment and surfaces, waste disposal practices, and infection control training?
4. What are the perceived contributing factors to the occurrence of healthcare-associated infections despite existing infection control protocols?
5. Is there a significant relationship between healthcare workers' compliance with infection control practices and healthcare-associated infection rates in the hospital?
6. What recommendations can be proposed to strengthen infection prevention and control protocols based on the findings of the study?

SCOPE AND DELIMITATIONS

This study was conducted at selected tertiary government hospital in the Philippines. It focuses on the quantitative assessment of healthcare-associated infections and the evaluation of infection control practices within the hospital setting. This study is subject to several limitations. First, it was conducted in a single tertiary government hospital, self-reported data collected through a questionnaire, employed quantitative design and did not include qualitative methods. Despite these limitations, the study provides valuable baseline information on infection control practices and healthcare-associated infection outcomes at selected tertiary government hospital.

REVIEW OF RELATED LITERATURES

Both local and international studies are examined to highlight existing findings, identify research gaps, and establish the theoretical and empirical basis for the study. Senbato et al. (2024) conducted a cross-sectional study in Addis Ababa, Ethiopia, revealing that only 36.5% of healthcare workers (HCWs) complied with standard infection prevention and control (IPC) precautions. Islam et al. (2022) utilized the WHO IPC framework to assess Bangladeshi tertiary hospitals, revealing significant gaps in IPC education, training, and surveillance. Only 18.2% of hospitals provided specific IPC training for patients and families, and none had a standardized HAI surveillance system.

THEORETICAL FRAMEWORK

Structure–Process–Outcome (SPO) Model by Avedis Donabedian. The model provides a comprehensive approach to assessing healthcare quality by examining the relationships between organizational inputs, care delivery processes, and health outcomes

CONCEPTUAL FRAMEWORK

In this framework, **structure** refers to resources such as staffing conditions, equipment, and training **process** focuses on healthcare workers' compliance with infection control practices; and **outcome** measures the results of healthcare-associated infection rates. Compliance is emphasized as a key factor directly influencing patient safety.

METHODOLOGY

The research design, participants, variables, data collection methods, procedures, data analysis, and ethical considerations used to ensure the validity and reliability of the findings. The

methods were selected to support a quantitative, data-driven examination of infection control practices and their relationship to healthcare-associated infection outcomes.

RESEARCH DESIGN

This study utilized a quantitative research design, which involves the systematic collection and analysis of numerical data to describe patterns and examine relationships among variables. The quantitative approach was appropriate for assessing healthcare-associated infections, infection control practices, and perceived contributing factors using structured instruments and statistical techniques.

RESEARCH STEPS

Data collection followed a systematic and ethical process. Approval was first obtained from the appropriate ethics review committee of St. Bernadette of Lourdes College. Formal permission to conduct the study was then secured from the hospital administration. After approval, coordination with department heads was conducted to identify eligible participants. Informed consent was obtained prior to data collection.

DATA COLLECTION AND SAMPLE SELECTION

Data were collected using a researcher-made, structured questionnaire designed to gather quantitative information on infection control practices and healthcare-associated infection outcomes. The questionnaire employed a Likert scale format to measure respondents' level of agreement. The selected sample size was considered sufficient to provide meaningful descriptive and inferential analysis of infection control practices within the institution.

DATA ANALYSIS METHODS

Data were analyzed using descriptive and inferential statistical methods. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the demographic profile of respondents, perceived prevalence of healthcare-associated infections, infection control practices, and perceived contributing factors. Inferential statistics were employed to examine relationships between variables. Pearson's correlation coefficient was used to determine the relationship between healthcare workers' compliance with infection control practices and healthcare-associated infection rates at the departmental level. The level of significance was set at 0.05 to test the study hypothesis and determine statistical significance.

RESEARCH HYPOTHESES AND VALIDATION

There is no significant relationship between healthcare workers' compliance with infection control practices and the prevalence rate of healthcare-associated infections at the hospital. The research instrument underwent validation by experts in infection prevention and control to ensure clarity, significance, and appropriateness. Revisions were made based on their feedback, and the final instrument was approved as valid and suitable for use in data collection among healthcare workers in a tertiary hospital setting.

STUDY LIMITATIONS AND ETHICAL CONSIDERATIONS

This study has limitations due to its conduct in a single tertiary hospital, which limits generalizability to other settings. It also relied on self-reported data, which may be affected

by bias, and used department-level data that cannot establish individual-level causation. The purely quantitative design also limited deeper exploration of healthcare workers' experiences, while time and data access constraints further affected the study scope. Ethical standards were strictly observed, including informed consent, voluntary participation, confidentiality, anonymity, and secure data handling throughout the research process

RESULTS AND DISCUSSION

The respondents are mostly young to middle-aged healthcare workers, with the largest age group being 20–30 years old (30%). Females dominate the workforce (58%), reflecting the common gender distribution in healthcare professions. In terms of roles, nurses comprise the largest group (35%), followed by doctors (20%) and medical technologists (18%), with most respondents having 1–5 years of experience (30%). The majority are assigned to high-demand clinical areas such as the Ward (30%) and ICU (25%), indicating strong representation from direct patient care units. Perceived prevalence and monitoring status of healthcare-associated infections (HAIs) shows that healthcare workers generally recognize healthcare-associated infections (HAIs) as an ongoing problem in their facility, with an overall weighted mean of **3.73 (“Agree”)**. Respondents reported strong awareness of current HAI cases and acknowledged that these infections remain a recurring issue.

In terms of infection control practices being followed by healthcare workers shows that healthcare workers generally comply with infection control practices, with an overall weighted mean of **3.97 (“Agree”)**. The highest compliance was observed in **hand hygiene (WM = 4.22)** and **use of PPE (WM = 4.10)**, indicating strong adherence to key preventive measures against HAIs.

Contributing factors to the occurrence of healthcare-associated infections despite existing infection control protocols, findings indicate that healthcare workers agree on several key factors contributing to HAIs, with an overall weighted mean of **4.17 (“Agree”)**. The most significant factor identified is **staff non-compliance with infection control protocols (WM = 4.30)**, highlighting its major role in increasing infection risk.

The findings revealed a strong perceived relationship between infection control compliance and reduced HAIs, with an overall weighted mean of **4.22 (“Strongly Agree”)**. Healthcare workers strongly believe that following protocols reduces the number of infections. They also agree that not following protocols can harm patients while continuous monitoring and feedback can improve adherence and reduce infections.

SUMMARY

The results show a strong link between infection control compliance and HAI rates in different hospital departments. Departments with compliance like the Operating Room and Ward had lower HAI rates. On the hand departments with low compliance like the Outpatient Department had higher infection rates. This shows that even small differences in adherence can affect outcomes. The statistical analysis confirmed this link, which means that improving compliance with infection control measures can significantly reduce HAIs.

CONCLUSIONS

In conclusion the results clearly show that high compliance with infection control protocols significantly reduces HAIs in hospitals. Departments with adherence to infection prevention guidelines had lower HAI rates while those with weaker compliance had higher rates. The strong link between compliance and infection outcomes means that hospitals must commit to upholding and improving infection control practices.

RECOMMENDATIONS

The study recommends that hospitals provide training and education to healthcare workers especially in departments with low compliance. Audits and monitoring systems should be implemented to ensure adherence to protocols. Hospitals should also ensure that they have personal protective equipment and hygiene materials. Infection control compliance should be included in performance evaluations and a strong culture of safety and accountability should be promoted. Additional support should be provided to high-risk areas and hospital leaders should enforce policies and reinforce commitment to infection prevention standards.

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