



A Study to Assess the Knowledge and Infection Control Practices Among Nursing Students in Selected Colleges of Nursing

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Abstract

Introduction:

Practices for infection prevention and control (IPC) are crucial to providing safe healthcare. During clinical training, nursing students must demonstrate proper infection control procedures and have sufficient understanding as future healthcare providers. Patients and healthcare personnel may be more susceptible to healthcare-associated infections (HAIs) due to inadequate information and poor adherence to infection prevention standards. In order to guarantee high-quality nursing care and patient safety, it is essential to evaluate nursing students' knowledge and infection control procedures.

Methodology: A convenient sample of 200 nursing students from particular nursing colleges participated in a descriptive cross-sectional study. A self-reported infection control practice checklist and a structured knowledge questionnaire were used to gather data. Data analysis was done using both descriptive and inferential statistics.

Results: According to the findings, 62% of nursing students had high knowledge, 28% had average knowledge, and 10% had inadequate comprehension of infection prevention. Good infection control practices were reported by 58% of respondents, satisfactory practices by 32%, and insufficient practices by 10%. There was a substantial positive correlation between knowledge and infection control practices ($r=0.68$, $p<0.05$). A few demographic characteristics, such as study year and previous infection control training, were shown to be strongly connected with knowledge evaluations.

Conclusion: The study found that while most nursing students had sufficient knowledge and effective infection control procedures, ongoing education and hands-on training are still necessary to improve adherence to infection prevention recommendations.

Keywords: Knowledge, Infection Control Practices, Nursing Students, Healthcare-Associated Infections, Hand Hygiene, Nursing Education, Infection Prevention.

INTRODUCTION

Worldwide, healthcare-associated infections continue to pose a serious threat and are a major cause of patient morbidity, mortality, extended hospital stays, and higher

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healthcare expenses. It is widely acknowledged that effective infection prevention and control techniques are essential for reducing the spread of infectious pathogens in hospital environments.¹

During their academic training, nursing students are exposed to a variety of clinical settings and frequently interact with patients, healthcare professionals, medical equipment, and biological materials. As a result, they are more likely to be exposed to infectious diseases, and if appropriate infection control procedures are not followed, they may potentially aid in the spread of infections.²

Hand hygiene, the use of personal protective equipment (PPE), safe injection techniques, biomedical waste management, environmental cleaning, and adherence to standard precautions are only a few of the preventive measures included in infection control methods. These procedures serve as the cornerstone of patient safety and high-quality medical care.³

The necessity of teaching healthcare professionals and students about infection control procedures is emphasized by the World Health Organization and the Centers for Disease Control and control. Research has shown that having sufficient knowledge greatly affects adherence to infection control protocols and lowers infections linked to healthcare.⁴

Programs for nursing education are essential for fostering infection prevention competencies. To guarantee that nursing students are adequately equipped to deliver safe patient care and safeguard themselves from occupational hazards, ongoing reinforcement of theoretical knowledge and clinical skills is required⁵

In order to identify training gaps and provide effective interventions to increase infection prevention compliance, it is crucial to evaluate nursing students' knowledge and infection control practices.

OBJECTIVES

1. To assess the knowledge regarding infection control among nursing students.
2. To assess infection control practices among nursing students.
3. To determine the relationship between knowledge and infection control practices among nursing students.

4. To find the association between knowledge and selected demographic variables.
5. To find the association between infection control practices and selected demographic variables.

HYPOTHESES

H₁: There will be a significant relationship between knowledge and infection control practices among nursing students.

H₂: There will be a significant association between knowledge scores and selected demographic variables.

H₃: There will be a significant association between infection control practice scores and selected demographic variables.

METHODOLOGY

Research Approach

Quantitative research approach.

Research Design

Descriptive cross-sectional research design.

Setting

Selected Colleges of Nursing.

Population

Nursing students studying in selected colleges of nursing.

Sample Size

200 nursing students.

Sampling Technique

Convenient sampling technique.

Inclusion Criteria

- Nursing students willing to participate.
- Students available during data collection.
- Students from GNM, B.Sc. Nursing, and Post Basic B.Sc. Nursing programs.

Exclusion Criteria

- Students absent during data collection.
- Students who had already participated in similar studies.

Research Variables

- Independent Variable: Demographic variables.

- Dependent Variables: Knowledge and infection control practices.

Development of Tool

Section A: Demographic Variables

Age, gender, course, year of study, clinical experience, previous infection control training, and source of information.

Section B: Structured Knowledge Questionnaire

A 30-item questionnaire assessing knowledge regarding:

- Hand hygiene
- Personal protective equipment
- Standard precautions
- Biomedical waste management
- Infection transmission

Section C: Infection Control Practice Checklist

A 20-item checklist assessing:

- Hand hygiene compliance
- PPE utilization

- Needle safety practices
- Waste segregation
- Environmental cleanliness

Validity and Reliability

Experts in infection control, medical-surgical nursing, and nursing education validated the tool. The Cronbach's Alpha technique was used to determine reliability ($r=0.86$).

Data Collection Procedure

The relevant authorities granted formal permission. Participants provided written informed consent. Self-administered questionnaires were used to gather data.

Data Analysis

Inferential statistics (Pearson correlation coefficient and Chi-square test) and descriptive statistics (frequency, percentage, mean, and standard deviation) were employed.

RESULTS

Descriptive and inferential statistics were used to evaluate the data gathered from 200 nursing students. The results showed that the participants' levels of infection control practices and knowledge varied. The following tables show the outcomes.

Table 1: Distribution of Nursing Students According to Demographic Variables (N=200)

S. No.	Demographic Variable	Frequency (f)	Percentage (%)
1	Age 17–19 years	60	30.0
	Age 20–22 years	110	55.0
	Age >22 years	30	15.0
2	Male	48	24.0
	Female	152	76.0
3	GNM	70	35.0
	B.Sc. Nursing	100	50.0
	P.B.B.Sc. Nursing	30	15.0
4	Previous Infection Control Training (Yes)	130	65.0
	No	70	35.0

Table 2: Distribution of Nursing Students According to Knowledge Scores Regarding Infection Control (N=200)

Knowledge Level	Score Range	Frequency (f)	Percentage (%)
Poor Knowledge	0–10	20	10.0
Average Knowledge	11–20	56	28.0
Good Knowledge	21–30	124	62.0
Total		200	100.0

Mean Knowledge Score = 22.8 ± 4.2

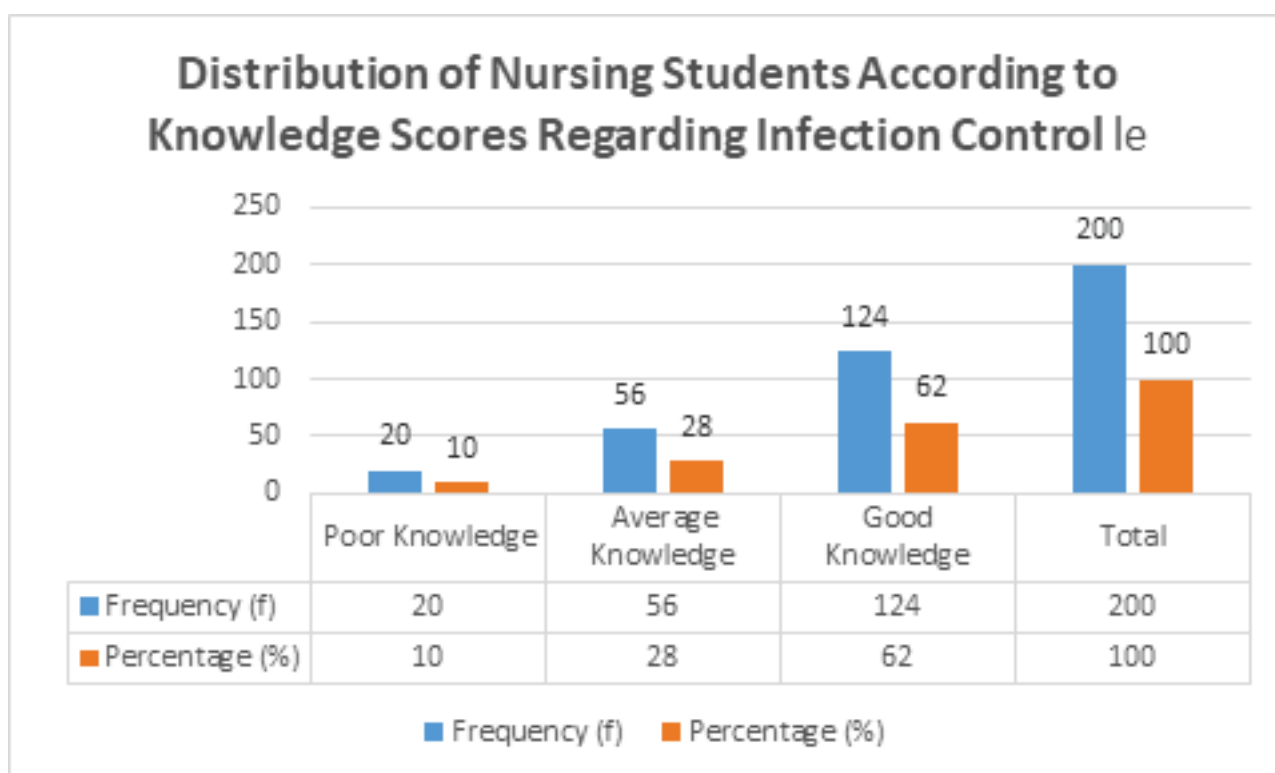


Figure 01: Distribution of Nursing Students According to Knowledge Scores Regarding Infection Control

Table 3: Distribution of Nursing Students According to Infection Control Practice Scores (N=200)

Practice Level	Score Range	Frequency (f)	Percentage (%)
Inadequate Practice	0–7	20	10.0
Satisfactory Practice	8–14	64	32.0
Good Practice	15–20	116	58.0
Total		200	100.0

Mean Practice Score = 15.9 ± 3.1

Table 4: Correlation Between Knowledge and Infection Control Practices Among Nursing Students (N=200)

Variables	Mean	SD	Correlation (r)	p-value
Knowledge Score	22.8	4.2	0.68	<0.05*
Practice Score	15.9	3.1		

Significant at $p < 0.05$ level.

Table 5: Association Between Knowledge Scores and Selected Demographic Variables (N=200)

Variable	χ^2 Value	df	p-value	Significance
Age	2.84	2	0.241	NS
Gender	1.96	1	0.161	NS
Year of Study	12.45	3	0.006	S
Previous Infection Control Training	10.62	1	0.001	S

S = Significant, NS = Not Significant

Table 6: Association Between Infection Control Practice Scores and Selected Demographic Variables (N=200)

Variable	χ^2 Value	df	p-value	Significance
Age	3.12	2	0.210	NS
Gender	1.72	1	0.189	NS
Clinical Exposure	11.38	2	0.003	S
Previous Infection Control Training	9.72	1	0.002	S

S = Significant, NS = Not Significant

Result Interpretation

Objective 1: Table 2 shows that 62% of nursing students had good knowledge, 28% had average knowledge, and 10% had poor knowledge regarding infection control.

Objective 2: Table 3 reveals that 58% of nursing students demonstrated good infection control practices, 32% had satisfactory practices, and 10% had inadequate practices.

Objective 3: Table 4 indicates a statistically significant positive correlation ($r = 0.68$, $p < 0.05$) between knowledge and infection control practices.

Objective 4: Table 5 shows significant associations

between knowledge scores and year of study as well as previous infection control training.

Objective 5: Table 6 demonstrates significant associations between infection control practice scores and clinical exposure and previous infection control training.

Summary of Results

Most nursing students showed adequate infection control procedures and solid knowledge. Knowledge and practice were found to be strongly positively correlated. The understanding and adherence to infection protection measures were considerably higher among students who had previously undergone infection control training.

DISCUSSION

The majority of nursing students have sufficient awareness of infection control procedures, according to the current study. Previous research has shown similar results, suggesting that infection prevention education improves students' awareness and clinical performance.⁶

The results also showed that most participants had adequate infection control strategies. Students who had previously received infection control training were found to have greater levels of hand hygiene compliance and PPE utilization.⁷

A significant positive correlation between knowledge and infection control practices was observed, suggesting that improved knowledge contributes to better implementation of infection prevention measures. Similar findings have been reported in studies conducted among healthcare workers and nursing students globally.⁸

The correlation between improved practice scores and infection control training emphasizes the significance of ongoing educational interventions and hands-on demonstrations during nursing education.⁹

CONCLUSION

The study found that nursing students displayed adequate infection prevention behaviors and had moderate to good knowledge of infection management. Knowledge and behavior are positively correlated, suggesting that educational interventions can successfully increase adherence to infection control recommendations. To guarantee patient safety and lower infections linked to healthcare, infection control education must be strengthened and frequent training sessions must be offered.¹⁰

Recommendations

1. Nursing students should participate in regular infection control training programs.
2. During clinical assignments, competency evaluations are to be carried out on a regular basis.
3. Nursing programs ought to include simulation-based learning.
4. Regular audits of infection control should be carried out.

5. Similar research can be carried out in various healthcare settings and with greater sample numbers.
6. To assess the efficacy of educational initiatives, interventional studies may be conducted.

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Conflict of Interest: None

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