

STUDY ON NOSOCOMIAL INFECTION KNOWLEDGE AMONG FIRST-YEAR B.SC. NURSING STUDENTS AT MADURAI MEDICAL COLLEGE.

Lt. O. Selvarajan ¹, Anitha.A², Prema.S³, Sangeetha.A⁴, Salma Begam.S⁵, Sathish Rajamani⁶

¹ Nursing Tutor Grade-II, College of Nursing, Madurai Medical College, Madurai,

⁽²⁻⁵⁾ I year M.Sc. (Nursing), Madurai Medical College, Madurai.

⁶ Professor – DRIEMS School and College of Nursing – Cuttack.

Abstract: The objective of this research was to assess the knowledge of first-year B.Sc. nursing students at Madurai Medical College's College of Nursing on nosocomial diseases and to correlate this knowledge with selected sociodemographic characteristics of hospital-acquired infections. The study used a descriptive non-experimental design based on Bertalanffy and J.W. Kenny's General System Theory. The sample included 35 first-year B.Sc. nursing students who met the study's inclusion criteria. Non-probability purposive sampling was used to select participants. The data was collected using a standardized sociodemographic questionnaire and analyzed using descriptive and inferential statistics. Results showed that 68.57% of participants had strong knowledge of nosocomial infections, 22.86% had average knowledge, and 8.57% had below-average knowledge. The study found that gender and kind of school knowledge of nosocomial diseases, as well as selected sociodemographic characteristics, were statistically significant among first-year B.Sc. nursing students. The study concluded that the majority of first-year B.Sc. nursing students had a good level of knowledge about nosocomial infections.

Keywords: Assess, Knowledge, Nosocomial infections, I year B.Sc. Nursing students

Introduction

Nosocomial infection, also known as hospital-acquired infection, affects millions of people annually and is defined as the occurrence of the infection within 48 hours of hospital admission, 3 days after discharge, or 30 days after an operation. These types of infections are prevalent in hospital settings (acquired in a medical facility). Typically, the transmission route includes healthcare workers to patients, medical and surgical instruments to patients, the environment to patients, and health care workers to patients. Nosocomial infections commonly manifest in patients who are in need of medical attention. These infections are reported to affect 7% of the population

in developed countries and 10% of the population in developing countries. They are not exclusive to developing nations. As suggested by a number of cross-sectional studies, nurses' understanding of nosocomial infections is inadequate and substandard.

Certain infections are caused by bacteria, viruses, or fungi, including *Salmonella typhimurium* (1.7%), *Escherichia coli* (11.9%), *Staphylococcus aureus* (6.8%), *Pseudomonas aeruginosa* (5.1%), *Shigella* (5.1%), and *Pseudomonas aeruginosa* (6.1%). These pathogens are responsible for catheter-associated urinary tract infections (CAUTI), surgical site infections (SS), and ventilator-associated pneumonia (VAP). Hospitals have been observed administering antibiotics to patients less than forty-eight hours after their admission. Length of hospital stay, age, gender, reason for admission, surgical history, type of disease condition, insertion of any type of catheter, invasive procedure, mechanical ventilators, and so forth are all risk factors associated with the infection.

Nosocomial infections can lead to significant cost overruns for the health care system in the long and short term. These complications include prolonged hospital stays, chronic diseases, mortality, morbidity, transitory and permanent dysfunction, and excessive therapeutic activity. By preventing nosocomial infections, infection control can contribute to the reduction of medical expenses. The series of infection control guidelines has enabled medical professionals to provide superior patient care. Several studies have reached the conclusion that health care workers lack sufficient knowledge, attitude, and practice concerning nosocomial infections. The significance of nosocomial infection prevention should be underscored among healthcare professionals.

Need for the study:

Patients receiving medical care are at risk of contracting nosocomial infections, which occur in both developed and poor nations worldwide. Developed nations have a 7% incidence rate while poor nations have a 10% incidence rate. In intensive care units, the incidence rate can be as high as 51%, as reported by EPIC II. After conducting thorough investigations, the incidence rate of healthcare-associated infections ranged from 13.0 to 20.3 incidents per thousand patients in the US and Europe.

Bacteria, viruses, and fungi are nosocomial pathogens. WHO estimates 15% of hospitalized patients have these illnesses. Studies in India estimate 11%–60% nosocomial infections in ICUs. Hospitalized individuals are exposed to germs from the environment, healthcare staff, and other diseased patients. These infections should be prevented by limiting transmission. Hospital trash might include pathogens, and 20%–25% is dangerous.

The International Nosocomial Infection Control Consortium reports 9.06 HCAI infections per 1,000 intensive care unit (ICU) patient days in India, which is higher than other wealthy countries. Hospitals in India have HCAI infection rates ranging from 4.4 to 83.09 percent. Total HAI prevalence in India was 3.76 percent. The surgical ICU (25%), medical ICU (20%), burns ward (20%), and pediatric ward (12.17%) were associated with HAI.

Catheter-related infections caused over 100 cases at Rajiv Gandhi Government General Hospital (RGGGH) in 2018, and 43 cases as of March 2019. More than 50 ventilator-associated infections and dialysis unit cases were recorded from 2018 to March 2019, up from 32 in 2017. Influenza remains a prevalent RGGGH infection. The above reference and the researcher's clinical experience prompted this investigation. Students working in clinicals must understand nosocomial infections and their treatment. Students in B.Sc. Nursing already study nosocomial infections. Thus, this study assesses student knowledge. Therefore, the researcher can choose to learn utilizing alternative instructional approaches in the future.

OBJECTIVES:

- To determine the extent to which first-year basic B.Sc. (N) students enrolled in the College of Nursing at Madurai Medical College, Madurai, are knowledgeable regarding hospital-acquired infections.
- To examine the association between the knowledge level of hospital acquired infections and the socio-demographic characteristics of first-year Basic B.Sc. (N) students enrolled in the College of Nursing at Madurai Medical College, Madurai.

Materials and Methods:

Research approach - Quantitative evaluative research approach.

Research design - Non experimental (descriptive research) design.

Setting of the study - College of Nursing, Madurai Medical College, Madurai.

Population of the study

Target population - B.Sc. Nursing students.

Accessible population - I-year B.Sc. Nursing students are studying at College of Nursing, Madurai Medical College, Madurai.

Sample - I-year B.Sc. Nursing students at College of Nursing, Madurai Medical College, Madurai and those who met the inclusion criteria.

Sample size - The sample size is 35

Sampling technique - Non probability (purposive) sampling technique.

Criteria for sample selection

Inclusion criteria

- ✓ The students who is studying in I year B.Sc. Nursing.
- ✓ Students who is willing to participate in the study.

Exclusion criteria

- ✓ The students who is not available at the time of data collection.
- ✓ The students who attended in-service education programme, ward teaching programme, bedside clinic and previous clinical experiences regarding Nosocomial infections.

Research Tool - The tool in question comprises two distinct sections: Socio Demographic Data and a Self-administered Structured knowledge Questionnaire pertaining to Nosocomial infections. The scoring procedure for the latter involves the use of 25 questions, each of which is assigned a score of one for each correct answer. It is worth noting that the language used throughout this questionnaire is designed to be formal and precise, to ensure that the resulting data is both accurate and reliable.

Level of Knowledge	Score
Below average	1-12
Average	13-17
Good	18-25

Data collection procedure:

The researchers started to collect data from the samples after getting permission from the college to do the study. The time frame for gathering the data was one week. The self-reporting questionnaire method was used to get information from the participants every day.

Procedure for data analysis - Research data was analyzed to make it interpretable and manageable. Statistics were used to organize and interpret the data. Investigators created a master sheet to compare data. Analysts employ descriptive and inferential statistics. Socio demographic factors were described by frequency and proportion. Chi-square test was performed to determine the association between sociodemographic characteristics and nosocomial infection knowledge among first-year B.Sc. Nursing students at College of Nursing, Madurai Medical College.

Results and Interpretations:

Table – I: Frequency and Percentage distribution of I Year B.Sc. Nursing students according to their socio demographic variables.

(n=35)

S. No.	Socio-demographic variables	f	%	
1.	Age	Less than 20	35	100%
		More than 20	0	0%
2.	Gender	Male	3	8.6%
		Female	32	91.4%
3.	Type of school	Government	9	25.7%
		Private	25	71.4%
		CBSE	1	2.9%
4.	Medium of study	Tamil medium	23	65.7%
		English medium	12	34.3%

		Others	0	0%
5.	Type of family	Nuclear family	30	85.7%
		Joint family	5	14.3%
		Extended family	0	0%
6.	Place of domicile	Rural	27	77.1%
		Sub urban	1	2.9%
		Urban	7	20%
7.	Occupation of the mother	Health care professional	0	0%
		Government employee	0	0%
		Private employee	6	17.1%
		Self-employee	29	82.9%
8.	Occupation of the father	Health care professional	1	2.9%
		Government employee	1	2.9%
		Private employee	6	17.1%
		Self-employee	27	77.14%
9.	Source of information	Books	19	54.3%
		Medical professional	1	2.9%
		Media	4	11.4%
		Others	11	31.4%

The above table – 1 shows the frequency and percentage distribution of I year B.Sc. Nursing students with their selected socio-demographic variables.

When age was taken into account, all 35 subjects were younger than 20 years old. When looking at gender, 32 of the subjects (91.4%) were women and only 3 (8.6%) were men. Based on the type of school, most of the subjects were studied in private schools (89.7%), government schools (25.7%), and CBSE schools (2.9%). When looking at the language used for study, 23 subjects (65.7%) were taught in Tamil, while 12 subjects (34.3%) were taught in English. When it came to the type of family, 30 of the subjects (85.7%) were nuclear families and 5 (14.3%) were mixed families. When it came to where most of the subjects lived, 27 (77.1%) were from rural areas, 7 (20%) were from cities, and 1 (2.9%) was from the suburbs. When looking at what most of the subjects did for a living, 29 (82.9%) were self-employed and 6 (17.1%) worked for private

companies. Out of the subjects who were asked what their father did for a living, 27 (77.14%) were private employees, 6 (17.1%) were government employees, and 1 (2.9%) was a health care worker. Most of the people who answered (54.3%) got their information about nosocomial infections from books, while 11 (31.4%) got their information from other sources, 4 (11.4%) got their information from the media, and 1 (2.9%) got their information from medical workers.

Table – II: Frequency and percentage distribution of subjects according to their level of knowledge regarding Nosocomial infections among I Year B.Sc. Nursing students.

(n = 35)

Level of knowledge	(f)	(%)	Mean with standard deviation
Below average	3	8.57%	17.54 ± 2.749
Average	8	22.86%	
Good	24	68.57%	

Table shows % distribution of knowledge levels regarding Nosocomial infections among 1st-year B.Sc. Nursing students at College of Nursing, Madurai Med. College.

Majority of the subjects 24 (68.57%) were having good knowledge, 8 (22.86%) were having average knowledge and 3 (8.57%) were having below average knowledge regarding Nosocomial infections among I Year B.Sc. Nursing students. The Mean score with Standard deviation of knowledge regarding Nosocomial infections is 17.54 ± 2.749

III - Association between the level of knowledge regarding Nosocomial infections among I Year B.Sc. Nursing students with their selected socio demographic variables

(n=35)

S. No	Socio-demographic variables	LEVEL OF KNOWLEDGE						χ^2	df	't' value
		Below average		Average		Good				
		f	%	F	%	f	%			
1.	Age									
	Less than 20	3	8.57%	8	22.86%	24	68.57%	0.125	2	5.99NS

	More than 20	0	0%	0	0%	0	0%			
2.	Gender							14.264	2	5.99S*
	Male	2	5.71%	0	0%	1	2.86%			
	Female	1	2.86%	8	22.86%	23	65.71%			
3.	Type of school							12.289	4	9.49 S*
	Government	1	2.86%	3	8.57%	5	14.28%			
	Private	1	2.86%	5	14.28%	19	54.29%			
	CBSE	1	2.86%	0	0%	0	0%			
4.	Medium of Study							8.554	4	9.49 NS
	Tamil	0	0%	4	11.43%	19	54.29%			
	English	3	8.57%	4	11.43%	5	14.28%			
	Others	0	0%	0	0%	0	0%			
5.	Type of family							2.33	4	9.49 NS
	Nuclear family	2	5.71%	8	22.86%	20	57.14%			
	Joint family	1	2.86%	0	0%	4	11.43%			
	Extended family	0	0%	0	0%	0	0%			
6.	Place of domicile							2.33	4	9.49 NS
	Rural	1	2.86%	5	14.29%	21	60%			
	Sub urban	0	0%	0	0%	1	2.86%			
	Urban	2	5.71%	2	5.71%	3	8.57%			
7.	Occupation of the Mother							3.319	6	12.59 NS
	Health Care Professional	0	0%	0	0%	0	0%			
	Government employee	0	0%	0	0%	0	0%			
	Private employee	0	0%	0	0%	6	17.14%			
	Self- employee	3	8.57%	8	22.86%	18	51.43%			
8.	Occupation of the Father							11.886	6	12.59 NS
	Health Care Professional	0	0%	0	0%	1	2.86%			
	Government employee	1	2.86%	0	0%	0	0%			

	Private employee	0	0%	2	5.71%	4	11.43%			
	Self- employee	2	5.71%	7	20%	18	51.43%			
9.	Source of information regarding Nosocomial infections									
	Books	2	5.71 %	3	8.57%	14	40%	7.375	6	12.59 NS
	Medical professional	0	0%	0	0%	1	2.86%			
	Media	0	0%	3	8.57%	1	2.86%			
	Others	1	2.86%	2	5.71%	8	22.86%			

S*–significant, NS – not significant

Chi- Square analysis reveals that, there was a statistically significant association between the level of knowledge regarding Nosocomial infections among I Year B.Sc. Nursing students with their selected socio-demographic variables such as **gender ($\chi^2 = 14.264$, 't' value= 5.599) and type of school ($\chi^2 = 12.289$, 't' value= 9.49) were associated** other variables age, medium of study, type of family, place of domicile, occupation of the mother, occupation of the father and source of information regarding Nosocomial infections among I Year B.Sc. Nursing students were not associated with their selected socio-demographic variables.

DISCUSSION:

The objective of the study was to assess nursing students' knowledge of Nosocomial infections at College of Nursing, Madurai Medical College.

The majority of the participants, specifically 24 (68.57%), shown a high level of knowledge. Additionally, 8 subjects (22.86%) exhibited a medium level of knowledge, while 3 subjects (8.57%) had below average knowledge.

The results of this study exhibited similarities to the findings reported in a study conducted by **Gadade et al. (2018)**. The purpose of this study was to evaluate the level of knowledge pertaining to nosocomial infections among Bachelor of Science in Nursing students at certain nursing institutes located in Pune city. Based on a comprehensive analysis, this study concludes that approximately 64% of B.Sc. nursing students possess an average level of knowledge regarding

nosocomial infection, while approximately 33% of B.Sc. nursing students demonstrate a good level of knowledge in this area.

The study's second objective was to correlate the level of knowledge of Nosocomial infections among I year B.Sc. (Nursing) students at the College of Nursing, Madurai Medical College, Madurai, with their selected socio-demographic variables.

To determine the association between the level of knowledge of Nosocomial infections and the students' socio-demographic variables, the Chi-square test showed a significant association with gender ($\chi^2 = 14.264$, 't' value = 5.99), $p = 0.05$ level, and type of school ($\chi^2 = 12.289$, 't' value = 9.49), $p = 0.05$ level.

Thus, the research hypothesis (H1), which states that there is a statistically significant association between the level of knowledge of Nosocomial infections and the students' socio-demographic variables, is accepted, while the null hypothesis is rejected.

The results of the current investigation were found to be incongruent with the findings of previous studies. The primary objective of the study conducted by Muhasin and Dr. S. N. Nanjunde Gowda (2021) was to investigate the existence of a significant correlation between the degree of knowledge and certain socio-demographic factors among fourth-year B.Sc. Nursing students at SCPM College of Nursing and Paramedical Sciences in Gonda. Based on the findings from the chi-square table 3, it can be concluded that there is no statistically significant relationship between the knowledge level and the selected socio-demographic characteristics. This conclusion is drawn based on the comparison of the chi-square value, which is lower than the critical value from the table at a significance level of 0.05. Consequently, the null hypothesis (H1) was rejected at a significance level of 0.05.

CONCLUSION:

The study's findings indicated that the majority of the 24 subjects (68.57%) possessed a decent understanding of nosocomial infections among first-year B.Sc. nursing students; 8 subjects (22.86%) had average knowledge; and 3 subjects (8.57%) had below-average knowledge. The average score for knowledge pertaining to nosocomial infections, accompanied by its standard deviation, is 17.54 ± 2.749 . Knowledge of nosocomial infections and infection control measures was deemed adequate by the majority of nursing undergraduates attending colleges in Madurai,

according to the findings of the study. The research findings underscored the necessity for additional advancements in the establishment of authoritative information sources regarding NIs. To facilitate a deeper understanding of nosocomial infection prevention among nursing undergraduates, it is recommended that infection control be introduced as an early college-level course. In addition, it is imperative that patients receive proper guidance on infection control protocols before beginning their clinical training in hospitals. Additionally, seminars, workshops, and programs of continuing education should be organized to ensure that knowledge is regularly updated.

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How to Cite this Article?

Selvarajan O, Anitha A, Prema S, Sangeetha A, Salma Begam S and Rajamani S. "Study on Nosocomial Infection Knowledge Among First-Year B.Sc. Nursing Students at Madurai Medical College". IJARMNHS, 2023. July – December; 1 (2) Page Number: 24 – 35.