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A STUDY TO ASSESS THE KNOWLEDGE AND PRACTICE ON PREVENTION OF NOSOCOMIAL INFECTION AMONG B.Sc (NURSING) 1st YEAR STUDENTS AT DR.MGR EDUCATIONAL AND RESEARCH INSTITUTE IN CHENNAI.

Mahizh Punitha [1], Abinaya Azhagar [2], Evangelin Blessy. J [3], Karthickraj. G [4], Nirmal. M [5], Sivasangari. S [6], Varshini. G [7]

[1] Professor, faculty of nursing, Dr.M.G.R. Educational and Research Institute, Chennai, India.

[2-7] B.sc Nursing, faculty of nursing, Dr.M.G.R. Educational and Research Institute, Chennai, India.

Abstract:

Introduction: Nosocomial infections, also known as hospital-acquired infections (HAIs), are infections that patients develop during their stay in a healthcare facility. The aim of the study to assess the level of knowledge and practice on prevention of nosocomial infection among B.Sc Nursing students at Dr. MGR Educational and Research Institute in Chennai. **Methodology:** The study used a descriptive research design. A sample of 80 students was selected through non-probability convenient sampling. Inclusion criteria required participants to be present and willing, while those with prior specialized training in nosocomial infection prevention were excluded. **Result and Findings:** The study found that 62.5% of first-year B.Sc. Nursing students had inadequate knowledge, 28.75% had moderately adequate knowledge, and 8.75% had adequate knowledge on preventing nosocomial infections. In terms of practice, 57.5% had inadequate practice, 26.25% had moderately adequate practice, and 16.25% had adequate practice. **Conclusion:** The study assessed the knowledge and practice of nosocomial infection prevention among first-year B.Sc. Nursing students. The results revealed a positive correlation, statistically significant at the $p<0.001$ level.

Keywords: Nosocomial infections, Prevention, Knowledge, Practice.

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INTRODUCTION

Nosocomial infections, also known as hospital-acquired infections (HAIs), are infections that patients develop during their stay in a healthcare facility. The knowledge of nursing students regarding nosocomial infections is foundational for effective infection control practices. Research indicates that nursing students often enter their clinical placements with varying levels of understanding about infection prevention measures.

Moreover, the educational systems in various countries play a crucial role in shaping the knowledge and attitudes of nursing students towards infection control. Engda's study emphasizes that the medical educational system significantly influences the knowledge, attitudes, and practices of health sciences students regarding infection prevention (Engda, 2020). The findings suggest that a structured curriculum focused on infection control can improve students' understanding and compliance with recommended practices. This is particularly relevant for first-year nursing students who are just beginning their clinical education and may not yet fully grasp the implications of nosocomial infections.

In addition to formal education, practical training and exposure to clinical settings are vital for nursing students to develop effective infection control practices. Hussin's comparative study underscores the importance of implementing standard protocols to reduce infection rates (Hussin, 2023). This aligns with the need for nursing students to engage in hands-on training that emphasizes the application of theoretical knowledge in real-world settings. Such training can enhance their confidence and competence in managing infection risks.

The COVID-19 pandemic has further highlighted the critical need for effective infection control measures in healthcare settings. Güven et al. discuss how isolation and hygiene measures implemented during the pandemic have contributed to a reduction in nosocomial infection rates, particularly in vulnerable populations such as oncology patients (Güven et al., 2021). This context serves as a valuable learning opportunity for nursing students, emphasizing the importance of adaptability and adherence to evolving infection control guidelines.

Furthermore, the role of healthcare professionals in preventing nosocomial infections cannot be overstated. Rafi'Ah and Hariyanto's analysis illustrates that active participation in infection control measures is essential for safeguarding both patients and healthcare workers (Rafi'ah & Hariyanto, 2021). This highlights the need for nursing students to cultivate a proactive approach to infection prevention, recognizing their responsibilities in maintaining a safe healthcare environment.

Educational interventions aimed at improving knowledge and practices related to nosocomial infections are essential. Aziz et al. conducted a study evaluating education and training in hygiene practices among health professionals, revealing that structured training programs significantly enhance compliance with infection control measures (Aziz et al., 2023). This finding underscores the importance of integrating comprehensive

training on infection prevention into nursing curricula, particularly for first-year students who are building their foundational knowledge.

In addition to formal education, continuous professional development and training are crucial for healthcare workers, including nursing students. Aiesh et al. emphasize the need for ongoing education and training to keep healthcare professionals updated on best practices for infection prevention (Aiesh et al., 2023). This is particularly relevant in the context of rapidly evolving healthcare challenges, such as the emergence of multidrug-resistant organisms, which pose significant risks for nosocomial infections.

The impact of nosocomial infections extends beyond individual patient outcomes to encompass broader public health concerns. Qattan et al. highlight that these infections can lead to increased healthcare costs, longer hospital stays, and heightened morbidity and mortality rates (Qattan et al., 2023). This underscores the importance of effective infection control measures not only for patient safety but also for the sustainability of healthcare systems. Nursing students must be aware of these broader implications as they prepare to enter the workforce.

Moreover, the role of hand hygiene in preventing nosocomial infections is a critical area of focus. Alsaedi et al. emphasize that improving hand hygiene compliance among healthcare workers can significantly reduce infection rates (Alsaedi et al., 2023). This finding reinforces the need for nursing students to prioritize hand hygiene practices in their daily routines and patient interactions. Educational programs should include practical demonstrations and assessments of hand hygiene techniques to ensure students are well-prepared to implement these practices in clinical settings.

The knowledge and attitudes of nursing students regarding infection control are influenced by various factors, including their educational background and exposure to clinical practice. Miah et al. conducted a study assessing nurses' knowledge and practices regarding nosocomial infections, revealing that higher levels of education correlate with better understanding and adherence to infection control measures (Miah et al., 2023). This suggests that nursing programs should focus on enhancing the educational experiences of students to foster a culture of safety and vigilance regarding infection prevention.

Furthermore, the identification and management of risk factors associated with nosocomial infections are essential components of infection control. Mudrik-Zohar et al. emphasize the importance of surveillance and monitoring in preventing bloodstream infections (Mudrik‐Zohar et al., 2023). Nursing students should be trained to recognize potential risk factors and implement appropriate interventions to mitigate these risks in their clinical practice.

In addition to traditional educational approaches, innovative strategies such as the use of technology and social media can enhance awareness and knowledge about nosocomial infections. Madhumathi et al. suggest that leveraging social media platforms can effectively disseminate information and raise awareness about infection prevention strategies (Madhumathi et al., 2021). This approach can engage nursing students in discussions about infection control and encourage them to share best practices with their peers.

Moreover, the significance of environmental factors in the transmission of nosocomial infections cannot be overlooked. Tchouaket et al. highlight the role of healthcare-associated infections in increasing healthcare costs and the importance of implementing effective environmental cleaning protocols (Tchouaket et al., 2020). Nursing students should be educated on the importance of maintaining a clean and safe environment for patients to reduce the risk of infection transmission.

The integration of infection control practices into nursing education is essential for preparing students to face the challenges of modern healthcare. Chang and Meng emphasize that educating healthcare professionals can enhance compliance with infection control measures and improve patient outcomes (Chang & Meng, 2023). This aligns with the need for nursing programs to prioritize infection prevention as a core component of their curricula.

AIM OF THE STUDY:

The study aims to assess the level of knowledge and practice on prevention of nosocomial infection among B.Sc Nursing students.

METHODOLOGY:

The study adopted a descriptive research design. A sample of 80 students was selected through non-probability convenient sampling. Inclusion criteria required participants to be present and willing, while those with prior specialized training in nosocomial infection prevention were excluded.

The study data was collected using a self administered knowledge and practice questionnaire. The tool's reliability was assessed using the split-half technique, r=0.87 for knowledge and 0.52 for practice. A pilot study with 10 participants was conducted at Rights College of Nursing, with no changes to the tool. Data collection occurred after obtaining permission from college authorities, and statistical analysis was made using descriptive and inferential statistics to explore relationships between knowledge, practice, and demographic variables.

RESULT AND ANALYSIS:

Table 1: Distribution of demographic variables of B.Sc Nursing 1st year students.

Demographic Variables	Frequency	Percentage
Age in years		
17 to 18	47	58.8
19 to 20	33	41.2
Above 21	-	-
Gender		
Male	47	58.8
Female	33	41.2
Religion		
Hindu	46	57.5
Christian	22	27.5
Muslim	12	15.0
Others	-	-
Marital status		
Married	-	-
Unmarried	80	100.0
Type of family		
Nuclear family	60	75.0
Joint family	20	25.0
Family monthly income		
Rs.15000 to Rs.20000	38	47.4
Rs.20001 to Rs.30000	15	18.8
Rs.30001 to Rs.40000	7	8.8
More than Rs. 40001	20	24.0
Area of living		
Urban	39	48.8
Semi urban	18	22.4
Rural	23	28.8
Education of mother		
No formal education	9	11.3
Primary education	24	30.0
Secondary school	33	41.3
Graduation and above	14	17.4
Education of father		

No formal education	5	6.3
Primary education	26	32.4
Secondary school	36	45.0
Graduation and above	13	16.3

The table 1 shows that the majority of first-year B.Sc. Nursing students were aged between 17 and 18 years (47 students, or 58.8%), with most being male. A total of 46 students (57.5%) identified as Hindus, and all 80 students (100%) were unmarried. Most students (60, or 75%) came from nuclear families, and 38 students (47.4%) reported a family monthly income of Rs. 15,000 to Rs. 20,000. Additionally, 39 students (48.8%) resided in urban areas, while 33 students (41.3%) had mothers with a secondary school education and 36 students (45%) had fathers with a secondary school education.

Table 2: D istribution of level of knowledge on prevention of nosocomial infection among B.Sc. Nursing 1st year students.

Level of Knowledge	Frequency	Percentage
Inadequate (≤50%)	50	62.5
Moderately Adequate (51 – 75%)	23	28.75
Adequate (>75%)	7	8.75

Table 2 shows that 50 students (62.5%) had inadequate knowledge, 23 students (28.75%) had moderately adequate knowledge, and 7 students (8.75%) had adequate knowledge regarding the prevention of nosocomial infections among first-year B.Sc. Nursing students.

Table 3: Distribution of level of practice on prevention of nosocomial infection among B.Sc. Nursing 1st year students.

Level of practice	Frequency	Percentage
Inadequate (≤50%)	13	16.25
Moderately Adequate (51 – 75%)	46	57.5
Adequate (>75%)	21	26.25

Table 3 shows that 46 students (57.5%) demonstrated inadequate practice, 21 students (26.25%) showed moderately adequate practice, and 13 students (16.25%) exhibited adequate practice regarding the prevention of nosocomial infections among first-year B.Sc. Nursing students.

Table 4: Correlation between knowledge and practice on prevention of nosocomial infection among B.Sc. Nursing 1st year students.

Variables	Mean	S.D	Correlation Value
Knowledge	5.08	1.80	**r = 0.402** **p = 0.0001, S***
Practice	33.06	7.67	

*p<0.05, S – Significant

Table 4 shows that the Karl Pearson's correlation coefficient (r = 0.402) indicates a positive correlation, which was statistically significant at the p<0.05 level. This suggests that as the knowledge of first-year B.Sc. Nursing students on nosocomial infection prevention increases, their practice in applying this knowledge also improves.

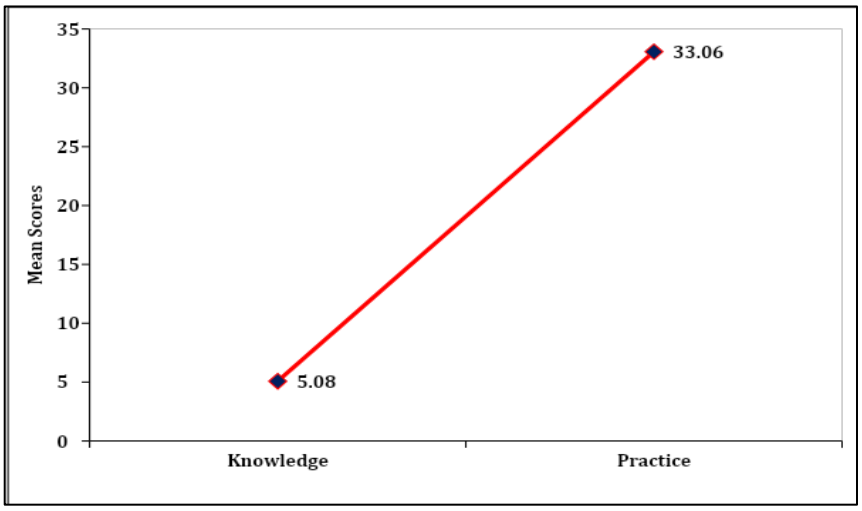

Figure 1: Correlation between knowledge and practice on prevention of nosocomial infection among B.Sc. Nursing 1st year students

Table 5: Association of level of knowledge on prevention of nosocomial infection among B.Sc. Nursing 1st year students with demographic variables.

Demographic Variables	Inadequate		Moderately Adequate		Adequate		Chi-Square Value
	n	%	n	%	n	%	
Age in years							χ^2=1.709 d.f=2 p = 0.426 N.S
17 to 18	32	40.0	12	15.0	3	3.8	
19 to 20	18	22.5	11	13.8	4	5.0	
21 to above	-	-	-	-	-	-	
Gender							χ^2=2.947 d.f=2
Male	33	41.2	11	13.8	3	3.8	

Female	17	21.2	12	15.0	4	5.0	p = 0.229 N.S
Religion							
Hindu	29	36.2	16	20.0	1	1.2	χ^2=6.905 d.f=4 p = 0.141 N.S
Christian	14	17.5	4	5.0	4	5.0	
Muslim	7	8.8	3	3.8	2	2.5	
Others	-	-	-	-	-	-	
Marital status							
Married	-	-	-	-	-	-	-
Unmarried	50	62.5	23	28.8	7	8.8	
Type of family							χ^2=0.998 d.f=2 p = 0.607
Nuclear family	36	45.0	19	23.8	5	6.2	
Joint family	14	17.5	4	5.0	2	2.5	
Family monthly income							
Rs.15000 to Rs.20000	27	33.8	11	13.8	0	0	χ^2=13.288 d.f=6 p = 0.039 S*
Rs.20001 to Rs.30000	7	8.8	4	5.0	4	5.0	
Rs.30001 to Rs. 40000	6	7.5	1	1.2	0	0	
More than Rs.40001	10	12.5	7	8.8	3	3.8	
Area of living							
Urban	24	30.0	13	16.2	2	2.5	χ^2=12.588 d.f=4 p = 0.013 S*
Semi urban	8	10.0	5	6.2	5	6.2	
Rural	18	22.5	5	6.2	0	0	
Education of mother							
No formal education	8	10.0	1	1.2	0	0	χ^2=5.791 d.f=6 p = 0.447 N.S
Primary education	14	17.5	9	11.2	1	1.2	
Secondary school	21	26.2	8	10.0	4	5.0	
Graduation and above	7	8.8	5	6.2	2	2.5	
Education of father							
No formal education	4	5.0	1	1.2	0	0	χ^2=9.577 d.f=6 p = 0.144 N.S
Primary education	14	17.5	11	13.8	1	1.2	
Secondary school	24	30.0	6	7.5	6	7.5	
Graduation and above	8	10.0	5	6.2	0	0	

***p<0.05, S – Significant, N.S – Not Significant**

The table 5 shows that the demographic variables family monthly income ($\chi 2$=13.288, p=0.039) and area of living ($\chi 2$=12.588, p=0.013) had statistically significant association with level of knowledge on prevention of nosocomial infection among B.Sc. Nursing 1st year students at $p<0.05$ level and the other demographic variables had not show statistically significant association with level of knowledge on prevention of nosocomial infection among B.Sc. Nursing 1st year students.

Table 6: Association of level of practice on prevention of nosocomial infection among B.Sc. Nursing 1st year students with demographic variable

Demographic Variables	Inadequate		Moderately Adequate		Adequate		Chi-Square Value
	n	%	n	%	n	%	
Age in year							χ^2=7.371 d.f=2 p = 0.025 S*
17 to 18	11	13.8	28	35.0	8	10.0	
19 to 20	2	2.5	18	22.5	13	16.2	
21 to above	-	-	-	-	-	-	
Gender							χ^2=2.845 d.f=2 p = 0.241 N.S
Male	10	12.5	27	33.8	10	12.5	
Female	3	3.8	19	23.8	11	13.8	
Religion							χ^2=1.315 d.f=4 p = 0.859 N.S
Hindu	8	10.0	27	33.8	11	13.8	
Christian	4	5.0	11	13.8	7	8.8	
Muslim	1	1.2	8	10.0	3	3.8	
Others	-	-	-	-	-	-	
Marital status							-
Married	-	-	-	-	-	-	
Unmarried	13	16.2	46	57.5	21	26.2	
Type of family							χ^2=0.634 d.f=2 p = 0.728 N.S
Nuclear family	9	11.3	36	45.0	15	18.8	
Joint family	4	5.0	10	12.5	6	7.5	
Family monthly income							χ^2=6.560
Rs.15000 to Rs.20000	6	7.5	25	31.2	7	8.8	d.f=6 p = 0.363 N.S
Rs.20001 to Rs.30000	2	2.5	10	12.5	3	3.8	
Rs.30001 to Rs.40000	2	2.5	3	3.8	2	2.5	

More than Rs. 40001	3	3.8	8	10.0	9	11.2	
Area of living							χ^2=5.116 d.f=4 p = 0.276 N.S
Urban	4	5.0	27	33.8	8	10.0	
Semi urban	3	3.8	9	11.2	6	7.5	
Rural	6	7.5	10	12.5	7	8.8	
Education of mother							χ^2=6.848 d.f=6 p = 0.335 N.S
No formal education	3	3.8	6	7.5	0	0	
Primary education	3	3.8	14	17.5	7	8.8	
Secondary school	6	7.5	19	23.8	8	10.0	
Graduation and above	1	1.2	7	8.8	6	7.5	
Education of father							χ^2=1.784 d.f=6 p = 0.938 N.S
No formal education	1	1.2	3	3.8	1	1.2	
Primary education	3	3.8	17	21.2	6	7.5	
Secondary school	7	8.8	18	22.5	11	13.8	
Graduation and above	2	2.5	8	10.0	3	3.8	

*p<0.05, S – Significant, N.S – Not Significant

Table 6 shows a statistically significant association between age and the level of practice on nosocomial infection prevention (χ2=7.371, p=0.025) among first-year B.Sc. Nursing students at the p<0.05 level. No other demographic variables showed a significant association.

DISCUSSION

This chapter analyzes data from a study assessing the knowledge and practices of 1st-year B.Sc. Nursing students at Dr. M.G.R Educational and Research Institute regarding the prevention of nosocomial infections. A total of 80 students were selected using purposive sampling. The demographic profile revealed that most students (58.8%) were aged 17-18 years, with a majority being male (57.5%), unmarried (100%), from nuclear families (75%), and having a family income between 15,000-20,000 (47.4%). The findings showed that 62.5% of students had inadequate knowledge and 57.5% had inadequate practices related to nosocomial infection prevention. The study also found a positive, statistically significant correlation between knowledge and practice (r = 0.402, p < 0.001). Additionally, demographic variables such as family income and living area were significantly associated with knowledge, while age was associated with practice. These findings align with similar studies showing gaps in knowledge and practice among nursing students**.**

CONCLUSION

The study aimed to assess the knowledge and practice regarding the prevention of nosocomial infections among first-year B.Sc. Nursing students. The results showed a positive correlation, which was statistically significant

at the $p<0.001$ level. This indicates that as the students' knowledge on nosocomial infection prevention increases, their practice of preventive measures also improves.

RECOMMENDATION

- A similar study can be conducted with a larger sample size to enhance the generalizability of the findings.
- A comparative study can be carried out to assess the knowledge and practice regarding the prevention of nosocomial infections among B.Sc. Nursing students in government and private institutions.

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