SHORT ARTICLE

Assessment of Knowledge and Practice to Control Nosocomial Infection, Among the Staff Nurses, Hi-Tech Medical College & Hospital, Bhubaneswar

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Abstract

Background: A nosocomial infection is that which is acquired in a hospital or other health care agency upto 48 hours after hospital admission, upto 3 days after discharge, upto 30 days after an operation or was admitted to hospital for other reasons other than the infection. Nurses have the major role to prevent the hospital acquired infection. Appropriate knowledge and practice in preventing nosocomial infection is important in their in their day to day patient care. **Objective**: To assess the knowledge and practice to control nosocomial infection & also to find out the association between knowledge and practice to control nosocomial infection with the selected demographic variables. **Material & Methods**: The study was conducted in different wards of Hi-Tech Medical College & Hospital, BBSR. The sample size was 122 and the universal sampling technique was used. After obtaining written informed consent from the study participants, data was collected using two standardized tool. Knowledge was assessed by a scoring key and practice was assessed by likert scale. The association of knowledge and practice with demographic variables was analysed using chi square test. **Results**: 89.4% of staff nurses were females, 39.3% were in the age group of 31-40 years. and majority (51.6%) were GNM. There was no significant association ($p<0.05$) found, neither with knowledge nor with practice, with different demographic variables.

Keywords

Knowledge; Practice; Nosocomial Infection; Staff Nurses

Introduction

The term “Nosocomial” is taken from the Greek word “nosocomium” meaning health care facility. A nosocomial infection is one that is acquired in a hospital or other health agency upto 48 hours after hospital admission, upto 3 days after discharge, upto 30 days after an operation or was admitted to hospital for other reasons other than the infection. A hospital is one of the most likely places for acquiring an infection because it harbours a high population of virulent stains of micro-organism that are usually resistant to antibiotics. Nosocomial infections not only extend hospital care for the patient, but also increase cost for both patient and hospital.(1)

A study conducted by Ross D. S and Vasantha S. on control and management of hospital acquired infection, using standard protocol, revealed that although standard operating procedures were followed, ventilated associated pneumonia

exceeded the benchmark during October to December.(2)

Another study was conducted by Baghaei R, Mikaili P., Nourani D, Khalkhali H.R. on 556 patients who were admitted to ICU of Imam Reza hospital from 2006-2007. The incidence of nosocomial infections was 8.45 percent. The most common type of infections were pneumonia 59.5%, UTI 21.3% and both 19.1%, respectively. (3)

Nurses have an important role in preventing and controlling the nosocomial infection in the hospital. The gaps in knowledge and practice in controlling nosocomial infection indicates towards a policy for strict implementation in the health care settings. This study was undertaken to assess the knowledge and practice of the staff nurses.

Studies related to incidence and prevalence of Nosocomial Infection:

Gowda A. conducted a prospective study to study the prevalence of nosocomial infections in the ICU. The results showed that out of 50 patients who had nosocomial infections in the ICU, 28% had urinary tract infections & 14% had pneumonias. Among 7 cases of pneumonias 5 were associated with VAP. He concluded that urinary infections are the most commonly seen in intensive care unit. (4)

Jan Muhammad Shaik, et al conducted an observational study at Tertiary care Hospital, Pakistan, on risk of acquiring infection in Intensive Care Unit. They included 333 samples of above 16 years of age admitted in ICU more than 48 hours and observed, result showed that out of 333 patients 97 patients had acquired nosocomial infection, the frequency of nosocomial infection was 29.12%. Hence, they concluded that patients admitted in ICU are more risk for acquiring nosocomial infection than others. (5)

Studies related to prevention of Nosocomial Infection: Chaudhury et al conducted a comparative study to identify the need for using prophylactic antibiotic in clean and clean-contaminated surgeries, to identify the prevalence of organisms in patients who are not given prophylactic antibiotics and to study whether presence of risk factors increase the incidence of surgical site infection. They got result out of 50 patients who were not given prophylactic antibiotic, 6 patients had more than one risk factor for development of SSI. (6)

Kibret M et al conducted, a cross-sectional study on Antibiogram of nosocomial urinary tract infection at Ethiopia. They selected 1254 patients for a year. Their Antimicrobial susceptibility tests were done using disc diffusion technique as per standard of Kirby-Bauer method and they got result as out of the 1254 patients, 118 (9.4%) developed nosocomial UTIs. Thus, they have concluded that catheterization and preoperative antibiotic prophylaxis were found to be risk factor for nosocomial infection.(7)

Aims & Objectives

1. To assess the knowledge of staff nurses about nosocomial infection.
2. To evaluate the practice of staff nurses to control nosocomial infection
3. To find out the association between the knowledge and practice to control nosocomial infection with selected demographic variables.

Material & Methods

- **Study design** – A quantitative survey approach with non-experimental descriptive design was undertaken.
- **Place of the study** – The study was conducted in different wards of Hi-Tech Medical College & Hospital, Bhubaneswar.
- **Period of stud**y – The study was undertaken from the period of July 2017 to December 2017
- **Inclusion criteria:** Registered nurses having minimum one year experience, Nurses who are willing to participate and have given consent to be a part of the study.

Ethical approval - The study was initiated after obtaining the institutional ethical committee clearance and getting permission from the respective authorities.

- **Sample and sampling technique** – The sample were the staff nurses. The sample size was 122 and the universal sampling technique was used.
- **Research tool and technique** – The data was collected using two standardized tool. Knowledge was assessed by a scoring key and practice was assessed by likert scale. The knowledge was assessed under the following parameters like incidence, mode of transmission and prevention of nosocomial infection. The questionnaire consists of 20 questions and the scoring key is as follows
  Scoring procedure (8)
  Good-14-20
  Average-7-13
  Poor-0-6
- **Consent –** Written informed Consent was obtained from all the study participants.

Data Analysis – Data was coded, entered and analyzed using MS – Excel. Statistical analysis was done by percentage and chi square test. A P-value <0.05 was taken to be statically significant.

Results

Majority (n=109, 89.4%) staff nurses were females, (n=48, 39.3%) were in the age group of 31-40 years. Majority (n=63, 51.6%) were educated up to GNM and (n=59, 48.4%) were B.sc N. None of the participants had M.Sc (Nursing) qualification. (Table 1)

The distribution of the staff nurses by knowledge score showed that majority (n=59) had average knowledge, (n=54) had good knowledge and (n=9) had poor knowledge. (Table 2)

The practice about the management of nosocomial infection was assessed by likert scale. The percentage distribution showed that (n=10, 20.84%) were practicing the management, while educating the patients, and also attendants, (n=2, 22.22%) were hesitant in practicing or neglecting their work due to ignorance. (Table 3)

Discussion

Nosocomial infections occur worldwide and affect both developed and developing countries. Infections acquired in health care settings are a significant burden for the patient and for public health. A prevalence survey conducted under the guidance of World Health organization in 55 hospitals of 14 countries representing 4 world health organization's Regions Europe, eastern Mediterranean, south-East Asia and Western pacific has showed an average of 8.7% of hospital patients and nosocomial infections. At any time, over 1.4 million people worldwide suffer from infectious complications acquired in hospital. (9)

The most frequent nosocomial infections are surgical wound, urinary tract infections and lower respiratory tract infections. Surgical site infections are the third most common nosocomial infections in surgical patients accounting for about 24% of the total number of nosocomial infections. It's rate has varied from a low of 2.5% to high of 41.9%.(10)

The effectiveness of infection control practices depends on nurses consciousness and consistency by using effective aseptic technique. It is human nature to forgot key procedural steps, or when hurried, to take short cuts that break aseptic procedures.

The nurse follows certain principles and practices including standard precautions to prevent and control of infection and its spread. During daily routine care, the nurse uses medical aseptic techniques to break the infection chain, for example use gloves and a mask during dressing, proper use of hand washing technique to break the entry of pathogens. The term standard precaution applies to blood and body fluids, non-intact skin, mucous membranes from all clients. The precautions will protect the client and provide protection to the nurses as directed by the occupational safety and health administration.

In the present study, knowledge level of the samples was assessed by questionnaire and was classified as good, average and poor. The percentage distribution of the staff nurses by knowledge score showed that majority (n=59), had average knowledge, (n=54) had good knowledge and (n=9) had poor knowledge. This is similar to the survey conducted by Labeau et al to assess the nurses knowledge. They, got the result as nurses mean score on the knowledge test was 29%.(11) In another study in Yemen 87 % nurses had fair knowledge regarding nosocomial infections.(12)

The practice was also assessed by likert scale. The percentage distribution showed that (n=10, 20.84%) were practicing the management while educating the patients, and also attendants, (n=2, 22.22%) were hesitant in practicing or neglecting there work due to ignorance. This is similar to the study conducted by Creedon Sile A. on compliance of the nurses with guidelines and screening protocol. It showed that the rate of adherence to use of gloves among nurses was 51-83% (13)

Conclusion

For infection control, nurse is responsible to maintain surveillance and analysis for hospital acquired infection. The nurses have the major role to educate the employees about infection control and ensuring the implementation of various infection control policies in the hospital. Assessing environmental control through surveillance monitoring, conducting environmental rounds in all in-patient and out-patient care can control the hospital acquired infection. Participating in equity / performance improvement activities by assessing, monitoring and measuring hospital acquired infections and evaluation outcomes on a continuous basis.

Recommendation

Preventive education regarding infection control among nurses should be incorporated at the induction level and periodic training of these health care providers is the need of hour. There is a need to develop strategies in each hospital to monitor the nurses and increase their awareness for such simple but necessary steps in patient care.

Limitation of the study

It was a cross sectional study and we could not follow up the study participants for a time period to understand their knowledge and practice.

Relevance of the study

The present study revealed that majority of nurses had average knowledge while they should have good knowledge on infection control. Therefore, there is a need to educate periodically all the nurses to improve their knowledge and in turn their practice will improve.

Authors Contribution

LS was responsible for conception, design and data analysis of the study while AM was responsible for data collection, compilation and tabulation. Both LS and AM had jointly prepared the manuscript. And done the literature review.

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Tables

TABLE 1 DEMOGRAPHIC CHARACTERISTICS OF STAFF NURSES (N=122)

Variables	Characteristics	Number	Percentage
Sex	**Male**	13	10.6
	Female	109	89.4
Age in years	21 – 30	43	35.2
	31 – 40	48	39.3
	41 – 50	22	18.2
	51 & above	09	7.3
Education	G.N.M	63	51.6
	B.Sc. (N)	59	48.4
	M.Sc. (N)	0	0

TABLE 2 ASSOCIATION BETWEEN KNOWLEDGE ABOUT NOSOCOMIAL INFECTION AND SELECTED DEMOGRAPHIC VARIABLE (N=122)

Variables	Poor knowledge N%		Average knowledge N%		Good knowledge N%		TOTAL N%		df	X^2 0.05	p value
Sex											
Male	0	0	6	46.15	7	53.85	13	100	2	0.15	0.82
Female	9	8.25	53	48.62	47	43.13	109	100			
Total	9	7.38	59	48.36	54	44.26	122	100			
Age in years											
21 – 30											
31 – 40	3	6.97	22	51.17	18	41.86	43	100	6	0.86	0.66
41 – 50	4	8.33	21	43.75	23	47.92	48	100			
51 & above	2	9.01	13	59.09	11	31.63	26	100			
	0	0	3	33.33	2	66.67	5	100			
Total	9	7.38	59	48.36	54	44.26	122	100			
Education											
G.N.M	5	7.93	32	50.79	26	41.28	63	100	4	1.32	0.17
B.Sc.	4	6.78	27	45.76	28	47.46	59	100			
Total	9	7.38	59	48.36	54	44.26	122	100			
(X^2) Significant at 0.05 level											

TABLE 3 ASSOCIATION BETWEEN PRACTICE OF MANAGEMENT FOR NOSOCOMIAL INFECTION AND SELECTED DEMOGRAPHIC VARIABLE. (N=122)

Variable	Strongly disagree N%		Disagree N%		Neither agree nor disagree N%		Agree N%		Strongly agree N%		df	Total value X^2 0.05	p-Value
Sex													
Male	0	0	3	23.07	4	30.79	3	23.07	3	23.07	2	0.82	.95
Female	10	9.17	16	14.67	21	19.26	42	38.56	20	18.34			
Total	10	9.17	19	37.74	25	50.05	45	61.63	23	41.41.			
Age in years													
21 – 30	8	18.60	11	25.58	9	20.95	8	18.60	7	16.27			
31 – 40	9	18.75	12	25	8	16.66	10	20.84	9	18.75	6	0.72	.92
41 – 50	4	18.18	3	13.63	5	22.75	7	31.81	3	13.63			
51 & above	2	22.22	1	11.11	3	33.34	2	22.22	1	11.11			
Total	23	77.75	27	75.32	25	93.7	27	93.47	20	59.76			
Education													
G.N.M	3	4.76	5	7.96	9	14.28	34	53.96	12	19.04	4		.72
B.Sc.(N)	6	10.16	7	11.86	14	23.72	17	28.84	15	25.42		0.61	
Total	9	14.92	12	19.82	23	38	51	82.8	27	44.46			
X^2 significant at 0.05 level													