

Effectiveness of Planned Teaching Programme on Knowledge Regarding Hospital Acquired Infection and Its Prevention Among B.Sc. Nursing First Year Students Studying in SGRR College of Nursing Dehradun

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ABSTRACT

Background: Hospital Acquired infection may cause prolonged hospital stays, higher mortality, long- term disability, increased microbial drug resistance, and excess health-care costs. Recently HCAI has become a major issue in health- care safety that concerns the safety of patients and HCWs. The main aim of the study is to evaluate the effectiveness of planned teaching programme regarding Hospital Acquired Infection and its prevention among B. Sc. Nursing first Year students.

Methods: One group pretest posttest research design was used to find out the effectiveness of planned teaching programme regarding Hospital Acquired Infection and its prevention. In this study, 60 B. Sc. Nursing first year students who were studying in SGRR College of nursing Dehradun, India was enrolled. Non probability purposive sampling technique was used to select the sample. The data were analyzed and interpreted by using descriptive, inferential statistics was used to find out association between the knowledge and selected demographic variables.

Results: Overall total Knowledge score showed that majority of B. Sc. Nursing first year students, 54 (90%) had inadequate knowledge, 6 (10%) of the students had adequate knowledge regarding HAI and its prevention and (mean \pm SD) pre-test 12.70 \pm 3.993 as compare to post –test 16.95 \pm 3.873.

Conclusion: ICU, HCWS report suboptimal levels of HAI and its prevention adherence. This finding in high-risk areas is particularly concerning given that it likely over estimate actual practice. Improving HAI control will likely require closing knowledge gaps in hospital infection control practice.

Keywords: Knowledge, Hospital Acquired infection, B. Sc. Nursing student

INTRODUCTION

Hospital Acquired infection may cause prolonged hospital stays, higher mortality, long- term disability, increased microbial drug resistance, and excess health-care costs. Recently HCAI has become a major issue in health- care safety that concerns the safety of patients and HCWs. Hospital Acquired Infection results from delivery of health services in health care facility. Hospital Acquired Infection is defined as an infection occurring in a patient during the process of care in a hospital or other health care facility that was not manifested at time of admission. These infections often caused by multiresistant pathogen, take a heavy toll on patient and their families by causing illness, prolonged hospital stay, potential disability, excess costs and sometimes death. The most frequent types of infections

include central line -associated bloodstream infections, catheter – associated urinary tract infections, surgical site infections and ventilator- associated pneumonia. Urinary-tract infections represent the most frequent form of Hospital Acquire Infections in industrialized nations, while in developing countries invasive medical procedures play a major role. Surgical interventions are one of the biggest sources of Hospital Acquired Infections with an incidence ranging from 1.2% to 23.6% of all surgical interventions and *Staphylococcus aureus* (20%), *Escherichia coli* (18%) and other Enter bacteria constituting the most frequent causative pathogens in developing countries. Health can neither be demanded nor given, it can neither be brought, nor sold but the circumstances and services that are pre - requisite to health can certainly be demanded and received as a right. A productive environment in the hospital unit is very essential as a pre- requisite particularly, when considering the services provided in the Neonatal Intensive Care Unit provision for a safe and protective environment is a prior need ¹

Of every hundred hospitalized patients, seven in developed and ten in developing countries can acquire one of the healthcare associated infections. Populations at stake are patients in Intensive Care Units (ICUs), burn units, undergoing organ transplant and neonates. According to Extended Prevalence of Infection in Intensive Care (EPIC II) study, the proportion of infected patients within the ICU is often as high as 51% ⁸. Based on extensive studies in USA and Europe shows that HCAI incidence density ranged from 13.0 to 20.3 episodes per thousand patients - days.

With increasing infections, there is an increase in prolonged hospital stay, long term disability, increased antimicrobial resistance, and increase in socio - economic disturbance, and increased mortality rate. Spare information exists on burden of Hospital Acquired Infections because of poorly developed surveillance systems and

inexistent control methods. Apart from patient-related factors (e.g. co-infection of other local sites, malnutrition and/or immune-deficiency), the quality of equipment, financial resources as well as the competence of the surgical team seem to be important determinants. ^{2,3}

Hospital acquired infections are among the leading causes of death. They cause significant morbidity among patients who receive health care. They also may impair the quality of life of the patient with a hospital acquired infections even after treatment. Most of the causative organisms are present in the external environment of the patient and are introduced into the body through direct contact or through bodily fluids. Prevention of hospital acquired infections is therefore cost effective and achievable even when resources are limited. As the literature suggest , all of these factors have heightened the need to identify, prevent, control and treat infections in a systematic fashion in order to improve patient and community safety and to decrease health care costs. Factors associated with transmission of resistant strains of these microorganisms include poor attention to hygiene, overcrowding, lack of an effective infection control programme and shortage of trained infection control providers. Nosocomial infection is a major public health problem throughout the world. WHO has described it one of the major infectious diseases having huge economic impact. It is estimated that at any point of time more than 1.4 million people are suffering from Hospital Acquired Infections in the world. The world over, approximately 88,000 people will die with these infections. Each year, hundreds of millions of patients around the world are affected by health care-associated infections (HAIs).⁴

Hospital acquired infection can be transmitted between hospitalized patients and HCWs including health-care students. Recently HCAI has become a major issue in health- care safety that concerns the safety

of patients and HCWs, but it still has not received priority attention in the medical curriculum in many developing and some developed countries. Consequently, patients as well as HCWs, especially medical and nursing students undergoing clinical training, are at high risk of contracting HCAI due generally to lack of awareness and skills.⁵

Hospital Acquired Infection results from delivery of health services in health care facility. Hospital Acquired Infection is defined as an infection occurring in a patient during the process of care in a hospital or other health care facility that was not manifested at time of admission. These infections often caused by multiresistant pathogen pathogens, take a heavy toll on patient and their families by causing illness, prolonged hospital stay, potential disability, excess costs and sometimes death.⁶

Hospital Acquired Infections are caused by viral, bacteria, and fungi pathogens. An important predisposing factor to hospital acquired infection is the use of instrumentation or devices for intubation, delivery of therapeutic agents, or drainage of body fluid during patient care as supportive measures. Infection control professionals collect data on device –related infections, i.e. catheter –associated urinary tract infections, vascular catheter – associated infections, and ventilator – associated pneumonias.⁷

Hospital Acquired Infections occur worldwide and affect both developed and resource-poor countries. Infections acquired in health care settings are among the major causes of death and increased morbidity among hospitalized patients. They are a significant burden both for the patient and for public health. A prevalence survey conducted under the auspices of WHO in 55 hospitals of 14 countries representing WHO Regions (Europe, Eastern Mediterranean, South-East Asia and Western Pacific) showed an average of 8.7% of hospital patients had Hospital Acquired Infections. At any time, over 1.4 million people

worldwide suffer from infectious complications acquired in hospital. The highest frequencies of Hospital Acquired Infections were reported from hospitals in the Eastern Mediterranean and South-East Asia Regions (11.8 and 10.0% respectively), with a prevalence of 7.7 and 9.0% respectively in the European and Western Pacific Regions.⁸

METHODS

After ethical approval of the dissertation committee of SGRR College of nursing Patel Nagar, Dehradun, the Knowledge study was carried out in SGRR College of Nursing Dehradun, India.

A quantitative research approach was used to assess the knowledge regarding Hospital acquired infection and its prevention. The research design selected for this study was pre- experimental one group pre-test post-test design. Non probability purposive sampling technique was used. This study was conducted at SGRRIM&HS College of Nursing at Patel Nagar, Dehradun studying on B.SC. Nursing first year students. The total Sample size was 60. The data was collected to assess the knowledge of 60 B.SC. Nursing first year students regarding Hospital Acquired Infection and its prevention by using planned teaching programme and questionnaire. The data were analyzed and interpreted by using descriptive and inferential statistics and chi-square test used to find out association between their socio demographic characteristics and knowledge.

The data entry was done by using MS-Excel SSPSS Program Version 10. For descriptive statistics, frequency, percentage, mean, and standard deviation were used. The chi-square test was used to find out association between knowledge and their selected demographic variables. The Independent t-test was used to compare the significance difference between the knowledge score of B. Sc. Nursing first year students with their selected demographic

variable. A p-value <0.05 was considered as statistically significant.

RESULTS

Table 1: Frequency and percentage distribution of samples according to demographic variables n=60

S.N.	Demographic Variables	Frequency(f)	Percentage (%)
1	Gender		
	Male	8	13%
	Female	52	87%
2	Age in Years		
	16-18	10	16.7%
	18-20	44	73.3%
	20-22	6	10.0%
3	Religion		
	Hindu	56	93.3%
	Muslim	2	3.3%
	Sikh	1	1.7%
	Christian	1	1.7%
4	Source of information regarding hospital acquired infection		
	Family Member	1	1.7%
	Friends	1	1.7%
	Teacher	47	78.3%
	Health professionals	11	18.3%
5	Have you attended any seminar /workshop regarding hospital acquired infection		
	Yes	36	60.0%
	No	24	40.0%

Table 1 explain that the maximum samples 52 (87%) were female, sample's age in years was 44(73%) was 18-20 years, 56(93.3%) samples from Hindu religion,

47(78.3%) sources of information got from teacher and 36(60%) samples had attended seminar/workshop yes.

Table 2: Mean and S.D. of pretest and posttest knowledge regarding hospital acquired infection and its prevention. n=60

Overall level of Knowledge score	Mean	SD	't' value
Pre test	12.70	3.993	5.971
Post test	16.95	3.873	

Table-2 explains that the mean pretest knowledge score was 12.70, SD 33.993 and mean posttest knowledge score was 16.95 SD 3.873, which shows that there is increase in the mean posttest knowledge. The difference between pretest and post test

score was statistically significant. Thus, it shows that planned teaching programme regarding hospital acquired infection and its prevention had been effective in increasing knowledge of B. Sc. Nursing first year students.

Table -3; Effectiveness of planned teaching program by comparing pre test and post test knowledge score regarding hospital acquired infection and its prevention n=60

Knowledge score	Pre test		Post Test	
	No of Sample(f)	Percentage (%)	No of Sample(f)	Percentage (%)
Adequate (≥61%-100%)	6	10.0%	19	31.7%
Inadequate (≤60%)	54	90.0%	41	68.3%
Total	60	100.0%	60	100.0%

Table 3 Shows that 6(10%) of students had adequate knowledge score and 54 (90%) had inadequate knowledge score in pre – test, after planned teaching programme

whereas 19(31.7%) had adequate knowledge and 41(68.3%) had inadequate knowledge regarding Hospital Acquired Infection and its prevention in posttest.

Table- 4: Association between Pretest knowledge score of B.Sc. (N) 1st Year Students with their Selected demographic variable on hospital acquired infection and its prevention. n=60

Characteristics	Demographic variable	Adequate (≥61%-100%)		Inadequate (≤60%)		Chi-square calculated value	Chi-square p Value	Level of significance
		f	%	f	%			
Gender	Male	2	3.3%	6	10.0%	2.308	0.178	NS
	Female	48	80.0%	4	6.7%			
Age groups in Years	16-18	1	1.7%	9	15.0%	0.337	0.845	NS
	18-20	4	6.7%	40	66.7%			
	20-22	1	1.7%	5	8.3%			
	22-24	0	0.0%	0	0.0%			
Religion	Hindu	5	8.3%	51	85.0%	3.849	0.278	NS
	Muslim	1	1.7%	1	1.7%			
	Sikh	1	1.7%	0	0.0%			
	Christian	1	1.7%	0	0.0%			

Table 4 shows that there is no significant association between knowledge level and their selected demographic variables as chi

-square value is lower than table value at 0.05 level of the significance.

Table- 5: Association between Posttest knowledge score of B.Sc. (N) 1st Year Students with their Selected demographic variable on hospital acquired infection and its prevention. n=60

Characteristics	Demographic variable	Adequate (≥61%-100%)		Inadequate (≤60%)		Chi-square p Value	Level of significance
		f	%	f	%		
Gender	Male	2	3.3%	6	10.0%	1.0	NS
	Female	17	28.3%	35	58.3%		
Age groups in Years	16-18	4	6.7%	6	10.0%	0.439	NS
	18-20	12	20.0%	32	53.3%		
	20-22	3	5.0%	3	5.0%		
	22-24	0	0.0%	0	0.0%		
Religion	Hindu	19	31.7%	37	61.7%	0.575	NS
	Muslim	0	0.0%	2	3.3%		
	Sikh	0	0.0%	1	1.7%		
	Christian	0	0.0%	1	1.7%		

The chi-square value table 5 implies that there is no significant association between knowledge level and their selected demographic variables as Chi Square value is lower than table value at 0.05 level of the significance.

DISCUSSION

In this study, the maximum samples 87% were female, sample's age in years 73% was 18-20 years, 93.3% samples from Hindu religion. About 10% of respondents had adequate knowledge score and 90% had inadequate knowledge score in pre -test, after planned teaching programme whereas 31.7% had adequate knowledge and 68.3% had inadequate knowledge regarding

Hospital Acquired Infection and its prevention in posttest. it is based on literature. This result also supported by, the study conducted by Nanjunde, Dr. S.N. (2020). In that study, revealed that maximum of nursing students had adequate knowledge on Hospital Acquired Infection and its prevention. The chi-square implies that there is no significant association between knowledge and selected socio demographic variables as the chi-square value is lower than the table value at 0.05 level of significance. This result also supports another study conducted by, Maheswari S., Muthamilselvi G. 2014, a study was conducted at Aarupadai Veedu Medical College and Hospital, Puducherry,

India among employees working at Aurapadaiveedu Medical college and Hospital Puducherry, assess the effectiveness of structure teaching program Universal Precautions. The study found to be Universal Precautions are simple standards of infection control, in which the comparison of pre-test and post-test of knowledge level to determine the effectiveness of structured teaching program. It shows that over all knowledge post- test mean value 699 and means percentage 93% are higher than the pre-test the mean value 319 and mean percentage 51%. The obtained t value of overall knowledge score 48.148 is greater than the table value at 0.05 level of significance.

CONCLUSION

ICU, HCWS report suboptimal levels of HAI and its prevention adherence. This finding in high-risk areas is particularly concerning given that it likely over estimate actual practice. Improving HAI control will likely require closing knowledge gaps in hospital infection control practice.

The present study also found that there was significant increase in posttest knowledge regarding prevention of Nosocomial infection among B.Sc. Nursing first year students. The planned teaching was significantly effective in increasing the knowledge of the B.Sc. Nursing first year students.

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