



## Effectiveness of a SIM on Prevention of the Hospital Acquired Infection in Delhi-Ncr

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### KEYWORDS

Hospital Acquired Infection, SIM, Knowledge, Infection Control Protocols

### ABSTRACT:

#### INTRODUCTION

Hospital Acquired Infection (HAI) is the biggest challenge being faced by the health care industry today. At any given moment nearly 5-10% of patients admitted to hospital suffer from HAI, resulting in millions of deaths and huge burden on the economy that can range from 5-70% of health care budget in various countries worldwide as found by WHO prevalence survey study conducted in 55 hospitals of 14 countries. The risk of infection increases by 2-20% in developing countries and almost half of these infections can be prevented by Infection Control Protocols

#### METHODOLOGY

A total no. of 60 subjects were chosen for the study. The instrument used to generate necessary data were structured questionnaire for knowledge assessment. The research design selected for the study was pre-experimental research design. It consists of 8 questions in the demographic data and 20 questions in knowledge assessment. The study was conducted at Prakash Institute of Physiotherapy Rehabilitation and Allied Medical Sciences, Greater Noida.

#### RESULTS

In the present study the researcher analysed that 10(16.7%) students have good knowledge, 46(76.7%) have average knowledge, 4(6.7%) have poor knowledge, whereas none of students have excellent knowledge regarding prevention of Hospital Acquired Infections. The maximum score of knowledge is 17 and minimum was 5. Total mean score of knowledge is 59.10; mean %= 11.82%; median= 12% and Standard Deviation= 2.825. 40(66.7%) of the subjects were between 15-20 years of age. Out of 60 students 26 (43.3%) students were male and 34(56.7%) were female. Majority of the students 42(70%) were Hindu. 17(28.3%) lives in joint family and 43(28%) in nuclear family. Majority of the students 38(63.3%) students have knowledge regarding prevention of hospital acquired infection and 22(36.7%) students do not have knowledge regarding HAI. Only one demographic variable i.e. educational status of parents ( $p < 0.033$ ) showed highly significant association with the level of knowledge.



## INTRODUCTION

*“Treatment without prevention is simply unsustainable”*

### - Bill Gates

Hospital Acquired Infection is an infection occurring in a patient in a hospital or other healthcare facility in whom the infection was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among staff of the facility.<sup>1,2</sup>

Hospital Acquired Infection (HAI) is the biggest challenge being faced by the health care industry today. At any given moment nearly 5-10% of patients admitted to hospital suffer from HAI, resulting in millions of deaths and huge burden on the economy that can range from 5-70% of health care budget in various countries worldwide as found by WHO prevalence survey study conducted in 55 hospitals of 14 countries<sup>3</sup>. Thus, spread of infection serves as a major source of worry for managers in health care practice<sup>4</sup>.

According to **Robert**, acquisition of a Hospital Acquired Infection can prolong duration of hospitalization, increase the costs of health care, and place a serious economic burden on patients and their families. This scenario should alert clinical instructors and supervisors to the need to pay adequate attention to imparting knowledge to students throughout their training period about measures to prevent nosocomial infections<sup>6</sup>.

Medical students, the future health care professionals are not well prepared to prevent infections as they have less knowledge and skills. Nursing student should be able to do the caring of patients after learning the principles of standard precaution, effective training is essential to ensure that these concepts about standard precautions are understood and put into practice wherever health care is provided<sup>7</sup>.

The WHO study, and others, has also shown that the highest prevalence of Hospital Acquired Infections occurs in intensive care units and in acute surgical and orthopaedic wards.<sup>8</sup> In India, Among Hospital-Acquired Infections 30to40% are urinary tract infections, 15 to 20% surgical wound infections, 15 to 20% lower respiratory tract infections and 5 to 15% blood stream infections.<sup>9</sup>

Most of the causative organisms are present in the external environment of the patient and are introduced

into the body through direct contact or by contact with contaminated materials. In medical scientific literature there is a lack of information about the newly emerging non-communicable diseases and risk factors in elderly patients<sup>10</sup>. In many instances hospital acquired infections could be prevented by practicing strict aseptic technique when giving care to the patients. Predominantly, it is on the hand of hospital staff as good hand hygiene could help reduce the economic burden and present distress caused by HAI, but there is evidence that it is infrequently and poorly performed by nurses.<sup>11</sup>

### 1.4 OBJECTIVES OF THE STUDY:

1. To assess the knowledge of students regarding prevention of HAI.
2. To evaluate the effectiveness of the self-instructional module
3. To find an association between pre-test knowledge scores with selected demographic variables

### 1.5 HYPOTHESIS

**H<sub>1</sub>**:- There will be a significant difference between mean pre and post-test knowledge scores of students regarding prevention of HAI

**H<sub>2</sub>**:- There will be a significant association between pre-test knowledge scores of students with selected demographic variables

### 1.9 INCLUSION CRITERIA

- Students of GNM 2<sup>nd</sup> year
- Students who are regular.
- Students who are ready for the assessment.

### 1.10 EXCLUSION CRITERIA

- Students who are not able to understand English.
- Students who are absent at the time of assessment

## METHODOLOGY

### RESEARCH APPROACH

Quantitative research approach was used for the study.

### RESEARCH DESIGN

The research design selected for this study is one group pre-test –intervention-- post-test.



O1 – Pre-test to assess the knowledge regarding prevention of hospital acquired infection



X – Self- instructional module is given on the knowledge regarding prevention of hospital acquired infection.

02- Post- test to re assess the knowledge regarding prevention of hospital acquire infection among GNM 2<sup>nd</sup> year students by structured knowledge questionnaire.

### SETTING OF THE STUDY

The study will be conducted at Prakash institute of Physiotherapy, Rehabilitation and Allied Medical Sciences, Greater Noida.

### SAMPLE

In the present study 60 students of GNM 2nd year will take as samples.

### SAMPLING TECHNIQUE

Purposive sampling technique will be applied for the selection of settings and subjects.

### SAMPLE SIZE

The final sampling consists of 60 samples. Each subject will get a code number; willingness to participate in the study will take into consideration and the answers are confidential.

**DATA COLLECTION TECHNIQUE**-a close ended questionnaire was prepared to assess the level of knowledge regarding prevention of hospital acquired infection.

### SELECTION AND DEVELOPMENT OF TOOL

On the basis of frame work develop for the purpose of the study; the questionnaire was planned for the knowledge assessment. It consists of 8 questions in the demographic questionnaire and 20 questions in the knowledge questionnaire.

### DESCRIPTION OF THE TOOL

The questionnaire (Appendix –A) used in present study consisted of 2 parts.

- **PART-A:** Questionnaire regarding demographic data
- **PART-B:** Knowledge Questionnaire

### PART-A: QUESTIONNAIRE REGARDING DEMOGRAPHIC DATA

This part consist of items for obtaining information about background variables i.e., Age, Gender, Religion, Family Type, area of Residence, Occupation of parents, Education of parents and any Previous knowledge regarding prevention of Hospital Acquired Infection.

### PART-B: KNOWLEDGE QUESTIONNAIRE

This part consist of 20 objective types of close ended questions i.e. multiple choice questions which assess the knowledge regarding prevention of hospital acquired infection. In this correct answers will score as '1' and incorrect answers will score as '0'. Range of score is 0 to 20.

### PROCEDURE OF DATA COLLECTION

Data collection will be done in the GNM 2nd year class of Prakash Institute of Physiotherapy Rehabilitation and Allied Medical Sciences on 28<sup>th</sup> Feb 2017

Permission for the study should be taken from the Head of department of nursing. Ethical Approval for the study will be obtained from higher authority. A total of 60 subjects will be chosen for the study. All the subjects will be explained about the purpose of the study and informed written consent will take from them. Data will be collected as per the plan.

### PLAN FOR DATA ANALYSIS

It was planned to analyse the data using descriptive and inferential statistics. Calculation will be carried out manually, using a calculator and with the help of Microsoft Excel.

The following plan for data analysis was developed:

- Frequency and percentage distribution of subjects by their demographic characteristics.
- The collected data will be coded and transformed to master sheet for statistical analysis.
- Mean median and standard deviation for aspect-wise and total scores of the nursing students will be computed.
- The analysed data will be presented in the form of tables, graphs and other figures.

### DATA ANALYSIS AND INTERPRETATION

#### SECTION –I

- Frequency and percentage distribution of the subject.
- Descriptive score according to Demographic variables. (PRE-POST TEST SCORE)
- Descriptive statistics of the knowledge level score which includes excellent knowledge, good knowledge, average knowledge, poor knowledge.

#### SECTION-II

- Effectiveness of self-instructional module on the knowledge level of participants

#### SECTION-III



- Association between knowledge score of the subject with the selected demographic variable. **SECTION-I.**

**TABLE-1: Frequency and percentage distribution of the subject.**

S.NO			FREQUENCY	PERCENTAGE
1	AGE	15-20years	40	66.7%
		21-25	18	30.0%
		26-30	2	3.3%
		31-above	00	00%
2	GENDER	Male	26	43.3%
		Female	34	56.7%
3	RELIGION	Hindu	42	70%
		Muslim	8	13.3%
		Sikh	8	13.3%
		Christian	2	3.3%
4	AREA OF RESIDENCE:	Urban	28	46.7%
		Sub-urban	13	21.7%
		Rural	19	31.7%
5	OCCUPATION OF PARENTS :	Joint family	17	28.3%
		Nuclear family	43	71.7%
6	EDUCATIONAL STATUS OF PARENTS:	Primary	14	23.3%
		Secondary	5	8.3%
		Intermediate	25	41.7%
		Graduation	15	25.0%
		Post-graduation	1	1.7%
7	PREVIOUS KNOWLEDGE	YES	38	63.3%
		NO	22	36.7%

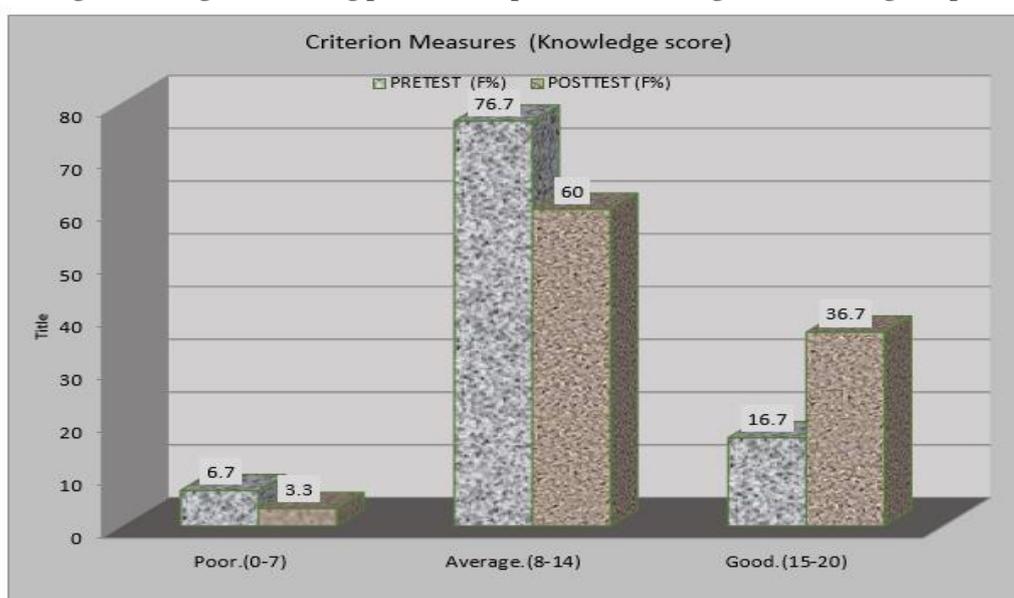
**TABLE-2 Descriptive score according to Demographic variables. (PRE-POST TEST SCORE)**

Variables	Opts	N	PRETEST Scores		POSTTEST	
			Mean	SD	Mean	SD
Gender :	Male	26	12.58	2.82	13.19	2.04
	Female	34	11.24	2.73	13.15	2.91
Age :	15-20	40	11.85	3.13	13.40	2.19
	21-25	18	11.72	1.84	13.06	3.10
	26-30	2	12.00	5.66	9.50	2.12
	31 and Above	0				
Area of Residence:	Urban	28	12.29	2.57	13.86	2.68
	Sub Urban	13	11.77	3.19	12.92	2.75
	Rural	19	11.16	2.95	12.32	2.00
Occupation of Parents :	Private employee	18	10.78	2.90	13.06	2.55



	Government employee	10	13.20	2.30	12.40	2.22
	Self employed	27	11.96	2.90	13.33	2.80
	Unemployed	5	12.00	2.35	14.20	1.79
Educational Status of Parents:	Primary education	14	11.43	3.18	14.14	1.70
	Secondary education	5	12.40	2.88	14.00	3.67
	Intermediate	25	11.72	2.57	12.88	2.49
	Graduate	15	12.47	2.85	12.53	2.90
	Post graduate	1	7.00		12.00	
	No formal education	0				
Religion :	Hindu	42	11.69	2.75	13.45	2.59
	Muslim	8	13.50	2.20	13.25	1.49
	Sikh	8	10.63	3.38	12.25	3.06
	Christian	2	12.50	3.54	10.50	2.12
	Others	0				
Previous Knowledge Regarding HAI	Yes	38	11.74	2.72	12.87	2.79
	No	22	11.95	3.06	13.68	2.03
Type of Family:	Nuclear	43	11.77	3.05	13.16	2.30
	Joint	17	11.94	2.22	13.18	3.19

Figure 1:-diagram showing pre-test and post-test knowledge scores among sample.





## SECTION-II

Effectiveness of self-instructional module on the knowledge level of participants

**Table -3** The table showing Comparison of Pre-Test and Post-Test knowledge Scores among the sample.

N=60								
Paired T Test	Mean±S.D.	Mean%	Range	Mean Diff.	Paired Test	T	P value	Table Value at 0.05
PRETEST KNOWLEDGE	11.82±2.825	59.10	5-17					
POSTTEST KNOWLEDGE	13.17±2.552	65.80	6-18	1.350	2.561 *Sig		0.0130	2.00

\*\* Significance Level 0.05 Maximum=20 Minimum=0

The above table-17 shows the PRETEST test range was 5-17, mean 11.82 standard deviation was 2.825 mean percentages was 59.1 % and the POSTTEST test range was 6-18, mean 13.17 standard deviation was 2.552 and mean percentage was 65.8%.

The data Presented in Table-17 shows that the mean POST-TEST-test Knowledge score (13.17) was higher than the mean PRETEST-test Knowledge score (11.82). The calculated' value (2.561 \*Sig) was greater than the table value (t = 2.001) at 0.05 level of significance. Hypothesis H1 was accepted Hence it can

be inferred that the SIM was effective in increasing the Knowledge

## SECTION- III

**ASSOCIATION BETWEEN THE DEMOGRAPHIC VARIABLES AND KNOWLEDGE SCORES**

Association Of Pre-test Knowledge Scores Of With Selected Socio-Demographic Variables.									
Variables	Opts	Good	Average	Poor	Chi Test	P Value	Df	Table Value	Result
Gender :	Male	7	18	1	3.774	0.151	2	5.991	Not Significant
	Female	3	28	3					
Age :	15-20	8	28	4	6.093	0.192	4	9.488	Not Significant
	21-25	1	17	0					
	26-30	1	1	0					
	31 and Above	0	0	0					
Area of Residence:	Urban	5	22	1	0.928	0.920	4	9.488	Not Significant
	Sub Urban	2	10	1					
	Rural	3	14	2					
Occupation of Parents :	Private employee	1	15	2	7.890	0.246	6	12.592	Not Significant
	Government employee	4	6	0					
	Self employed	5	20	2					



	Unemployed	0	5	0					
Educational Status of Parents:	Primary education	1	12	1	16.695	0.033	8	15.507	Significant
	Secondary education	1	4	0					
	Intermediate	4	20	1					
	Graduate	4	10	1					
	Post graduate	0	0	1					
No formal education	0	0	0						
Religion :	Hindu	5	34	3	5.659	0.462	6	12.592	Not Significant
	Muslim	3	5	0					
	Sikh	1	6	1					
	Christian	1	1	0					
	Others	0	0	0					
Previous Knowledge Regarding HAI	Yes	6	30	2	0.424	0.809	2	5.991	Not Significant
	No	4	16	2					
Type of Family:	Nuclear	9	31	3	2.091	0.351	2	5.991	Not Significant
	Joint	1	15	1					
	Extended	0	0	0					

**Table-4** shows that the association between the level of score and socio demographic variable. Chi-square test used to associate the level of knowledge and selected demographic variables. The Chi-square value shows that there is significance association between the score level and demographic variable (**educational status of parents**). There is no significance association between the level of scores and other demographic variables (**age, gender, area of residence, religion, occupation of parents, family type, previous knowledge**) The calculated chi-square values were less than the table value at the 0.05 level of significance.

#### FINDINGS RELATED TO DEMOGRAPHIC VARIABLES

- Majority of the students 40(66.7%) students are from age group of 15-20 years.
- Subjects according to the gender (26) 43.3% were male and (34)56.7% were female.
- Majority of the students 42(70%) students were Hindu.

- Majority 28(46.7%) were belong to urban area,13(21.7%) were from sub-urban area, 19(31.7%) were belong to rural area.
- According to the occupation of student's parents. Maximum no. i.e. 18(30.0%) are from private job, 10(16.7) are from government job.
- Maximum no. i.e. 14(23.3%) are from primary education, 5(8.3%) are from secondary education, 25(41.7%) are graduated, 1(1.7%) are post graduated and (00%) are others.
- Majority 17(28.3%) were belong to joint family 43(71.7%) were from nuclear family.
- Majority 38(63.3%) have previous knowledge, 22(36.7%) do not have any previous knowledge.

#### FINDINGS RELATED TO KNOWLEDGE REGARDING PREVENTION OF HAI.

In the present study the researcher analyzed that 10(16.7%) students have good knowledge, 46(76.7%) have average knowledge, 4(6.7%) have poor knowledge, whereas none of students have excellent knowledge regarding prevention of Hospital Acquired Infections. The maximum score of knowledge is 17 and



minimum was 5. Total mean score of knowledge is 59.10; mean %= 11.82%; median= 12% and Standard Deviation= 2.825

There was significant relationship between knowledge and selected factor educational status of parents

There was no significant relationship between knowledge and selected factors like Age, Gender, Educational status of parents, Occupation of parents, Previous knowledge regarding prevention of Hospital Acquired Infection

## **DISCUSSIONS**

### **1. The first objective is to assess the knowledge of students regarding prevention of HAI.**

In the present study the researcher analyzed that 10(16.7%) students have good knowledge, 46(76.7%) have average knowledge, 4(6.7%) have poor knowledge, whereas none of students have excellent knowledge regarding prevention of Hospital Acquired Infections.

The maximum score of knowledge is 17 and minimum was 5. Total mean score of knowledge is 59.10; mean %= 11.82%; median= 12% and Standard Deviation= 2.825.

### **2. The second objective is to evaluate the effectiveness of the self instructional module.**

The effectiveness of the self instructional module , that mean percentage is:

PRE-TEST knowledge score is 59.08%.

In the POST-TEST test mean percentage knowledge score is 65.83%.

The mean difference percentage is 6.75%.

### **3. The third objective is to find an association between pre-test knowledge scores with selected demographic variables**

Out of all the mentioned variables only one variable i.e. educational status of parents ( $p < 0.03$ ) showed highly significant association with the level of knowledge. Whereas age, gender, religion, family type, area of residence, occupation of parents and previous knowledge are not significant with the level of knowledge ( $p < 0.05$ ). Hence the research hypothesis stated "There will be significant association between knowledge score with selected demographic variables" was partially accepted.

## **CONCLUSIONS**

Maximum level of knowledge score was 17 and minimum was 5. Findings indicate that the students

have average level of knowledge regarding prevention of Hospital acquired infection. Only one demographic variable i.e. educational status of parents ( $p < 0.033$ ) showed highly significant association with the level of knowledge. Whereas age, gender, religion, family type, area of residence, occupation of parents are and previous knowledge regarding prevention of hospital acquired infection are not significant with the level of knowledge ( $p < 0.05$ ).

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