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A Study to Assess the Effectiveness of Information Booklet regarding the Knowledge and Practice of Staff Nurses to Prevent and Control Nosocomial Infection in Pediatric Unit in selected Hospitals, Dehradun, Uttarakhand

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Abstract: ***Nosocomial infection is frequent, complication affecting hospitalized patients after the admission within 72 hours. Now a day's students are taking clinical experience from various health care setting globally more than 1.4 million people suffering from the nosocomial infection complications. In India the rate of nosocomial infection in year 2010-2011 is 38.7% of hospitalized patient. Nosocomial infections are also called Hospital acquired infections, developing in the patients after admission to hospital, which were neither present nor in incubation at the time of hospitalization. Such infections may manifest during their stay in hospital or, sometimes, after the patient is discharged. Patient in hospital are likely to get sick due to a new variety of microorganisms responsible for wide spectrum of hospital infection. So, hospital has increasingly become unsafe place for patient during their stay. Infection is a health hazard of great expense and significance affecting the final outcome of treatment. Objectives: 1. To assess the knowledge and practice of nurses regarding nosocomial infection. 2. To find out the effectiveness of information booklet distribution on knowledge and practice of nurses in pediatric unit by assessing pretest and post test scores. 3. To find out the association between knowledge and practice score of staff nurses regarding nosocomial infection and selected demographic variables. 4. To find out the correlation between the knowledge and practice score of staff nurses regarding nosocomial infection. Hypothesis: H_1- There is a significance difference between the knowledge and practice of staff nurses regarding prevention of nosocomial infection, before and after the distribution of information booklet. H_2 -There is a significant association between the knowledge and practice regarding Nosocomial Infection with their demographic variables. Research approach: A quantitative research approach was used. Research design: Pre- experimental one group pre-test & post- test research design. Setting: SMI Hospital Patel Nagar and CMI Hospital Dehradun. Sample size & technique: 40 Staff nurses Pediatric Unit in Selected Hospital by Convenient sampling Technique. Method of data collection and tool: Self develop structured questionnaire and checklist. Result: Major finding of the study revealed that Highest percentage of Staff nurses 57.5% was in the age group of 20-25 years, Highest percentage of staff nurses 55% was in the education, Highest percentage of Staff nurses designation was 52.5%. Highest percentage of staff nurses 55% were from work experience of staff, Highest percentage of staff nurses 100% belongs to urban area. Highest percentage of staff nurses 67.5% was in the working unit. Highest percentage of staff nurses 100% was having previous knowledge, Highest percentage of staff nurses 67.5% was having information from College. Pre-test analysis in response to knowledge questionnaires revealed that in Pre-test 2.5%of subject's adequate knowledge and in post test that was increased to 100%. Moderate knowledge score in pretest was 45% that was reduced to 0%. Inadequate knowledge score in pre test was 52.5% that was reduced to 0% in post test. There is significant difference between the pre and post-test scores of knowledge questionnaires was demonstrated by using paired "t" test and computed between pre-test and post-test knowledge score. The value of paired "t" test for knowledge score is 14.68 with the table value 2 at 0.05 level of significance was found to be highly significant relationship between pre-test and post-test scores. So in this study it was found that booklet information is effective in improving the knowledge of staff nurses regarding Nosocomial infection. The study proved that there was not significant association between pretest knowledge score and selected demographic variables Age, Education of staff, Designation of staff, Area of working, Working unit, Any previous knowledge, Sources of information at 0.05 level of significance. There is significant association between demographic variables Duration of work at 0.05 level of significance. Hence the research hypothesis H2 accepted. This study proved that there is significant association between knowledge scores with their selected demographic variables. Conclusion: Study revealed that in response to knowledge questionnaires in Pre-test 2.5% of subject's adequate knowledge and in post test that was increased to 100%. Moderate knowledge score in pretest was 45% that was reduced to 0%. Inadequate knowledge score in pre test was 52.5% that was reduced to 0% in post test. This indicate that booklet information are effective in improving knowledge of students.***

Keywords: Knowledge, Effectiveness, Information booklet, Practice, Staff Nurse, Prevent, Pediatric Unit, Nosocomial infection.

1. Introduction

Sneha Wairagada 2017 Good health depends in a part on a safe environment. Clients in all health settings are at risk for acquiring infections because of lower resistance to infectious micro-organisms, increased exposure to numbers and types of disease causing micro-organisms and invasive procedures.

WHO 2017; Nosocomial infection is also called as 'Hospital Acquired- Infection', it is derived from the Greek word 'Nosocomeion' meaning hospital or hospitalization. It can be defined as an infection whose development is favoured by a hospital environment, such as one acquired by a patient during a hospital visit or one developing among hospital staff. Such infections include fungal, viral and bacterial infections and are aggravated by the reduced resistance of individual patients. Two factors contribute to the occurrence of nosocomial infections. First, concentration of virulent forms of different organisms in the hospital and second is the presence of patients with anatomical and physiological defects.

Dr. Ramanan Laxminarayan, September 22, 2011 "A large proportion of these hospital infections are easily preventable with increased hospital infection control, including stepping up hygiene practices, such as frequent hand-washing".

WHO 15 May 2017 Nosocomial infections are important contributors for morbidity and mortality. They became more important public health problem with increasing economic and human impact because of increasing numbers and crowding of people, more frequent impaired immunity due to age, illness, treatments, new microorganisms, increasing bacterial resistance to antibiotics. Nosocomial infections occur worldwide and affect both developed and developing countries. Infections acquired in health care settings are a significant burden both 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 Regions Europe, Eastern Mediterranean, South-East Asia and Western Pacific has showed an average of 8.7% of hospital patients had nosocomial infections. At any time, over 1.4 million people worldwide suffer from infectious complications acquired in hospital.

1.1 Need of the study

Dr. S.M. Kadri 2013 Nosocomial infections add to functional disability and emotional stress of the patient and may in some cases, lead to disabling conditions that reduce the quality of life. Nosocomial infections are also one of the leading causes of death. The Centres for Disease Control And Prevention has estimated roughly 1.7 million hospital-associated infections, from all types of bacteria cause or contribute to 99,000 deaths each year.

Vasudha Mukherjee 20 Jul 2001 Nosocomial infections occur in about 5-10 percent of hospital admissions worldwide. In India, the nosocomial infection rate is alarming and is estimated at about 30-35 percent of all hospital admissions. Nosocomial infections typically affect immune compromised patients due to factors like age, underlying diseases, medical or surgical treatments. Aging of the population and increasingly aggressive medical and therapeutic interventions, including implanted foreign bodies, organ transplantations, and xenotransplantation have created a plethora of vulnerable individuals. Another important factor is the poor state of government hospitals in India. The highest infection rates are in intensive care unit patients. Nosocomial infection rates in adult and pediatric ICU are approximately three times higher than other hospital wards.

Free-researches 2.6.2013 Nosocomial infections are commonly transmitted when hospital officials become complacent and personnel do not practice correct hygiene regularly. Also, increased use of outpatient treatment in recent decades means that a greater percentage of people who are hospitalized today are likely to be seriously ill with more weakened immune systems than in the past. Moreover, some medical procedures bypass the body's natural protective barriers.

Ayyat AA , et al 2000 conducted a study in Egypt to assess the knowledge and practice of staff and student nurses . A questionnaire is designed and distributed to all student nurses in the school and to all staff nurses working in the hospital .They used scoring system for data analysis. Result showed the overall scoring of Knowledge Attitude and Practice for the three items studied are below 80%, which means that they really need health education about these items. Nosocomial infections have received increasing attention in recent years and are believed to involve about 2 million clients per year. The most common settings where nosocomial infections develop are hospital surgical or medical intensive care units. Reports from the National Nosocomial Infection Surveillance System have revealed that the urinary tract, the respiratory tract, blood stream and wounds are the most common nosocomial infection sites. Nosocomial infections are most commonly transmitted by direct contact between health personnel and patient or from patient to patient.

1.2 Objectives

- To assess the knowledge and practice of nurses regarding nosocomial infection.
- To find out the effectiveness of information booklet distribution on knowledge and practice of nurses in pediatric unit by assessing pre-test and post test scores.
- To find out the association between knowledge and practice score of staff nurses regarding nosocomial infection and selected demographic variables.
- To find out the correlation between the knowledge and practice score of staff nurses regarding nosocomial infection.

1.3 Hypothesis

H_1- There is a significance difference between the knowledge and practice of staff nurses regarding prevention of Nosocomial infection, before and after the distribution of information booklet.

H_2 -There is a significant association between the knowledge and practice regarding Nosocomial Infection with their demographic variables.

1.4 Operational Definition

- **Knowledge**: It is a gaining information regarding Nosocomial infection.
- **Effectiveness:** It is a process which produces an intended result on knowledge and skills among staff nurses regarding Nosocomial Infection.
- **Information booklet:** It is a pre planned explanatory document which help in the learning process for nursing staff about Nosocomial Infection.
- **Practice**: It refers to the condition of being skilled through repeated exercise related to Nosocomial infection.
- **Staff Nurse**: The nurses who are working in Pediatric unit.
- **Prevent**: Stay away from Nosocomial infection.

- **Pediatric Unit**: The branch of medicine that deals with the medical care of infants, children, and adolescents.
- **Nosocomial infection**: An infection that is acquired at a hospital or other healthcare facility.
- Conceptual framework: Selected for this study was based on Simple System Theory as postulated by Ludwing Von Bertanlanffys 1968 and modified by J. W. Kenny and is called open system model.

2. Review of literature

Review of literature for the present study has been presented under following headings.

1) Studies related to incidence and prevalence of Nosocomial Infection.
2) Studies related to prevention of Nosocomial Infection.
3) Studies related to Structured Teaching on prevention of Nosocomial Infections.

3. Methodology

Research methodology is a way to systematically solve research problem. Research methodology includes steps, procedures and strategies for gathering and analyzing the data in a research investigation.

3.1 Research approach

A quantitative research approach was used for this study. The main goal is to assess or evaluate the success of the programme.

3.2 Research Design

Pre- experimental one group pre-test & post- test research design.

3.3 Sample size & technique

40 Staff nurses Pediatric Unit in Selected Hospital. And Convenient sampling Technique.

3.4 Method of data collection and tool

Self develop structured questionnaire and checklist

4. Data Analysis

The data was analyzed by descriptive and inferential statistics.

5. Result

Organization of finding

The data analysis were presented under the following headings:-

Section 1: Description of sample characteristics.

Section 2: Effectiveness of information booklet on Nosocomial Infection.

Section 3: Effectiveness of information booklet by comparing pre test and post test level of knowledge score regarding Nosocomial Infection among staff nurses.

Section 4: Association between pre-test scores with their selected demographic variables

Section 1: Description of sample characteristics

Table1: Frequency and percentage distribution of sample according to their selected demographic variables.

Section 2: Association between pre-test scores of information booklet with their selected demographic variables

Table 2: Association between pre-test knowledge score with their selected demographic variables.

Section 3: Effectiveness of information booklet on Nosocomial Infection.

Table 3: Frequency and percentage distribution of sample Pre-test and post-test response to information booklet on Nosocomial Infection of knowledge.

Table 4: Frequency and percentage distribution of sample Pre-test and post-test response to information booklet on Nosocomial Infection of practice.

Table 5: Mean, Standard Deviation and "t" value between the pre-test and post-test regarding Nosocomial Infection for knowledge.

Table 6: Mean, Standard Deviation and "t" value between the pre-test and post-test regarding Nosocomial Infection for practice.

Table 7: Correlation between post test knowledge and practice score regarding Nosocomial Infection.

Section 1: Description of sample characteristics

Table 1: Frequency and percentage distribution of sample according to their selected demographic variables, **N = 40**

S. No.	*Demographic Variables*	Frequency (f)	Percentage (%)
1	**Age (In Years)**		
	a) 20-25	23	57.5
	b) 26-30	16	40
	c) 31-35	1	2.5
	d) >36	0	0
2	**Education of Staff**		
	a) ANM	0	0
	b) GNM	22	55
	c) BSc Nursing	18	45
	d) MSc Nursing	0	0
3	**Designation of Staff**		
	a) Fresher	16	39.65
	b) Grade 1	3	7.5
	c) Grade 2	21	52.5
	d) Ward in charge	0	0
4	**Work Experience of Staff**		
	a) < then 1 Year	22	55
	b) 2 – 5 Year	17	42.5
	c) More than 5 Year	1	2.5
5	**Area of Working**		
	a) Urban	40	100
	b) Rural	0	0
6	**Working Unit**		
	a) General	27	67.5
	b) PICU	7	17.5

	c) NICU	6	15
	d) Emergency	0	0
7	**Any Previous Knowledge on Nosocomial Infection**		
	a) Yes	40	100
	b) No	0	0
8	**Source of Information Related to Nsocomial Information**		
	a) Television and newspaper	4	10
	b) College	27	67.5
	c) Internet	4	10
	d) Patents and relatives	5	12.5

Section 2: Association between pre-test scores of information booklet with their selected demographic variables

Table 2: Association between pre-test knowledge score with their selected demographic variables, **N=40**

S. No	*Demographic variables*	*Frequency*	*DF*	*Chi-Square value*	*Table Value*	*Level of association*
1	**Age (In Years)**					
	a) 20 - 25	23	6	3.82	12.59	#
	b) 26 – 30	16				
	c) 31 – 35	1				
	d) >36	0				
2	**Education of Staff**					
	a) ANM	0	6	3.16	12.59	#
	b) GNM	22				
	c) BSc Nursing	18				
	d) MSc Nursing	0				
3	**Designation of Staff**					
	a) Fresher	16	6	4.08	12.59	#
	b) Grade 1	3				
	c) Grade 2	21				
	d) Ward incharge	0				
4	**Work Experience of Staff**					
	a) < then 1 Year	22	4	9.83	9.49	*
	b) 2 – 5 Year	17				
	c) More than 5 Year	1				
5.	**Area of Working**					
	a) Urban	40	2	0	5.99	#
	b) Rural	0				
6	**Working Unit**					
	a) General	27	6	0.997	12.59	#
	b) PICU	7				
	c) NICU	6				
	d) Emergency	0				
7	**Any Previous Knowledge on Nosocomial Infection**					
	a) Yes	40	2	0	5.99	#
	b) No	0				
8	**Source of Information Related to Nsocomial Information**					
	a) Television and newspaper	4	6	7.46	12.59	#
	b) College	27				
	c) Internet	4				
	d) Patents and relatives	5				

***Significant at p<0.05 level**
 # Not significant at p<0.05

Table 7 present that there was not significant association between pretest knowledge score and selected demographic variables Age, Education of staff, Designation of staff, Area of working, Working unit, Any previous knowledge, Sources of information at 0.05 level of significance. There is significant association between demographic variables Duration of work at 0.05 level of significance.

Hence the research hypothesis H2 accepted.

Section 3: Effectiveness of information booklet on Nosocomial Infection.

Table 3: Frequency and percentage distribution of sample Pre-test and post-test response to information booklet on Nosocomial Infection of knowledge, **N=40**

	Adequate		*Moderate*		*Inadequate*	
	Frequency (f)	Percentage (%)	Frequency (f)	Frequency (f)	Percentage (%)	Frequency (f)
Pre Test	1	2.5%	18	45%	21	52.5%
Post Test	40	100%	0	0%	0	0%

Pre Test and Post Test

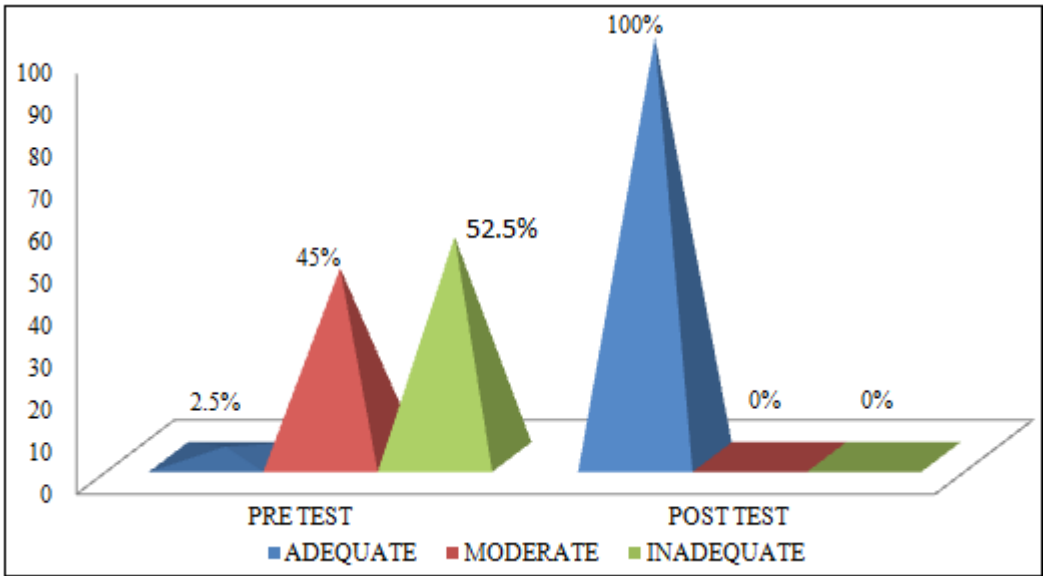


Table 4: Frequency and percentage distribution of sample Pre-test and post-test response to information booklet on Nosocomial Infection of practice, N=40

	Adequate		*Moderate*		*Inadequate*	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Pre Test	29	72.5%	11	27%	0	0%
Post Test	40	100%	0	0%	0	0%

Pre Test and Post Test

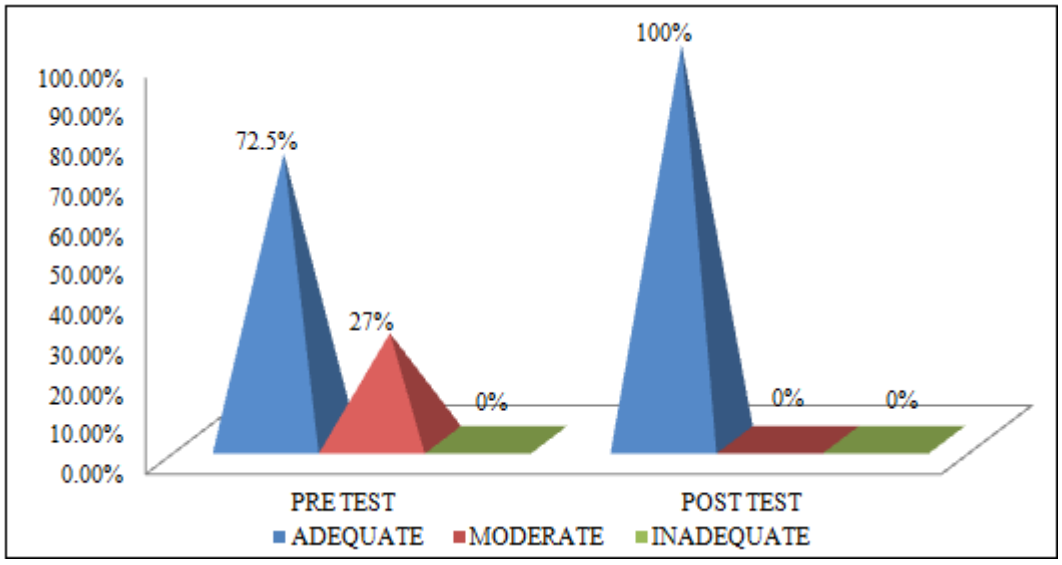


Table 5: Mean, Standard Deviation and "t" value between the pre-test and post-test regarding Nosocomial Infection for knowledge, N=40

MEAN AND S.D.

Level of Knowledge	*Mean*	*S.D*	*df*	*Calculated t Value*	*Table Value*	*Level of Significance*
Pre test	10.45	2.64	39	14.68	2.02	Significant
Post test	18.175	1.68				

"t" 0.05 = 2.02 p< 0.05

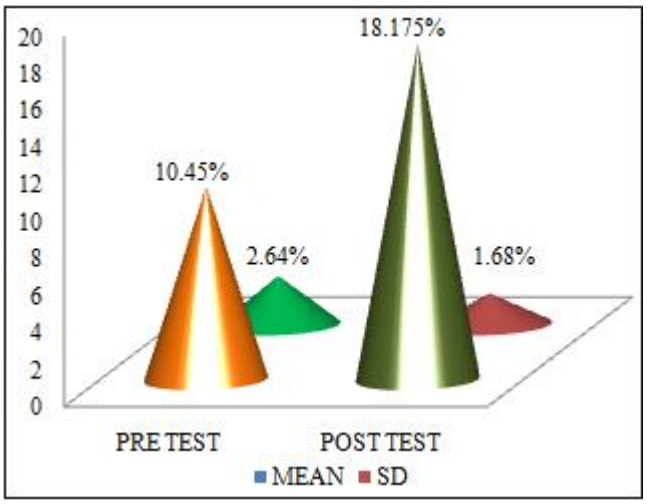


Table 6: Mean, Standard Deviation and "t" value between the pre-test and post-test regarding Nosocomial Infection for practice, N=40

Level of Knowledge	*Mean*	*S.D*	*df*	*Calculated t Value*	*Table Value*	*Level of Significance*
Pre test	8.1	0.82	39	9.45	2.02	Significant
Post test	9.57	0.5				

"t" 0.05 = 2.02 p< 0.05

MEAN AND S.D

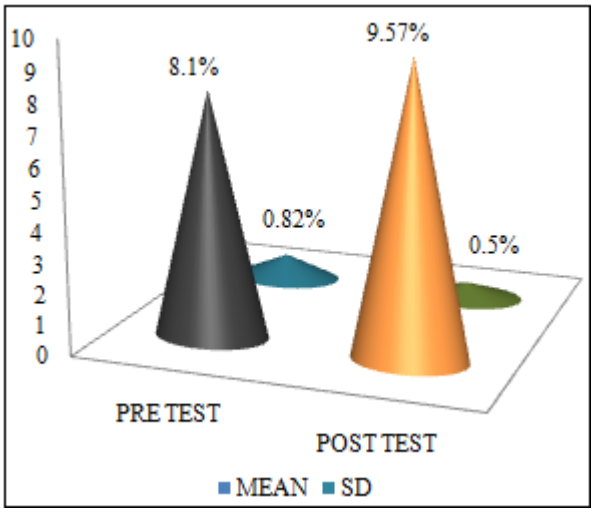
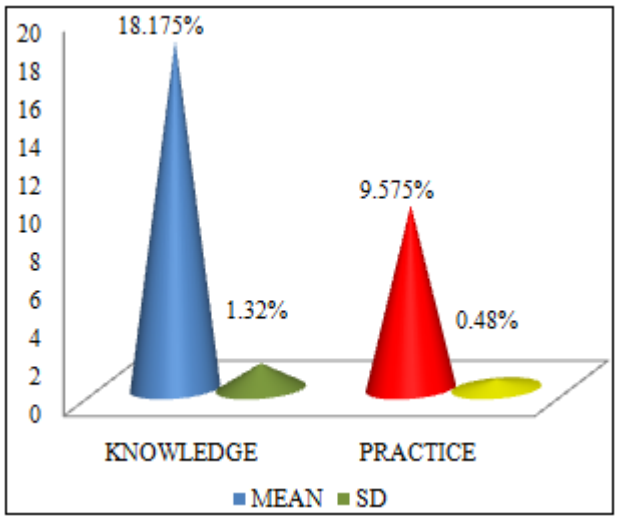


Table 7: Correlation between post test knowledge and practice score regarding Nosocomial Infection.

Level of Knowledge and Practice	*Mean*	*S.D*	df	Calculated t Value	Table Value	Level of Significance
Knowledge	18.175	1.32	39	43	2.02	Significant
Practice	9.575	0.48				

"t" (0.05) = 2.02, p< 0.05

Mean and S.D



6. Conclusion

On the basis of findings of the study the below said conclusion were drawn. It also brings out the limitations of the study in picture.

The knowledge score had decreased when assessed during pre-test, where as the knowledge score increased during post-test.

From the finding of the study it can be concluded that highest percentage of Staff nurses 57.5% was in the age group of 20-25 years. Highest percentage of staff nurses 55% of GNM was in the education of staff nurses. Highest percentage of Staff nurses designation was 52.5% in Grade 2. Highest percentage of staff nurses 55% were from work experience of staff in <1 then 1 year. Highest percentage of staff nurses 100% belongs to urban in area of working. Highest percentage of staff nurses 67.5% was in the working unit of General Ward. Highest percentage of staff nurses 100% of Yes was having any previous knowledge. Highest percentage of staff nurses 67.5% was having information from College in source of information.

"A Study to assess the effectiveness of information booklet regarding the knowledge and practice of staff nurses to prevent and control Nosocomial Infection in Pediatric Unit in selected Hospitals, Dehradun, Uttarakhand". The paired "t" test was computed between pre-test and post-test knowledge score. The value of paired "t" test for knowledge score is 14.68 with the table value 2 at 0.05 level of significance was found to be highly significant relationship between pre-test and post-test scores. So in this study it was found that effectiveness of information booklet is influensive in improving the knowledge of staff nurses regarding Nosocomial Infection.

This study proved that there is significant association between knowledge scores with their selected demographic variables.

7. Recommendations

- A large scale study can be conducted on larger samples to generalize the findings.

- A comparative study can be conducted to assess the knowledge regarding prevalence of Nosocomial Infection Staff nurses.
- A comparative study can be conducted among urban and rural hospital regarding Nosocomial infection.
- An experimental study can be conducted to assess the effectiveness of information booklet regarding the knowledge and practice of staff nurses to prevent and control Nosocomial Infection.

Based on the objectives of the study, a knowledge questionnaire was used to assess the effectiveness of information booklet. It was considered to be an appropriate instrument.

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