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A Quasi Experimental Study to Assess the Effectiveness of Protocol on Standard Precautions for Prevention of Infection in Terms of Knowledge among Staff Nurses Working in Intensive Care Units of HSK Hospital and Research Centre Bagalkot

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Abstract: ***Background of the study: Microbes are everywhere in the biosphere and their presence in variably affects the environment they are growing in. The effects of microbes on their habitats can be beneficial or harmful or in apparent with regards to human affairs. A microbe, which is capable of causing infectious disease in human being, is called a pathogen. Four groups of microbes contain pathogens: Bacteria, Fungai, Protozoa and Viruses. Pathogens are the cause of infectious disease (Madison, 2006). Objectives: 1) To assess the knowledge on standard precautions for prevention of infection among staff nurses working in intensive care units. 2) To evaluate the effectiveness of protocol on standard precautions for prevention of infection by comparing pre test and post test knowledge scores of staff nurses. 3) To associate the pretest knowledge of standard precautions for prevention of infection among staff nurses working in intensive care units with their selected socio demographic variables. Methodology: The Quasi-experimental, i. e. one group pre-test post test without control group design was adopted for the present study. The sample includes 30 staff nurses working in intensive care units of B. V. V. Sangha's, hospital Navanagar Bagalkot. Using probability simple random sampling technique. Data collected using structured knowledge questionnaire & analysed using descriptive and inferential statistics. Results: The mean percentage of knowledge scores of the staff nurses in the pre-test was 47.02% with mean and SD (16.93±3.42), whereas the mean percentage of knowledge scores in post-test was 89.80% with mean and SD (32.33±1.03). The paired 't' test showed that there is no significant difference in the knowledge of staff nurses regarding standard precaution for prevention of hospital infection after the administration of STP. Findings reveal that there is no significant association between post-test knowledge scores of the staff nurses and socio demographic. Conclusion: A significant difference was found between the pre-test and post-test knowledge scores of staff nurses. The study showed that STP was effective in improving the knowledge of staff nurses on standard precaution for prevention of hospital infection.***

Keywords: Effectiveness; Staff nurses; Standard precaution for prevention of hospital infection

1. Introduction

Infection is the invasion of the body by pathogenic microorganism that invades the issue and overcome the patient's resistance and multiplies. In healthcare settings the patients may be infected by their own organism called as endogenous infection or may be by organism from other people called as exogenous infection[2.] Hospital infections are defined as an infection acquired during or as a result of hospitalizations. The patients neither have these infections not are incubating these infection on admission. Generally a patient who develops an infection after 48 hours of hospital admission is considered to have a nosocomial infection[3].

Infection occurs in hospitals and health post because patients who visit these facilities have often many different illness; while in the hospital or health post they may transmit there organisms through direct or indirect contact. In a healthcare setting, a protocol, also called a medical guideline is a set of instructions which describe a process to be followed to investigate a particular set of finding in a patient or the method which should be followed to control of a certain disease[4].

Standard Precautions (or Universal Precautions) are work practices that are required for the basic level of Infection Control. They include Good hygiene practices, frequent hand washing, the appropriate use of gloves, the use of other personal protective equipment, such as eye protection, masks, aprons, gowns and overalls[10.] Transmission usually occurs via healthcare workers, patients, hospital equipment, or interventional procedures. The most common sites of infection are the blood stream, lungs, urinary tract, and surgical wounds. The main aim of infection control nurse is to help prevent patient infections in hospitals and clinics and to instruct other nurses and health care staff on proper sanitation procedures; they also study patient's bacteria to identify any infections that may have possibly resulted from a patient's health care[19]. There is a need to develop a system of continuous education for all the categories of staff. In

order to reduce the incidence of hospital infections, compliance with interventions are mandatory.

Problem Statement

"A Study To Assess The Effectiveness of Protocol on Standard Precautions For Prevention of Infection In Terms of Knowledge Among Staff Nurses Working In Intensive Care Units of B. V. V. Sangha's HSK Hospital And Research Centre At Bagalkot ".

Objectives of the Study

1) To assess the knowledge on standard precautions for prevention of infection among staff nurses working in intensive care units of B. V. V. Sangha's HSK Hospital and Research Centre at Bagalkot ".
2) To evaluate the effectiveness of protocol on standard precautions for prevention of infection by comparing pre test and post test knowledge scores of staff nurses.
3) To associate the pretest knowledge of standard precautions for prevention of infection among staff nurses working in intensive care units with their selected socio demographic variables.

Hypothesis:

H1: There will be significant difference between pre test and post test knowledge score of staff nurses of intensive care units regarding prevention of infection.
H2: There will be significant association between posttest knowledge scores of staff nurses with their selected socio demographical variables.

2. Methodology

- **Research approach:** The evaluative research approach.
- **Research design:** Quasi-experimental one group pre-test, post-test without control group design.
- Setting of the study: Intensive care units of HSK Hospital and research center, Bagalkot.

Research Variables

- **Dependent Variable:**
  Knowledge of staff nurses regarding standard precautions for prevention of hospital infection.
- **Independent Variable**
  Structured teaching programme.
- **Socio-demographic Variables.**
  Age, sex, religion, Qualification, income, years of experience in ICU, attended any CNE on hospital infection programme.
- **Accessible population**: staff nurses who are working in the Intensive care units of HSK Hospital and research center, Bagalkot.
- **Sample size:** The sample size consists of 30 staff nurses working in intensive care units of Shri B. V. V Sangha's HSK Hospital Navanagar, Bagalkot.
- **Sampling Technique:** Simple random sampling technique was used for the present study.

Criteria for Sample Selection

1) **Inclusion Criteria**
   - This study will include staff nurses who are willing to participate in this study.
   - This study will include staff nurses who are available at the time of data collection.
2) **Exclusion Criteria**
   - Study excludes the Staff Nurses who are not able to co-operate throughout the period of study.
   - The study excludes Staff Nurses who are not willing to give written consent.

Development and Description of the Tool:

Part I: Socio demographic variables: Consists of items seeking information regarding socio-demographic characteristics of staff nurses such as, Age, Gender, Religion, Qualification, Year of working experience, Number of staff nurses in each ward you teach, no of working hours, have you suffered from any hospital infection.

Part II: Structured knowledge questionnaire: Consists of 35 items pertaining to knowledge regarding hospital infection and its Prevention among staff nurses. It has four sections as mentioned below.

Section A: Consists of 10 questions on General questions about Questionnaires on General Information Related to Infection Control
Section B: Consists of 6 questions On Hand Washing.
Section C: Consists of 12 questions On Bio Medical Waste.
Section D: Consists of 7 questions on Personal Protective Equipments.

Scoring System:

1-7-Very poor knowledge
8-14-Poor knowledge
15-21-Average knowledge
22-28-Good knowledge
29-35-Very good knowledge

Reliability of the Tool

The reliability of the instrument was established by administering the tool to 4 staff nurses working intensive care units of Dhanush hospital, Bagalkot. The coefficient of internal consistency was completed for structured knowledge questionnaire using split half technique. The reliability of the test was found out by using Karl Pearson's co-efficient of correlation formula. The reliability co-efficient obtained was 0.87 which indicates that the tool is reliable.

Data Collection Procedure

Written permission was obtained from the college principal after explaining the nature and importance of the study. The data was collected. The investigator approached Dean of the Hospital, according to the timing given. Prior to the data collection, the investigator familiarized himself with the subjects and explained the purpose of the study to them. He requested consent and full co-operation from participants and assured them of the confidentiality of their responses.

Pretest knowledge questionnaire was administered. Then STP was administered on the same day after one hour of pre-test, which took about 45 minutes. On the 8th day after the administration of STP the post test was conducted by the

investigator using the same questionnaire at the same place. The data collected was then complied for data analysis.

Plan for Data Analysis

The data obtained was analyzed in terms of achieving the objectives of the study using descriptive and inferential statistics.

Ethical Consideration

The present study was accepted from institutional ethical committee. Assurance was given to the subjects that anonymity of each individual would be maintained. Clearance certificate was submitted with synopsis of this study to Rajiv Gandhi University of Health Sciences, Bangalore.

3. Results

Section I: Description of socio-demographic characteristics of sample.

This section deals with the description of sample characteristics and is explained in frequency and percentage and presented in Table 1.

Frequency and percentage distribution of socio-demographic characteristics of sample, N=30

Sr no.	Variables	Frequency	Percentage
1.	**Age in years**		
	20-25 years	05	16.66%
	26-30 years	15	50%
	31-35 years	06	20%
	36 years and above	04	13.33%
2.	**GENDER**		
	Male	09	30%
	Female	21	70%
3.	**RELIGION**		
	Hindu	21	70%
	Muslim	05	16.66%
	Christian	03	10%
	Others	01	3.33%
4.	**EDUCATION**		
	GNM	07	23.33%
	BSC	08	26.66%
	PBBSC	13	43.33%
	MSC	02	6.66%
5.	**Experience**		
	1-5 years	17	56.66%
	6-10 years	09	30%
	11-15 years	03	10%
	16 years and above	01	3.33%
6.	**Area of work**		
	MICU	13	43.33%
	ICU	05	16.66%
	SICU	05	16.66%
	CCU	07	23.33%
7.	**Have you attended any conference on standard precaution for prevention of hospital infection**		
	Yes	11	36.66%
	No	19	63.33%
8.	**Source of information**		
	Mass media	06	20%
	Health personnel	18	60%
	Friends or relatives	06	20%

The above table reveals that Majority 50 % of the Staff Nurse was between the age group of 26-30years.70% of staff nurses were females and 30% of them were males. Majority of staff nurses i. e, 70% were belonging to Hindu religion, 43.33% had completed Post Basic Bsc Nursing. Majority of 56.66% of staff nurses had 1-5 year of experience.40%of staff nurses were working in MICU. (63.33%) of staff nurses had not attended conference on standard precaution for prevention of hospital infection.80%of staff nurses had gained information through Health care personnel.

Section II: Assessment of pre-test knowledge score of the staff nurses regarding standard precaution for prevention of hospital infection.

Level of knowledge	Range of scores	Number of respondents	Percentage (%)
Very poor	0-8	0	0.0
Poor	9-16	0	0.0
Average	17-24	9	30%
Good	25-32	19	63%
Very good	33-40	2	7%
Total		30	100

Area wise mean, SD and mean percentage of pre-test knowledge scores of staff nurses.

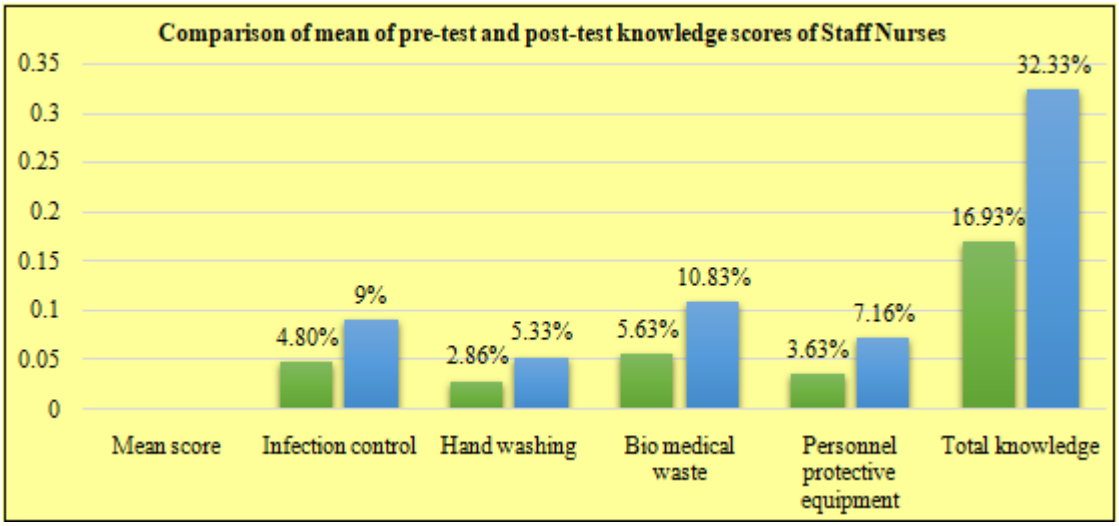
Section III: Evaluation of the Effectiveness of the STP on standard precaution for prevention of hospital infection.

Knowledge area	Max. score	Mean	SD	Mean %
General questions on infection control	09	4.8	1.04	48%
Hand washing	06	2.86	0.88	47.66%
Bio medical waste	12	5.63	1.49	46.91%
Personnel protective equipment	08	3.63	1.13	45.37%
Total	35	16.93	3.42	47.02%

Comparison of Day 1 pre test with Day 8 post test

Knowledge area	Test	Mean	SD	Mean Diff.	SD Diff.	Paired t-value	Table value
General questions on infection control	Pre test	4.8	1.04	4.2	0.97	17.74*	2.05
	Post test	9	0.77				
Hand washing	Pre test	2.86	0.88	2.46	1.08	15.78*	2.05
	Post test	5.33	0.59				
Bio medical waste	Pre test	5.63	1.49	5.2	1.77	15.67*	2.05
	Post test	10.83	1.03				
Personnel protective equipment	Pre test	3.63	1.13	3.53	1.54	13.16*	2.05
	Post test	7.16	0.85				
Total	Pre test	16.93	3.42	15.03	2.38	23.57	2.05
	Post test	32.33	1.03				

The calculated values were much higher than table value (2.05). Hence the H_1 stated is accepted. Findings reveal that the difference between mean pre-test (16.93±32.33) and post-test (34.24±1.03) knowledge scores of staff nurses found to be statistically significant at 0.05 level of significance [t= 23.57, p<0.05].



Section IV: Association between the pre-test knowledge scores of staff nurses regarding standard precaution for prevention of hospital infection with socio demographic variables.

This section deals with the association of knowledge scores with selected demographic variables of the study participants. Chi square test was used to find out the association. N= 30

Sr. No	Socio-demographic variables	Df	Chi-square value	Table value	Level of significance
1.	Age	1	1.35	3.84	P>0.05 NS
2.	Gender	1	3.76	3.84	P>0.05 NS
3.	Religion	1	0.288	3.84	P>0.05 NS
4.	Qualification	1	0.135	3.84	P>0.05 NS
5.	Year of clinical experience	1	0.288	3.84	P>0.05 NS
6.	Area of work	1	0.574	3.84	P>0.05 NS
7.	Conference	1	0.143	3.84	P>0.05 NS
8.	Source of Information.	1	0.15	3.84	P>0.05 NS

Findings reveal that there is no significant association between post-test knowledge scores of the staff nurses sand socio demographic variable hence H_2 rejected and no significant association found between knowledge of staff nurses with their other demographic variables like age gender, religion, qualification, year of clinical experience, has staff nurses attended any conference and source of information.

Nursing Implications

The findings of the study can be used in the following areas of nursing profession. The implications made in the study

are vital concern to the nursing practice, nursing education, nursing administration and nursing research.

Nursing practice

From the present study it was found that STP was very effective teaching method. The investigator as a Staff Nurses felt that need that Nurses should act as Key person to educate the clients about Standard Precaution for Prevention of Hospital Infection.

Nursing education

The Knowledge of Health professionals can be improved by conducting training programs related to Standard Precaution for Prevention of Hospital Infection.

Nursing administration

Nursing administrators need to plan and encourage staff development programs, so that nurses are kept informed of updates regarding Standard Precaution for Prevention of Hospital Infection.

Nursing research

Nursing research will provide nurses the credibility of decision making, policy and protocol formulation regarding Standard Precaution for Prevention of Hospital Infection. Hence, research in this area will broaden knowledge on management of Hospital Infection. The finding of the present study suggests that educators and administrators must encourage nurses to lead, discuss and conduct studies so as to enable evidence based practice.

4. Conclusion

- In the pre-test assessment of level of knowledge of staff nurses on standard precaution for prevention of hospital infection showed that majority (63%) of them had good level of knowledge, 30% of them had average level of knowledge, 7% of them had very good level of knowledge regarding standard precaution for prevention of hospital infection.
- In the post-test assessment of level of knowledge of staff nurses showed that majority (90%) of the staff nurses had very good knowledge, 10% of them had good knowledge regarding standard precaution for prevention of hospital infection.
- There was no significant difference found between the post-test and pre-test knowledge scores of staff nurses. The study showed that the STP was highly effective in improving the knowledge of staff nurses on standard precaution for prevention of hospital infection.

There was no significant association found between post-test knowledge scores of the staff nurses and socio demographic variables.

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