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Research Article

Effectiveness of structured teaching programme on knowledge and practice regarding prevention of nosocomial infection among staff nurses

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Abstract

A study was conducted to see the effectiveness of structured teaching programme on prevention of nosocomial infection. **Aim:** The aim of the study was to assess the knowledge and practice regarding prevention of nosocomial infections among staff nurses. **Materials and Methods:** Pre-experimental one group pre-test post-test design was used. The study was carried out in NIMS Hospital, Jaipur. 30 staff nurses were conveniently selected for the study. The data collection was done with the help of structured knowledge questionnaire and 3 point Likert Scale on practice regarding prevention of nosocomial infection and it was evaluated by Mean and standard deviation. The statistical method for demographic variables was presented using frequencies and percentages. Mean and standard deviation was used to describe the knowledge and practice of staff. Further statistical significance on the effectiveness of the STP was analyzed using paired "t" test. Association between demographic variables with knowledge and practice score of staff nurses was tested using Chi square test. **Results:** The study result revealed that the mean post-test knowledge score 19.9 was higher than mean pre-test knowledge score 13.8 .The computed't' value 13.50 ($p<0.05$) showed that there was significant difference between the mean pre-test and mean post-test knowledge score. The mean post-test practice score was 36.5 higher than mean pre-test practice score 24.3. The computed't' value -7.88 ($p<0.05$) showed that there was significant difference between the mean pre-test and mean post-test practice score. **Conclusion:** Study revealed that STP is one of the important teaching tool to improve the knowledge and practice regarding prevention of nosocomial infection among staff nurses which decrease the rate of nosocomial infection in patients.

Keyword: Effectiveness of structured teaching programme, nosocomial infection

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1. Introduction

The term 'nosocomial infection' also refers to 'health care associated infection', 'hospital acquired infection' or 'hospital associated infection'. It is an infection that develop in patients during hospitalization and which was not present at the time of admission. Sometimes such infection may occur after their discharge. Nosocomial infection first appears 48 hours or more after hospital admission or within 30 days after discharge from hospital.[1] Nosocomial pathogens can be spread from one person to another by contact of hands and also by environmental sources like contaminated water, air, and foods.

Nosocomial infection can also be transmitted through infected individuals, various equipments which use in hospitals.[2] Sometimes nosocomial infections causing permanent disability and death as well as increase the emotional stress of the family members.[3] The most common Health associated infections are urinary tract infections, respiratory infection, wound and skin asepsis, gastrointestinal infections, burns, bacteraemia and septicaemia.[4] In comparison to Europe or USA the prevalence is two-to-three fold higher in developing countries. The incidence rate is higher in ICU as the patients in the Intensive care unit have a range of underlying diseases and often expose to various invasive procedure during their treatment period(Naidu K et al. 2012).[5] The developing countries bears the burden of 75% these hospital acquired infection (Khan, H et al. 2015).[2] For different kinds of nosocomial infection the incidence rate is alarming in India varying from 11% to 83%(2014).[1]

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Need of the study

In the USA in 2011, near about 722,000 patients carried out an infection at the time of stay in acute care hospital out of them 75,000 died due to nosocomial infection.[6] Each year approximately 2 million peoples involves in US due to Hospital acquired and cost involves about 4.5 billion dollars. The problems are even more serious in India[7]. Many studies has shown that, after so many advancement and guidelines still the prevalence of nosocomial infection is high and patients are getting consequences of it in terms of morbidity or mortality. Researcher realized while looking the routine practice of staff nurses that the knowledge and practice regarding prevention of nosocomial infection among staff nurses can be improved and with this strategy we can control or bring down the incidence of nosocomial infection. In this view researcher planned to assess the effectiveness of STP on knowledge and practice regarding prevention of nosocomial infection.

Objective:

1. To assess knowledge and practice regarding prevention of nosocomial infection.
2. To develop structured teaching program on knowledge and practice regarding prevention of nosocomial infection
3. To evaluate the effectiveness of structured teaching program regarding prevention of nosocomial infection
4. To find out the association between pre-test knowledge score and selected demographic variables.
5. To find out the association between pre-test practice score and selected demographic variables.

Research hypotheses:

H_{01}- There will be no significant difference between mean pre-test knowledge score and mean post test knowledge score after structured teaching programme regarding prevention of nosocomial infection among staff nurses.

H_{02}- There will be no significant difference between mean pre-test practice and mean post test practice score after structured teaching programme regarding prevention of nosocomial infection among staff nurses.

H_{03}-There will be no statistically significant association between the knowledge score and selected demographic variables.

H_{04}- There will be no statistically significant association between the practice score and selected demographic variables.

Conceptual framework:

The framework of this study is based on General System theory.

2. Methodology:

- **Research approach-** A quantitative research approach was used.
- **Research design-**In this study one group pre test post test pre experimental research design was used
- **Independent variables**- Structured teaching program on prevention of nosocomial infection.
- **Dependent variables**- Knowledge and Practice regarding prevention of nosocomial infection.
- **Research setting-** The study was conducted in NIMS hospital, Jaipur
- **Sample size-** A sample size for the study was 30 staff nurses from NIMS hospital jaipur.
- **Sampling technique-** The sampling technique for this study was convenience sampling.
- **Statistical methods use for the study-** Demographic variables was presented using frequencies and percentages. Mean and standard deviation was used to describe the knowledge and practice of staff nurses working in NIMS Hospital, Jaipur. Further statistical significance on the effectiveness of the STP was analyzed using paired T test. Association between demographic variables with knowledge and practice score of staff nurses was tested using Chi square test.

Tool:

The tool was divided into three sections:
Section A- Demographic variables of the staff nurses
Section B- Self administered knowledge questionnaire on prevention of nosocomial infection.
Section C- 3 points Likert scale on practice regarding prevention of nosocomial infection

Content validity and reliability

Content validity of the tool was established by 9 experts from medical surgical nursing. The reliability of the knowledge questionnaire was tested by Split Half method. The reliability of knowledge score obtained by Karl-Pearson's product moment correlation and found highly reliable(r= .871) and 3 point Likert Scale on practice of nosocomial infection was tested by Colbarch alpha value and found reliable (=.81)

Ethical consideration

Ethical approval was obtained from the Institutional Ethical Committee of the NIMS University and formal approval for data collection was obtained from the NIMS hospital authority. Written and oral consent of samples was obtained.

Data collection process

Pre-test was conducted then STP was administered. The post –test was conducted after 7 days .

3. Result

Findings related to Frequency and % distribution of respondents according to demographic variables

Table 1. Frequency and % distribution of respondents according to demographic variables

SN	Demographic variables	Frequency	Percentage
1	**Age**		
	21-30 Years	18	60
	31-40 Years	12	41
	41-50 Years	0	0
	Above 50 years	0	0
2	**Sex**		
	Male	16	53
	Female	14	47
3	**Level of education**		
	G.N.M.	13	43
	Post Basic	0	0
	B.Sc.	17	57
	M.Sc	0	0
4	**Working area**		
	Ward	10	33
	ICU/OT/DIALYSIS	18	60
	O.P.D.	2	7
5	Work experience		
	0-5 Years	17	57
	6-10 Years	12	40
	11-15 Years	0	0
	Above 15 Years	1	3
6	**Source of information**		
	Personal experience	22	73
	Published Literature	2	7
	Information Booklet	5	17
	Mass Media	1	3

Findings related to comparative distribution of respondents according to knowledge level in pre and post test assessment

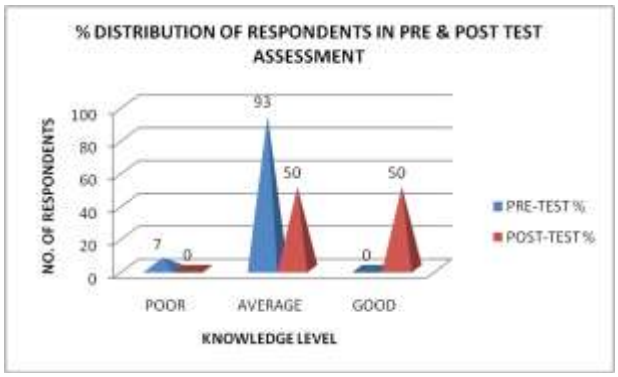

Figure 1: Pyramid graph showing Percentage distribution of respondents in pre and post test assessment.

The figure 1 shows that in pre-test only 2(7%) of staff nurses had poor level of knowledge followed by majority 28(93%) of staff nurses had average knowledge whereas no one had good knowledge and In post test 15(50%) of staff nurses had average knowledge and others 15(50%) of staff nurses had good knowledge, whereas no one had poor knowledge.

Findings related to comparative distribution of respondents according to practice level in pre and post test assessment

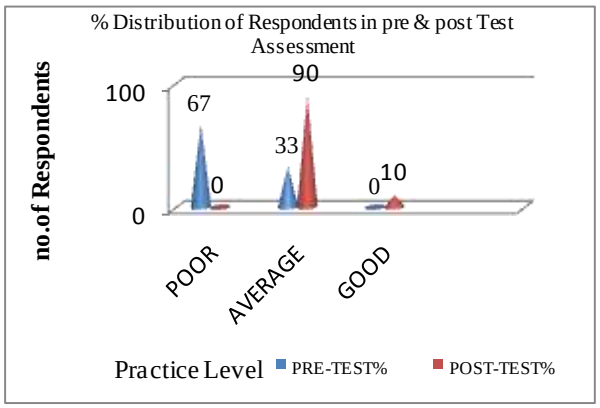

Figure 2: Cone graph showing Percentage distribution of respondents in pre and post test assessment.

The figure 2 shows that during pre-test highest 20(67%) of staff nurses had poor practice followed by 10(33%) of staff nurses had average practice and no one had good practice. Whereas in post test highest 27(90%) of staff nurses had average practice followed by only 3(10%) had good practice but no one had poor practice.

Findings related to the effectiveness of STP on knowledge regarding prevention of nosocomial infection among staff nurses

Table 4. Statistical difference of pre-test and post –test knowledge score

Knowledge Assessment	Mean	S.D.	D.F	Paired 't' TEST	P –Value
Pre-test	13.8	2.15	29	13.50	< 0.00001
Post-test	19.9	2.44			

The table 4 reveals that the obtained difference between mean pre-test and post-test knowledge score was found to be statically significant at ($p<0.05$). Hence null hypothesis H_{01} was rejected and alternative hypothesis was accepted.

Findings related to the effectiveness of STP on practice regarding prevention of nosocomial infection among staff nurses

Table 5. Statistical difference of pre-test and post –test practice score

Level of Practice	Mean	S.D.	D.F.	Paired 't' Test	P-Value
Pre-test	24.3	4.77	29	-7.88	<.00001
Post-test	36.5	7.02			

The table 5 reveals that the obtained difference between mean pre-test and post-test practice score was found to be statically significant at ($p<0.05$). H_{02} was rejected and alternative hypothesis was accepted

Association between pre-test knowledge score on prevention of nosocomial infection and selected demographic variables

The finding reveals that there was significant association between pre-test knowledge score and working experience as the calculated p value for the working experience (p=.0004) was less than established p value (0.05 level).Therefore H_{03} was rejected and alternative hypothesis was accepted. There was no other significant association found.

Association between pre-test practice score on prevention of nosocomial infection and selected demographic variables.
The finding reveals that there was no significant association between pre-test practice score and selected demographic variables.

Recommendations
Based on the findings of the study the following recommendations are made-

- A similar study can be undertaken with a large sample to generalize the findings.
- A similar study can be undertaken with a control group.
- A similar study can be undertaken on non-nursing personnel.
- This study can be conducted among nursing student to enhance their knowledge level for their future care.
- A comparative study can be conducted on knowledge and practice of staff nurses in government and private hospital.

4. Discussion

In the pre-test, out of 30 subjects, 2 (7%) had poor knowledge, followed by 28 (93%) had average knowledge and no one had good knowledge on prevention of nosocomial infection. In the case of pre-test level of practice majority of sample 20 (67%) had poor practice and remaining 10 (33%) had average practice, no one had good practice.

Sarani, H et al 2015, was conducted a study to assess the Knowledge, Attitude and Practice of Nurses about Standard Precautions for Hospital-Acquired Infection in Teaching Hospitals Affiliated to Zabol University of Medical Sciences (2014) which revealed that 43% of the participants in this study had poor knowledge, 42% had average practice, and 37% had a moderate attitude about hospital infection.[8]

The comparison of pre-test and post-test knowledge and practice score on prevention of nosocomial infection among staff nurses revealed that the mean post test knowledge score (19.9) and practice score (36.5)was higher than mean pre-test knowledge score (13.8) and mean pre-test practice score (24.3) respectively the computed paired 't' value for knowledge was 13.50 ($p<0.05$) and for practice 13.7629 ($p<0.05$) showed that there was significant difference between the mean pre-test and mean post-test knowledge and practice score as well. The overall finding of the study showed that the structured teaching programme on knowledge and practice regarding prevention of nosocomial infection among staff nurses was more effective and had brought excellence in the knowledge and practice level of staff nurses about the prevention of nosocomial infection.

Jacob, J et al, 2014, was conducted an experimental research design study to assess the effectiveness of self instructional module on prevention of nosocomial infection in neonatal intensive care unit (NICU) among staff nurses in selected hospital at mangalore, The sample consisted of 30 staff nurses who met the inclusion criteria and were chosen by purposive sampling technique. Data collection was done from 20-10-2013 to 20-11-2013. Data was collected by using structured knowledge questionnaire. On day one, Pre-test was given and the self instructional module was administered on the same day and the post-test was conducted on the seventh day. The result of the study shown that in the pre-test knowledge assessment, the mean percentage of response was 50.73% with mean and SD of 15.223 ± 2.5, which was increased to 92.83% with mean and SD of 27.85± 1.20 in the post test. The results showed a significant difference suggesting that the self instructional module was effective in increasing the knowledge of staff nurses regarding prevention of nosocomial infection.[9].

The analysis was done to find out the association between pre-test level of knowledge score and selected demographic variables. The chi-square association revealed that there was no significant association of pre-test knowledge scores regarding prevention of nosocomial infection with the selected demographic variables such as age, sex, level of education, working area, and source of information, except working experience which only shows significant association.

Potdar N et al, 2015, conducted a study to assess the effectiveness of structured teaching programme of nosocomial infection among nurses working at tertiary

hospital revealed that Demographic variable course and preventive action on hospital acquired infection is significantly associated with the knowledge score of pre-test. The other demographic variables like age, gender, years of experience, area of experience and patient seen with hospital acquired infection was not significantly associated on knowledge on prevention of Nosocomial infection [10].

The chi-square analysis was done to find out association between pre-test practice of staff nurses with the demographic variables. There was no significant association was found between pre-test practice score when compared to staff nurse's age, sex, level of education, working area, work experience and source of information.

Dhanokar N, et al, 2013, was also supported by the findings of his study to assess the existing knowledge and selected practices regarding infection control measures among NICU Nurses which showed that Demographic variable like designation is significantly associated with the practice score of pre-test. There was no significant association was found between pre-test practice score and other demographic variables like professional qualification, working experience, in-service education, awareness regarding infection control policy in NICU [11].

Conclusion

The study shows that structured teaching programme was one of the effective methods in increasing the knowledge and improving practice regarding prevention of Nosocomial Infection among staff nurses which is helpful in decrease the rate of nosocomial infection in patients.

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