



Original Research Article

Volume 8 Issue 4

Oct-Dec 2019

**A STUDY TO EVALUATE THE EFFECTIVENESS OF STRUCTURED
TEACHING PROGRAMME ON PREVENTION OF METHICILLIN
RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) IN TERMS OF
KNOWLEDGE AND SKILL AMONG STAFF NURSES OF SELECTED
HOSPITALS AT INDORE**

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Abstract:

A Pre Experimental One Group Pre-Test Post-Test Study to assess the effectiveness of structured teaching programme regarding on prevention Of methicillin resistant staphylococcus aureus (Mrsa) in terms of knowledge and skill among staff nurses of selected hospital at Indore by using simple random sampling technique method. The tool comprised of by using structured knowledge questionnaire & observational check list. The pretest was conducted and the structured teaching programme was administered. The post test was conducted after one week .The data obtained were analyzed by using differential and inferential statistics. The mean post-test knowledge score is 27.98 was greater than the mean pre-test knowledge scores 17.18. The enhancement in the knowledge level of respondents is 10.50 indicates gain in knowledge by respondents.

Key words – One group pre –test post –test pre experimental study, staff nurses, knowledge, hospital and simple random sampling.

INTRODUCTION:

Nosocomial infection otherwise known as hospital acquired infection (HAI) is one which was not present at the time of admission to the hospital. Hospital acquired infection are a worldwide problem. Prevalence studies in several countries have shown that at any one time between 6 percent and 12 percent hospital inpatient acquires an infection after admission. Infection control is the responsibility of health care professionals. Nosocomial infection is a major problem both in term of the cost to the health services and more importantly because of the consequent increase in morbidity and mortality. Nosocomial infection complicates the course of the original illness, increased cost of the hospital stay and delay recovery. The infections have increased along with advances in med. Nosocomial infection is an important public health problem in developing countries as well as in other developed countries. It has been estimated that over 2.1 million Nosocomial infections occurs annually in United States and approximately one third of these infections can be prevented by adhering to established infection control guidelines. Among all micro-organisms that cause Nosocomial infection, the most common is *S. Aureus*. This is because staphylococci are associated with skin, skin glands and mucous membranes of almost all the warm-blooded animals. This bacterium is also widely present in the environment. Nearly one third of the human population supports the colonization of *S. Aureus* and is designated as carriers. Hospitalized patients as well medical and paramedical staff show higher incidence of carriage of *S. Aureus*. Various studies show that the *S. Aureus* is the commonest organism causing nosocomial infection. Among the various strains of *S. Aureus* some of the organisms are resistant to many groups of drugs, even to Methicillin. Such a group of *S. Aureus* is called as the Methicillin Resistant *Staphylococcus Aureus*. These bacteria carry an altered penicillin binding protein, PBP2a, which is encoded by the *mec A* gene. The alteration of the gene does not allow the drug to bind to the bacterial wall. This is the cause for its resistance to various drugs including methicillin. Methicillin resistant *staphylococcus aureus* is a major problem in hospital in industrial nation. It is significant cause of morbidity and cost of health services. Three hundred strain of *staphylococcus aureus* was

isolated from different clinical specimen from patients treated at GTB Hospital, New Delhi, India between may 2015 to April 2016. MRSA is mainly spread on the hand of staff caring for infected patients. It may also be airborne, especially dust contain scales. Therefore, hand washing is the most important factor in preventing cross infection. Infected patients are nursed in a side room, where possible to minimize the risk of airborne spread. Measure to reduce the introduction of MRSA reducing visiting times and encouraging visitors to wash their hands when arriving and leaving the hospital Taken together, the social and economic impact includes prolongation of hospitalization, mortality and increased costs and this adversely affects the economic situation of the country. This is especially to be emphasized for poor countries such as India, because a large proportion of health costs are directly and entirely born by the Government. Report that the incidence of MRSA declined over a 12 - month period after key medical staff had received an intervention focusing on the role of hand hygiene in the control of cross - infection, although hand hygiene behavior was not directly audited. Knowledge and performance of infection control precautions are known to be poor among nursing personnel, but there is growing evidence that educational programmes can effectively increase compliance with agreed protocols. The ward is widely regarded as the most suitable venue for teaching and had consistently been identified as the preferred place to learn by nurses. Currently there is very less emphasis on infection control measures in the hospital. This results in an increased incidence of Nosocomial infections and increases costs. There is a need to develop adequate hospital based infection control programmes to expand the infection prevention and control activities in all areas where health care is being delivered. For this, it is important to educate health personnel regarding infection control and prevention with emphasis on the MRSA, which is of growing concern currently. Being the core of the health care team the emphasis should be on training nursing personnel.

RESEARCH ELABORATIONS

Statement of problem –

“A study to evaluate the effectiveness of structured teaching programme on prevention of Methicillin Resistant Staphylococcus Aureus (MRSA) in terms of knowledge and skill among staff nurses of selected hospitals at Indore”.

OBJECTIVES

1. To determine the level of knowledge of staff nurses regarding MRSA infection.
2. To identify the skill of staff nurses regarding MRSA infection To identify the skill of staff nurses regarding MRSA infection
3. To evaluate the effectiveness of structured teaching programme (STP) on MRSA infection in terms of knowledge and skill among staff nurses.
4. To find out the relationship between the following:
 - Pre-test knowledge score and pre-test skill scores.
 - Post-test knowledge scores and post-test skill scores
5. To find the association between the following:
 - Post-test knowledge score and years of experience of the staff nurses.
 - Post-test skill score and years of experience of the staff nurses.

HYPOTHESIS

H1: There will be significant difference between pre-test and post-test knowledge score regarding structured teaching programme (STP) regarding MRSA infection among staff nurses.

H1: There will be significant difference between pre-test and post-test skill score regarding structured teaching programme (STP) regarding MRSA infection among staff nurses

H2: There will be significant association between pre-test knowledge score with selected socio demographic variables.

H2: There will be significant association between pre-test skill score with selected socio demographic variables

MATERIALS AND METHODS

Population – Staff Nurses

Sample- Staff Nurses in different hospitals at Indore City.

Sample Size – 40 staff nurses

Sampling Technique-Simple random sampling

Setting –Shubhdeep medical college and Hospital, Indore, Madhya Pradesh, India

The conceptual framework for the present study is based on CIPP Model

RESEARCH DESIGN

The research design selected for the present study was a one group pre-test post-test research design

PRE-TEST	TREATMENT	POST –TEST
R01	X	R02
Knowledge & skill of Staff Nurses.	Structured Teaching Programme	Knowledge & skill of Staff Nurses.

Table 1 :pre experimental one group pre and post-test research design

The interpretations of the symbol are as below:

R01 = Assessment of knowledge & Skill by pre-test.

X = **Structured teaching programme** on prevention of Methicillin Resistant Staphylococcus Aureus (MRSA) in terms of knowledge and skill among staff nurses

R02 = Assessment of knowledge & skill by post-test.

Ethical Consideration

After obtaining permission from research committee of hospital, Prior permission

was obtained from nursing superintendent and medical superintendent of Shubhdeep Hospital, Indore (India) .Consent was taken from each participant who had participated in the study.

Description of the Tool

Tool -1 The structured knowledge questionnaire consisted of two parts i.e .Part – I & II .

Part I: Consist of selected socio-demographic variables like age, sex, experience, professional qualification, previous knowledge of Methicillin Resistant Staphylococcus Aureus (MRSA) , and area of working (ward)

Part II: Consist of structured knowledge questionnaire on knowledge of MRSA Infection. It consists of 35 items. Each correct answer was given a score of one and the wrong answer, zero. The maximum score for the structured questionnaire was 35.

Tool-2: Consisted of observation check list with 20 activities related to the skill of staff nurses regarding MRSA Infection. Each activity had 3 options. Done correctly, done incorrectly, not done. If an activity is done correctly a score of “one” and if done incorrectly or not done, a score “zero” was allotted. The maximum obtainable score was 20.

Data Collection and Data Analysis

The data was presented under the following sections

Section I: Description of socio-demographic variables of staff nurses.

Section II: Findings related to pretest knowledge scores regarding MRSA infection among staff nurses.

Section III: Findings related to association between pre-test knowledge score with selected socio-demographic variables of staff nurses.

Section IV: Findings related to pretest skill scores regarding MRSA infection among staff nurses.

Section V: Findings related to association between pre-test skill score with selected socio-demographic variables of staff nurses.

Table-1: Frequency and percentage distribution of staff nurses by selected demographic variables. **N=40**

S.No	Demographic Variables	No	%
1	Age		
	a. 20-25 yrs	23	57.5
	b. 26- 30 yrs	8	20
	c. 31-35 yrs	9	22.5
2	Gender		
	a. Male	8	20
	b. Female	32	80
3	Previous Education on MRSA		
	a. In -Service Education	6	15
	b. Mass Media	31	77.5
	c. Books	3	7.5
4	Training on MRSA		
	a. Undergone	7	17.5
	b. Not undergone	33	82.5
5	Years of Experience		
	a. Below 5 years	30	75
	b. 5-14 years	9	22.5
	c. 15- 30 years	1	2.5
	d. above 30 years	0	0

INTERPRETATION

Interprets that maximum numbers of samples 23 (57.5%) belonged to the age group of 20-25 years. There were only 8 (20%) sample found between the ages of 26-30 years.

Regarding Gender, majority of the subjects were female that is 32 out of 40 (80%) while only 8 out of 40 (20%) were males.

With regard to previous education on MRSA 31 (77.5%) from Mass Media and only 3 (7.5%) from books.

Staff nurses have undergone MRSA training showed that 33 (82.5%) of the subjects not undergone MRSA training and 7 (17.5%) undergone training.

Regarding the years of experience, the majority of the subjects that is 30 out of 40 (75%) had below 5 years of experience and no subjects had above 30 years of experience.

Table-6: Comparison between the pre and post knowledge regarding MRSA Infection.

N=40

Domain	Pre-test		Post test		Improvement		t- test
	Mean	SD	Mean	SD	Mean	SD	
Knowledge	17.18	6.29	27.98	4	1.8	4.63	7.35

S* p>0.001 level**

Data on the table 6 shows that the mean post-test knowledge score of the subjects was 27.98. Post-test knowledge was higher than the mean pre-test knowledge score of 17.18. In order to test the difference between the 2 means, t-test was computed and the obtained 't' value of 7.35 was found to be statistically highly significant at 0.001 level. This indicated that the difference between the means 1.8 was a true difference and not occurred by chance. Hence ,the research hypothesis H₁ which stated that "mean post-test knowledge score of staff nurses who received structured teaching programme (STP) regarding MRSA Nosocomial infection will be significantly higher than the mean pre-test knowledge score" was accepted and the null hypothesis was rejected

Table 3: Dispicted area wise analysis shows the subjects had a maximum mean of 3.86 with a standard deviation of 0.40 and mean percentage of 96.50%

regarding pressure sore. The mean score of 5.88 with standard deviation of 0.33 and mean percentage of 98.00% regarding introduction to Braden scale and its contents. The subjects obtained score of 4.66 with standard deviation of 0.56 with mean percentage of 93.20% for sensory perception. The mean knowledge on moisture is 4.30 with standard deviation of 0.81 has mean percentage of 86.00%. The mean knowledge on activity is 3.20 with standard deviation of 0.90 and has mean percentage of 80.00%, where as for mobility the respective values are found to be 3.22, 0.89 and 80.50%. The mean for nutrition is 6.48 with a standard deviation of 0.65 with a mean percentage of 90.00%. The friction and shear has mean score of 6.48 and a standard deviation of 0.65 whose mean percentage is 92.57%. However, the overall mean knowledge score is found to be 36.10 with a standard deviation of 1.91. The overall mean percentage of knowledge score is 90.25%.

Table - 7: Comparison between the pre and post skill regarding MRSA Infection.

N=40

Domain	Pre-test		Post test		Improvement		t- test
	Mean	SD	Mean	SD	Mean	SD	
Knowledge	8.68	3.49	13	2.91	4.33	1.97	5.76

S*= P>0.001 level**

Data on the table 7 shows that the mean post-test skill score of 13 was higher than the mean pre-test skill score of 8.68. In order to test the difference between the 2 means t-test was computed and the obtained t-value of 5.76 was found to be statistically highly significant at 0.001 level. The difference between the means 4.33 was a true difference and had not occurred by chance. Hence, the research hypothesis H₂ which stated that “mean post-test skill score of staff nurses who received structured teaching programme (STP) regarding MRSA Nosocomial infection will be higher than the mean pre-test skill score” was accepted and the null hypothesis was rejected.

Section C: Correlation between knowledge and skills.

Table - 8: Correlation between pre-test knowledge and pre-test skill.

Domain	Pre Knowledge		Pre Skill		N=40 r- value
	Mean	SD	Mean	SD	Mean
Correlation	17.18	6.29	8.68	3.49	4.33

S* = P>0.05 level

Table 8 depicts that the obtained co-efficient of correlation $r = 4.33$ was significant at 0.05 level. This indicates that there was a highly positive correlation and marked relationship between pre-test knowledge and pre-test skill scores which was significant at 0.05 level. Hence, the research hypothesis H_3 (a) which stated that “there will be a significant relationship between pre-test knowledge score and pre-test skill scores among staff nurses, who received STP regarding MRSA Infection” was accepted and the null hypothesis was rejected. The finding suggests that when there is increase in knowledge, there will be an improvement in skill.

CONCLUSION

The overall comparison of pre and post-test knowledge staff nurses on MRSA Infection and found that maximum number of staff nurses 25 (62.5%) had inadequate knowledge and 10 (25%) had average knowledge and only remaining 5 (12.5%) had adequate knowledge. After the structured teaching programme the post-test showed that the maximum number of samples 25 (62.5%) had adequate knowledge, 15 (37.5%) had average knowledge and none of the sample had inadequate knowledge.

The comparison of pre-test knowledge scores and post-test knowledge scores of the subjects shows that the overall mean in the pre-test was 17.18 with SD 6.29 and in the post-test 27.98 with SD 4. The overall improvement mean was 1.8 with 't'- value 7.35 which was highly significant at $P > 0.001$ level. This showed that there was a significant improvement in knowledge of staff nurses after the structured teaching programme.

The study also assessed the skill of staff nurses on MRSA and found that maximum number of staff nurses 24 (60%) had poor skill, and 15 (37.5%) had Fair skill and only 1 (2. %) had Good skill. After the structured teaching programme, the post-test showed that the maximum number of samples 30 (75%) had Fair skill, 5 (12.5%) had Good skill and the remaining 5 (12.5%) had Poor skill.

The comparison of pre-test skill scores and post-test skill scores of the subjects shows that the overall mean in the pre-test was 8.68 with SD 3.49 and in the post-test mean 13 with SD 2.91. The overall improvement mean was 4.33 with 't' - value 5.76 which was highly significant at $P > 0.001$ level. This showed that there was a significant improvement in skills of staff nurses after the structured teaching programme.

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