EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME REGARDING PREVENTION OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS INFECTION AMONG STAFF NURSES

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Abstract

A pre-experimental study was conducted to evaluate the effectiveness of structured teaching programme on methicillin resistant staphylococcus aureus infection among nurses working in PICU of selected hospitals. Data was collected from 60 staff nurses selected by purposive sampling technique. The mean of overall pre test knowledge score was 13.45±4.64 which is 44.83 % of maximum score and the mean of overall post test knowledge score was 23.17±4.22 which is 77.22% of maximum score. Improvement in the knowledge score of the nurses from the pre-test to post-test is tested for statistical significance using students paired t-test ('t'=15.19), shows significant difference between pre and post-test score ($p < 0.05$).

Keywords- Nosocomial infection; structured teaching programme;Methicillin resistant staphylococcus aureus(MRSA) infection; knowledge; sterile techniques; nurses.

Introduction

Nosocomial infections may be transmitted to the patient by the nursing personnel who fail to practice the sterile techniques. It is necessary to give careful attention to the creation and maintenance of a safe and acceptable therapeutic environment in order to prevent the potential development of nosocomial infections. Among nosocomial infections,MRSA (Methicillin Resistant Staphylococcus Aureus) is a subgroup accounting for 40% of the common staphylococcus aureus bacterial infections that is resistant to a range of antibiotics including penicillin[1,2,3].

MRSA shown its incidence in PICU's, MRSA infections often occurs in people who are in the hospitals or in health care settings. Children who acquire MRSA in the hospital have high rates of infection. Preventing transmission of MRSA in hospitalized children should remain a priority [4,7].

Therefore the researcher conducted a study to assess the knowledge of registered nurses regarding the principles of infection control and sterile technique in order to prevent MRSA infection in hospital settings through education. The investigator felt that infection control measures are to be reviewed as priority and have to be integrated fully in to the continuous process of improvement of quality of care and strongely felt that there is need for conducting a teaching programme among nurses to prevent MRSAinfection.

The objectives of the study

(i) To assess the knowledge on prevention of MRSA infection among nurses.

(ii) To assess the effectiveness of structured teaching programme regarding prevention of MRSA infection among nurses.

(iii) To find out the association between post test knowledge scores of nurses with their selected demographic variables.

Hypotheses

HI: There is significant difference between pre-test and post-test knowledge scores of staff nurses.

H2: There is significant association between post test knowledge scores of staff nurses with their selected demographic variables.

Methodology

Research design:

Pre-experimental design i.e. one group pre-test and post-test was adopted to conduct the study, the research design used is :

Group	Pre test	Treatment	Post test	
Nurses Working in PICU	O1	X	O2	$E=O_2-O_1$

Research approach:

Experimental research approach was used to determine the effectiveness of the structured teaching programme on prevention of MRSA infection among nurses.

Setting of the study:

Setting for the study were District hospital and Bharathi hospital at Tumkur.

Population:

The population comprised of the all registered nurses who were working in hospital.

Sampling:

The sample comprised of 60 nurses working in PICU of District hospital and Bharathi hospital at Tumkur and the sample was selected by using purposive sampling technique.

Tool description:

Tool used 1.Closed ended questionnaire
2.STP on prevention of MRSA infection in the hospital

1. Closed ended multiple choice questionnaire was used to collect data which is comprised of two Sections

Section A: Demographic characteristics which consists of 11 items such as age, sex, education, marital status, religion, income, working department, food habits, number of working hours per day, years of experience and source of information regarding prevention of MRSAinfection.

Section B: consists of 30 items pertaining to knowledge regarding MRSA infection and its prevention.

2.STP-Contents of the STP includes incidence,infection,transmission,prevention and management of MRSAinfection.

Scoring of the items

There were 30 items. Each item has four options with one correct answer.The score for correct response to each item was "one" and incorrect response was "zero". Thus for 30 items maximum obtainable score was 30 and minimum score was zero.

Validity & Reliability

Content validity of the tool was established by obtaining suggestions from experts.The tool was validated by experts in the field of

child health nursing,statistician and english language expert. Modifications were made on the basis of recommen dation and suggestions of the experts.

Reliability of the tool was assessed by collecting data from six nurses working in PICU's at district hospital Tumkur. Split Half method with Spearman's Brown prophecy formula was used to test the reliability of the tool.

The reliability of the tool was 0.948.It was statistically significant and thus reliable.

Data Collection

The closed ended multiple choice questionnaire was used to collect the data from the nurses working in PICU'S at selected hospitals, Tumkur, after obtaining formal permission from authority and consent from subjects. The investigator collected data from 60 nurses. Pre-test was conducted for all and on the same day structured teaching program was co nducted by the investigator for a period of 45 minutes by using chalk board and LCD projector in english language. The same closed ended questionnaire was used to collect the post test data also on 8 th day after imple-mentation of structured teaching programme.

Major Findings:

Distribution of respondents according to demographic characteristics:

Majority of the respondents (61.7%) were in the age group of 26 to 30 years and 86.7% were respondents from Hindu religion. 55% of the respondents were unmarried and most of respondents (91.7%) have mixed diet. Majority (66.7%) of the nurses completed diploma and (70%) had the income ranging between 5000 to 9999. Around (66.7%) of the nurses had 1 to 5 years of working experience and none of them undergone in-service education on prevention of MRSA infection.

Knowledge level of respondent regarding MRSA infection and its prevention Table 1:Levels of pre-test and post-test scores based on different areas

Area wise	Pre-test			Post-test		
	≤ 50% Inadequate knowledge)	51-75% Moderate knowledge)	>75% (Adequate knowledge)	≤ 50% Inadequate knowledge)	51-75% Moderate knowledge)	>75% (Adequate knowledge)
Meaning of MRSA infection, structure and incubation period of MRSA	43	8	9	22	15	23
Etiology/risk factors and mode of transmission		20	40	2	25	33
Knowledge regarding pathophysiology of MRSA infection	41	12	7	5	30	25
Diagnostic measures and clinical manifestations of MRSA infection	54	4	2	23	16	21
Treatment and preventive measures of MRSA infection	54	2	4	5	16	39
Overall knowledge	48	8	4	5	19	36

Area wise analysis of the pre test and post test knowledge scores which reveals the following findings:

1.Meaning of MRSA infection, structure and incubation period of MRSA:

Among the 60 nurses , 71.66% of nurses had inadequate knowledge, 13.33% had moderate knowledge, 15% had adequate knowledge in pre-test whereas in the post-test scores, 36.67% had inadequate knowledge, 25% had moderate knowledge and 38.33% had adequate knowledge.

2. **Etiology/risk factors/and mode of transmission:** It is observed from the study that 33.33% of nurses had moderate knowledge and 66.67% of nurses had adequate knowledge. In the post test 3.33% of nurses had in adequate knowledge, 41.67% had moderate knowlwdge and 55% had adequate knowledge.
3. **Knowwledge regarding patho physiology of MRSA infection:** With regard to this aspect 68.33% of nurses had inadequate knowledge, and 11.67% had adequate knowledge in the pre-test whereas in the post-test 8.33% had inadequate knowledge, 50% had moderate knowledge and 41.67% had adequate knowledge.
4. **Diagnostic measures and clinical manifestations of MRSA infection:** During pre-test 90% of nurses had adequate knowledge, 6.67% had moderate knowledge, 3.33% of nurses adequate knowledge whereas in the post-test, 38.33% had inadequate knowledge, 26.67% had moderate knowledge and 35% had adequate knowledge.

5. **Treatment and preventive measures of MRSA infection:**During pre-test 90% of nurses had inadequate knowledge, 3.33% had moderate knowledge and 6.67% of nurses had adequate knowledge whereas

8. 33% of nurses h ad in adequ ate knowledge, 26.67% had moderate knowledge and 65% had adequate knowledge in the post-test.

6. **Overall knowledge:** The data from the study represents that there is subsequent increase in overall post - test scores as 80% of nurses had inadequate knowledge, 13.33% had moderate knowledge and 6.67% had adequate knowledge in the pre-test whereas 8.33% of nurses had inadequate knowledge, 31.67% had moderate knowledge and 60% had adequate knowledge in the post-test.

Table 2: Area wise statistical analysis and comparison of Mean,Median.SD and Mean percentage of pre-test and post-test knowledge scores

Area wise	Pre-test			Post-test		
	⩽ 50% Inadequate knowledge)	51-75% Moderate knowledge)	>75% (Adequate knowledge)	⩽ 50% Inadequate knowledge)	51-75% Moderate knowledge)	>75% (Adequate knowledge)
Meaning of MRSA infection, structure and incubation period of MRSA	43	8	9	22	15	23
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Area wise comparison of Mean, SD, Mean percentage and difference in Mean percentage of pre-test and post-test scores shows out of five area the lowest mean was on “treatment and preventive measures of MRSA infection”(2.68±2.53) which was only 24.39% and all other areas also had less than 50% of the mean score except on “etiology/risk factors and mode of transmission” (3.67±0.48) which 91.67% whereas during post test lowest mean was 4.08±1.51 which 68.06% and highest mean was 87.92%. Further highest and difference in the pre and post test mean was found for “treatment and preventive measures of MRSA infection” which lowest during post test. Paired t-test value after depicts highly significant difference between pre and post-test scores(Table 2).

Discussion

The findings of the study shows that knowledge level of nurses was significantly low in the pre-test with the overall mean pre-test knowledge scores of(44.83%) when compared to the mean post-test knowledge score of (77.22%).The mean pre-test knowledge score was 13.45 with SD ± 4.64 which is similar to the findings of the study conducted by Tracie Northway on the knowledge of nurses regarding infection control in the PICU where nurses practitioners knowledge of infection control had significantly low level of knowledge when compared with the scores of expert panel. The study concluded that the nurse practitioners education programme has its implications to enhance the knowledge level of nurses[5,9].

The present study shows that the overall mean% knowledge scores was 44.83% in the pre-test, the mean pre-test knowledge score was 13.45 with SD ±4.64 when compared to overall post-test mean% knowledge scores 77.27%. The mean post-test knowledge scores was 23.17 with SD ± 4.22 .The findings of the study shows that structured teaching programme for infection control was effective which is similar to the study of Walker M on the assessment of efficacy of control programme to prevent spread of MRSA in PICU where incidence rates between' pre-programme' and 'programme' were compared. The rate of MRSA infection is decreased from 34% to 2% and the ratio of MRSA to all staphylococcus aureus fell from 71% to 11%.He concluded that the implementation of infection control measures directed towards limiting person to person spread was effective in controlling high MRSA infection rates in a PICU, but it is important to allow enough time for staff to carry out the hygienic practices thoroughly which is similar to the present findings [10].

Recommendations

- A Similar study can be replicated on a large sample in different settings to generalize the findings.
- An experimental study can be

undertaken with control group for effective comparison of the result.

- Manuals, Information booklets, and STM may be developed in areas of prevention of MRSA infection.

Conclusion

The knowledge of nurses regarding the prevention of MRSA infection was inadequate. After the implementation of Structured Teaching Programme ,the kn owledge l evel o f nu rses were significantly increased. Hence the structured teaching programme on prevention of MRSA infection can be used as an effective tool in enhancing the level of knowledge of nurses.

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