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Research Article

A PRE–EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME REGARDING CARE BUNDLE ON PREVENTION OF CENTRAL LINE ASSOCIATED BLOOD STREAM INFECTION IN TERMS OF KNOWLEDGE AND PRACTICE AMONG STAFF NURSES WORKING IN SELECTED HOSPITAL OF DELHI/NCR

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A R T I C L E I N F O

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Staff Nurses; Knowledge; Practice; Care Bundle; Central Line Associated Blood Stream Infection.

A B S T R A C T

Background: Infection is the most frequent complication related to central venous catheters and usually occurs when microorganisms on the patient's skin or health cares' hands migrate down the catheter tract or through its hubs and subsequently colonize the catheter. Nurses are often at the frontline of central line care and the profession has the potential to significantly impact the reduction in central line associated blood stream infections by adopting preventive measures.[1] **Aim:** The aim of the study was to evaluate the effectiveness of structured teaching programmein terms of knowledge and practice regarding care bundle on prevention of central line associated blood stream infection among staff nurses. **Methodology:** Pre-experimental research design was adopted and Non-probability convenient sampling technique was used to collect the sample from 30 staff nurses working in intensive care units. Data obtained was analysed and interpreted in the light of the objectives using both descriptive and inferential statistics. **Results:** The findings of the study revealed that the mean post-test knowledge and post-test practice scores of the staff nurses working in intensive care units was significantly higher than the mean pre test knowledge and mean pre test practice scores. Also, there exists a positive correlation between post test knowledge scores and post test practice scores among staff nurses working in intensive care units. **Conclusion:** Thus, the research study findings indicated that the structured teaching programme was effective in improving the knowledge and practice of staff nurses regarding care bundle on prevention of central line associated blood stream infection.

INTRODUCTION

During the past 50 years the health problems of people have changed significantly. Sophisticated techniques and devices have revolutionized making it possible to perform many procedures. One such revolution is central venous cannulation in medical science. Central venous cannulation also known as a central line, has become a standard procedure since introduced to medical practice in the 1950s.[2] Among all hospitalized patients, Eight percent (8%) of patients has a central venous catheter. Central venous catheters are often mandatory devices when caring for critically ill. However central venous catheters carry a high risk of infection and these infections can be life threatening.[3]

A central line associated blood stream infection is a laboratory-confirmed blood stream infection in a patient who had a central line within the 48 hours period before the development of the blood stream infection and that is not related to an infection at another site.[4] In conjunction with the increasing use of central venous catheters among critically ill patients, the occurrence of central line associated blood stream infections is also increasing. Recent studies have shown that this serious implication could result in increasing mortality, morbidity and increased hospital stay length. An estimated 30,100 central line-associated bloodstream infections (CLABSI) still occur in intensive care units and wards of U.S. acute care facilities each year.[5] Healthcare workers caring for a patient with central venous catheter need to be adequately trained, and assessed as being competent in using central lines and adhering to infection prevention practices.[6]

Institute for Health Care Improvement (IHI), has developed the concept of 'Bundle' to help health care members deliver bedside care more reliably and effectively. The Central Line Care Bundle is a group of evidence-based interventions for patients with intravascular central catheters that result in reducing blood stream infections.[7] Doctors and nurses can help prevent central line associated blood stream infection by using

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a bundle of five care steps i.e. Hand hygiene, Maximum barrier precautions, Optimal catheter site selection, Chlorhexidine skin antisepsis and Daily review of line necessity.[8]

Nurses are often at the frontline of central line care and the profession has the potential to significantly impact the reduction in central line associated blood stream infections by adopting preventive measures.

Problem statement

A Pre–Experimental Study to Assess the Effectiveness of Structured Teaching Programme Regarding Care Bundle on Prevention of Central Line Associated Blood Stream Infection in terms of Knowledge and Practice among Staff Nurses Working in Selected Hospital of Delhi/NCR.

Objectives of the study

- To assess the knowledge regarding Care Bundle on Prevention of Central Line Associated Blood Stream Infection before and after administration of Structured teaching programme among staff nurses.
- To assess the practice regarding Care Bundle on Prevention of Central Line Associated Blood Stream Infection before and after administration of Structured teaching programme among staff nurses.
- To evaluate the effectiveness of Structured teaching programme in terms of knowledge regarding Care Bundle on Prevention of Central Line Associated Blood Stream Infection among staff nurses.
- To evaluate the effectiveness of Structured teaching programme in terms of practice regarding Care Bundle on Prevention of Central Line Associated Blood Stream Infection among staff nurses.
- To find out the correlation between the post test knowledge score and Post-test practice scores regarding Care Bundle on Prevention of Central Line Associated Blood Stream Infection among staff nurses.
- To determine the association between the post test knowledge score regarding Care Bundle on Prevention of central line associated blood stream infection among staff nurses with selected demographic variables.
- To determine the association between the post test Practice score regarding Care Bundle on Prevention of Central Line Associated Blood Stream Infection among staff nurses with selected demographic variables.

MATERIAL AND METHODS

Research Approach- Quantitative research approach
Research Design- Pre-experimental one group pre-test and post-test research design

Variables

Independent variable: Structured Teaching Programme regarding care bundle on prevention of central line associated blood stream infection.

Dependent variable: Knowledge and Practice of staff nurses regarding care bundle on prevention of central line associated blood stream infection.

Selected demographic variables: (1) Age (2) Gender (3) Educational Qualification (4) Years of experience in critical care unit (5)Source of information regarding Central line care bundle.

Setting- Intensive care units of selected Hospital of Delhi, NCR.
Population - Staff Nurses
Sample - Staff nurses working in Intensive care unit
Sampling Technique – Non probability Convenient sampling technique
Sample Size-30 Staff nurse

RESULTS

Results collected from the study revealed that majority of staff nurse's knowledge and practice regarding care bundle on prevention of central line associated blood stream infection improved after the implementation of structured teaching programme.

DISCUSSION

The findings of the study revealed that (1) the mean post-test knowledge and mean post-test practice scores of the staff nurses working in intensive care units was significantly higher than the mean pre test knowledge and mean pre test practice scores. (2) There exist a positive correlation between post test knowledge scores and post test practice scores among staff nurses working in intensive care units.

Fisher's exact test was used to find the association between post test knowledge score with selected demographic variables and findings showed that there was a significant association between post test knowledge score with selected demographic variable i.e. educational qualification at 0.05 level of significance. Findings of association between post test practice score with selected demographic variables showed that there was a significant association between practice scores with the selected demographic variables i.e. Gender, educational qualification and years of experience in critical care unitat 0.05 level of significance.

CONCLUSION

The research study findings indicated that the structured teaching programme was effective in improving the knowledge and practice of staff nurses regarding care bundle on prevention of central line associated blood stream infection.

Table 1 Research Design

GROUP	Day 1		Day 8
30 Staff Nurses	Pre test (O1) o Tool I Demographic Proforma o Tool II Structured Knowledge Questionnaire o Tool III Observational Practice Checklist	Intervention (X) Administration of Structured teaching programme.	Post Test (O2) o Tool II Structured Knowledge Questionnaire o Tool III Observational Practice Checklist

Table 2 Mean, Mean Difference, Median, Standard Deviation, T-Value Of Knowledge Score Regarding Care Bundle On Prevention Of Central Line Associated Blood Stream Infection Among Staff Nurses

N=30

Test	Range	Mean	Mean difference	Median	Standard deviation	t-value
Pre- test	6 – 17	10.7	11.2	11	3.08	16.7*
Post- test	15 - 26	21.9		21.5	3.28	

*df(29)= 2.05 at 0.05 level of significance

The above findings revealed that there was a significant difference between mean pre-test and mean post-test knowledge score.

Table 3 Mean, Mean Difference, Median, Standard Deviation, T-Value Of Practice Score Regarding Care Bundle On Prevention Of Central Line Associated Blood Stream Infection Among Staff Nurses

N=30

Test	Range	Mean	Mean Difference	Median	Standard deviation	t-value
Pre test	7.4 - 12.8	10.2	4.2	10.7	1.84	5.22*
Post test	12.6 -15.8	14.4		14.8	0.83	

*df(29)= 2.05 at 0.05 level of significance

The above finding revealed that there was a significant difference between mean pre-test and mean post-test practice score.

Table 4 Fisher's Exact Test Showing Association Of Post-Test Knowledge Scores Of Staff Nurses With Selected Demographic Variables

N=30

Demographic Variables	Knowledge score		P value	Inference (S / NS)
	Below Median	Above Median		
1. **Age**				
A. Below 25 years	7	6		
B.25-30 years	8	6	0.26	NS
C. Above 30 years	0	3		
2. Gender				
A. Male	3	4	0.30	NS
B. Female	12	11		
3.Educational qualification				
A. GNM	6	6		
B. B.Sc.	7	7	0.04*	S
C. Post- basic	2	2		
D. Post graduate & above	0	0		
4. Years of experience in intensive care unit				
A. Less than 6 months	6	4		
B. 6 months-1year	9	4	0.20	NS
C. More than 1 year	0	7		
5. Source of information regarding central line care bundle				
A. Have attended in service education	15	13		
B. Printed materials	0	0	0.20	NS
C. Mass Media	0	0		
D. Short term course in infection control practice.	0	2		

*Significant at 0.05 level of significance

The above data showed that there was a significant association between post-test knowledge score staff nurses with selected demographic variable i.e. Educational qualification at 0.05 level of significance whereas the demographic variables; Age, Gender, Years of experience in intensive care unit and source of information regarding central line care bundle and post-test knowledge score of staff nurses does not have significant association at 0.05 level of significance and were independent of each other.

Table 5 Fisher's Exact Test Showing The Association Between The Post-Test Practice Score With Selected Demographic Variables

N=30

Demographic Variables	Practice score		P value	Inference (S / NS)
	Below Median	Above Median		
1. **Age**				
A. Below 25 years	6	7		
B.25-30 years	5	9	0.1	NS
C. Above 30 years	0	3		
2. Gender				
A. Male	3	4	0.003*	S
B. Female	8	15		
3.Educational qualification				
A. GNM	8	4		
B. B.Sc.	3	11	0.03*	S
C. Post- basic	0	4		
D. Post graduate & above	0	0		
4. Years of experience in intensive care unit				
A. Less than 6 months	7	3	0.01*	S
B. 6 months-1year	4	9		
C. More than 1 year	0	7		
5. Source of information regarding central line care bundle				
A. Have attended in service education	11	17		
B. Printed materials	0	0	0.3	NS
C. Mass Media	0	0		
D. Short term course in infection control practice.	0	2		

The above data represented thatthere was a significant association between post-test practice score staff nurses with selected demographic variables i.e. Gender, Educational qualification and Years of experience in intensive care unit at 0.05 level of significance whereas variables; Age and Source of information regarding central line care bundle indicates that the demographic variable and post-test practice score of staff nurses does not have significant association at 0.05 level of significance and were independent of each other.

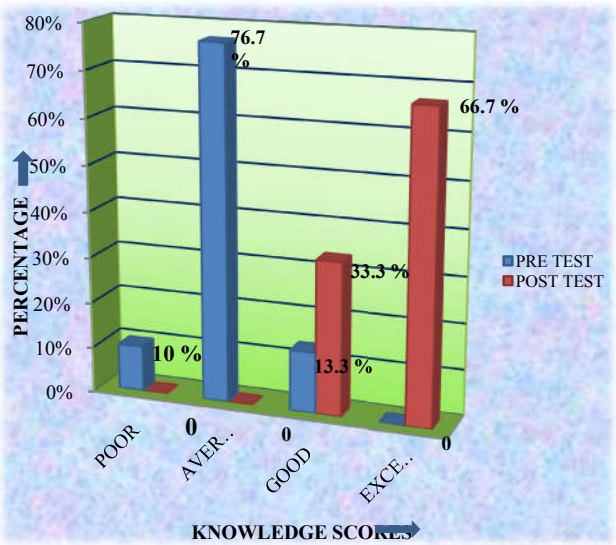

Figure 1 Bar diagram depicting theFrequency and Percentage distribution of pre-test and post-test knowledge scores regarding care bundle on prevention of central line associated blood stream infection
N=30

*Fig 1.*The knowledge score of staff nurses regarding care bundle on prevention of central line associated blood stream infection in pre test was assessed which revealed maximum numbers of staff nurses i,e. 23 (76.7%) were having Average knowledge, 4 (13.3%) were having Good knowledge and 3 (10%) were having poor knowledge whereas in post-test 20 (66.7%) were having Excellent knowledge and 10 (66.7%) were having Good knowledge which indicates an increase in knowledge score after administration of Structured Teaching Programme.

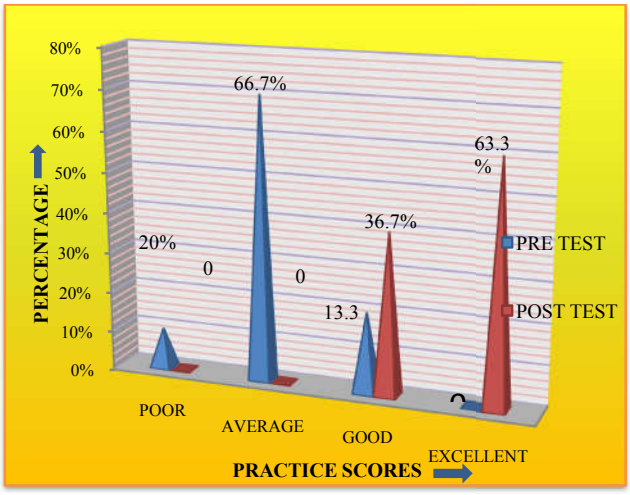

Figure 2 Cone diagram depicting theFrequency and Percentage distribution of pre-test and post-test practice scores regarding care bundle on prevention of central line associated blood stream infection
N=30

Fig 2. The practice scores of staff nurses in pre test was assessed which revealed maximum numbers of staff nurses i,e. 20 (66.7%) were having Average practice, 6 (20%) were having Poor practice and 4 (13.3%) were having Good practice whereas in post-test 19 (63.3%) were having Excellent practice and 11 (36.7%) were having Good practice which indicates an increase in knowledge score after administration of Structured Teaching Programme.

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