

RESEARCH ARTICLE

"EFFECTIVENESS OF EDUCATION PROGRAM REGARDING CENTRAL VENOUS CATHETER (CVC) CARE BUNDLE IN TERMS OF KNOWLEDGE AND PRACTICE OF NURSING PERSONNEL".

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Manuscript Info

Abstract

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Key words:-

Effectiveness, Education Program, CVC, CVC Care Bundle, Knowledge, Practice, CLABSI, Nursing Personnel. Introduction: Central Venous Catheter (CVC) is commonly used for administration of drugs as well as nutrients and for hemodynamic monitoring in Intensive Care Unit. Lack of knowledge and inappropriate handling of CVC can lead to Central Line Associated Blood Stream Infection (CLABSI). Nursing Personnel have an important role of in prevention of CLABSI. The aim of present study was to evaluate the Effectiveness of Education Program regarding CVC Care Bundle in terms of Knowledge and Practice of Nursing Personnel. Methods: Pre- Experimental study using One Group Pretest Posttest Design was conducted. Total Enumeration Sampling Technique was used to enroll 35 Nursing Personnel who were directly involved in patient care in the Liver Coma ICU. A Structured knowledge questionnaire was prepared to assess the knowledge of Nursing Personnel regarding CVC Care Bundle. An Observation Checklist was prepared to assess the practice of the Nursing Personnel regarding CVC Care Bundle. The reliability of the Knowledge questionnaire was established by test retest method and Crohn Back alpha was found to be 0.75. The reliability of Observation checklist was by interrater reliability and was found to be 0.95. The Education Program on CVC Care Bundle was prepared got validated by Subject experts. The data was collected in the month of January till February, 2018. The Practice of Nursing Personnel regarding CVC Care Bundle was assessed using an Observation Checklist and their Knowledge was assessed using Structured Knowledge Ouestionnaire. This was followed by administration of Education Program on CVC Care Bundle through Lecture cum Discussion method. After the completion of the Education Program, Practice and Knowledge were reassessed using the same tools on day 7. The data was analyzed using descriptive and inferential statistics by SPSS version 22. Following statistical tests of significance were applied: Student t test, Paired t test, One Way ANOVA, Post hoc analysis and Pearson correlation.

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Results: There was a significant difference in the Mean Pretest (19.57 \pm 3.43) and Posttest (24.94 \pm 4.78) knowledge scores (p= <0.001) as well as Pretest (39.17 \pm 2.86) and Posttest (47.11 \pm 1.87) Practice scores (p= <0.001) of Nursing Personnel regarding CVC Care Bundle. This revealed significant increased scores for both Knowledge and Practice after the Education Program. Domain wise, the lowest mean

percentage in Pretest Knowledge scores of Nursing Personnel was 46.2 percent in the domain "Removal of CVC", followed by 48.5 percent in the domain "Maintenance of CVC", 66.8 percent in the domain "Blood sample collection from CVC" and 67.1 percent in the domain "Insertion of CVC". It indicated that the Nursing Personnel had minimum Knowledge in the domains "Removal of CVC" and "Maintenance of CVC". After administration of Education Program, the mean percentage of Posttest Knowledge Scores was increased in all 4 Domains. There was no significant association found between Posttest Knowledge scores and Posttest Practice scores of Nursing Personnel regarding CVC Care Bundle.

Conclusion: Study concluded that the Education Program was effective in enhancing the Knowledge and improving the Practice of Nursing Personnel regarding CVC Care Bundle. The findings also revealed that the knowledge of Nursing Personnel was associated with the duration of last attended In-service Education Program. Therefore it can be concluded that there is a need to provide education regarding CVC Care Bundle after regular intervals.

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Introduction:-

A Central Venous Catheter (CVC) is an essential element of modern healthcare all over the world. These devices are used for hemodynamic monitoring, medication administration and total parental nutrition (TPN) infusion for acute and critically ill patients. CVC, in situ may lead to the risk of central line associated blood stream infection (CLABSI), bleeding, discomfort during placement, blocking or kinking of catheter and pneumothorax (Xiaoli, 2012). Moreover inappropriate adherence to infection control precautions and inadequate maintenance care for CVC leads to CLABSI (Brook, 2012). In India, CLABSI rate was 7.7% per 1000 catheter days in 2009 and by the report of National Nosocomial Infections Surveillance System (NNISS) for the Centers for Disease Control and Prevention (CDC) showed that CLABSIs rate was 5.1 per 1,000 catheter days in 2016 which was too high as compared to other countries (Mehta.et.al. 2016). Nurses in ICU have a vital role in reducing catheter-related bloodstream infection. Nurses' lack of knowledge may be a barrier to adherence to evidence-based guidelines for preventing CLABSIs. (Friedt, 2011). For the prevention of CLABSI in the ICU, several strategies should be used in combination such as a) use of checklist for catheter insertion and maintenance, b) adequate training and education program for the nurses who are involved in direct patient care and c) adequate nurse patient ratio etc. which would help in the reduction of CLABSI. The findings of the current study will provide a base of knowledge for ICU nurses on central venous catheter management, and ensure the highest standards of nursing management that is aiming at improving patients' outcomes. They should be well educated to use strategies to decrease central venous catheter infection rates to improve patient's outcomes. It is hoped that this effort might help nurses to improve their practice in assessment, planning, implementation and evaluation of such patients. This will reflect on shortening patient's length of stay, as well as decreasing hospital costs. Nursing personnel should be properly trained and assessed to evaluate their competencies for providing care to CVC (Frasca. et. al. 2010).

Aim:-

The aim of present study is to assess the Knowledge and Practice of Nursing Personnel regarding CVC Care Bundle and evaluate the effectiveness of Education Program on CVC Care Bundle.

Approach & Design

The research design selected for this study was Quantitative Research Approach with **one group pretest-posttest design** because this study intends to ascertain the gain in knowledge of nursing personnel who used the education program on CVC Care Bundle.

Participants

Total enumeration sampling technique was used comprising of 35 nurses from the Liver Coma ICU of ILBS.

Data Collection

The data collection was done was conducted in month of January, 2018 to February, 2018 from 35 nursing personnel working in Liver Coma ICU of a selected hospital of New Delhi. Data were interpreted in terms of objectives by descriptive and inferential statistics. The written informed consent was taken after providing information about purpose and procedure of the study. On the day one, the pretest was done to assess the practice and knowledge of the nursing personnel. Followed by administration of the education program, posttest was conducted on day seven.

Ethical Consideration

Ethical approval was taken for the study from the Institutional Ethics Committee.

Data analysis

Data were analyzed using both descriptive (mean, median, range, percentage and standard deviation) and inferential (Paired t test, Student t test and One way ANOVA) statistics by SPSS version 22.

Validity, Reliability

The reliability of the structured knowledge questionnaire was calculated by test-retest reliability and it was found to be as 0.75 by using Cronbach's α formula. The inter rater reliability of Observation Checklist was found to be 0.95. In order to measure the content validity index, criterion to evaluate the tools was submitted along with lesson plan of education program to 7 experts from the field of Nursing and Doctors. Comments and suggestions were incorporated and suggested modifications for the items were made to prepare the final draft of the tools.

Results:-

More than half (62.9 percent) of nursing personnel were in the group of age 21-30 years and the rest were in the age group of 31-40 years. Approximately half of the Nursing Personnel (54.3 percent) were males. More than half (65.7 percent) of the nursing personnel were G.N.M. qualified. All others had a graduate degree either in Post Basic B.Sc. Nursing (approximately 30 percent) or B.Sc. Nursing (approximately 11 percent). Eight nurses (22.9 percent) had working experience of 1-4 years. Less than half of the nurses (40 percent) had a working experience of 5-8 years in ICU and rest (37.1 percent) nurses had experience of more than 8 years (Table 1)

Table 1:-Frequency and Percentage Distribution of Nursing Personnel by Demographic Characteristics (Age, Gender, Professional Qualification and Work Experience) of Nursing Personnel

		n=35
Variable	Frequency	Percentage
	(f)	(%)
Age in years		
21-30	22	63
31-40	13	37
Gender		
Male	19	54.3
Female	16	45.7
Professional Qualification		
G.N.M.	23	65.7
B.Sc. Nursing	8	22.9
Post B.Sc. Nursing	4	11.4
Work Experience in critical care	nursing unit (in years)	
1 to 4	8	22.9
5 to 8	14	40
More than 8	13	37.1

Out of all, more than one third (86 percent) of nursing personnel had attended in service education related to CVC Care Bundle. Nursing Personnel had attended the last in-service education within a period of 6 months was 16.7 percent and again 16.7 percent had attended between the period of 6 months to 1 year whereas majority of the nursing personnel (66.6 percent) had attended in-service education program earlier than one year. Majority (94.3

n_35

percent) of nursing personnel had two to three patients assigned to them in a shift. Most (91.4 percent) of the nursing personnel had two to three patient on ventilator, out of their assigned patients in a shift (Table 2)

Table 2:-Frequency and Percentage Distribution of Nursing Personnel by Demographic Characteristics (In-service Education, Number of Assigned Patient and Number of Assigned Mechanically Ventilated Patients in a shift)

		11-55
Variable	Frequency (f)	Percentage (%)
Attended In-service education		
Yes	30	86
No	05	14
Last attended In- service education attended		
Within last 6 months	05	16.7
6 months - 1 year	05	16.7
Earlier than 1 year	20	66.6
No. of Assigned Patient		
One	02	05.7
Two to three	33	94.3
No. of Assigned Mechanically Ventilated Patient		
One	03	08.6
Two to three	32	91.4

Mean posttest knowledge score (24.94) of thirty five nursing personnel (35) was found to be significantly higher than their mean pretest knowledge score (19.57) suggesting gain in the knowledge of nursing personnel regarding CVC Care Bundle (Figure 1).



Figure 1:-Area Chart showing comparison between Pretest and Posttest Knowledge Scores of Nursing Personnel

Mean posttest practice score (47.11) of thirty five nursing personnel was found to be significantly higher than their mean pretest practice score (39.17), suggesting the effectiveness of education program in adopting the correct practice of nursing personnel regarding CV Care Bundle (Figure 2). There is significant association between pretest knowledge score and duration of last attended in- service education as computed by One way ANOVA (p=0.024). The computed One- way ANOVA test value between pretest knowledge score and duration of last attended inservice education was 0.024, which is lower than 0.05 level of significance, hence it is statistically significant.



Figure 2:-Area Chart showing comparison between Pretest and Posttest practice scores obtained by nursing personnel

Discussion:-

The result of the present study was showed that mean pretest knowledge score was 19.57. A similar finding was found in the study concluded by Shaolin. et.al. (2015) revealed that the mean knowledge score was 8.17 out of 20 and standard deviation was 2.72. The result of present study showed the mean pretest knowledge score was (19.57) and the posttest knowledge score was (24.94). Similar findings were found in study concluded by Pushpakala and Ravinath (2014), they reported that mean pretest score was 9.80% and the posttest knowledge score was 16.58% as followed by Self-Instructional Module. Both show that the programs increased the knowledge after their administration in the study group. However, education program in the present study showed 15.34% of gain in knowledge in contrast to only 6.78% of gain by Self-Instructional Module. The greater gain could be assigned to direct face to face interaction with the learners. Similar findings were found in the study conducted by Shrestha, (2014) revealed that mean knowledge score in pre-intervention was 14.75 \pm 2.37. After educational intervention the score was changed 16.80 \pm 5.51.The mean posttest practice score (47.11) were higher than their mean pretest practice score 39.17) with mean difference of 7.94. The p value was <0.001 whereas the comparable findings were found in a study which was done by Sol and Badawy, (217) revealed that the mean pretest practice score was 5.09 and mean posttest practice was 9.98. It indicates that education program was effective to enhance the practice of nursing personnel.

Limitations

- 1. Study was limited to only liver coma ICU
- 2. No attempt was made to measure the retention of knowledge gained and improved practice due to time limitation.
- 3. Standardized tool could not be located by investigator, so investigator developed the tool for the study.

Conclusion:-

Study concluded that the Education Program was effective in enhancing the Knowledge and improving the Practice of Nursing Personnel regarding CVC Care Bundle. Therefore it can be concluded that there is a need to provide education regarding CVC Care Bundle after regular intervals.

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