

Effectiveness of structured teaching programme on knowledge regarding care of central venous catheter among staff nurses working in Sher-i-Kashmir Institute of Medical Sciences Soura Srinagar Kashmir.

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Abstract: This study was conducted with an aim to improve knowledge of staff nurses by structured teaching programme regarding care of central venous catheter working in Sher-i-Kashmir Institute of Medical Sciences Soura Srinagar Kashmir. A pre -experimental one group pre-test and post-test design was used to conduct the study. The pre-test was conducted by using a self-structured questionnaire followed by a structured teaching programme on the same day and on every 7th day post-test was conducted. The findings revealed that the mean post-test knowledge score (**39.02±4.75**) was greater than the mean pre-test knowledge score (**26.86±7.68**) with mean difference of **12.16** at **p0.001** level of significance. This indicates that structured teaching programme were effective in enhancing the knowledge of staff nurses. There is significant association of pre-test knowledge score of staff nurses regarding care of central venous catheter with their demographic variable i.e., professional qualification at (**p0.009**) level of significance. However no significant associattion was found between pre-test knowledge score and the selected demographic variables like age in years, place of posting, working experience in years and in-service training program attended.

Keywords: Central venous catheter, Effectiveness, Structured teaching programme, Knowledge, Staff nurses, SKIMS

Introduction

Central venous catheters are small, flexible tubes placed in large veins (subclavian, jugular and femoral) for clients who require frequent access to the bloodstream. Insertion of a Central Venous Catheter in humans was first reported by a surgical intern WERNER FOREMAN, who canalized his own right atrium via the cephalic vein in 1992. A technique that facilitates catheter placement into body cavities was introduced by SVEN IVAR SELDINGER in 1953¹.

More than 5 million central venous catheters are inserted each year in the United States. Multi-lumen central venous catheters have become common in the Intensive Care Unit².

Common indications for placement of central venous catheter include hemodynamic monitoring, measurement of central venous pressure, venous oxyhaemoglobin, monitoring pressure of right side of heart, administration of intravenous fluids and nutrients, administration of medication (e.g, vasopressors, chemotherapy) because they can cause phlebitis when administered through a peripheral intravenous catheter³.

Central line associated bloodstream infection (CLABSI) remains serious and the most common cause of hospital acquired infections (HAIs) worldwide.^{4,5} While in the united states, the ICU central line bloodstream infection rate and in-patient ward central line associated bloodstream infection rate are 1.6 and 1.1 per 1000 central line days, respectively; in the developing countries the ICU central line associated bloodstream infections rate ranges from 1.6 to 44.6 cases per 1000 central line days in ICUs. ^{6,7}

Prevention of central line-associated bloodstream infection (CLABSI) remains a major issue for client's safety and cost. In fact, the CLABSI rate is proposed as an indicator for quality of care in ICUs in several countries. Many studies have shown that the education and training of ICU health care workers concerning central venous catheter

care is efficient in preventing CLABSI. Interventions focusing primarily on central-line insertion procedure, emphasized staff education, compliance to basic hygiene and timely removal of CVC have been associated with substantial reductions in CLABSI rate.⁸

While working in neonatal intensive care unit SKIMS Soura Srinagar Kashmir the researcher observed that inadequate knowledge and skill of staff nurses while handling the clients/children with central venous catheters made them to suffer from CVC related complications like catheter blockage, dislodgement of catheter, extravasation of catheter and local infection (catheter site), occlusion, phlebitis and if not treated well will lead to septicaemia and result in increased hospital mortality and morbidity rates. Nurses have a vital role in preventing central venous catheter related complications in children.

Objectives of the Study

1. To assess the pre-test knowledge score regarding care of central venous catheter among staff nurses.
2. To assess the post-test knowledge score regarding care of central venous catheters among staff nurses.
3. To evaluate the effectiveness of structured teaching programmes on knowledge regarding care of central venous catheters among staff nurses by comparing pre-test and post-test knowledge scores.
4. To find the association of pre-test knowledge scores regarding care of central venous catheter among staff nurses with their demographic variables (age in years, professional qualification, place of posting, working experience in years, in-service training programme on central venous catheter care attended.)

Research Hypothesis

1. **H₁:** There is a significant increase in mean post-test knowledge score as compared to mean pre-test knowledge score regarding central venous catheter care among staff nurses after administration of structured teaching programmes at $p \leq 0.05$ level of significance.
2. **H₂:** There is significant association of pre-test knowledge score of staff nurses regarding central venous catheter care with their selected demographic variables (age in years, professional qualification, place of posting, working experience in years, in-service training programme on central venous catheter care attended) at $p \leq 0.05$ level of significance.

Review Literature

Pushpakala, K.J, Ravinath A (2014)⁷³ conducted a pre-experimental study at Tamil Nadu India among 50 staff nurses. The aim of the study was to assess the effectiveness of self-instructional modules on knowledge regarding care of central venous catheters. The findings of the study revealed that the mean posttest score was 16.58% was greater than mean pretest-score was 9.80 %, and the difference between pre-test knowledge score and post-test knowledge score was 6.78%. The findings of the study revealed that the staff nurses in post-test were having 70% adequate knowledge and 30% were having moderately adequate knowledge regarding care of clients with central venous catheter. So the self-instructional module was effective in increasing the knowledge regarding care of central venous catheters among staff nurses.

Shrestha R (2013)⁷⁴ conducted a pre-experimental study at Kathmandu Nepal among 40 staff nurses. The aim of the study was to determine the effectiveness of educational intervention in improving the nurse's knowledge regarding care central venous catheter. The results revealed that the mean pretest knowledge score was 14.75 and mean posttest knowledge score was 16.80 and the mean difference was 2.05 $p = (0.0001)$. The findings of the study showed that educational intervention programs significantly improved the nurses' level of knowledge regarding care of the clients with central venous catheter.

Daniell B, Nagaraju B, Padmavathi GV, Bolouri A, Zothanmawii C, Sahar SH (2013)⁷⁶ conducted a pre-experimental study at oncology hospital of Bangalore among 50 staff nurses. The aim of the study was to assess the effectiveness of structured teaching programmes on knowledge regarding care of clients with central venous catheter. The findings of the study revealed that the Mean post-test knowledge score (34.8) was greater than the Mean pre-test knowledge score (26.9) with mean difference in pre and post-test knowledge score 7.9 and was found to be statistically significant at level (p -value 0.0001). Which implied that the teaching program regarding care of central venous catheter among staff nurses was effective?

Methodology

The research design selected for the study was Pre-experimental one group pre-test post-test research design and was conducted at surgical ICU, Paediatric ICU, Medical Oncology, and Neonatal ICU among 50 staff nurses selected by Convenient Non-Probability Sampling FROM 10-04-2019 to 26-05-2019. Pre-test knowledge was assessed by administering a structured of structured teaching programme after 15 minutes of break. Post-test knowledge score was assessed by administering the same self-structured questionnaire on the 7th on 7th day. Data was analysed and interpreted by differential deferential and inferential statistics.

Results

Data presented in table 1 revealed that most of study subjects **25 (50%)** belong to the age group of 31-40 years, Most of the study subjects **28 (56%)** were B.sc(N) qualified, most of study subjects **16 (32%)** were from surgical ICU, most of study subjects 32% were having 1-10 years of experience, Majority of the study subjects **48 (96%)** have not attended any in-service training program and only **2 (4%)** have attended in-service training program.

Table 1: Demographic details of study subjects

N=50

Particulars	Category	Frequency	Percentage
Age (years)	21-30	15	30
	31-40	25	50
	41-50	10	20
Professional Qualification	GNM	16	32
	B.Sc. (N)	28	56
	M.Sc. (N)	6	12
Place of Posting	SICU	16	32
	PICU	11	22
	Medical Oncology	10	20
	NICU	13	26
Working Experience E in years	1-5	16	32
	6-10	16	32
	11-15	6	12
	16-20	5	10
	21 and above	7	14

In-service

Training programme

On central venous

Catheter care

Attended	Yes	2	4
	No	48	96

Data presented in table 2 revealed that in pre-test most of the study subjects **21 (42%)** had moderately adequate knowledge, **19 (38%)** had inadequate knowledge and only **10 (20%)** had adequate knowledge regarding care of central venous catheter and in post-test, majority of study subjects **43(86%)** had adequate knowledge, **7 (14%)** had moderately adequate knowledge and none had inadequate knowledge regarding care of central venous catheter.

Table 2: Comparison of study subjects according to Pre-test and Post-test knowledge score.

Level of Knowledge	Pre-test		Post-test	
	Frequency	Percentage	Frequency	Percentage
Inadequate	19	38	0	0
Moderately adequate	21	42	7	14
Adequate	10	20	43	86

Data presented in the table 3 revealed that mean post-test knowledge score (**39.02**) was greater than than mean pre-test knowledge score (**26.86±7.68**) of study subjects with mean difference of **12.16** at **p <0.001*** (significant) which indicates that structured teaching programmes were effective in improving knowledge of study subjects regarding care of central venous catheters.

Table 3: Comparison between mean Pre-test and Post-test knowledge score and SD of study subjects.

Knowledge assessment	Mean	Median	SD	Min	Max	Mean difference	Paired 't' test	P-value
Pre-test	26.86	28.5	7.68	14	40	12.16	15.74	<0.001*
Post-test	39.02	40	4.75	28	47			

Data presented in table 4 revealed that a significant association was found between professional qualification and pre-test knowledge score (**p=0.009**). while as no association was found between age in years(**p= 0.305**), place of posting(**p=0.793**), working experience in years (**p=0.162**) and any inservice programme attended (**p=1.891**) with pre-test knowledge score of study subjects (**p0.05**).

Table 4: Association of pre-test knowledge score of study subjects regarding central venous catheter care with their selected demographic variables.

Variable		Level of Knowledge			Chi-square	p-value	df	Result
		Inadequate	Moderate	Adequate				
Age (years)	21-30	4	6	5	4.959	0.305	4	NS
	31-40	11	12	2				
	41-50	4	3	3				
Professional Qualification	GNM	11	5	0	13.169	0.009	4	S
	B.Sc. (N)	7	14	7				
	M.Sc. (N)	1	2	3				
Place of Posting	Surgical ICU	5	7	4	3.268	0.793	6	NS
	Pediatric ICU	5	3	3				
	Medical Oncology	3	6	1				
	Neonatal ICU	6	5	2				
Working Experience (years)	1-5	5	6	5	11.742	0.162	8	NS
	6-10	5	9	2				
	11-15	5	1	0				
	16-20	2	3	0				
	> 20	2	2	3				
In-service training program attended	Yes	1	0	1	1.891	0.501	2	NS
	No	18	21	9				

Discussion

The above findings are supported by a apre-experimental study conducted by **Danielle B, Nagaraju B, Padmavathi GV, Bolouri A, Zothanmawii C, Sahar SH (2013)**⁷⁶ at oncology hospital of Bangalore among 50 staff nurses to assess the effectiveness of Structured teaching programme on knowledge regarding care of central venous catheter. The findings of the study revealed that the Mean post-test knowledge score (**34.8**) was greater than the Mean pre-test knowledge score (**26.9**) with mean difference of **12.16** ($p < 0.001$) which implied that the teaching program on central venous catheter among staff nurses was effective.

The findings of the study are further supported by a pre-experimental study conducted by **Shrestha R (2013)**⁷⁴ at Kathmandu Nepal among 40 staff nurses to assess the effectiveness of educational intervention in improving nurse’s knowledge regarding care central venous catheter. The results revealed that the mean pretest knowledge score was (**14.75**) and mean posttest knowledge score was (**16.80**) and the mean difference was **2.05** ($p < 0.001$). Which indicated that the educational intervention program on central venous catheter among staff nurses was effective?

The findings of the study are further supported by a pre-experimental study conducted by **Deshmukh M, Shinde M (2014)**⁴⁴ at Govt Jalana Hospital India among 60 staff nurses to assess the effectiveness of structured educational programs on knowledge regarding care of central venous catheter. The results of the study revealed that the mean posttest knowledge score (**65**) was greater than the mean pretest knowledge score (**43.3**) with mean difference of

21.7 ($p < 0.001$). Which indicated that a structured educational programme was effective in enhancing the knowledge of staff nurses regarding care of central venous catheters? **Implications:**

The findings of the study have implications for nursing practice, nursing education, nursing research and nursing administration.

Conclusion:

The Structured Teaching programme regarding care of central venous catheter was effective in improving the knowledge of staff nurses. Educating staff nurses will help them to become more aware and competent to provide quality care to the patients with central venous catheters.

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