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A Study to Evaluate the Effectiveness of Structured Teaching Programme on Knowledge Regarding The Care of Central Venous Catheter Among Staff Nurses Working in Paediatric Units in Selected Hospitals of District Lucknow, U.P.

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Abstract: ***The use of Central Venous Catheters has increased dramatically and exclusively in modern medicine, they are considered as life sustaining devices. They are widely used in critically ill patients throughout the world. Nurses play a vital role in preventing complications associated with Central Venous Catheters. The aim of study was to evaluate the effectiveness of structured teaching program on knowledge regarding the care of Central Venous Catheter among staff nurses working in Paediatric units of selected hospitals of District Lucknow,U.P.. An experimental approach with Pre-Experimental pre-test post-test design was used for this study. 40 staff nurses were selected from selected hospitals by Purposive sampling technique. Data was collected by using self-structured knowledge questionnaire. The findings of study revealed that knowledge score of Staff Nurses was higher 76.30% in post-test as compared to the pre-test 34.80%. The difference between knowledge scores of pre-test and post-test was calculated by 't' Test which was found statistically significant at p<0.05. Hence the study concluded that by providing knowledge regarding the care of Central Venous Catheter to staff nurses working in paediatric units of selected hospitals of District Lucknow,U.P. there was significant gain in their knowledge.***

Keywords: Effectiveness, Knowledge, Structured Teaching Programme, Central Venous Catheter, and Staff nurses working in paediatric units.

I. INTRODUCTION

"Health is a crown that the healthy wear, but only the sick can see it. "-Imam Shafi'ee"

Central venous catheters are small, flexible tubes placed in large veins for patients who require frequent access to the blood stream. Central venous catheters can be implanted under the skin and was introduced in 1982.[1] It is often referred as venous access ports, central line, central venous line, or central venous access catheter, because they allow frequent access to the veins without deep needle sticks. Catheters can be placed in veins in the neck (internal jugular vein), chest (subclavian vein or axillary vein), groin (femoral vein), or through veins in the arms (also known as a PICC line, or peripherally inserted central catheters).[2]Some catheters have 2 or 3 tubes (called double or triple lumen catheters). Depending on the type of catheter, central venous catheters typically remain in place for long periods, weeks, months, or even longer.[3] A CVC is an indwelling catheter that provides

temporary or long-term stable venous access for both acute and chronically ill patients. These catheters provide stable venous access that can be used for a variety of medical purposes including drawing blood, hemodynamic monitoring, and infusion of intravenous medication, infusion of intravenous □uids, chemotherapy, blood products, and parenteral nutrition. For some paediatric patients with acute and chronic illness, CVCs are an important tool in their medical care when temporary peripheral access is inadequate. There are multiple types of paediatric central lines and the decision regarding the type of line that is chosen for insertion is dependent upon the reason for the CVC, patient's diagnosis, age of the patient, patient weight, and time frame the CVC will be in place. Types of central lines include external catheters such as Hickman or Broviac, totally implanted catheters such as Mediports, and peripherally inserted central catheters.[4]

The most common indications of the central venous line include invasive hemodynamic monitoring (central venous pressure, pulmonary artery pressure), parenteral nutrition support, dialysis, chemotherapy, temporary pacemaker, venous line for caustic solutions, venous line for rapid □uid resuscitation, and inadequate peripheral veins.4 It is important in the initial phase of surgical treatment or chemotherapy, as well as in chronic management of advanced cancer and in the palliative care setting.[5]

Mechanical complications such as air embolisms, catheter leaks, and hub separations were common complications in the early literature; however, these complications are now rare during central line placement. Central line-associated bloodstream infection was recognized as the most serious risk factor in the use of the CVC in the 1950s and it continues to be a significant complication today. It is widely recognized that complications associated with the use of a CVC contribute to morbidity and mortality and lead to increased health care utilization and cost; risks and benets of CVC must be weighed carefully.[6]

Risks of CVCs include infection, malposition, pneumothorax, thrombus, embolism, tamponade, bleeding, arrhythmias, and catheter occlusion. . Nurses provide on-going assessment of people's health. Their round- the – clock presence, observation skills, and vigilance allow doctors to make better diagnosis and propose better treatments. Many lives have been saved because an attentive nurse picked upon early warning signs of up come crisis.

II. Research Methodology

Research Approach and Design: A Quantitative approach with Pre- Experimental pre-test post-test design was used for this study.

Population and Sample: The population of the main study comprised of the staff nurses who were working in Paediatric units of selected hospitals of District Lucknow,U.P.. Purposive sampling technique was used to select 40 staff nurses working in Paediatric units.

Research Tools: In this study tool consisted of two sections: Section A: Socio-demographic variables and Section B: Self- structured knowledge questionnaire regarding the care of Central Venous Catheter.

Data Collection Method: The data was collected during the month of March, 2020 from the staff nurses working in Paediatric units of selected hospitals of District Lucknow,U.P.. A prior formal written permission was obtained from the concerned authority. The investigator conducted pre-test by personally handling over the Self- Structured knowledge questionnaire to the staff nurses working in Paediatric units of selected hospitals of District Lucknow,U.P. regarding the care of Central Venous Catheter. Average time spent by the subjects for completing pre-test was approximately 15-20 minutes. After the pre-test, staff nurses were given Structured Teaching Program and a post -test was administered with the same questionnaire to the same group after 7-10 days.

Data Analysis: Results were analysed through descriptive and inferential statistics.

III. RESULTS

The analysed data was organized and presented in the form of tables which was organized under the following sections:

Section I: Frequency and percentage distribution of socio- demographic variables of staff nurses working in paediatric units.

Section II: Findings related to pre-test knowledge score of staff nurses regarding care of Central Venous Catheter.

Section III: Findings related to post-test knowledge score of staff nurses regarding care of Central Venous Catheter.

Section IV: Findings related to the effectiveness of structured teaching program regarding care of Central Venous Catheter among staff nurses by means of "t" Test.

Section V: Findings related to association between pre-test knowledge score of staff nurses regarding care of Central Venous Catheter with selected socio-demographic variables by means of Chi Square test.

Table no 1: Frequency distribution of demographic variables

S. No.	Socio- demographic Variables of staff nurses	Category	Percentage	Frequency
1	AGE IN YEARS	21 - 30	35.0%	14
		31 - 40	65.0%	26
		41 - 50	0.0%	0
		Above 50	0.0%	0
2	GENDER	Male	5.0%	2
		Female	95.0%	38
3	PROFESSIONAL QUALIFICATION	GNM	60.0%	24
		Post Basic B.Sc. Nursing	7.5%	3
		B.Sc. Nursing	32.5%	13
		M. Sc. Nursing	0.0%	0
4	PLACE OF POSTING	Surgical ICU	62.5%	25
		Pediatric ICU	22.5%	9
		Nursery	15.0%	6
		Neonatal ICU	0.0%	0
5	WORKING EXPERIENCE (In Years)	Less than 5	80.0%	32
		5- 10	12.5%	5
		10-15	7.5%	3
		Above 15	0.0%	0
6	SOURCE OF INFORMATION REGARDING THE CARE OF CENTRAL VENOUS CATHETER	Classroom instructions	35.0%	14
		Colleagues	55.0%	22
		Others	10.0%	4

Table No. 2: Table showing pre-test knowledge scores

CRITERIA MEASURE OF PRE-TEST KNOWLEDGE SCORE	
score level (N= 40)	**Pre-test f (%)**
INADEQUATE.(0-14)	21 (52.5%)
MODERATE.(15-28)	18(45%)
ADEQUATE.(29-43)	1(2.5%)
Maximum Score=43	**Minimum Score=0**

Table No.3: Table showing Mean, , Median, , Range, SD of pre-test knowledge score of staff nurses regarding the care of Central Venous Catheter.

Descriptive Statistics	Mean	S.D.	Median Score	Maximum	Minimum	Range	Mean %
Pre-test knowledge score	14.98	5.30 8	14	33	7	26	34.80

Maximum = 43 Minimum = 0

Table No.4: Table Showing Level of post-test knowledge scores

CRITERIA MEASURE OF POST-TEST KNOWLEDGE SCORE	
Score Level (N= 40)	**Post-test f (%)**
Inadequate (0- 14)	0 (0%)
Moderate (15- 28)	4 (10%)
Adequate (29- 43)	36(90%)

Maximum Score = 43 Minimum Score = 0

Table No.5: Table showing Mean, S.D, Median, Maximum, Minimum, Range and Mean Percentage scores of post-test knowledge score

N= 40

Criteria	Mean	S.D.	Median Score	Maximum	Minimum	Range	Mean %
Post-test knowledge score	32.80	3.791	33	43	25	17	76.30

Maximum= 43 Minimum= 0

Table No.6: Table showing Difference between pre-test and post-test knowledge scores

CRITERIA MEASURE OF KNOWLEDGE SCORE		
Score level (N= 40)	**Pre-testf (%)**	**Post-testf (%)**
Inadequate (0-14)	21(52.5 %)	0(0%)
Moderate (5-28)	18(45%)	4(10%)
Adequate (29-43)	1(2.5%)	36(90%)

Maximum Score=43 Minimum Score=0

Table No.7: Table showing Effectiveness of planned teaching program

	Mean ± S.D	Mean %	Range	Mean Diff.	Pairedt-Test
Pre-test knowledge	14.98±5.308	34.80	7-33	17. 820	21.771
Post-test knowledge	32.8±3.791	76.30	25-42		

Maximum=43 Minimum=0 Significance level = 0.05

Table No .8: Table showing the association between the pre-test knowledge score with selected socio -demographic variables

Association of Pre-test knowledge scores of with Selected Socio-Demographic Variables.									
Variables	**Options**	**ADEQUATE**	**MODERATE**	**INADEQUATE**	**Chi SquareTest**	**P Value**	**df**	**Table Value**	**Result**
AGE IN YEARS	21 - 30	0	7	7	0.684	0.710	2	5.991	Not Significant
	31 - 40	1	11	14					
	41 - 50	0	0	0					
	Above 50	0	0	0					
GENDER	Male	0	1	1	0.067	0.967	2	5.991	Not Significant
	Female	1	17	20					
PROFESSIONAL QUALIFICATION	GNM	0	11	13	2.402	0.662	4	9.488	Not Significant
	Post Basic B.Sc. Nursing	0	1	2					
	B.Sc. Nursing	1	6	6					
	M. Sc. Nursing	0	0	0					
PLACE OF POSTING	Surgical ICU	1	11	13	0.664	0.956	4	9.488	Not Significant
	Paediatric ICU	0	4	5					
	Nursery	0	3	3					
	Neonatal ICU	0	0	0					
WORKING EXPERIENCE (In Years)	Less than 5	1	15	16	2.251	0.690	4	9.488	Not Significant
	5- 10	0	1	4					
	10-15	0	2	1					
	Above 15	0	0	0					

SOURCE OF INFORMATION REGARDING THE CARE OF CENTRAL VENOUS CATHETER	Classroom instructions	1	7	61	2.474	0.649	4	9.488	Not Significant
	Colleagues	0	9	2					
	Others	0	2	3					

The study revealed that majority (52.5%) of staff nurses had inadequate pre-test knowledge score, followed by 45% having moderate knowledge, 2.5% having adequate pre-test knowledge score regarding the care of Central Venous Catheter. The study results depicted that majority (90%) of staff nurses had adequate knowledge score followed by 10% moderate post-test knowledge score regarding the care of Central Venous Catheter. mean, Median, Range, and S.D. of the post-test knowledge score of staff nurses regarding the care of Central Venous Catheter. The Mean post-test knowledge score was 32.80; Standard Deviation was 3.791 with Median 33 and Range17. Maximum scores obtained were 42 and minimum scores obtained were 25 out of the total possible score of 43. Post-test Mean percentage of knowledge score was 76.30. The pretest Mean± S.D. knowledge score was 14.98±5.308 pre-test Mean percentage was 34.00% and pretest Range was 7-33. Post-test Mean± S.D. was 32.8±3.791, post- test Mean percentage was 76.30% and post-test Range was 25-42. Mean difference was 17.820, calculated paired t-test was 21.771 and tabulated t-value was 2.02. Referring to tabulated t-value (2.02), the tabulated t-value was less than calculated t-value (21.771). As there was significant difference between mean pretest knowledge score and mean post-test knowledge score at0.05 level of significance after administration of structured teaching program hence H1 hypothesis was accepted and null hypothesis was rejected. Actually present, some virtual. But all have their contribution in their own way. It will not be enough whatever I pay…but my few words of acknowledgment fervently from my heart are for them…”

IV. Conclusion

Competency in care of Central Venous Catheter is critical in neonatology units and paediatric intensive care units to ensure the safety and health of neonates. Care of Central Venous Catheter is effective only when health professionals have sufficient knowledge this reason, all personnel involved in these units especially nurses should be trained adequately in all aspects of care of Central Venous Catheter. The study revealed that majority (52.5%) of staff nurses had inadequate pre-test knowledge score, followed by 45% having moderate knowledge, 2.5% having adequate pre-test knowledge score regarding the care of Central Venous Catheter. The study results depicted that majority (90%) of staff nurses had adequate knowledge score followed by 10% moderate post-test knowledge score regardingthe care of Central Venous Catheter.

V. Implications of the Study

Nursing Education

As a nurse educator, nurses should be educated to be the critical thinkers and take care of patients with Central Venous Catheter.

Nursing Practice

Nurses working in Paediatric units should have commitment to attend any form of education program to provide quality nursing care and update their knowledge to provide quality care and prevent complications caused by Central Venous Catheters.

Nursing Administration

The nurse administrator should encourage, motivate the staff nurses and make arrangements for training the staff nurses on current care of Central Venous Catheter.

Nursing Research

The nurse researcher can encourage clinical nurses to apply the findings in their daily nursing care. The nurse can promote more research with regard to knowledge of care of Central Venous Catheter.

VI. RECOMMENDATION

1. A study can be conducted to assess practice of staff nurses working in paediatric units regarding care of Central Venous Catheter.
2. A study can be replicated with a large number of samples in different setting for better generalization.
3. A comparative study can be conducted to assess the knowledge and practice of staff nurses working in paediatric units in selected government and private hospitals.

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