

A study to assess the structured teaching programme and knowledge regarding continuous renal replacement therapy among nursing staff in Apollo Hospitals Bilaspur

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Abstract:

Background: The key aspect of the study is the effective and better outcome of the staff nurse. The nursing work involved with continuous renal replacement therapy is highly complex and the learning requirements are challenging; therefore, it is important to identify Nurses' knowledge. Acute kidney injury (AKI) is a common complication in critically ill patients. Renal replacement therapy is prescribed for as many as 70% of critically ill patients in AKI and may be provided in the form of intermittent or continuous dialysis including intermittent hemodialysis, sustained low-efficiency dialysis, and continuous renal replacement therapy (CRRT).

Materials and methods: A quantitative research approach was used to assess the knowledge of nurses regarding continuous renal replacement therapy. One group pretest-posttest design was adopted and samples who met the inclusion criteria were selected using the convenience sampling method. A questionnaire was developed to assess the level of the nurses on CRRT. A pretest was conducted which was followed by the structured teaching program and posttest.

Results: The study findings revealed that pretest 10% (3) had poor knowledge, 50% (15) were average, 40% (12) had good knowledge and in the post-test, 73.33% (22) had good knowledge, 26.67% (8) had average knowledge. The structured teaching program was found to be effective as the calculated *t* value of 8.16 was higher than the tabulated value of 3.66 at $p < 0.001$ level of significance. Findings revealed that mean posttest knowledge score 81.56% was higher than mean pretest knowledge score 57.92%. Thus the findings reveals there has been significant increased knowledge of staff nurse, regarding continuous renal replacement therapy among nursing staff in Apollo Hospitals Bilaspur.

There was a significant association between the knowledge and the training attended by the staff nurses.

Conclusion: Although CRRT is performed only in an ICU, acute care nurses outside the ICU also play an integral part in the care of the acute care patient before and after therapy. When all nurses expand their knowledge of the effects that many disease processes have on kidney function and available treatments, they can help provide safe, high-quality care. Thus the findings reveals there has been significant increased knowledge of staff nurse, regarding continuous renal replacement therapy among nursing staff in Apollo Hospitals Bilaspur.

Key word: CRRT- continuous renal replacement therapy. AKI-. Acute kidney injury, knowledge, Staff nurses, structure teaching program.

Date of Submission: 28-05-2022

Date of Acceptance: 08-06-2022

I. Introduction

Nance, Lauren (2019), CRRT is a type of blood purification therapy used with patients who are experiencing AKI during this therapy, a patient's blood passes through a special filter that removes fluid and uremic toxins, returning clean blood to the body¹. Liu K.D (2006) ,The slow and continuous nature of the process, which is termed hemodynamically unstable and typically performed over a 24-hour period, to better tolerate this process allows patients with unstable blood pressure and heart rates². Saudan P. (2006), Continuous renal replacement therapy (CRRT) is commonly used to provide renal support for critically ill patients with acute kidney injury, particularly patients who are hemodynamically unstable³. Vinsonneau C (2006), A variety of techniques that differ in their mode of solute clearance may be used, including continuous venovenous hemofiltration with predominantly convective solute clearance, continuous venovenous hemodialysis with predominantly diffusive solute clearance, and continuous venovenous hemodiafiltration, which combines both dialysis and hemofiltration⁴. Ronco C.(1999), The present article compares CRRT with other modalities of renal support and reviews indications for initiation of renal replacement therapy⁵. Tolwani A.J., (2008), Despite the general safety and valuable advantages, CRRT has some limitations⁶. Payen D., (2009), These include the

requirement of a large-bore central vascular access (a risk source of infection), hypotension , continuous anticoagulation (inadequate control of anticoagulants may lead to bleeding, which is associated with a decrease in hemoglobin level and/or drop in blood pressure and possible need of blood transfusion, or clot formation which is associated with short circuit life, interruption of prescribed dose, inadequate therapy, and increased cost), electrolyte imbalance (potassium, phosphorus, and magnesium), drug removal (e.g., antibiotics), and immobilization of the patient for prolonged periods⁷. Joannes-Boyau (2013),The aim of the present study is to improve the knowledge regarding CRRT among the staff nurses.⁸

II. Material And Methods

Research approach: Quantitative research approach

Research design: Pre-Experimental Design \

Settings of the study: Apollo Hospitals Bilaspur, CG

Duration of the study: October 2021 to December 2021

Data collection method: Data are collected using a questionnaire. It contains:

Section A – Demographic Variables like age gender, education, experience, training on the topic and sources of information

Section B – Structured Questionnaire, number of question-15, scoring system-each 2 marks.

Target population: ICU Staff nurses

Sample size: 30 staff nurses

Sampling method: Non-Probability Convenience Sampling

Inclusion criteria:

1. Staff nurses who work in ICU'S.
2. Staff nurses who are present on the duty on the day of the study.
3. Staff nurses who are willing to participate.

Exclusion criteria:

1. Staff nurses who are working in other areas such- Labour Room,OT and Ward
2. Staff nurses who are not present on the duty on the day of the study.

Procedure methodology

A formal permission was obtained from the Assistant medical superintendent of Apollo hospitals. A total of 30 samples were selected using convenience sampling technique and one group pre- test post -test design was adopted to assess the knowledge of the ICU nurses on CRRT. The pretest was followed by structured teaching program and posttest.

Statistical analysis

The data was analyzed using Descriptive statistics [Frequency and percentage], Chi-square was used to find the association between the demographic variables and level of knowledge, the effectiveness of the structured teaching program was assessed using inferential statistics [Paired t test].

III. Result

The findings of the study are tabulated based on the objectives

1. Frequency and percentage distribution of the demographic variable
2. Level of knowledge of nurses on CCRT in PreTestLevel of knowledge of nurses on CRRT in Posttest
3. Effectiveness of the structured teaching program
4. Association of the demographic variables with the pre- test level of knowledge

Frequency and percentage distribution of the demographic variable

Figure-1.1 Piediagram representing the distribution of subjects according to age group.

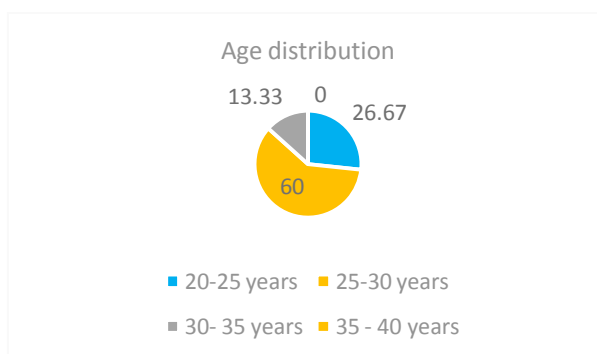


Figure-1.1, depicts that among 30 nursing staff of 26.67% (8) are belong to 20-25 years, 60% (18) belongs 25-30 years, 13.33% (4) belongs 30-35 years, (0) belongs 35-40 years.

Figure 1:2 Distribution of subjects according to Gender.

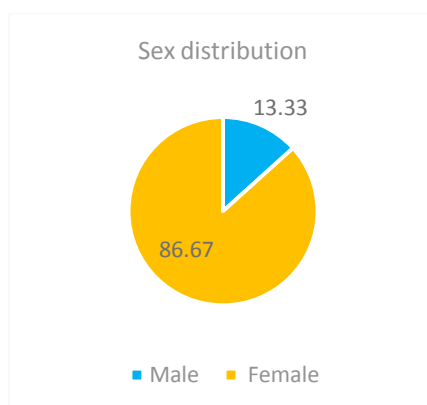


Figure 1:2 depicts that among 30 nursing staff of 13.33% (4) are males 86.67 (26) are females.

Figure 1:3 Distribution of subjects according to educational status.

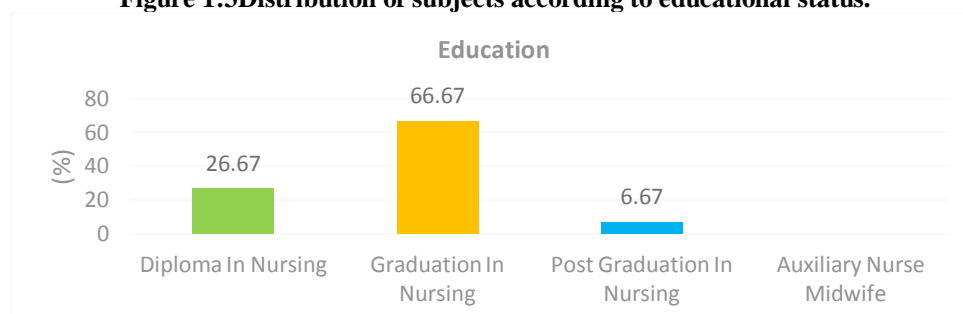


Figure 1:3 depicts that among 30 staff nurse of 26.67% (8) are having Diploma In Nursing, 66.67% (20) Graduation In Nursing 6.67% (2) were Post-Graduation In Nursing, (0) were Auxiliary Nurse Midwife.

Figure 1:4 Distribution of subjects according to Experience.

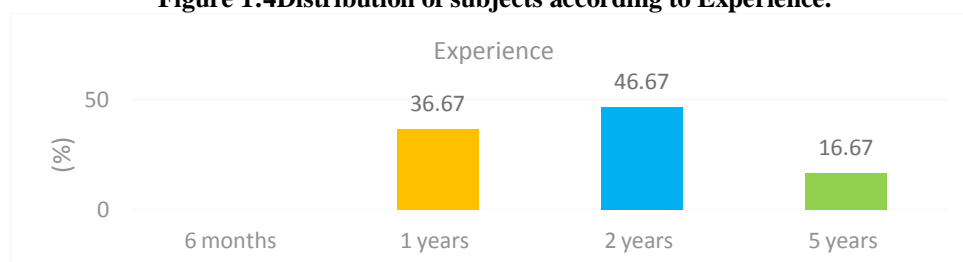


Figure 1:4, depicts that among 30 staff nurse of (0) are having 6 months experience, 36.67% (11) , 1 years' experience ,46.67% (14) were 2 years' experience, 16.67(5) were 5 years' experience.

Table 2: Level of knowledge of nurses on CRRT in Pre-test

	Knowledge Level			
	Poor (0-5)	Average (6-10)	Good (11-15)	Total
Pre-test	3(10%)	15(50%)	12(40%)	30(100%)
Post-test		8(26.67%)	22(73.33%)	30(100%)

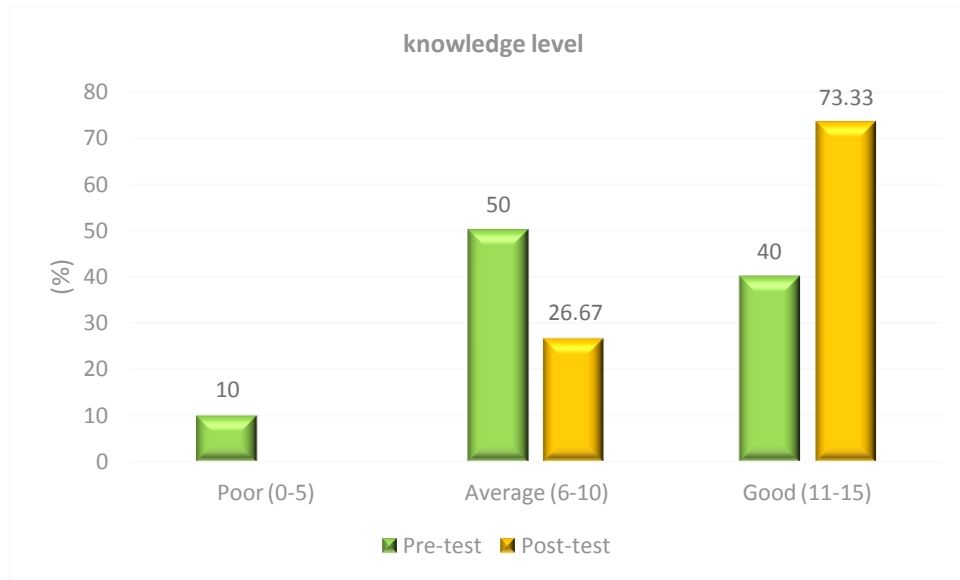
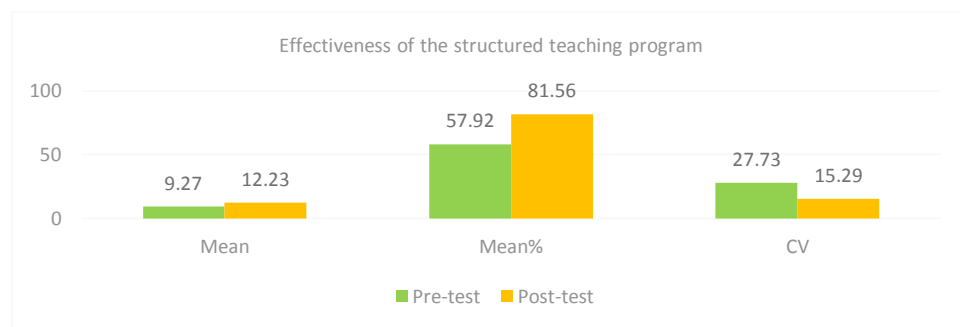


Table No-2: Present that 10% (3) were poor, 50% (15) were average, 40% (12) were Good, Total 100% (30). post test It represent that 0% (0) were poor, 26.67% (8) were average, 73.33% (22) were Good, Total 100% (30).

Table 4: Effectiveness of the structured teaching program

	Knowledge score				Significance
	Mean	Mean%	Mean difference (Gain %)	Paired 't' value	
Pre-test	9.27	57.92	2.96(23.64%)	8.16	P<0.001 HS
Post-test	12.23	81.56			



Chi-square value=8.07, df=2, P<0.02 S

Table -4, Figure -4, Shows that the pre-test total mean percentage was 57.92% and the post-test total mean percentage was knowledge 81.56%. Paired t-test value was 8.16 which was more than the table value 3.66 p<0.001 level of significance. Hence the structured teaching program had improved the knowledge of the nurses on CRRT

Table 5: Association of the demographic variables with the pre -test level of knowledge

	Pre-test knowledge regarding CRRT			Total	Chi-square value/df/Critical value	Table value of chisquare	Significance
	Poor (0-5)	Average (6-10)	Good (11-15)				
1 Age group							
20-25 years	0(0%)	5(62.5%)	3(37.5%)	8(100%)	4.19/4/9.49	P>0.05	Not Significant
25-30 years	3(16.67%)	9(50%)	6(33.33%)	18(100%)			
30- 35 years	0(0%)	1(25%)	3(75%)	4(100%)			
35 - 40 years							
2 Gender							

Male	0(0%)	2(50%)	2(50%)	4(100%)	0.47/2/ 5.99	P>0.05	Not Significant
Female	3(11.54%)	13(50%)	10(38.46%)	26(100%)			
3 Education							
Diploma In Nursing	2(25%)	2(25%)	4(50%)	8(100%)	5.60/4/ 9.49	P>0.05	Not Significant
Graduation In Nursing	1(5%)	11(55%)	8(40%)	20(100%)			
Post GraduationIn Nursing	0(0%)	2(100%)	0(0%)	2(100%)			
Auxiliary Nurse Midwife							
Experience							
6 months					12.14/ 4/9.49	P<0.05	Significant
1 years	2(18.18%)	8(72.73%)	1(9.09%)	11(100%)			
2 years	1(7.14%)	7(50%)	6(42.86%)	14(100%)			
5 years	0(0%)	0(0%)	5(100%)	5(100%)			
Have you attended any training in relation on CRRT?							
Yes	0(0%)	9(47.37%)	10(52.63%)	19(100%)	7.75/2/ 5.99	P<0.05	Significant
No	3(21.43%)	9(64.29%)	2(14.29%)	14(100%)			

Source of information	Pre-test knowledge regarding CRRT			Total	Chi square value/df/Critical value	P value	Significance
	Poor (0-5)	Average (6-10)	Good (11-15)				
Medias	3(11.54%)	12(46.15%)	11(42.31%)	26(100%)	1.67/4/9.49	P>0.05	Not Significant
TV							
Newspaper	0(0%)	1(100%)	0(0%)	1(100%)			
Journals	0(0%)	2(66.67%)	1(33.33%)	3(100%)			

Table presents that experience of the nurses, previous training attended had an association with the pretest level of knowledge at p<0.05 level of significance

IV. Discussion

The findings of the study on the effectiveness of structured teaching program regarding continuous renal replacement therapy among nursing staff in Apollo Hospitals Bilaspur Chhattisgarh.

The major findings of the study are:

- 1) Majority of nursing staff 60% (18) belongs 25-30 years of age.
- 2) Majority of nursing staffs 86.67 (26) are females.
- 3) Majority of nursing staffs 66.67% (20) are Graduate In Nursing.
- 4) Majority of nursing staffs 46.67% (14) have 2 years' experience, 16.67(5) were 5 years' experience.

The level of knowledge on CRRT on pretest was 10% (3) poor, 50% (15) average, 40% (12) Good and in post-test majority 0% (0) were poor, 26.67% (8) were average, 73.33% (22) were good.

The Pre-test and post-test mean percentage was 57.92% and 81.56% respectively. Paired t-test value was 8.16 which was more than the table value 3.66 at p<0.001 level of significance, Hence the research hypothesis that there will be a significant increase in the level of knowledge after the structured teaching program was accepted. The study finding is supported by a similar study done by Nance et.al 2019 to determine if education focusing on continuous renal replacement therapy (CRRT) troubleshooting was effective at improving ICU nurses' knowledge and self-confidence levels. 30 ICU Nurses participated in the educational intervention. The findings revealed CRRT troubleshooting education had significantly improved the knowledge and self-confidence of ICU nurses. Which thereby. Decreased downtime and improved patient outcomes in the future¹.

V. Conclusion

Jang SM (2020), Initial and ongoing healthcare staff education is central to successful uninterrupted CRRT. Typically, education is both didactic (for example, reasons for use, treatment modalities, patient scenarios, documentation) and simulated (for example, competency checks, machine setup, troubleshooting). Also beneficial are subject-matter experts (clinical nurse specialists, educators, advanced bedside nurses) who serve as resources for ICU nurses. Intentional rounds, just-in-time discussions (at the bedside) about patients on CRRT, and periodic competency checks also can help identify potential gaps and areas for improvement. Although CRRT is performed only in an ICU, acute care nurses outside the ICU also play an integral part in the care of the acute care patient before and after therapy. When all nurses expand their knowledge of the effects that many disease processes have on kidney function and available treatments, they can help provide safe, high-quality care⁹.

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