

KNOWLEDGE ON CONTINUOUS RENAL REPLACEMENT THERAPY IN CRITICALLY ILL PATIENTS***Kanchana, G., Mary Monica, S., Jaslina Gnanarani, J., Sasikala, D., Vijayalakshmi, K. and Nesa Sathya Satchi**

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Abstract

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 unstable. **Aim:** The study was aimed to assess the level of knowledge on continuous renal replacement therapy in critically ill patient among critical care nurses. **Methods:** A descriptive correlative study was conducted to assess the level of knowledge on continuous renal replacement therapy in critically ill patients among critical care nurses at selected tertiary care centers. After obtaining ethical clearance and setting permission, 100 staff nurses were selected by consecutive sampling technique. The data was collected by self-administration method using predetermined and pretested tools through Google forms in WhatsApp / E mail. **Results:** The study findings revealed that the majority of the critical care nurses were aged between 21-25 years (73%), graduates (95%), 40% of them had 1-3 years of total experience and experience in critical care unit and had received the necessary knowledge about CRRT through in-service education (59%). More than half of the critical care nurses had moderately adequate knowledge (51%), 38% of them needed improvement and 11% of them had adequate knowledge on continuous renal replacement therapy in the critical care unit. The mean and standard deviation of knowledge scores on continuous renal replacement therapy in the critical care unit was $M = 17/30$, $SD = 3.93$ and mean percentage was 56.66. There was a significant association between background variables like age and level of knowledge on continuous renal replacement therapy in CCU at $P < 0.05$. **Conclusion:** The findings from the study contributes that more than one third of the nurses needed improvement on knowledge regarding continuous renal replacement therapy in critically ill patients.

Keywords: Knowledge, Continuous renal replacement therapy and critically ill patients

INTRODUCTION

Nursing is a profession within the healthcare sector focused on the care of individuals, families, and communities so they may attain, maintain, or recover optimal health and quality of life. Nurses independently assess and monitor patients, and taking a holistic approach, determine the patients need to attain and preserve their health (Smith, 2023). Acute kidney injury (AKI) is a common complication among critically ill patients worldwide and is associated with substantial morbidity and mortality rates of 50% to 90%. Approximately 5% to 10% of AKI patients require acute renal replacement therapy (RRT) during intensive care unit (ICU) admission (Tolwani, 2012). Critically ill patients can develop acute kidney injury (AKI) as a result of myriad conditions, including COVID-19, sepsis, and heart failure. According to Katulka and colleagues, when these patients require renal replacement therapy (RRT), their mortality rate increases to nearly 60%. Continuous Renal Replacement Therapy (CRRT) is ordered 70% of the time for acute kidney injury patients (Gabarre, 2020). Nurses who are charged with the role of caring for the patient experiencing CRRT require comprehensive training that focuses on the concept of renal failure. Evidence based resources and standardized education are necessary for nurses to provide safe care to gravely ill patients requiring CRRT. It is essential for the nursing staff to be very proficient when using the therapy while caring for a very critically ill patient. Education is a key essential of the CRRT therapy and safe care of the patient and promote positive patient outcomes (Bonnassieux, 2018).

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Need for the Study

Acute kidney injury (AKI) in intensive care units (ICUs) is associated with a high mortality of up to 50–60% and almost 5–20% of the patients remain long-term dialysis dependent for a long time. Continuous renal replacement therapy (CRRT) has become a mainstay therapy in the intensive care unit (ICU) and its utilization continues to increase in developed countries to provide kidney support for critically ill patients who are hemodynamically unstable (Tandukar, 2019). The current evidences on knowledge of nurses on CRRT is very limited. Therefore, this study is designed to assess the knowledge on continuous renal replacement therapy in critically ill patients among critical care nurses at selected hospitals, Chennai.

Statement of the Problem

A Descriptive Correlational Study to Assess the Knowledge on Continuous Renal Replacement Therapy in Critically Ill Patients among Critical Care Nurses at Selected Hospitals, Chennai.

Objectives of the Study

- To assess the level of knowledge on continuous renal replacement therapy in critically ill patients among critical care nurses.
- To find out the association between selected background variables of nurses and level of knowledge on continuous renal replacement therapy in critically ill patients among critical care nurses.

Null Hypothesis

H01: There will be no significant association between selected background variables of nurses and level of knowledge on continuous renal replacement therapy in critically ill patients among critical care nurses.

METHODOLOGY

A descriptive correlative study was conducted to assess the level of knowledge on continuous renal replacement therapy in critically ill patients among critical care nurses at selected tertiary care centers. An intensive review of literature and guidance laid the foundation for the development of tools such as background variable proforma of nurses and structured knowledge questionnaire on continuous renal replacement therapy in critical care units. The data collection tools were validated and the reliability was established. The feasibility of the study and appropriateness of the instruments were assessed by conducting pilot study. After obtaining ethical clearance and setting permission, 100 staff nurses were selected by consecutive sampling technique. The purpose of the study was explained with the brief introduction and written consent was obtained from all the study participants. The data was collected by self-administration method using predetermined and pretested tools through Google forms in WhatsApp / Email. The collected data were analyzed using the appropriate descriptive statistics such as mean and standard deviation and inferential statistics such as chi square test.

RESULTS AND DISCUSSION

The baseline data revealed that majority of the critical care nurses were aged between 21 and 25 years (73%), graduates (95%), forty percent of them had 1-3 years of total experience and experience in critical care unit and they have received necessary knowledge about CRRT through in service education (59%). Most of them were female nurses (83%) in critical care unit (Fig.1).

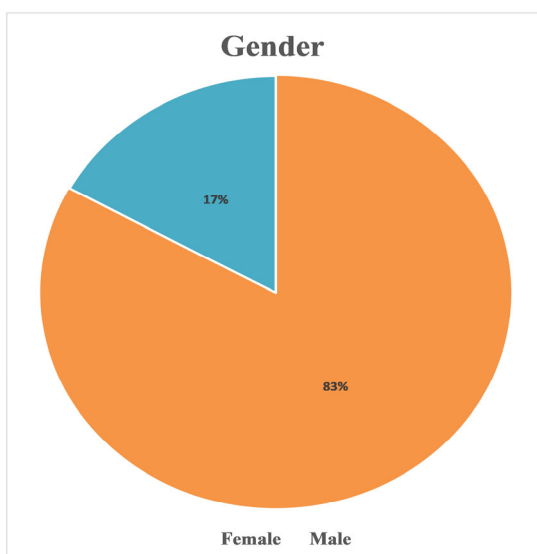


Figure 1. Percentage Distribution of Gender among Critical Care Nurses

More than half of the critical care nurses had moderately adequate knowledge (51%), 38% of them needed improvement and 11% of them had adequate knowledge on continuous renal

replacement therapy in the critical care unit (Table1). This insists the CCU nurses need to be updated with the knowledge and practice on continuous renal replacement therapy. A lack of knowledge, in regard to troubleshooting, has been shown to cause increased down time, decreased filter life, and have a negative impact on patient outcomes.

Table 1. Percentage Distribution of Level of Knowledge on Continuous Renal Replacement Therapy in the Critical Care Unit among Critical Care Nurses

(N=100)	
Level of Knowledge	f & %
Adequate Knowledge (23 -30)	11
Moderately Adequate Knowledge (15-22)	51
Needs Improvement(0-14)	38

The above results were supported by an experimental study conducted by Nance (2019) to determine if education focusing on CRRT troubleshooting was effective at improving ICU nurses' knowledge and self-confidence levels by using pre-post-test and questionnaire at Saint Joseph Hospital among 30 ICU nurses. The findings revealed a statistically significant increase in overall knowledge ($p < 0.001$). CRRT troubleshooting education was shown to be significant in improving knowledge and self-confidence levels of ICU nurses. A routine educational intervention to improve education and self-confidence in the management and troubleshooting of CRRT was effective at increasing ICU nurse knowledge and self-confidence levels. Improved knowledge levels and self-confidence in managing CRRT may lead to decreased down time and improved patient outcomes in the future. The Mean and Standard Deviation of knowledge score on continuous renal replacement therapy in the critical care unit among critical care nurses was 17.30 ± 3.93 (Table 2).

Table 2. Mean and Standard Deviation of Knowledge Scores on Continuous Renal Replacement Therapy in the Critical Care Unit among Critical Care Nurses

(N= 100)				
Variable	Obtainable Score	Mean	SD	Mean Percentage
Knowledge	0-30	17	3.93	56.66

There was a significant association between background variables like age and level of knowledge on continuous renal replacement therapy in CCU at $P < 0.05$. However, there was no significant association between total years of experience in CCU and knowledge on CRRT ($P > 0.05$). The corresponding hypothesis stated that there will be no significant association between selected background variables of nurses and level of knowledge on continuous renal replacement therapy in critically ill patients among critical care nurses was rejected with regard to age and retained with respect to years of experience in CCU (Table 3).

Table 3. Association between Selected Background Variables of Critical Care Nurses and Level of Knowledge on Continuous Renal Replacement Therapy

Background Variables	Level of Knowledge		Chi- Square χ^2	df	p Value
	Up to Mean	Above Mean			
Age					
≤ 25 years	50	23	4.84	1	0.028
> 25 years	12	15			
Total Years of experience in CCU					
≤ 3 years	36	41	1.03	1	0.31
> 3 years	8	15			

The findings were supported by Lu (2022) to explore the application of specialist nursing teams in patients undergoing unplanned interruptions in continuous renal replacement therapy among sixty-six patients admitted to the intensive care unit of Jiangsu Province Hospital, China for continuous renal replacement therapy (CRRT) and experienced unplanned interruptions from Aug 2020 to Mar 2021. Twenty-four patients with conventional care were taken as the control group, and 42 patients in the specialized nursing team were taken as the experimental group. The age, type of disease, and degree of illness of the two groups were statistically processed and the differences were not significant ($P>0.05$) and were comparable.

Conclusion

The findings from the study contributes that more than half of the critical care nurses had moderately adequate knowledge on continuous renal replacement therapy in critically ill patients. It highlights the need for periodical educational intervention on continuous renal replacement therapy with follow up and reinforcement.

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