

**A STUDY TO ASSESS THE KNOWLEDGE AND
PRACTICES OF STAFF NURSES REGARDING FLUID
AND ELECTROLYTE ADMINISTRATION IN POST
OPERATIVE CARDIAC SURGICAL PATIENTS
ADMITTED IN CARDIAC SURGICAL ICU AND
CARDIAC SURGICAL WARD,
SCTIMST, TVM**

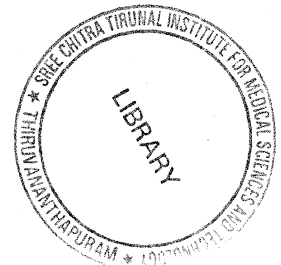
PROJECT REPORT

*Submitted in partial fulfillment of the requirements
for the*
Diploma in Cardiovascular and Thoracic Nursing

Submitted by

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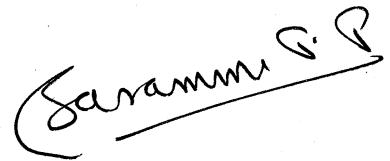
November 2011

CERTIFICATE FROM SUPERVISORY GUIDE

This is to certify that Ms. Aswathy Vijayan has completed the project work on “A study to assess the knowledge and practices of staff nurses regarding fluid and electrolyte administration in post operative cardiac patients admitted in CSICU and CSW, SCTIMST” under my direct supervision and guidance for the partial fulfillment for the “ Diploma in cardiovascular and thoracic nursing” in the university of Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. It is also certified that no part of this work report has been included in any other thesis for procuring any degree by the candidate.

Thiruvananthapuram

November 2011



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CERTIFICATE FROM THE CANDIDATE

This is to certify that the project on “A study to assess the knowledge and practices of staff nurses regarding fluid and electrolyte administration in post operative cardiac surgical patients admitted in CSICU and CSW, SCTIMST, Trivandrum.” is a genuine work done by me, under the guidance of Dr. P. P. Saramma, PhD, Senior Lecturer in Nursing, SCTIMST, Thiruvananthapuram. It is also certified that this work has not been presented previously to any other University for award of degree, diploma or other recognition.

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APPROVAL SHEET

This is to certify that Miss. Aswathy Vijayan bearing code no: 6206 has been admitted to the Diploma in Cardiovascular and Thoracic nursing, in January 2011 and she has undertaken the project entitled, “A study to assess the knowledge and practices of staff nurses in fluid and electrolyte administration after cardiac surgery ” which is approved for the Diploma in Cardiovascular and Thoracic nursing, awarded by the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, and it is found satisfactory.

Place:

Examiners

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Aswathy Vijayan

ABSTRACT

Background of the study

Fluid and electrolyte complications can occur after cardiac surgery. So the nurse should have adequate knowledge and practice in fluid and electrolyte administration. It is required to assess the knowledge of the nurses about fluid and electrolyte balance to identify the errors in administration and to plan further training classes to improve their knowledge. Not much studies have been conducted to assess the knowledge of the nurses regarding fluid and electrolyte balance although it is important.

Objectives

1. To assess the knowledge of nurses regarding fluid and electrolyte balance.
2. To observe the practices of nurses in intravenous fluid administration.
3. To find out the relationship between knowledge and selected demographic variables.

Methodology

A survey approach was used for the study. The structured knowledge questionnaire was adopted to collect the data to assess the knowledge of staff nurses in fluid and electrolyte administration. The sample size was forty. The structured knowledge questionnaire consist of 15 questions and the time taken for the completion was about 10minutes. And an observational schedule is used to assess the practices of the staff nurses in intravenous fluid and electrolyte administration. Sixty different observations were done. The duration for each observation was one hour.

Major findings

The study findings showed that 50% of the samples have 76-100% of knowledge score, about 47.5% of samples have knowledge score of 51-75% and 2.5% of samples have a knowledge score of <50%. There is no significant relation between the age and knowledge score of the samples. And also there is no significant relation between the experience and the knowledge score of the samples and no significant relation between the area of work and the knowledge score of the samples. The observation revealed that in most of the situations most of the criteria in fluid and electrolyte administration were fulfilled.

Conclusion

A descriptive study was undertaken to assess the knowledge and practices of staff nurses about fluid and electrolyte administration after cardiac surgery among staff Nurses in Cardiac Surgical ICU and Cardiac Surgical Ward in SCTIMST, Trivandrum. The study was conducted in a relatively small sample of 40. This study clearly portrays that fifty percentage of the nurses have above average knowledge about fluid and electrolyte administration after cardiac surgery.

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Chapter - I

INTRODUCTION

1.1 Introduction

“ Water is essential for life, and maintaining the correct balance of fluid in the body is crucial to health.” (Welch, 2010).

Fluid balance is a term used to describe the balance of the input and output of fluids in the body to allow metabolic processes to function correctly. (Welch, 2010). Around 52% of total body weight in women and 60% in men is fluid. This consist of water and molecules containing, for example, sodium, chloride and potassium (mooney ,2007). These compounds dissociate into particles which carry electrical charge; these particles in solutions are called electrolytes.

Plasma electrolytes are balanced as it is important to have the correct concentration of ions in the blood, especially sodium, potassium and magnesium. Too much or too little these electrolytes can cause cardiac arrhythmias. (Docherty, 2006). To make a competent assessment of fluid balance, nurses need to understand the fluid compartments within the body and how fluid moves between these compartments(Davies, 2010). Two thirds of total body fluid is intracellular, and the remaining third is extracellular fluid, which is divided into plasma and interstitial fluid (Docherty and McIntyre, 2002). There is also a third space, known as “transcellular fluid” , which is contained in body cavities, such as cerebral spinal fluid and synovial, peritoneal and pleural fluids(Day et al,2009).

It is important to remember that, although these fluid compartments are classed as separate areas, water and electrolytes continually circulate between

them (Timby, 2008). In a number of situations, people may be at risk for fluid and electrolyte imbalances. Those at risk include people who depend on others for fluid and food, such as infants, the elderly, and the hospitalized, and individuals undergoing medical treatment that involves intravenous transfusion, drainages or suction, and urinary catheters.

Cardiac surgery involves major blood loss, possibly in the region of 1 litre. (Belse and Hardy 1996). Cardio pulmonary bypass can cause multiple physiologic alterations, including electrolyte disturbances, acid base imbalances, atelectasis, diminished pulmonary compliance, hemodialysis and thromboembolism. Cardioplegia solutions induce hypothermia induces alterations in potassium metabolism and Ph. The stress of surgery increases catecholamine circulation and augments adh release, both of which affect fluid and electrolyte equilibrium. Dilution of the circulating blood volume from pump perfusate and volume resuscitation with crystalloid and colloid solutions produce fluid, electrolyte and hemostatic disorders.

The infusion of crystalloid solutions in the post operative period rapidly restores the circulating volume. The patient will pass large volumes of dilute urine in the first 2-6 hrs after surgery and will excrete large amounts of potassium. Urea and electrolytes levels will need to be assessed frequently because the patient may require regular potassium supplementation to maintain a serum potassium between 3.5 to 4.5 mEq/l. (Richard, 2007).

The normal serum electrolyte levels are sodium (135-145mEq/l), chloride (95-105mEq/l), potassium (3.5-4.5mEq/l), calcium (9-11mg percent), phosphate (1.7-2.6mEq/l), magnesium (1.3-2.1mEq/l) (suellyn 1981). A patient with fluid and electrolyte or acid base imbalance in the acute care setting can be seriously ill. Good patient care management requires mastery of fluid administration principles.

1.2 Background of the Study

“The subject of water and electrolyte balance has been obscured by a long series of efforts to establish shortcuts. It is not a simple subject but rather one that requires careful study and thought.” (Rhoads,1957)

Fluid and electrolyte complications can occur after cardiac surgery. Nursing assessment of these complications include monitoring of intake and output, weight, hemodynamic parameters, hematocrit levels, distension of neck veins, edema, liver size, breath sounds and electrolyte levels.

Monitoring of fluid status is an important component of early post operative care. Intake and output are recorded hourly during the first 24 hours and every 2hours during the next 24hours to document the amount of fluid administered compared with that lost as urine and chest tube drainage. Patients commonly gain 2-5kg of body weight during cardiac surgical operations owing to the effects of CPB and hormonal changes associated with a major operation. Both ADH and aldosterone levels are elevated by surgical stress, leading to increased sodium and water retention(Behrendt and Austen 1985).

Most patients experience a spontaneous diuresis 48 to 72 hours after surgery as fluid is mobilized into the vascular space. Although this may provide sufficient diuresis for some patients, may require the administration of diuretic agents to hasten the process. (Betsy, 2000). Hans (2005) conducted a study and found that administration errors involving continuous IV infusions occur frequently and it could be reduced by more common use of intravenous infusion control devices and regular checking of administration rates. The implementation of intravenous drug therapy is an increasingly common experience for patients and one that carries a significant risk for damaging side effects.

Monitoring a patient's fluid balance to prevent dehydration or overhydration is a relatively simple task, but fluid balance recording is notorious for being inadequately or inaccurately completed (Bennet,2010). A study by Reid (2004), which audited the completion of fluid balance charts on different wards, found the major reasons fluid balance charts were not completed appropriately were staff shortages, lack of training, and lack of time.

According to the nursing and midwifery council(2007), record keeping is an integral part of nursing care, not something to be “fitted in” where circumstances allow. It is the responsibility of the nurse caring for a patient to ensure observations and fluid balance are recorded in a timely manner, with any abnormal findings documented and reported to the nurse in charge (Scales and Pilsworth, 2008). The use of fluid balance charts that show cumulative input and output is now being debated in the literature(Bennet, 2010). A recent study by Perren et al(2011) suggested that for a large proportion of patients, especially those in critical care, cumulative fluid balance charts are not accurate and their use should be questioned.

Achieving optimal hydration is an essential part of holistic patient care. Maintaining fluid balance is important to avoid complications such as dehydration and overhydration, both of which can have serious clinical consequences. So the nurse should have adequate knowledge and practice in fluid and electrolyte administration. It is required to assess the knowledge of the nurses about fluid and electrolyte balance to identify the errors in administration and to plan further training classes to improve their knowledge. Not much studies have been conducted to assess the knowledge of the nurses regarding fluid and electrolyte balance although it is important.

1.3 Need of the Study

“The use of fluid and electrolyte therapy has become such a familiar part of medicine that it is rarely scrutinized.” (Veech,1986).

Patients undergoing cardiac surgery experience a myriad of fluid and electrolyte disorders. Fluid and electrolyte management is one of the corner stones of patient care. In todays world of health care the registered nurse who practices intravenous therapy must possess a thorough and up to date working knowledge of the intravenous fluids hat are administered. This is not only necessary for safe nursing practice, but it is essential for excellent quality of patient care. Due to the many types of intravenous fluids manufactured and administered today it is extremely vital that the nurse be entirely familiar with each one before it is administered.

The 1999report of the UK national confidential enquiry into perioperative deaths (Callum, Gray et al1999) has emphasized that fluid imbalance leads to serious post operative morbidity and mortality , and estimated that 20% of the patients studied had either poor documentation of fluid balance or unrecognized /untreated fluid imbalance. It was suggested that some doctors and nurses lack awareness of the central role of good fluid management. Recommendations included training in fluid management , for medical and nursing staff, to increase awareness and spread good practice and that fluid management should be accorded the same status as drug prescription.

The surgical procedures greatly influences the physiologic status of fluid and electrolytes in the body. A nurse working in the intensive care unit should have enough knowledge about the physiology of fluid and electrolyte balance, electrolyte deficit calculation. Error in administration can cause detrimental patient outcomes and increase in patient health care cost. Knowledge of the nurses is most important.

1.4 Statement of the Problem

A study to assess the knowledge and practices of staff nurses regarding fluid and electrolyte administration in post operative cardiac patients admitted in CSICU and CS Ward, SCTIMST.

1.5 Objectives

1. To identify the knowledge of nurses regarding fluid and electrolyte balance.
2. To observe the practices of nurses in intravenous fluid administration.
3. To find out the relationship between knowledge and selected demographic variables.

1.6 Operational Definitions

1. Knowledge

It is the familiarity, awareness or understanding about the fluid and electrolytes, its balance and complications of its imbalance and the skills in its administration, gained through experience or study measured by form of self prepared questionnaires.

2. Practice

It is the skill or expertness in intravenous fluid administration acquired through studies and experience measured by an observational schedule.

3. Fluid and Electrolyte Balance

It is a state in which the volume of body water and its solutes (electrolytes and non electrolytes) are within normal limits and there is normal distribution of fluids within the intracellular and extracellular compartments.

1. Post Operative Cardiac Patients

Those who admitted in the cardiac surgical intensive care unit and cardiac surgical ward after cardiac surgery.

1.7 Methodology

This is a descriptive survey of nursing staff. The investigator first assess the knowledge about fluid and electrolyte balance among cardiac nurses with a self administered questionnaire, and the practices of fluid and electrolyte administration assessed with the help of an observational schedule. 40 nursing staff were selected for the study. The duration of the study is from august to October.

1.8 Delimitations

The study is delimited to nursing staff working in cardiac surgical intensive care unit and cardiac surgical ward in Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum.

1.9 Organisation of the Report

The report is divided into five chapters. The first chapter is introduction. It includes the background of the study, the need and the significance of the study, the problem and objectives, the operational definitions of the terms included in this study, and the delimitations of the study. The chapter 2 includes the summary of the related studies. Chapter 3 deals with the materials and methods of this study and chapter4 analyses and interrupts the findings, chapter 5 includes a summary of the study which includes major findings, conclusions, implications, limitations of the present study along with certain recommendations for further research. Selected references and appendices were also included.

Chapter - II

REVIEW OF LITERATURE

Definition

Generally the purpose of the review is to analyse critically a segment of a published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature and theoretical articles.

2.1: studies related to knowledge regarding fluid and electrolyte balance

2.2: studies regarding the fluid and electrolyte changes after cardiac surgery

2.3: studies regarding the practices in intravenous fluid administration

2.1: Studies related to knowledge regarding fluid and electrolyte balance

Armstrong (1996) conducted a study to assess the nurses knowledge about the fluid needs of the elderly. The sample consist of 57 patients. The fluid intake was determined by direct observation and recording of fluids consumed by each subjects over three 24 hour periods. The result shown that in all cases, regardless of the unit, level of dependency, cognitive or continence status, elderly patients received considerably less than the recommended daily intake of 2000-2500ml. The investigator found out that generally nurses knowledge was inadequate in a number of areas such as the signs and the complications of dehydration and the fluid requirements of the elderly.

2.2: Studies related to fluid and electrolyte changes after cardiac surgery

Svagzdiene et al (2006) conducted a study to assess changes in serum electrolyte levels and their influence on the incidence on the atrial fibrillation after coronary artery bypass grafting surgery among 12 patients. All patients divided into two groups. Group1 included patients with post operative atrial fibrillation. Group 2 included patients who remained in sinus rhythm after the

surgery. The result shown that the overall incidence of arterial fibrillation was 26.83%. the investigator found that the incidence of arterial fibrillation after coronary artery bypass surgery remains relatively high, serum electrolyte concentration after coronary artery bypass grafting varies within normal changes, and patients with post operative arterial fibrillation had higher chloride and lower phosphate concentrations immediately after surgery and lower ionized calcium and phosphate level 18-20 hrs after the surgery.

Polderman et al (2004) conducted a study to assess severe electrolyte disorders after cardiac surgery among 250 patients. Intravenous potassium supplementation was greater in cardiac surgery patients and most received one or more doses of magnesium for clinical reasons. Despite these differences in supplementation, electrolyte levels decreased significantly in cardiac surgery patients, most of whom met criteria for clinical deficiency in one or more electrolytes. The findings partly explained the high risk of tachyarrhythmia in patients who have undergone cardiac surgery. The researchers recommended prophylactic supplementation of potassium, magnesium and phosphate should be seriously considered in all patients undergoing cardiac surgical procedures, both during surgery and in the immediate post operative period and levels of these electrolytes should be monitored frequently in such patients.

Arikan et al (2011) conducted a study to investigate the association between fluid overload and oxygenation among 80 patients. The oxygenation index, fluid overload percent, and daily pediatric logistic organ dysfunction scores were obtained in a retrospective chart review of patients with respiratory failure. The result shown that higher peak fluid overload percent predicted higher peak oxygenation index, independent of age, gender, and pediatric logistic organ dysfunction ($p=.009$). This study reported that positive fluid balance adversely affected the pediatric intensive care unit course in children who did not receive renal replacement therapy.

2.3: Studies regarding the practices in intravenous fluid administration

Han et al (2005) conducted a study to assess the factors predictive of intravenous fluid administrative errors in Australian surgical care wards among 687 samples. A prospective study was conducted and all the samples received continuous infusion of IV fluids. The result shown that among the observations were made, with 124 (18%) having at least one medication administration error. The most common error observed was wrong administration rate. The investigator concluded that administration errors involving continuous infusions occur frequently. These could be reduced by more common use of IV infusion control devices and regular checking of administration rates.

Glenn et al(2006) conducted a study to evaluate the reliability of recorded fluid balance to approximate body weight changes in patients undergoing cardiac surgery among 32 adult patients who underwent cardiac surgical procedures. Analysis revealed that 30patients increased their body weight from the night before surgery until the discharge from the ICU. The investigator found out that body weight in patients who underwent cardiac surgery was found to fluctuate over the peri operative period, and use of recorded fluid balance to reflect change in body weight for patients undergoing cardiac surgery was deemed unreliable.

Pradeep et al (2010) conducted a study to assess high volumes of intravenous fluid during cardiac surgery are associated with increased mortality among 1358 patients. The result showed that increased 90 day mortality in those patients who received greater than the median volume of IV during cardiac surgery. The researchers found that administration of large volumes of intraoperative intravenous fluid is independently associated with an increase in 90 day mortality in cardiac surgery.

Dooley et al (2008) conducted a study to assess intravenous KCl prescribing and administration practices in Victoria. The investigator found out that there is a significant variability in the prescription and administration of IV KCl in these Victorian hospitals. New formulation of premixed IV KCl infusions may enable the removal of ampoules from patient care areas. The medical profession can play a major role in driving the adoption of consistent practice and supporting and leading this important safety initiative.

Karaday et al (2008) conducted a study to assess the determination of record keeping behavior of nurses regarding IV fluid treatment. The study was conducted with 150 nurses working in adult clinics of 936 bed university hospital. The investigators found out that the most frequently fulfilled record keeping behaviours were solution type, total solution amount and date of treatment. The least frequent fulfilled behaviours were the diagnosis of patients and the time of passage of medication added to the solution. The nurses never recorded the type of intravenous fluid treatment, complications and discontinuation of therapy. The findings shown that the record keeping behavior of nurses regarding intravenous fluid treatment is not at the desired level.

Karadag et al (2000) conducted a study on devising an intravenous fluid therapy protocol and compliance of nurses with the protocol. The study was done with 37 nurses working in coronary care unit. The data were collected on a “nurse observation form,” and statistical evaluation, percentage, and the Cochran Q significance test were used. By the third observation, a higher percentage of nurses performed the procedures correctly. The investigator found out that implementation of protocol had a positive effect.

2.4 Conclusion

Review of literature is the key step in research process which helps to lay a foundation for the study. The literature review provides a background for understanding current knowledge on topic and illuminate the significance of the

study. A literature review is a body of text that aim to review the critical points of current knowledge include substantive findings as well as theoretical and methodological contribution to the particular topic.

Chapter -3

METHODOLOGY

3.1 Introduction

Research methodology is the systematic way to solve the research problem. It includes the step that researcher adopts to study his problem with the logic behind. It indicates the general pattern of organizing the procedure of gathering valid and reliable data for an investigation.

This chapter deals with the research approach, setting, the sample and sampling technique, development of tool , description of tool , pilot study , data collection procedure and plan for analysis.

3.2 Research Approach

Descriptive survey approach is used.

The objective of the study is: -

- (a) To assess knowledge of the nurses regarding fluid and electrolyte balance.
- (b) To observe the practices of nurses in intravenous fluid administration
- (c) To describe the relationship between knowledge and selected demographic variables.

3.3 Settings

The study is conducted in cardiac surgical ICU and cardiac surgical ward in Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram; an institute of national importance established by an Act of the Indian Parliament. Cardiac surgical ICU consists of 14 beds. The post

operative cardiac patients are admitted there for 3-4days after the surgery. The fluid and electrolyte balance is strictly maintained in the intensive care unit. When the patient become stable they will be shifted to the cardiac surgical ward. The ward is divided into five areas. Intermediate medical ICU, thoracic ward, special room, female ward, and male ward. Totally there are 35 beds. The patients will be discharged from the ward on the sixth or seventh post operative day.

3.4 Sample and Sampling technique

The sample was selected from the nursing staff working in the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. The size of the sample was forty. Sampling technique refers to process of selection portion of nursing staff. In order to get a representation sample, purposive sampling technique was used for the present study. The duration of the study period was from August 2011 to October 2011.

3.5 Inclusion Criteria

Nursing staff working in Cardiac Surgical Intensive Care Unit and cardiac surgical ward in Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram and those who are willing to participate in the study is included.

3.6 Exclusion Criteria

Nursing staffs working in operation theater, other departments, central sterile supply departments and the temporary staff nurses.

3.7 Development of Data Collection Tool

Data collection tool refers to instruments, which are constructed to obtain relevant data. An extensive review and study of literature and journal articles

helped in preparing items for the tool. The investigator used questionnaire and observational schedule as tool for the study. Experts in Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum validated and approved the tool.

3.8 Description of Tool

The tool used in the present study consisted of following parts.

Part-1

The part is socio demographic data, which consist of age, sex, qualification, place of work, total year of experience total year of ICU experience.

Part-2

Using a questionnaire assessed knowledge. It consists of 15 questions. It covers knowledge about fluids, electrolytes, its balance and its imbalance. Actual duration for completing the questionnaire was about 10 minutes.

Scorning of Knowledge

The scoring of the knowledge question is in such a way that each correct response is awarded one mark. Zero mark is awarded for incorrect response. The maximum possible score will be 15 and minimum will be zero.

Knowledge

76-100%	adequate knowledge
51-75%	moderately adequate knowledge
<50%	inadequate knowledge

Part-3

It consists of an observational schedule to assess the practices in intravenous fluid and electrolyte administration. This observational checklist consists of 8 items, which includes administration of fluids and electrolytes, and proper documentation of the administration of fluids and electrolytes.

3.9 Pilot Study

After obtaining permission from the authorities pilot study was conducted among the nursing students of Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. Pilot study was done on August 2011. The purpose of the study was to test the feasibility of original tool.

3.10 Data Collection

For data collection formal permission was obtained from the authorities. The total period of data collection was from August to October 2011. The sample size was forty. The investigator first introduced herself and explained the need and purpose of the study. Confidentiality of their responses was assured and consent was obtained from each nursing staff. The nursing staff were given the structured tool to complete. The time taken for the completion was about 10 minutes. The investigator assessed the practices in intravenous fluid and electrolyte administration by the help of an observational schedule. Each observation lasts for about one hour and observed in 60 different occasions.

3.11 Plan of Analysis

The data were coded, entered in excel sheet for analysis. Descriptive statistics and present them in the form of tables and bar diagram.

3.12 Summary

This chapter presented the research approach used for the study, design of the study, setting of the study, sample and sampling techniques, development of data collection tool, description of tool, pilot study. Data collection procedures and plan for data analysis.

Chapter - IV

ANALYSIS AND INTERPRETATION

4.1 Introduction

Analysis is the categorizing, ordering, manipulating and summarizing the data to an intelligible and interpretable form so that the research problem can be studied and tested including relationship between variables (Kerlinger 1986). Interpretation refers to the process of making sense of the results and examining the implications of the findings within a broader context.

4.2 Distribution of samples according to demographic data

4.1 Distribution of samples according to age group

4.2 Distribution of samples according to sex

4.3 Distribution of samples according to qualification

4.4 Distribution of samples according to experience

4.5 Distribution of samples according to ICU experience

4.6 Distribution of samples according to area of work

4.3 Distribution of samples according to level of knowledge

Table 4.1 Distribution of sample by age group

Age group	Frequency	Percentage
23-35	28	70%
36-45	10	25%
46-55	2	5%
Total	40	100

Table 4.1a) shows that 28 (70%) belonged to the age group 23-35years , 10(25%) belonged to the age group of 36-45years and 2(5%) belonged to the age group of 46-55years.

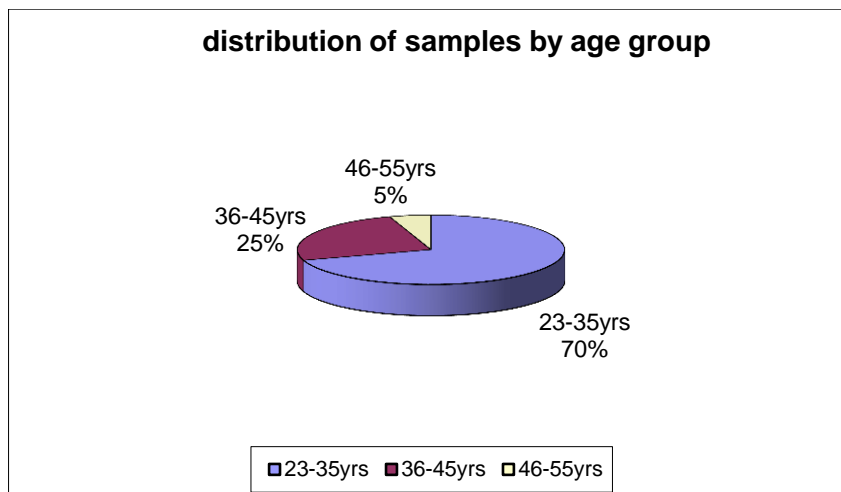


Fig4.1 Pie diagram showing distribution of samples by age group

Table4.2 Distribution of sample by sex

Sex	Frequency	Percentage
Male	2	5%
Female	38	95%
Total	40	100%

Table 4.2 shows that 2(5%) of the samples are male and 38(95%) are females.

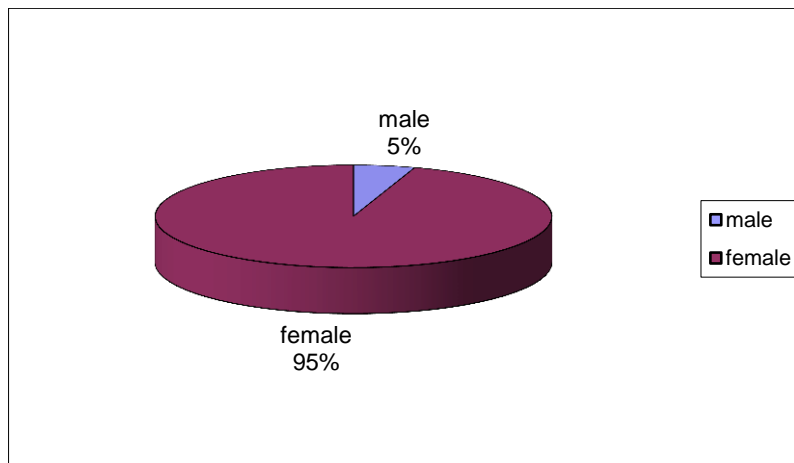


Fig: 4.2 Pie diagram shows distribution of samples by sex

Table4.3 Distribution of sample by qualification

Qualification	Frequency	Percentage
G N M	17	42.5%
DCN/PBCN	10	25%
B. Sc nursing	13	32.5%
Total	40	100%

Table 4.3 shows that the qualification of 17(42.5%) samples were GNM , 10(25%) are diploma in cardiovascular and thoracic nursing or post basic B. Sc nursing and 13(32.5%) are B. Sc nursing.

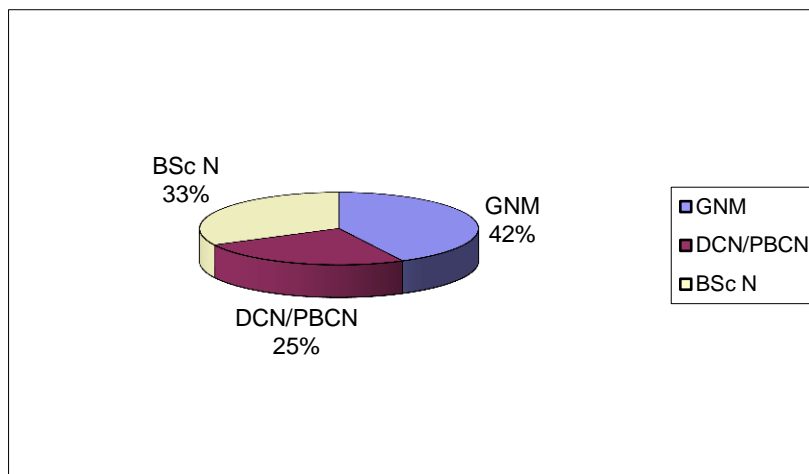


Fig: 4.3 Pie diagram shows distribution of samples according to qualification

Table4.4 Distribution of samples according to experience

Years of experience	Frequency	Percentage
<1year	6	15%
1-5years	17	42.5%
6-10years	9	22.5%
>10years	8	20%
Total	40	100%

Table 4.4 Shows that 5(12.5%) of samples having experience of 1-6months, 1(2.5%) having experience of 6-12months, 17(42.5%) having experience of 1-5 years, 9(22.5%) having experience of 5-10years, 6(15%) having experience of 10-20years and 2(5%) having experience of more than 20years.

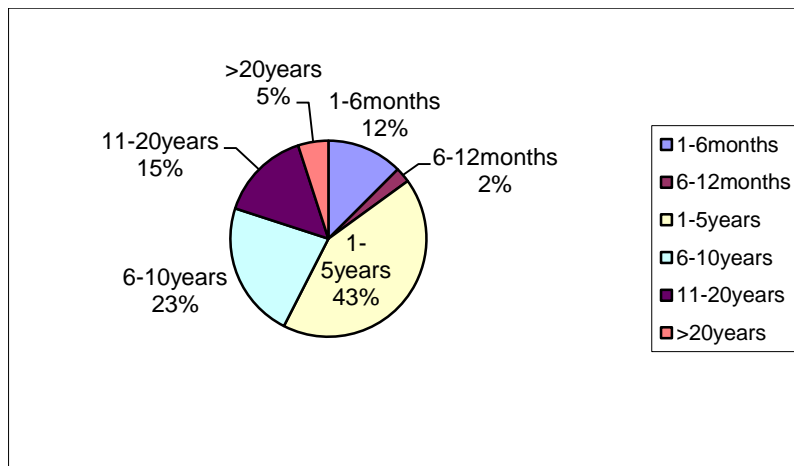


Fig: 4.4 Pie diagram shows distribution of samples according to experience

4.5 Distribution of samples according to ICU experience

Years of experience	Frequency	Percentage
<1years	9	22.5%
1-5years	22	55%
6-10years	6	15%
>10years	3	7.5%
Total	40	100%

Table4.5 Distribution of samples according to ICU experience

Table4.5 shows that 6(15%) of samples having ICU experience of 1-6months, 3(7.5%) having experience of 6-12months, 22(55%) having experience of 1-5 years , 6(15%) having experience of 6-10years, 3(7.5%) having experience of 11-20years.

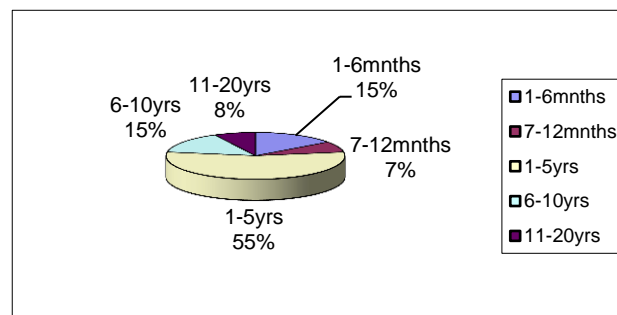
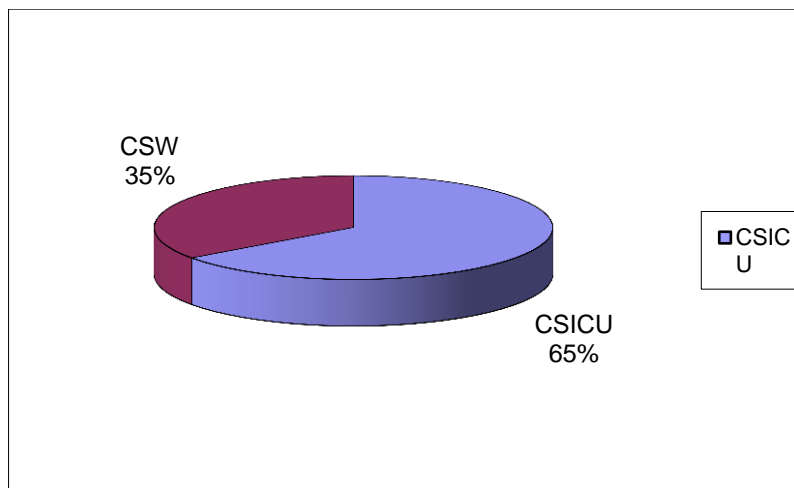


Fig: 4.5 Pie diagram shows distribution of samples according to ICU experience

Table4.6 Distribution of samples according to area of work

Area of work	Frequency	Percentage
CSICU	26	65%
CSW	14	35%
Total	40	100%

Table 4.6 shows that 26(65%) of samples from CSICU and 14(35%) of samples from CSWARD.



4.6 Pie diagram shows distribution of samples according to area of work

Table 4.7 Distribution of sample according to level of knowledge score

Level of knowledge score	Frequency	Percentage
Inadequate <50%	1	2.5%
Moderately adequate 51-75%	19	47.5%
Adequate 76-100%	20	50%
Total	40	100%

Table 4.7 shows that 20(50%) of samples having adequate knowledge in fluid and electrolyte imbalances, 19(47.5%) having moderately adequate knowledge in fluid and electrolyte imbalances, and 1(2.5%) having inadequate knowledge in fluid and electrolyte imbalances.

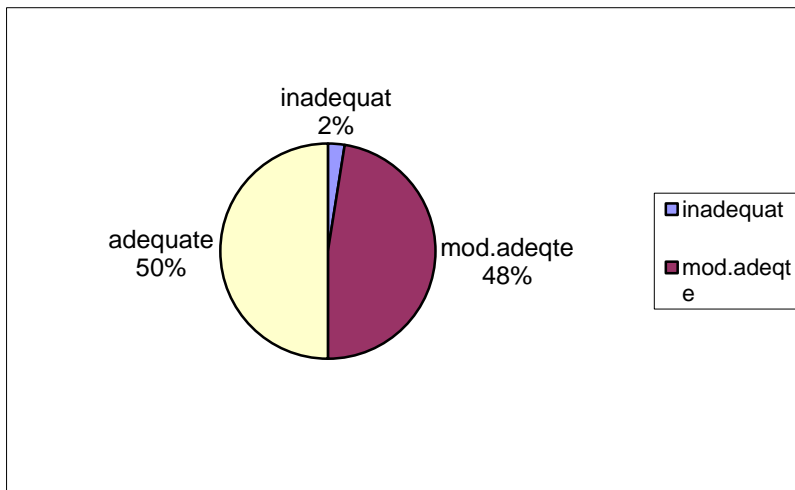


Fig: 4.7 Pie diagram shows distribution of samples according to level of knowledge

4.4 ANALYSIS AND INTERPRETATION

Table 4.8 Mean, standard deviation, and p value of knowledge score by the age group.

Age group	Frequency	Mean	Standard deviation	P value
<29.5years	20	11.9	1.52	0.4
>29.5years	20	11.3	2.74	

Table 4.8 showed that the frequency, mean and standard deviation of knowledge score of age group <29.5 years is 20, 11.9, and 1.52 respectively and that of age group >29.5 years is 20,11.3, 2.74 respectively. The 'p' value is 0.4.

Table 4.9 Mean, standard deviation, and p value with experience by the knowledge score

Experience	Frequency	Mean	Standard deviation	P value
<7.5years	20	12.15	1.73	0.12
>7.5years	20	11.05	2.52	

Table 4.9 showed that the frequency, mean and standard deviation of knowledge score of samples with an experience of less than 7.5years is 20, 12.15, 1.73 and those of samples with an experience of greater than 7.5years is 20, 11.05, and 2.52. And the P value is 0.12.

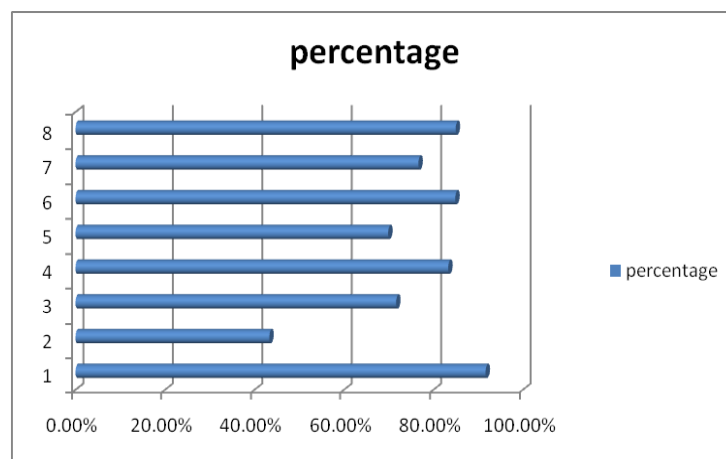
Table4.4c) mean, standard deviation, and P value with area of work by the knowledge score

Area of work	Frequency	Mean	Standard deviation	P value
CSICU	26	12.04	2.42	0.09
CSWard	14	10.79	1.48	

Table4.5 distribution of samples according to the meeting of criteria in the observational schedule

SL NO.	CHECK LIST	MET		NOT MET	
		Frequency	%	Frequency	%
1.	Check the amount, type of fluid against doctors prescription	55	91.67	5	8.33
2.	Accurately adjusts the flow rate	26	43.33	34	56.67
3.	Document the prescribed fluid on chart	43	71.67	17	28.33
4.	Document the time started	50	83.33	10	16.66
5.	At the end of administration of electrolytes flush the tubing with heparinized normal saline	42	69.90	18	30
6.	Mentioning the amount of fluid infused	51	84.90	9	15

7.	Document the additives which added to the fluid	46	76.66	14	23.33
8.	Labeling the date in which the fluid bottle is opened	51	84.99	9	15



4.8 Distribution of samples according to the meeting of criteria in the observational schedule

There are 60 observations done with the help of an observational schedule which consist of 8 criteria. Each observation done in 60 different occasions and each one lasts for about half an hour.. The observation revealed that about in about 91.67% of the situations the amount, type of fluid are checked against doctors prescription. Only in 43.33% of the occasions the flow rate is accurately adjusted. And in 71.67% of the situations the prescribed fluid on chart is documented. In about 50% of the situations the time in which the fluid started is documented. Flushing the tubing with heparinized normal saline after the administration of electrolytes is happened in about 69.90 occasions. In about 84.90% of occasions the correct amount of fluid infused is mentioned. In about 76.66% of the occasions the additives which added to the fluid is documented. And in 84.99% of the situations the date in which the fluid bottle opened is labeled.

Chapter - 5

SUMMARY, CONCLUSION, DISCUSSION AND RECOMMENDATIONS

5.1 Summary

The study is to assess the knowledge of staff nurses regarding fluid and electrolyte balance after cardiac surgery.

The objectives of the study was:

1. To identify the knowledge of nurses regarding fluid and electrolyte balance.
2. To observe the practices of nurses in intravenous fluid administration.
3. To find out the relationship between knowledge and selected demographic variables.

The study has been done in SCTIMST Trivandrum with the permission from authorities. A self prepared questionnaire approved by the experts of SCTIMST used for assessing the knowledge of staff nurses regarding fluid and electrolyte balance. Pilot study conducted on the month of September in 5 student nurses and sample collection has been started after making necessary corrections in the questionnaire. The samples were collected from the cardiac surgical ICU and cardiac surgical wards of SCTIMST Trivandrum. The period of study was from September to October 2009. Forty samples were selected and their knowledge regarding the fluid and electrolyte balance were assessed.. The practices of the staff nurses regarding the fluid and electrolyte administration were assessed with the help of an observational schedule which consist of eight major criteria regarding fluid administration.

5.2 Findings

The study findings of the knowledge were :

Percentage of samples	Knowledge score
50%	76-100%
47.5%	51-75%
2.5%	0-50%

There is no significant relation between the age and knowledge score of the samples. And also there is no significant relation between the experience and the knowledge score of the samples and no significant relation between the area of work and the knowledge score of the samples.

There are 60 observations done with the help of an observational schedule which consist of 8 criteria. Each observation done in 60 different occasions and each one lasts for about half an hour. The observation revealed that about in about 91.67% of the situations the amount, type of fluid are checked against doctors prescription. Only in 43.33% of the occasions the flow rate is accurately adjusted. And in 71.67% of the situations the prescribed fluid on chart is documented. In about 50% of the situations the time in which the fluid started is documented. Flushing the tubing with heparinized normal saline after the administration of electrolytes is happened in about 69.90 occasions. In about 84.90% of occasions the correct amount of fluid infused is mentioned. In about 76.66% of the occasions the additives which added to the fluid is documented. And in 84.99% of the situations the date in which the fluid bottle opened is labeled.

5.3 Limitation

The study to assess the knowledge level of staff nurses regarding the fluid and electrolyte balances is limited to SCTIMST Trivandrum. The period of

study was only one month. The sample size is limited to forty. Each observation done with the help of an observational schedule lasts for about half an hour. And the observational schedule does not covered all the aspects of fluid and electrolyte administration.

5.4 Recommendations

Keeping in mind the findings and limitations of the study, the following recommendations were made for future research.

1. Similar study can be done in other intensive care units and wards of this institute.
2. Similar study can be done by increasing the size of the sample.

5.5 Discussion

The findings of the study were discussed with reference to the objectives and with the findings from other studies. The objective of the study were to identify knowledge and practices of nurses about fluid and electrolyte administration after cardiac surgery among post operative cardiac surgical patients in Cardiac Surgical ICU and cardiac surgical ward and to identify the relationship between knowledge level about fluid and electrolyte administration after cardiac surgery and selected demographic variables.

5.6 Conclusion

A descriptive study was undertaken to assess the knowledge and practices of staff nurses about fluid and electrolyte administration after cardiac surgery among staff Nurses in CSICU and cardiac surgical ward in SCTIMST, Trivandrum. The study was conducted in a relatively small sample of 40 nurses. The practices in fluid and electrolyte administration after cardiac surgery was assessed with the help of an observational schedule which consist of eight

criteria. About sixty observations were done and each observation lasted for about half an hour. This study clearly portrayed that most of the nurses have an average score about fluid and electrolyte administration after cardiac surgery.

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INFORMED CONSENT

I here by agree to participate in the research study “A study to assess the knowledge and practice about fluid and electrolyte administration in post operative cardiac patients among nurses in CSICU and CSW.” conducted by Ms.Aswathy Vijayan, First year Diploma in Cardiovascular and Thoracic Nursing , SCTIMST, Trivandrum. I understand the data given by me will be kept confidential, and be used only for the research purpose.

Place :

Signature of staff:

Date :

APPENDIX

RESEARCH TOOL

KNOWLEDGE TEST ABOUT FLUID AND ELECTROLYTE BALANCE IN POST OPERATIVE CARDIAC PATIENTS AMONG STAFF NURSES IN CSICU AND CSWARD

1.SOCIO DEMOGRAPHIC DATA

1.AGE: years

2.SEX: male female

3.QUALIFICATION : GNM DCN/PBCN BSc(N)

MSc(N)

4.TOTAL YEARS OF EXPERIENCE: years

5.TOTAL YEARS OF ICU EXPERIENCE:

2. STRUCTURED KNOWLEDGE QUESTIONNAIRE

NOTE: Encircle the most appropriate answer. Total fifteen questions, each one carries one mark.

1)what are the two systems in the human body mainly monitored to assess the fluid balance?

- a. circulatory & renal b. respiratory & circulatory
- c. renal & gastrointestinal d. hepatic & lymphatic

2)what is the normal serum potassium level?

- a.<2.5meq/l b.3.5-4.5meq/l
- c.2.5-3.5meq/l d.>4.5meq/l

3)what electrolyte disturbance leads to an ECG with a tall, tented 'T'wave?

- a.hyperkalemia b.hypokalemia
- c.hypercalcemia d.hypocalcemia

4)which one is the manifestation of hypovolemia?

- a.low hematocrit level b.a very low hematocrit level
- c.normal hemetocrit level d.high hematocrit level

5)what is the most serious consequence of potassium imbalance?

- a.status epilepticus b.nerve damage
- c.renal failure d.cardiac abnormalities

6)what can be the result of rapid administration of too much of 5% dextrose?

- a.hyperkalemia b.hypermagnesemia
- c.hyponatremia d.hypernatremia

7)what is the most physiological intravenous fluid?

- a.Normal saline b.Isolyte P
- c.Ringer lactate d.3%saline

8)what must be observed when administering spironolactone?

- a)hyperkalemia b.hypokalemia
- c.hypernatremia d.hypercalcemia

9)what is the drug of choice for hypermagnesemia?

- a.intravenous phosphorus b.intravenous potassium
- c.intravenous calcium d.intravenous sodium

10)the sequestration of isotonic extracellular fluid into tissue spaces or body cavities are often referred to as

- a.hypervolemia b.fluid retention
- c.third spacing d.hypernatremia

11)what is the normal serum calcium level?

- a)<8mg/dl b)8.5-10.2mg/dl
- c)7.5-8 d)>10.2mg/dl

12)what is the manifestation of hyperkalemia?

- a.hyperactivity b.decreased vision
- c.anxiety/irritability d.headache

13)what is the problem which is caused by the third spacing of fluid?

- a.hypovolemia b.electrolyte imbalances
- c.hypervolemia d.hypertension

14)what is the clinical manifestation of hypocalcemia?

- a)stupor b)muscle spasms
- c)vomiting d)oedema

15)which drug is contraindicated in case of hypercalcemia?

- a)loop diuretics b)thiazide diuretics
- c)steroids d)calcitonin

3. OBSERVATIONAL SCHEDULE

SL NO.	Check list	MET	NOT MET
1.	Check the amount, type of fluid against Doctors prescription		
2.	Accurately adjusts the flow rate		
3.	Document the prescribed fluid on chart		
4.	Document the time started		
5.	At the end of administration of drugs and electrolytes flush the tubing with heparinized normal saline		
6.	Mentioning the amount of fluid infused		
7.	Document the additives which are added to the fluid		
8.	Labeling the date in which the fluid bottle is opened		