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Original Article

A STUDY TO ASSESS THE KNOWLEDGE AND PRACTICES OF FLUID ELECTROLYTE MANAGEMENT OF POSTOPERATIVE PATIENTS AMONG STAFF NURSES IN CARDIAC ICU OF A SELECTED HOSPITAL IN LUCKNOW

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ABSTRACT

Background: - Fluid Administration is a powerful tool in maintaining the hemodynamics and organ perfusion after cardiac surgery. It improves the preload and cardiac function in fluid responsive patients. Postoperative fluid therapy helps in preventing catabolism and improving fluid electrolyte balance and pH of patients after cardiac surgery.

Material and Methods:- A descriptive survey approach is used to assess the knowledge and practices of staff nurses on fluid management in cardiac ICU among 40 samples of selected hospital of Lucknow city. A structured questionnaire is developed to assess the knowledge level of staff nurses on fluid and electrolyte balance and management. An observation checklist is developed to assess the practice of fluid administration.

Result: - The data analysis was done using descriptive and inferential statistics. The study reveals that 50 % have inadequate knowledge of fluid electrolyte imbalance, 37.5 % moderate knowledge and 12.5 % have adequate knowledge on fluid and electrolyte imbalance. The observation checklist consists of 14 points in which the samples are observed on different occasions and the result shows that none of the samples has followed the fluid administration observation checklist accurately. There is no association of demographic variables with the knowledge of fluid and electrolyte balance.

Conclusion: - The author concluded that the staff nurses lack knowledge in the management of postoperative patient's fluid and electrolyte balance. The study reveals there is urgent need of inservice education of staff nurses to keep update with knowledge.

Keywords: Fluid Electrolyte Management, Postoperative patients, cardiac ICU

INTRODUCTION

Patients having cardiac surgery experience various fluid and electrolyte disorders. It can cause multiple physiologic alterations including electrolyte disturbances, acid base balances, atelectasis, diminished pulmonary compliance, hemolysis and thromboembolism. Cardioplegic solutions and induced hypothermia impose alterations in potassium metabolism and P_H . The stress of surgery increases catecholamine circulation and augments ADH release both of which affect fluid and electrolyte equilibrium.

Critically Ill patients need IV fluid therapy in order to correct or prevent problems with their fluid and electrolyte status for renal protection. Errors in fluid and electrolyte management contribute to overall morbidity and mortality. In critical care units monitoring fluid balance is daily routine. An automated acquisition of urinary output combined with data of infusion would reduce the workload of staff and visualization of fluid status

STATEMENT OF THE PROBLEM

A study to assess the knowledge and practices of fluid electrolyte management of postoperative patients among staff nurses of

cardiac ICU of a selected hospital in Lucknow.

OBJECTIVES OF STUDY

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

Research Methodology refers to controlled investigations of the ways of obtaining, organizing and analyzing data. It addresses the development, validation and evaluation of research tools or techniques.

Research Approach

The research method adopted for the present study was descriptive survey approach as the study aimed at assessing the knowledge level of staff nurses on fluid electrolyte imbalance of postoperative cardiac patients. This approach would help the investigator to evaluate the knowledge level and practices of staff nurses and find the association between knowledge and different variables.

Research Design: Descriptive Survey Approach design

Setting

The present study was conducted in Cardiac ICU of Sewa Hospital, Lucknow which has 10 cardiac post operative beds. The patients are admitted in cardiac ICU immediately after surgery for 2-3 days and thereafter shifted to cardiac general wards.

Population

The population comprises of staff nurses working in ICU

Sampling

Sample size is 40

Sampling Technique

Non probability purposive sampling was adopted

DEVELOPMENT OF TOOL

A self-structured questionnaire and observational checklist was developed for assessing the knowledge of fluid electrolyte imbalance and practices. For the selection of the items and preparation of the tool the following steps were taken.

Review of research and non-research literature was conducted in the area related to fluid and electrolyte imbalances. Opinion and suggestions were taken from experts, and a relevant modification has been done.

DESCRIPTION OF THE TOOL

The Structured Questionnaire consists of two sections

:Section A: This section of socio demographic data which consist of age, gender, qualification, place of work, total year of general experience and ICU experience.

The second part is self-structured questionnaire which consists of knowledge regarding common fluids and electrolytes used in ICU, management of imbalance etc. It also consists of an observational checklist to assess the practices of fluid administration and assess the documentation process. There are a total of 30 questions in the questionnaire

RESULTS AND DISCUSSIONS

The data was analyzed based on the following objectives.

1. To assess the knowledge of nurse 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.

ORGANIZATION OF STUDY

FINDINGS

The collected data is tabulated, analyzed, organized and presented under the following headings.

SECTION I: It deals with the analysis of the demographic data of the samples like age, educational status, qualification, years of experience.

SECTION II: It deals with the analysis of data related to knowledge scores on fluid and electrolyte balance in postoperative cardiac patients.

SECTION III: It includes the analysis of observational checklist on practices of fluid administration in postoperative patients.

SECTION IV: It includes analysis of data to find the association between selected demographic variables such as age, educational status 'years of experience etc.

SECTION 1

Table 1. Frequency and Percentage of socio demographic characteristics(n -40)

S NO	CHARACTERISTICS	FREQUENCY	PERCENTAGE
1.	Age		
	23- 35	24	60
	36 -45	14	35
	46 -55	02	05
2	Gender		
	Male	12	30
	Female	28	70
3	Qualification		
	GNM	22	55
	B.Sc	12	30
	P.B.B.Sc	06	15
	M.Sc	00	00
4	Years of Experience		
	Less than 1 year	10	25
	1-5 years	14	35
	6-10 years	12	30
	More than 10 years	04	10
5	ICU experience		
	Less than 1 year	20	50
	1-5 years	16	40
	6-10 years	04	10
	More than 10 years	00	00
10	Do you have information on management of fluid balance		
	Yes	18	30
	No	42	70
11	If Yes		
	Books	10	25
	Seniors	18	45
	Health care Professional	12	30

The data presented in table 1 shows that in the experimental group of the study, majority (60%) of the adults fall in the age group of above 23-35 Years, 35% fall in the

category of 36-45 years, 05% in the age group of 46-55 years and 25% .30% are male participants and 70% are female participants. Majority of participants are GNM qualified (55%) whereas 30 % are B.Sc Nursing .Only 15% are Post basic B.Sc nursing and no M.Sc were there in the study.

Around 35% are having experience of 1-5 yrs of experience. 30% are having experience of 5-10 years of experience. 25% are less than 1 year experience. 50 % of study participants are having ICU experience less than one year. 40% are having experience below 5 years. Only 10% are having experience more than five years. None of them is having experience of more than 10 year.

The demographic data of the study also reveals that 70% of study participant have no information on maintenance of fluid balance in ICU. 45% have the information from seniors and books.

SECTION –II

It deals with the analysis of data related to knowledge scores.

The analysis of Section 2 is done on basis of knowledge of staff nurses regarding fluid and electrolyte management post operatively

for cardiac nurses. The following are the scores of knowledge.

Table 2. Table on Knowledge level score

Level of knowledge	Scores	Frequency	Percentage
Inadequate	less than 50	20	50
Moderate	50	15	37.5
Adequate	More than 50	05	12.5

Fig 1. Pie chart showing knowledge score in percentage

Table 3. Knowledge score of each category on fluid electrolyte Management

S NO	AREAS	Mean	SD
1	Knowledge on fluids	1.63	1.261
2	Knowledge on different electrolyte levels in body	2.17	1.326
3	Signs of fluid and electrolyte imbalance	1.96	1.294
4	Methods of prevention of imbalance	1.95	1.274

Table No: 3 shows that knowledge regarding knowledge on fluids, different electrolytes in the body, Signs of fluid and electrolyte imbalance, methods of prevention of electrolyte imbalance are less in samples and there is need of improving knowledge in these fields.

SECTION –III

This section deals with the observation checklist which is developed to assess the **practice of** nurses while administering fluids.

.There was 40 samples taken for study. Each sample has been observed while doing procedure on different occasions against the criteria The test scores are obtained as below:

Table 4., Table showing checklist of observation on procedure

S N O	STEPS	MET		NOT MET	
		Frequen cy	Perc enta ge	Freq uenc y	Percent age
1.	Check the doctor's prescription for the type and amount of fluid.	38	95	02	5
2	Calculate the flow rate.	14	35	26	65
3,	Check the fluid for cloudiness and expiry date.	08	20	32	80
4.	Adjust the flow rate	15	37.5	25	62.5
5	Ensure comfort of patient	28	70	12	30
6	Document the procedure starting time, amount and type of fluid.	17	42.5	23	57.5
7	Flush the tubing with heparinised solution after the infusion.	38	95	02	05
8	Observe for any fluid overload, allergic reactions and other complications.	14	35	26	65
9	Document the amount of fluid administered, type of fluid, any additives and any observations made.	40	100	40	100
10	Maintain Intake Output chart on time	28	70	12	30
11	Assess body weight changes	40	100	0	0
12	Assess skin turgor	40	100	0	0
13	Assess muscle tone and strength	40	100	0	0
14	Assess ECG changes	38	95	02	5
15	Monitor lab results	35	87.5	05	12.5

The above table shows that majority (95%) checked the doctor's prescription before administering fluids.ajority (65%) did not calculate the flow rate or not able to do

calculation, Only (20%) checked the fluid and tube patency before administration which is a very important factor in preventing infection. Only 42.5% documented the exact information before starting procedure. While 95% flushed the tubing after administration. Only 35% observed for allergies or any complications. all of them documented the procedure after procedure. Majority (70%) did not maintain intake output chart on time but afterwards. None of the samples checked for signs of electrolyte imbalance whereas 5 % checked for any ECG changes and only 12.5% checked for laboratory results to assess electrolyte imbalances.

SECTION- IV

This section deals with the association of knowledge score related to knowledge of fluid and electrolyte imbalances with demographic variables like age, qualification, years of experience, place of work experience etc

Chi-square test used to find out association between knowledge and selected demographic variables. It was found that the chi square value obtained was greater than the calculated value which indicates no

significant association between knowledge score and demographic variables.

CONCLUSION

The fluid management plays a vital role in establishing and maintaining cellular homeostasis in cardiac surgery. The importance of fluid therapy helps in managing tissue perfusion, heart rate, hemoglobin, and oxygen saturation in patient postoperatively. The nurses in cardiac ICU need to know the importance of fluid management and the balance to be maintained. Hence the researcher felt the need to study the topic. The study findings reveal that very few get information from health professionals which show that there is need for health sectors to focus on in-service education of staff nurses regarding fluid electrolyte management in postoperative cardiac patients. The present study has great implications in clinical practice as the department can conduct frequent workshops and other means of education to update the knowledge of nurses. Also this study has implications in nursing education as it provides motivation for the nursing students to conduct research in these areas.

The study has implications in nursing administration as further scope of studies are there in other clinical areas.

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