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A Study to Assess the Critical Disposition Regarding Fluid and Electrolyte Imbalance Among Staff Nurses with a View to Plan a CNE at Era Hospital, Lucknow

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Abstract

Some fluid and electrolyte imbalances are directly caused by illness or diseases (e.g. burns, heart failure), the imbalance occurs also due to nurses' practice errors and medication administrative errors., "Critical thinking" needs to be a central and vital component of nursing practice. It is the responsibility of the nurse caring for a patient to ensure observations and any abnormal findings. The present study focuses to assess the critical disposition regarding fluid and electrolyte imbalance among staff nurses with a view to plan a CNE at Era Hospital, Lucknow. The discussion about the study findings are presented in this chapter. The findings of the study are discussed under the following headings: i) Assess the level of critical disposition regarding fluid and electrolyte imbalance among staff nurses. ii) Associate between the level of critical disposition regarding fluid and electrolyte imbalance with selected demographic variables. iii) Conduct a CNE on critical disposition regarding fluid and electrolyte imbalance among staff nurses. A quantitative research approach and non-experimental descriptive research design was adopted for the study. Conceptual framework was based on Donabedian's Theory. Data was collected by using self-structured questionnaire (based on analytical skills, systematic skills, interpretation and evaluation) for critical disposition regarding fluid and electrolyte imbalance which was found reliable (r=0.77). The collected data from 131 staff nurses selected by using convenient sampling technique was analyzed using descriptive and inferential statistics. The study revealed that majority 98 (74.8%) had inadequate critical disposition among staff nurses, 22 (16.8%) had moderate critical disposition among staff nurses and 11 (8.4%) had adequate critical disposition among staff nurses. Under the sections, the systematic skills rank given as 1, evaluation given as rank 2, analytical skills given as rank 3 and interpretation given as rank 4. The study findings revealed that age in years, total years of experience and area of working is found to have significant association scores and there was no significant association between course completed. Therefore, there is a critical disposition regarding fluid and electrolyte imbalance. The CNE will help to improve and motivate the staff nurses to increase their knowledge and skills.

INTRODUCTION

Background of the Study

"Water is essential for life, and maintaining the correct balance of fluid in the body is crucial to health." (Welch, 2010) [1]. 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) [2].

Fluid, electrolyte balance is fundamental to the process of life. In the presence of a severe imbalance, the most perfectly conditioned heart cannot beat, neurons either cannot transmit or fire uncontrollably, digestion cannot take place, and skeletal muscle cannot contract. At the cellular level, operations and exchanges, that are essential to the life of the cell, cannot take place. [3].

Although medical therapy to prevent and treat fluid, electrolyte disturbance is the responsibility of a physician, the nurses play a major role in all the aspects of patient care for those at risk of developing a disturbance or those with a disturbance. [4].

Some fluid and electrolyte imbalances are directly caused by illness or diseases (e.g. burns, heart failure). At times, therapeutic measures (e.g. IV fluid replacement, diuretics) cause or contribute to fluid and electrolyte imbalances [5]. 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 [6].

Critically ill patients are at high risk for developing fluid and electrolyte disturbances in ICUs which associated with increased morbidity and mortality. Many factors can contribute to shifting in fluid and electrolyte levels among critically ill patients. Disease process in critically ill patients is the main factor that causes this imbalance. Another causing factor is nurses' practice errors, such as inappropriate administration of fluid and electrolyte, and medications administration errors. These factors are interfering with body absorption of electrolytes and having negative impact on the function of body organs that responsible for maintaining fluid and electrolyte balance [7].

To deliver optimal patient care, health care providers should be aware of all principles and practices of fluid and electrolyte physiology and pathophysiology as well as effective treatment measures. [8].

Achieving optimal hydration is an essential part of holistic patient care. Maintaining fluid balance is important to avoid complications such as dehydration and over hydration, 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. [9].

Continuing education in nursing implies to learning beyond the basic educational programes. These experiences are designed to promote the development of knowledge, skill and attitude for the enhancement of nursing practice, thus improving the public health. [10].

Need of The Study

According to the previous study in 2020, disturbances in electrolytes are frequently observed in the emergency departments. There were 12500 patients admission with various electrolyte abnormalities studied to check the prevalence of electrolyte imbalance in the patients admitted in emergency department of a tertiary care hospital. Hyper and hypo abnormalities in potassium, sodium, and calcium were the common abnormalities and were present in 40.7%, 36.16%, and 6.7% respectively. [11]

Studies on Covid-19 confirm electrolyte disturbances in patients, including sodium, potassium, chlorine, and calcium imbalances. Some drugs previously used in the United States Food and Drug Administration's treatment protocol for patients with Covid-19, such as chloroquine and hydroxychloroquine, can cause electrolyte imbalance. [12]

"The use of fluid and electrolyte therapy has become such a familiar part of medicine that it is rarely scrutinized." (Veech,1986). 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. [13]. Recent studies have reported that fluid and electrolyte imbalances are associated with increased morbidity and mortality among critically ill patients. To provide optimal care, health care providers should be familiar with the principles and practice of fluid and electrolyte physiology and pathophysiology. [14].

"Critical thinking needs to be a central and vital component of nursing practice. In nursing as a practical profession, the concept of critical thinking disposition is important component in helping to manage complex health situations and to deal with patient issues effectively. [15].

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, 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. An observational schedule was used to assess the practices of the staff nurses in intravenous fluid and electrolyte administration. The study portrays that 50% of the nurses have average knowledge about fluid and electrolyte administration after cardiac surgery. [16].

Title of The Study

A study to assess the critical disposition regarding fluid and electrolyte imbalance among staff nurses with a view to plan a CNE at Era Hospital, Lucknow.

Statement of The Problem

Nurses are facing problems in assessing the fluid and electrolyte imbalance. They are unable to analytic the imbalance manifestations, systematize the interventions, interpret the values of electrolytes and evaluate the level of care given to the patient.

Objectives

Objectives of the study are to:

- Assess the level of Critical Disposition regarding Fluid and Electrolyte Imbalance among staff nurses.
- Associate between the level of Critical Disposition regarding Fluid and Electrolyte Imbalance with selected demographic variables.
- Conduct a CNE on Critical Disposition regarding Fluid and Electrolyte Imbalance among staff nurses.

Hypothesis

- **H1** There is a significant association between the level of critical disposition regarding fluid and electrolyte imbalance with selected demographic variables.
- **H0** There is no significant association between the level of critical disposition regarding fluid and electrolyte imbalance with selected demographic variables.

RESEARCH METHODOLOGY

In the present study the researcher aims to assess the critical disposition regarding fluid and electrolyte imbalance among staff nurses at Era Hospital, Lucknow.

Research Approach

The research approach adopted for this study is Quantitative Research Approach to assess the critical disposition regarding fluid and electrolyte imbalance among staff nurses with a view to plan a CNE at Era Hospital, Lucknow.

Research Design

The research design selected for the study is non experimental descriptive research design.

Research Setting

This study was conducted at Era's Lucknow Medical College and Hospital, which is located at Sarfarazganj Hardoi road, Lucknow. It has fully functional 850 beds complete with all modern facilities and advanced technology.

Population

In this study, population is the staff nurses.

Target Population

The target population of the study comprises staff nurses working at Era Hospital, Lucknow.

Accessible Population

The accessible population in this study is the total number of staff nurses fulfilling the inclusion criteria.

Sampling Technique

In the present study the sample were selected by using Convenient Sampling Technique. This is a sampling technique the researcher draws the sample because of the convenient method for the researcher to collect data for study. Researcher restricted the size of the sample as 131.

Criteria for Sample Selection

Samples were selected with the following pre-determined set of criteria during the period of study.

Inclusion Criteria

Staff nurses working in Era Hospital, Lucknow are included.

Exclusion criteria

Staff nurses who will not be present at the time of data collection.

Data Collection Tool

A self-structured questionnaire was prepared to assess the critical disposition regarding fluid and electrolyte imbalance among staff nurses, found to be most appropriate method of data collection keeping the research question in mind.

Research tool and scoring criteria

It included structured questionnaire to assess the critical disposition regarding fluid and electrolyte imbalance among staff nurses.

It consisted of:

Self-Structured questionnaire

- Demographic variables
- Questionnaire to assess the critical disposition regarding fluid and electrolyte imbalance among staff nurses.

Tool 1: Demographic variables

This section deals with 4 items to obtain personal information such as age, course completed, total years of experience, area of working.

Tool 2: Structured Questionnaire for Critical Disposition regarding Fluid and Electrolyte Imbalance

Section A: It involves the questionnaires related to Analytical Skills for Critical Disposition regarding Fluid and Electrolyte Imbalance.

Section B: It involves the questionnaires related to Systematic Skills for Critical Disposition regarding Fluid and Electrolyte Imbalance.

Section C: It involves the questionnaires related to Interpretation for Critical Disposition regarding Fluid and Electrolyte Imbalance.
Section D: It involves the questionnaires related to Evaluation for Critical Disposition regarding Fluid and Electrolyte Imbalance.

Scoring Criteria

Tool 2:

It consisted of 20 self-administered multiple-choice questions for critical disposition regarding fluid and electrolyte imbalance. The correct and wrong answer was given one and zero respectively. The maximum total score will be twenty. The total score is computed and categorized as follows.

Level of Critical Disposition	Score	Percentage
Inadequate Critical Disposition	0-10	Less than 50%
Moderate Critical Disposition	11-15	51-75%
Adequate Critical Disposition	16-20	76-100%

DATA ANALYSIS AND INTERPRETATION

Analysis and interpretation of data includes compilation, editing, coding, classification and presentation of data. Analysis is the process of organizing and synthesizing the data so as to answer research questions and to test hypothesis. This chapter deals with the analysis and interpretation of data collected from 131 samples to assess critical disposition regarding fluid and electrolyte imbalance among staff nurses. The data obtained were computed and analyzed by both descriptive and inferential statistics and the level of significance was at $p<0.05$.

1. Frequency and Percentage Distribution of Demographic variables.

Variables	Opts	Frequency	Percentage%
Age in years	20-30	89	67.9
	31 and above	42	32.1
Course completed	Diploma	86	65.6
	Degree	45	34.4
Total years of experience	≤ 5 years	83	63.4
	<5years	48	36.6
Area of working	General ward	48	36.6
	Critical ward	83	63.4

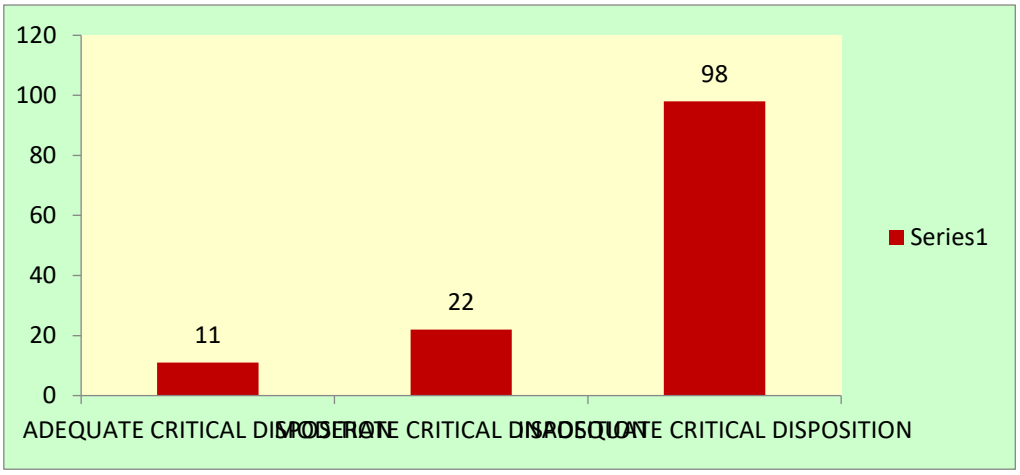
2. Frequency and Percentage distribution of Critical Disposition regarding Fluid and Electrolyte Imbalance among Staff nurses at Era Hospital, Lucknow N=131

Table No: Table Showing Level of Scores

CRITERIA MEASURE OF CRITICAL DISPOSITION SCORE		
LEVEL OF SCORES N= 123	FREQUENCY	PERCENTAGE%
Adequate Critical Disposition.(16-20)	11	8.4
Moderate Critical Disposition.(11-15)	22	16.8

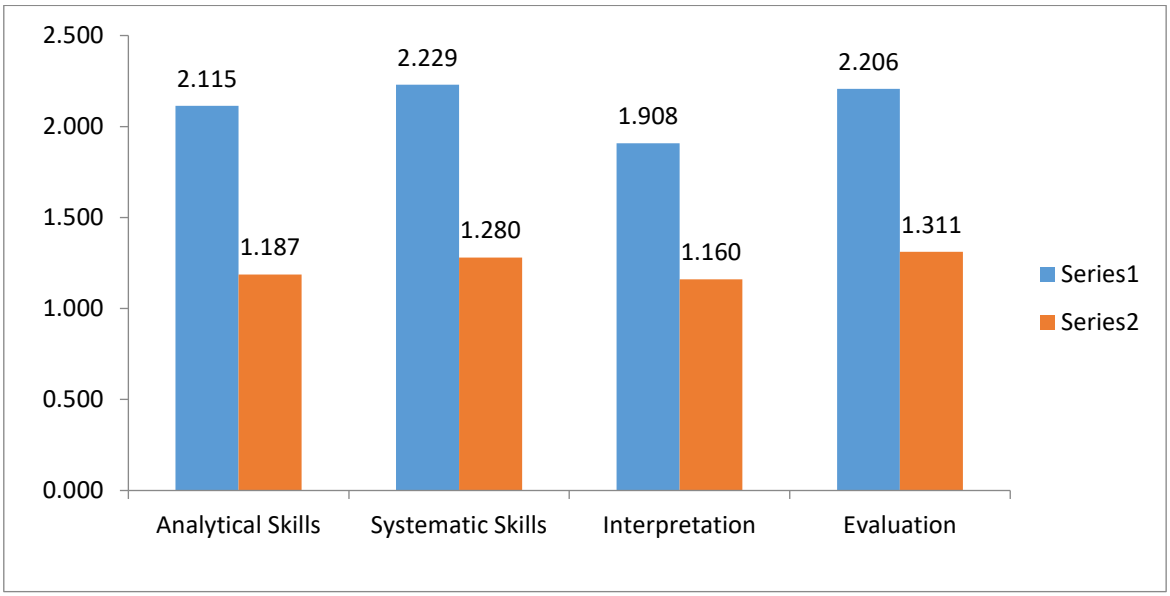
Inadequate Critical Disposition.(0-10)	98	74.8

Maximum =20 Minimum=0



Descriptive Statistics of Critical Disposition regarding Fluid and Electrolyte Imbalance among Staff nurses working at Era Hospital, Lucknow.

Sections of Critical Disposition	Minimum	Maximum	Mean	Std. Deviation	Variance	Mean %	Rank
Analytical Skills	.00	5.00	2.1145	1.18738	1.410	42.29	3
Systematic Skills	.00	5.00	2.2290	1.28041	1.639	44.58	1
Interpretation	.00	5.00	1.9084	1.15991	1.345	38.168	4
Evaluation	.00	5.00	2.2061	1.31100	1.719	44.122	2
Descriptive Statistics	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Mean %
Critical Disposition Score	15.00	3.00	18.00	8.4580	3.28226	10.773	42.29



Descriptive Statistics of Critical Disposition regarding Fluid and Electrolyte Imbalance among Staff nurses working at Era Hospital, Lucknow.

Descriptive Statistics	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Mean %
Critical Disposition Score	15.00	3.00	18.00	8.4580	3.28226	10.773	42.29

Association between the level of Critical Disposition Regarding Fluid and Electrolyte Imbalance among Staff Nurses working at Era Hospital, Lucknow with their selected Socio-Demographic variables. N=131

Variables	Opts	Adequate Critical	Moderate Critical	Inadequate Critical	Chi Test	P Value	df	Table Value	Result
Age in Years	20-30 Years	3	15	71	9.267	.010	2	5.991	Significant
	31 and above	8	7	27					
Course Completed	Diploma	4	14	68	4.830	0.089	2	5.991	Not Significant
	Degree	7	8	30					
Total Years of Experience	Less than 5 years	2	14	67	10.730	.005	2	5.991	Significant
	More than 5 years	9	8	31					
Area of Working	General ward	8	6	34	7.162	.028	2	5.991	Significant
	Critical ward	3	16	64					

NS- Non-significant *- Significant at p<0.05

ABSTRACT

Statement: "A study to assess the critical disposition regarding fluid and electrolyte imbalance among staff nurses with a view to plan a CNE at Era Hospital, Lucknow."

Objectives:

Objectives of the study are to:

- Assess the level of critical disposition regarding fluid and electrolyte imbalance among staff nurses.
- Associate between the level of critical disposition regarding fluid and electrolyte imbalance with selected demographic variables.
- Conduct a CNE on critical disposition regarding fluid and electrolyte imbalance among staff nurses.

Materials and Methods:

The non-experimental descriptive research design was used on 131 staff nurses who were working in Era Hospital, Lucknow fulfilling the inclusion criteria were included in the study. The convenient sampling technique was used. Socio-demographic profile was used to collect personal information of subjects and

structured questionnaire method was used to assess the critical disposition regarding fluid and electrolyte imbalance among staff nurses. The data was collected using structured questionnaire and was analyzed using descriptive and inferential statistics.

Results:

Findings reveals that overall critical disposition regarding fluid and electrolyte imbalance shows that majority 98 (74.8%) had inadequate critical disposition, 22 (16.8%) had moderate critical disposition and 11 (8.4%) had inadequate critical disposition. Among the demographic variables analyzed in this study, age in years, total years of experience and area of working is found to have significant association scores. There was no significant association between course completed.

Conclusion:

The study findings revealed that age in years, total years of experience and area of working is found to have significant association scores and there was no significant association between course completed. Therefore, there is a critical disposition regarding fluid and electrolyte imbalance. The CNE will help to improve and motivate the staff nurses to increase their knowledge and skills.

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