

Knowledge of Major Electrolytes and Observed Practices of Prevention of Electrolyte Imbalance in Patients, among Nurses

Elizabeth M Varghese¹, Pinki, Kiran, Anitha Rani Sahu, Amrita Kushwaha, Kanchan Yadav

Abstract: Aim: A study to assess the knowledge of major electrolytes and observed practices of prevention of electrolyte imbalance in patients, among nurses of selected tertiary care hospital, Uttar Pradesh. Objectives: 1) To assess the knowledge of the nurses regarding major electrolytes. 2) To assess the practices followed by Nurses in prevention of electrolyte imbalance. 3) To find association between knowledge of nurses and select demographic variables. Methodology: A cross sectional study approach was used. The study was conducted on 60 nurses working in various critical and acute care settings of selected tertiary care hospital. Results: Out of 60 nurses, majority 51 (85%) were less than 40 years of age. Most of the nurses were graduates, 35 (58.3%). Approximately one third 21 (35%) of them possessed more than 10 years of clinical experience. Two third 41 (68.3%) of the nurses had also done additional update/ diploma courses, and among them majority 14 (23.3%) had done ICU course. The study revealed that majority of the nurses 36 (60%) had good knowledge regarding major electrolytes and prevention of their imbalances. Practices were lacking mainly in the areas of documentation and reporting of abnormalities, dietary modifications and health education. The study also revealed that significant statistical association exists between knowledge of nurses and clinical experience (at 95% CI, p value =0.004673), knowledge of nurses and ICU update courses (at 95% CI, p value =, 0.02804) and knowledge of nurses with other update courses (at 95% CI, p value =0.03528). Conclusion: The knowledge of the nurses regarding electrolytes and prevention of its imbalance was not adequate and there is significant scope of improvement. It was also found that with increasing years of clinical experience, knowledge level also showed improvement. ICU and other update courses have significant impact on improving the knowledge and hence it is recommended to conduct periodic training programmes and workshops.

Keywords: Knowledge, Practice, Major Electrolytes and Nurses

1. Introduction

Electrolytes and the levels of electrolytes play significant roles that are essential to life. Electrolytes are present in specific concentrations in the intracellular and extracellular fluid compartments and their equilibrium is maintained by various regulating mechanisms (1). Disorders of these mechanisms results in electrolyte imbalances that may be life threatening clinical conditions (2). Electrolyte Imbalances are commonly seen in critically ill and other hospitalized patients.

If electrolyte imbalances are prevented the mortality rates among hospitalized patients as well as length of hospital stay, both can be reduced significantly (7). The clinical nurse being available at bedside of the patient round the clock can significantly contribute towards improving patient outcome. Her knowledge and correct practices can not only help in early identification of electrolyte imbalances but can also prevent its occurrence in the high risk groups. This study was conducted to assess the knowledge of nurses and observe their practices of prevention of electrolyte imbalance among the patients under her care.

Aim

A study to assess the knowledge of major electrolytes and observed practices of prevention of electrolyte imbalance in patients, among nurses of selected tertiary care hospital, Uttar Pradesh.

Objectives

The objectives of the study were:

- 1) To assess the knowledge of nurses regarding major electrolytes.

- 2) To assess the practices of prevention of major electrolyte imbalances followed by the nurses while managing hospitalized patients.
- 3) To find the association between knowledge of the nurses with select demographic variables.

2. Methodology

A descriptive study was conducted on 60 nurses, selected by probability sampling technique, who were working in acute and critical care wards of the selected tertiary care hospital in Uttar Pradesh. The knowledge was assessed using structured self administered questionnaire and preventive practices performed by nurses were assessed by non-participatory observation method using a checklist. Data regarding correct practices were also verified with the patients documents, records and reports maintained in the ward. Descriptive and inferential statistics was used to interpret the findings. Ethical clearance was obtained from the ethical committee of the hospital. Written Informed consent certificate was also taken from the subjects.

3. Discussion

Out of the total nurses under study majority (85%) were less than 40 years of age and majority were (58.3%) were graduates. Majority (35%) of them had more than 10 years of clinical experience. Two third (68.3%) of the nurses had also done additional update / diploma courses. Among them majority (23.3%) had also done ICU course.

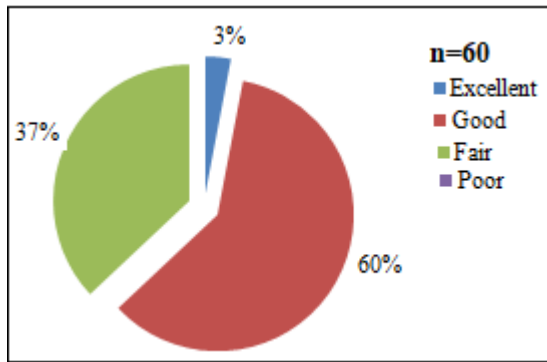


Figure 1: Percentage distribution of nurses based on knowledge

Majority of the nurses 36 (60%) had good knowledge regarding major electrolytes and prevention of their imbalances, 3% had excellent knowledge, while 36.7% had fair knowledge (Figure 1). The results of the present study are similar to the study conducted by Mrs R Kanakalakshmi to assess the knowledge and practice regarding fluid and electrolyte replacement therapy for patients with burns

among nurses in NMCH, Nellore, which showed that 15% of nurses had adequate knowledge, 62% had moderately adequate knowledge and 23% had inadequate knowledge regarding fluid and electrolyte replacement therapy. On the contrary S Aslam et al (2017) in their study on the knowledge and practice of the registered nurses regarding fluid and electrolytes monitoring and administration in the cardiac surgery patients, showed that the nurses have poor knowledge.

Majority 42 (63.3%) of the nurses had good knowledge regarding Potassium and prevention of its imbalance as compared to their knowledge pertaining to Sodium and Calcium. (Fig: 2) Study conducted by Aysegul Gunes and Sevilyay Senol Celik, to assess the knowledge and practices of nurses concerning intravenous potassium also showed that the average knowledge score was 9.48 ± 3.21 (approx 50%) which was relatively lower than the maximum score. The majority of the nurses did not know all the aspects of the potassium disorder.

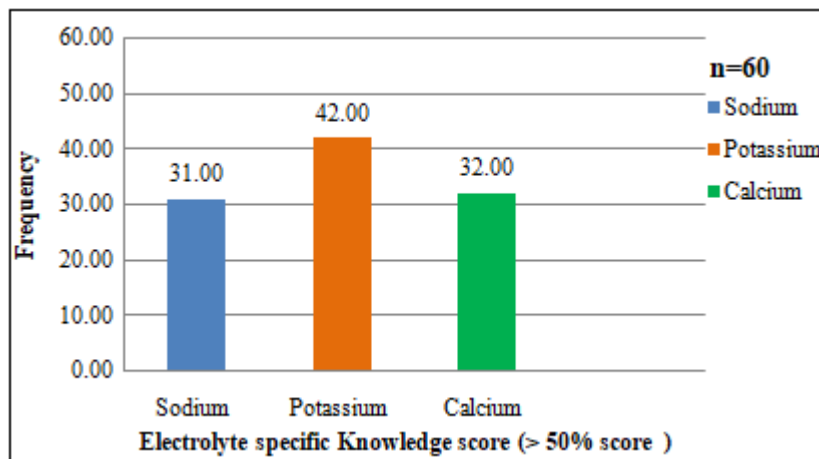


Figure 2: Frequency distribution of nurses based on specific electrolyte knowledge

The findings related to prevention of electrolyte imbalances revealed that in majority (73%) of the cases correct practice of immediate recording of vital parameters was carried out. Accurate periodicity of monitoring of vital parameter was followed for most (39, 65%) of the cases. However, proper documentation of abnormal vital parameter was lacking in majority (51.7%) of cases. It was also found that practice of ECG recording/ continuous monitoring, though indicated, on admission was carried out only in 41.6% cases. (Fig.3) It was also observed that only 40% were immediately reported and documented abnormal ECG recording, (Fig:4)

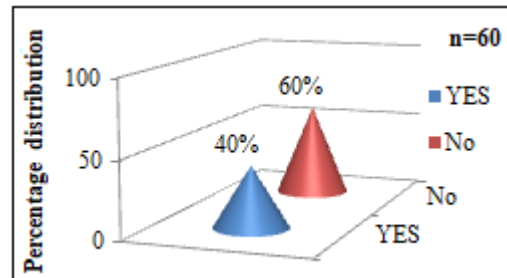


Figure 4: Reported and documented abnormal ECG

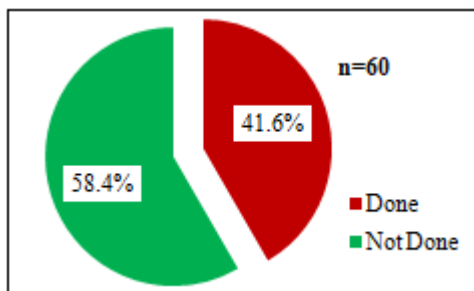


Figure 3: Percentage distribution based on practice of ECG recording on admission

The baseline blood investigations was done and reports were collected on the same day of admission in majority of the cases 48 (80%) (Fig.5) In majority of the cases 53 (88.3%) abnormal electrolyte reports were noticed and immediately informed to the physician for instructions regarding corrective action, and 65% abnormal electrolyte reports were documented in report book. (Fig.6)

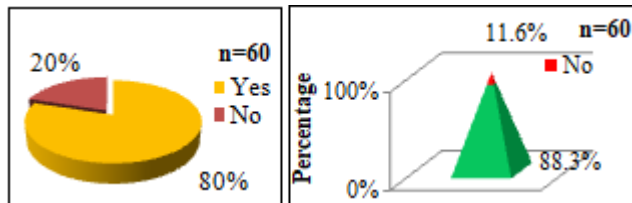
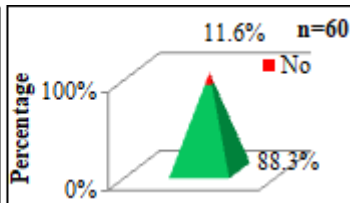


Figure 5 Figure 6

Figure 5: Percentage distribution based on Baseline investigation done on admission

Figure 6: Distribution based on Reporting of abnormal electrolyte to physician



Out of the sixty patients 41 were on Diuretics/Hypertensive/ cardiac / drugs which affect electrolyte levels. However, biweekly electrolyte monitoring was done in only in 20 (48.8%) cases. It was also observed daily electrolyte monitoring was not indicated in 9 (15%) cases. In rest of the

cases though indicated, daily electrolyte monitoring was done only for (21.7%) cases.

In majority of the cases 46 (76.6%) accurate type of IV fluid was administered at accurate rate as prescribed by physician. Accurate output monitoring in terms of periodicity (1/ 2hrly for critical patients and as per frequency of voiding in normal patients) including accurate recording of volume of output was done in 23 (38%) cases. Dietary modifications (menu plan, frequency, amount and daily caloric intake endorsed) were observed correctly in only 14 (23.3%) cases. Health education was imparted only in 17 (28.3%) cases.

In addition it was also found that there was no significant statistical association between knowledge of nurses with age, educational qualification and place of training of the nurses.

Table 1: Association between clinical experience of nurses and knowledge regarding major electrolytes, n=60

Clinical Experience	Knowledge Category					df	Tab Value & X ²	p-value	Remarks
	Excellent	Good	Fair	Poor	Total				
< 1 Yr	0	1	8	0	9	6	12.59 18.715	0.004673	Highly Significant
1-5 Yr	0	11	5	0	16				
6-10 Yr	0	13	2	0	15				
>10yr	2	11	7	0	20				
Total	2	36	22	0	60				

*Since p value is < 0.05 there is **significant** association between knowledge and experience

The study revealed that there was significant statistical association between knowledge of nurses and clinical experience (p value =0.004673, at 95% CI). Similarly, the study also showed a significant association between knowledge of nurses regarding major electrolytes with having attended special/update course (p value =0.03528 at 95% CI (which shows that there exists a statistically significant association between the two variables).

The study also revealed that significant statistical association exists between knowledge of nurses and attending ICU update courses (p value =, 0.02804, at 95% CI). And hence shows that update courses help in significantly improving the knowledge of the clinical nurses.

4. Conclusion

This study revealed that majority of nurses (60%) had good knowledge. However it is also observed there is scope for improvement regarding practices of prevention of electrolyte imbalance. The study thus reflects the need for continuing in-service nursing education and periodic training programmes for updating the knowledge of nurses with latest guidelines. The study also emphasizes the need of establishing standardized observation tool for periodic evaluation of nursing care.

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