

## To Assess Prevalence of Hyponatremia Among Elderly Population: An Institutional Based Study

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### ABSTRACT

**Background:** Hyponatremia is the common electrolyte imbalance that occurs due to disruption of sodium and water homeostasis, normally maintained by complex multi-system physiological mechanisms. Hyponatremia is common among older people. The present study was conducted to assess prevalence of hyponatremia among elderly population.

**Materials and Methods:** This hospital based cross sectional study was conducted among 180 elderly patients. Patients' demographic data like gender and age were noted. A thorough general physical examination was conducted. All these findings were recorded on a predesigned and pretested proforma. Blood samples were collected and send for further analysis. Patients were evaluated for hyponatremia. The recorded data was compiled, and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA).

**Results:** In the present study a total of 180 elderly patients were included in which 66.66% were males and 33.33% were females. Hyponatremia was present in 59.45% males and 63.76% females. Maximum cases of hyponatremia were in age group of 61-70yrs (63.63%).

**Conclusion:** The present study concluded that hyponatremia was present in 59.45% elderly males and 63.76% elderly females. Maximum cases of hyponatremia were in age group of 61-70yrs (63.63%).

**KEYWORDS:** Hyponatremia, Elderly, Sodium, Homeostasis.

### INTRODUCTION

Hemostasis Hyponatremia is the common electrolyte imbalance encountered in clinical practice.<sup>1</sup> It occurs due to disruption of sodium and water homeostasis, normally maintained by complex multi-system physiological mechanisms.<sup>2</sup> Hyponatremia is defined as a serum sodium concentration of <135 mEq/L.<sup>3</sup>

Patients with clinically significant hyponatremia present with nonspecific or neurologic symptoms attributable to cerebral edema. When coupled with a recent history of altered fluid balance, these symptoms suggest the possibility of hyponatremia.<sup>4</sup>

Ageing results in impairment of water-excretory capacity due to decreased GFR, reduction in total body water content, higher sensitivity to osmotic stimuli, and associated with multiple comorbidities and exposure to multiple drugs.<sup>5-9</sup> Hyponatremia can be of three types- hypertonic hyponatremia, isotonic hyponatremia or hypotonic hyponatremia. Hypotonic hyponatremia is the

most common type encountered in clinical practice and further categorised in three-ways based on patient's volume status- hypervolemic, euvolemic and hypovolemic. Hyponatremia, resulting from hyperlipidemia, paraproteinemia is pseudohyponatremia.<sup>10</sup> Kidney failure is one of the major reasons for Hyponatremia. Creatinine is a waste product produced by muscles from the breakdown of a compound which abnormally goes high during Hyponatremia.<sup>11</sup> Hyponatremia has many causative factors, especially in older patients with a greater predisposition due to physiological deterioration, comorbidities, and/or polypharmacy.<sup>6,12</sup> The clinical symptoms are generally associated with the severity of hyponatremia, with the most frequently encountered symptoms being nausea, fatigue, and headache.<sup>4,13</sup> The present study was conducted to assess prevalence of hyponatremia among elderly population.

## MATERIALS AND METHODS

This hospital based cross sectional study was conducted in Department of Medicine, Indian Institute of Medical Science & Research, Warudi, Badnapur, Jalna, Maharashtra (India) among 180 elderly patients. Before the commencement of the study ethical approval was taken from the Ethical Committee of the institute and written consent was taken from the patient after explaining the study. Patients with upper respiratory tract infection, known cardiac disease, diabetes mellitus, hypertension, renal diseases and terminally ill patients were excluded from the study. Patients' demographic data like gender and age were noted. A thorough general physical examination was conducted to assess vital

parameters, anthropometry and clinical signs followed by systemic examination. All these findings were recorded on a predesigned and pretested proforma. Further, Blood sample was collected for laboratory investigations. Blood samples were collected under all aseptic precautions; blood samples were collected by venepuncture and collected in vacutainer. The sample was collected within 6 hours of admission and send for further analysis. Patients were evaluated for hyponatremia. The recorded data was compiled, and data analysis was done using SPSS (SPSS Inc., Chicago, Illinois, USA). P-value less than 0.05 was considered statistically significant.

**Table 1: Prevalence of Hyponatraemia according to gender**

Gender	N(%)		
	Present	Absent	Total
Male	66(59.45%)	45(40.54%)	111(61.66%)
Females	44(63.76%)	25(36.23%)	69(38.33%)
Total	110(61.11%)	70(38.88%)	180(100%)

**Table 2: Prevalence of Hyponatraemia according to age group**

Age group (yrs)	N(%)		
	Present	Absent	Total
61-70	56(63.63%)	32(36.36%)	88(48.88%)
71-80	34(57.62%)	25(42.37%)	59(32.77%)
81-90	20(60.60%)	13(39.39%)	33(18.33%)
Total	110(61.11%)	70(38.88%)	180(100%)

## RESULTS

In the present study a total of 180 elderly patients were included in which 66.66% were males and 38.33% were females. Hyponatremia was present in 59.45% males and 63.76% females. Maximum cases of hyponatremia were in age group of 61-70yrs (63.63%).

## DISCUSSION

Hyponatremia has been associated with considerable morbidity and mortality in several chronic diseases, most notably in patients with congestive heart failure (CHF) and chronic liver disease (CLD).<sup>14,15</sup>

In the present study a total of 180 elderly patients were included in which 66.66% were males and 38.33% were females. Hyponatremia was present in 59.45% males and 63.76% females. Maximum cases of hyponatremia were in age group of 61-70yrs (63.63%).

Miller M et al., study revealed 53% of elderly in-patients aged 60 years and above, had hyponatremia over 12 months.<sup>16</sup>

The available literature suggests that, prevalence of chronic hyponatremia in the elderly population between 7% to 20% and to a large extent it depends on the level of serum sodium and the setting in which the measurement is made. When studying the risk factors for orthostatic hypotension in an otherwise healthy population, Caird et al. noted that approximately 7% of patients >65 years of age had serum sodium concentrations <math>d' 137 \text{ mEq/L}</math>.<sup>17</sup>

Older people have an increased predisposition to hyponatremia due to degenerate physiology, multiple comorbidities and poly-pharmacy.<sup>18</sup>

It is also observed that due to abnormal levels of creatinine in kidney, the condition of hyponatremia in elderly population has become more prevalent. This may be because of one of the most important factors that is frequent prescription of drugs such as thiazides or antidepressants which can be associated with hyponatremia.<sup>19</sup>

Rao MR et al. (2010), Hyponatremia was more common in females and they seemed to better tolerate it than their male counterparts.<sup>20</sup>

## CONCLUSION

The present study concluded that hyponatremia was present in 59.45% elderly males and 63.76% elderly females. Maximum cases of hyponatremia were in age group of 61-70yrs (63.63%)

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