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A cross sectional study of Anemia in Elderly in Urban Population

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ABSTRACT: There is increase in elderly population both in number and proportion across the globe. The number is expected to increase from present 7% to 12% by the year 2030. With the increasing age the person is also prone for diseases both infectious and Noninfectious. Anemia is of the common problems in elderly. When anemia is associated with comorbidities like heart failure or renal failure, the morbidity and mortality are much higher. Prevalence of anemia in elderly is around 8-44%. **Aim & Objectives**: To determine the socioeconomic and Demographic profile of elderly with anemia and to determine the type of anemia among elderly and to compare these findings with socioeconomic and Demographic profile **Materials and Methods**: 217 subjects who were 60 years and above were considered for this prospective, cross sectional, Observational study. WHO criteria were followed the determine the diagnosis of anemia.Detailed history was taken and relevant investigations was done **Results**: of the study subjects 137 were female and 80 were male subjects.158 were Hindu,32 were Christians, 9 were Muslims and 7 others followed different religion. 57% (123) were married, 40% (88) were widow/widowers, 2% (4) were never married and 1%92) were divorced. 93% (202) were staying with family, 5% (11) were staying alone and 2% (4) were staying in old age home. 6 subjects belonged to Upper class, 39 belonged to upper middle class, 67 belonged to lower middle class, 102 belonged to upper lower class and 3 belonged to lower class. 21.66% subjects had mild Anemia, 58.03% had moderate Anemia and 20.28% had severe Anemia with Hemoglobin range of 2.4 to 12.2 and mean hemoglobin of 9.4+/-1.96g/dL. Among the male subjects,21.25% had mild anemia, 53.75% had moderate anemia and 25% had severe anemia. **Conclusion**: Anemia in elderly is unique in terms of its presentation. Mean Hemoglobin was 9.4+/-1.96g/dL in the present study with range of hemoglobin was 2.4-12.2g/dL. 47 subjects had mild anemia, 126 had moderate anemia and 44 had severe anemia. Normocytic normochromic anemia was more common in the study (66.18%) followed by Microcytic Hypochromic anemia (28.5%) and Macrocytic anemia (5.32%).

There is increase in population aging in terms of number as well as proportion and is a Global Phenomenon. As per current statistics the prevalence of Elderly (above 65 years of age) is 7% and is expected to increase to 12% by 2030. [(1)]Elderly, which cannot define with precision but refers to ages close to or over the average life span of human being. Government of India has adopted "National Policy on Older persons and defines senior citizen or Elderly as a person who is of the age of 60 years and above [(1)]

With aging any person is prone for several diseases or at increased risk of diseases, both infections and Non-infectious disease. Anemia is one such condition. Anemia is a condition in which there is reduced Oxygen carrying capacity due to reduced levels of Hemoglobin or reduced Red Blood Cell count. As per WHO criteria, anemia is defined as hemoglobin levels of less than 13gms in Men and 12gms in Women. Several studies have shown that Elderly or Geriatric population are more prone for Anemia especially on lower socio-economic population. [(2)]

India being the second most populous country in the world and has seen dramatic demographic transition in past 50 years. Indian Government Statistics, As per 2011 elderly population has tripled and the numbers will increase from 7.5% in 2010 to 11.1% by 2025 which is remarkable figure in absolute terms.(United Nations Department of Economics and Social Affairs 2008) A few important characteristics of elderly in India are, more than two thirds live in rural India and half of this population is in poor socio-economic status.[(3)]More than half of the elderly in India are dependents due to multiple factors like widowhood, diverse and majority elderly are women.[(4)]Minority of elderly are living alone, more women (3,49%) than men(1.42)

The prevalence of Anemia in elderly is around 8 to 44% [(5)], with highest prevalence in men above 85 years and above. As per WHO, Prevalence rates of Anemia is around 11% in men and 10.2% in women aged 65 years and above. [(8)]Elderly persons

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with associated comorbidities like heart failure or chronic renal failure are prone for increased morbidity and mortality. [6]

Anemia in elderly is classified into three types:
1.Nutritional deficiency or Blood loss (34%)
2 Anemia of Chronic disease (32%) and
3. Unexplained Anemia (34%).

Number of factors affect Hemoglobin in elderly

1. Aging-with the aging there is increased inflammatory process especially increased levels of IL-6. Increased levels of IL-6 are associated with increased morbidity and mortality, functional dependency and a number of Geriatric syndromes like Dementia, Osteoporosis. Aging predisposes to the development of Anemia. [7]
2. Progressive decline in GI functions like reduced motility, reduced secretion, reduced splanchnic circulation and reduced absorbing surface all leading reduced absorption and nutritional deficiency. Iron absorption is also affected by increased levels of "Hepcidin "a glycoprotein in liver which is stimulated by increased IL6 levels leading Iron deficiency. Aging also reduces the metabolism of conversion of Cobalamin in the gut causing Vitamin B12 deficiency. [8]
3. With aging, there will be many endocrinal changes like increased corticosteroids and reduced Androgens, Growth hormone, Insulin and Thyroxin
4. There is also a progressive decline in marrow function with reduced cellularity

Anemia in elderly is unique in many ways. The diagnosis of anemia itself is challenging. The onset is insidious and features are nonspecific and many elderly attributes these changes to advancing age. Anemia in elderly is more common in men than in women. Etiology is most of the times unexplained in elderly.
The current study was undertaken to correlate the socio-economic and demographic profile with the type of Anemia in elderly population in Urban population.

Aims and Objectives: To determine the socio-economic and demographic profile of elderly with anemia and to determine the type of anemia among elderly and to compare these findings with socio-economic and demographic profile

MATERIALS AND METHODS:

It is a prospective, cross sectional and observational study done in subjects aged 60 years and above with Anemia. Number of subjects studied are 217. Sample size was calculates taking 17% as the prevalence rate. The study was done between May2016 to April 2018. Criteria for Anemia diagnosis is as per WHO criteria. Patients who were less than 60 years and who were seriously ill were excluded from the study. The study subjects included both male and Female. Detailed history was taken and Demographic information was recorded. Hematological assessment was done in all subjects like Complete Blood Count (CBC including ESR), Peripheral smear, Serum Creatinine, Additional tests were done to find the causes of anemia like Reticulocyte count, Iron profile, Vitamin B1, Folic acid, upper GI Endoscopy, Ultrasound Abdomen and Pelvis and Bone marrow examination. Smoking and Alcohol History was obtained.
Study subjects were divided into three categories:
Young old-60-69
Middle old-70-79
Very old-80 years and above
All the tests were done using the standard laboratory techniques and equipment.

STATISTICAL ANALYSIS:

Analyses was done using Statistical package for social service for windows software after entering the data in Microsoft excel format. Descriptive statistics such as mean and standard deviation were determined. Statistical significance was set at 0.05.

RESULTS

Of the study population, 80 were male and 137 were females. Mean age of the subjects is 70.1+/-7.97. As per above classification, 112(51.6%) were in young old group, 70(32.3%) in middle old group and 35(16.1%) in very old group. 73% (158) were Hindu, 15% (32) were Christians,9% (20) were Muslims and rest 3%(7) belonged to other religion. 57% (123) were married, 40%(88) were widow/widowers, 2%(4) were never married and 1%92) were divorced. 93% (202) were staying with family, 5% (11) were staying alone and 2% (4) were staying in old age home. 87% (189) were dependent on others for their daily activities and 13% (28) were independent. 6 subjects belonged to Upper class, 39 belonged to upper middle class, 67 belonged to lower middle class, 102 belonged to upper lower class and 3 belonged to lower class. Socio-economic classification was based on

Kuppuswamy's classification.21.66% subjects had mild Anemia, 58.03% had moderate Anemia and 20.28% had severe Anemia with Hemoglobin range of 2.4 to 12.2 and mean hemoglobin of 9.4+/-1.96g/dL. Among the male subjects,21.25% had mild anemia, 53.75% had moderate anemia and 25% had severe anemia. Among Female subjects, 21.9% had mild anemia, 60.58% had moderate anemia and 17.52% had severe anemia. Severe anemia was more common in men compare to women in the study and moderate anemia was most common in both sexes Correlation of Gender with type of anemia showed Normocytic and Normochromic was the most common type of anemia. Microcytic anemia was more common in men than in women (32.46% vs 26.15) with p-value of 0.500. Correlation with age and severity of anemia showed, moderate anemia was the common across all age groups in the study. Severe anemia was less common in very old group (2%). Mild anemia was similar among all age groups. Correlation of age and morphological type of anemia showed normocytic normochromic anemia was the most common followed by microcytic anemia. Macrocytic was less common in very old group. Distribution of type of anemia was similar among all age groups. Correlation of religion with severity of anemia showed moderate anemia was common in all religions, mild and severe anemia was seen in Muslim elderly subjects. Distribution of severity of anemia was almost similar in Hindu and Christians. These differences can be attributed to food habits, cultural practices in different religions. Correlation of Marital status with severity of anemia showed, moderate anemia was common among all options of marital status. Severe anemia was more common in unmarried subjects. moderate anemia was seen in divorced subjects. Normocytic normochromic anemia is common type of anemia across married, unmarried and widow/widowers. Moderate an anemia was common in subjects living with family and old age home. Severe anemia and moderate anemia were of equal distribution in subjects who lived alone. Severe anemia was common in dependent group, mild anemia in independent group.

DISCUSSION:

Anemia in elderly is unique in terms of its presentation. Present study involved 217 subjects. Mean age of the subjects were70.1+/-7.97 years. 112 patients were in group of young old (60-69 years), 70 were in the group middle old and 35 were in very old group. A study done by Bhatt R et al had mean age of 67.73+/- 7.12 and majority were in young old group 72.5% which is almost similar to this study [(9)]. 137 subjects were female and 80 were male in the present study. In a similar study done by Obaidely MA et al had female subjects of 66.7% in their study. [(10)]Of the 217 subjects, 158 were Hindus973%), 32 were Christians (15%), 20were Muslims (9%) and rest 7 followed other religions (3%). In a study done by Shraddha et al had 526 subjects in their study, of which 94.7% were Hindus [(11)].123 subjects were married in the present study (57%),88 were widow/widower (40%), 4 subjects never married and 2 were divorced. In a study by purty AJ et al, of the 320 subjects, 67.5 were married and 32.3% were widowed. [(12)]In the present study 93% were staying with family 5% were staying alone and 2% were staying at old age home. A study done in Nigeria by Sunday BU et al noted that 80% were living with the family and5.8% were living alone. [(13)]Inthe present study 87% were dependents in their daily activitiesand only 13% were Independent in their routine activities. In contrast purty et al showed in their study that 95% were independent. Sunady BU et al, reported that 55.3% were partially dependents and 39.8% were totally dependents. As per Kuppuswamy classification, study subjects were divided into upper class (6%), upper lower class (47%), lower middle class (31%), upper middle class (18%) and lower Class (1%). In similar study done by Shraddha et al, majority subjects belonged to upper lower class as seen in the present study.

Mean Hemoglobin was 9.4+/-1.96g/dL in the present study with range of hemoglobin was 2.4-12.2g/dL. 47 subjects had mild anemia, 126 had moderate anemia and 44 had severe anemia. Normocytic normochromic anemia was more common in the study (66.18%) followed by Microcytic Hypochromicanemia (28.5%) andMacrocyticanemia (5.32%). Bhasin et al in their study showed that prevalence of Normocytic normochromic anemia was 62%, Microcytic anemia was 30% and macrocytic anemia was 6% which almost similar to the present study. [(14)]Severe anemia was more common in men compared to women (25% vs 17.5%). However majority elderly male and females had moderate anemia (60.58% vs 53.75%). Normocytic normochromic anemia was the common type in both sexes (69.23% in women vs 61.03 in men). Moderate anemia was common across the age groups in this study followed by mild anemia. Distribution of severity in Hindu, Christians and Muslims was similar. Distribution of the type of anemia was normocytic normochromic anemia in all three main religions followed by Microcytic anemia. These values were statistically significant (p-value 0.041). Moderate normocytic normochromic anemia was common in married,

unmarried and widowed subjects. However divorced subjects had moderate anemia. Moderate to severe anemia was more common in subjects who lived alone, moderate anemia was common in subjects living with family (58.4%). Severe anemia was seen in only dependent group but moderate anemia was common in both dependent and independent groups. Mild anemia was common in elderly who belonged to upper socioeconomic class, severe anemia was more common in low socioeconomic class. Normocytic normochromic anemia was the commonest across all the socioeconomic classes.

CONCLUSION:

It is essential that a health care worker is aware of Anemia in elderly which is unique in its pathogenesis and presentation. Presence of associated comorbidities like heart failure and renal failure increases the risk of morbidity and mortality. Identifying and treating the underlying etiology can reduce the risks.

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