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Prevalence of anemia in geriatric age group at tertiary care hospital in Maharashtra, India.

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ABSTRACT

Background: According to the World Health Organization (WHO), anemia is defined as hemoglobin (Hb) levels <12.0 g/dL in women and <13.0 g/dL in men. Understanding anemia's varied and complex etiology is crucial for developing effective interventions that address the context-specific causes of anemia and for monitoring anemia control programs. Individuals in older age groups have lower hemoglobin levels than those in younger age groups.

Methods: Geriatric patients of age group more than 60 years attending OPD of medicine department Indian institute of medical science and research badnapur, Jalna were enrolled from December 2021 to May 2022. Total number of subjects taken for study was 300. Thorough clinical and hematological examination carried out on patient.

Results: Out of total 300 cases, 143(47.6%) was found be anemic. Females were affected more than males. Of 143 anemic cases, 82(57.3%) were females and 61(42.6%) were males. Normocytic Normochromic was the most common morphological type of anemia. Etiologically, anemia of chronic disease followed by anemia due to blood loss and nutritional anemia were the common types.

Conclusions: Considering huge global burden of anemia and significantly higher prevalence in elderly, there is a need to understand its complex etiology in geriatric age group in order to develop effective strategies for prevention and treatment of anemia.

Keywords: Anemia, Geriatric, Elderly, Prevalence, Hemoglobin.

INTRODUCTION

Anemia is a worldwide health problem affecting both developing and developed countries. According to the World Health Organization (WHO), anemia is defined as hemoglobin (Hb) levels <12.0 g/dL in women and <13.0 g/dL in men. But, normal Hb distribution varies with sex, ethnicity and physiological status. Ethnicity, gender, and age are taken into consideration while proposing new lower limits of normal Hb. Anemia is often multifactorial and is not an independent phenomenon.The patient history, underlying pathological mechanism and hematologic parameters are necessary to classify and diagnose anemia.In western countries, aging of population causes an increase of anemia in elderly people. In elderly population, anemia, recently defined by levels of Hb <12 g/dL in both sexes, is mostly of mild degree (10-12 g/dL). As it contributes to significant morbidity and mortality, understanding the pathophysiology of anemia in this population is of utmost importance.[1]

Conventionally, the elderly population is defined as individuals aged 65 years or more, though the increase in life expectancy, improvement in health status and functional abilities calls for an adjustment in this cutoff. Elderly with lower levels of hemoglobin exhibits higher morbidity. With each 1 g/dl decrease in hemoglobin , there is increased risk of developing cardiovascular disease and hypertension. Hospitalization rates were noted to be higher in nursing home patients with more severe anemia.[2]

Anemia is a global public health problem amongst geriatric population in India also. Anemia in old age further worsens the age-related decline in functional ability and mobility. It leads to fatigue, decreased bone density, and skeletal muscle mass. There is lack of evidence on the prevalence of anemia and its risk factors among geriatric population.[3] Anemia affects the important quality-of-life (QoL) components like exercise capacity, cognitive function, and the ability to carry out social activities.[4]

Anemia is associated with impairment in overall survival and health-related quality of life. These parameters are significantly affected in individuals over 60 years old.[5]

Anemia due to nutritional deficiency, including iron, folate, or vitamin B12 deficiency accouns for about one-third cases of anemia; similarly, anemia of chronic disease accounts for about another one-third of the cases. However, anemia cannot be explained by an underlying disease or by any specific pathological process in one third of patients.This kind of anemia is defined "unexplained anemia". Unexplained anemia may be due to the progressive resistance of bone marrow erythroid progenitors to erythropoietin, and a chronic subclinical pro-inflammatory state[1]

Complete blood count and examination of the peripheral smear forms the basis of laboratory diagnosis of anemia.The peripheral smear is important in interpretation of diagnostically significant red blood cell (RBC) findings in patients with anemia. These include assessment of RBC shape, size, color, inclusions, arrangement and abnormal type of cells. Abnormalities of RBC shape and other RBC features can provide key information in establishing a differential diagnosis in blood disorders.[6]

Since anemia is associated with poor health outcomes and leads to significant morbidity and mortality, the prevalence of anemia is a important public health indicator. Even though anemia is primarily caused by iron deficiency, it may also result from other conditions such as chronic diseases[7].

In a recent systematic review, it has been reported that the global prevalence of anemia in elderly population was 17% (3%–50%)[8]. The World Health Organization (WHO) has reported that globally 23.9% of elderly people residing in low-income and middle-income countries had anemia[9]. Moreover, many studies conducted in various parts of India had found high prevalence rate of anemia varying from 21-96% in elderly population[10]. Considering a high prevalence rate in elderly and significant variation in rate in different parts of country and lack of scientific evident data, there is need to understand the prevalence and pattern of anemia in various regions. Hence this study was carried out in a tertiary care hospital in Maharashtra, India.

METHODS

Geriatric patients of age group more than 60 years attending OPD of medicine department Indian institute of medical science and research badnapur, Jalna were enrolled from December 2021 to May 2022. The study was approved by institutional ethics committee. Total number of subjects taken for study was 300.A written informed consent from all subjects was taken after explaining the need for study. Relevant details were recorded in case record form.Patient data obtained was kept confidential, only the study parameter data which does not identify the patient was used for analysis of the study. Thorough clinical and hematological examination was carried out on patient. WHO criteria was used to define anemia. Hematological examination and peripheral smear was done in those found anemic.Source Documents were case record forms of OPD patients and Laboratory investigation reports. The documents were used to enter the data required as per study objectives and parameters. Data collected was tabulated and analysed accordingly. Statistical analysis was done using Graph Pad Prism Software Version 8.4.

RESULTS

In this study, age of patients ranged from 60 to 84 years. Maximum number of patients were from age group 60 to 70 years(Table 1). Of total 300 patients in study, 182 were males and 118 were females(Figure 1).

Out of total 300 cases, 143(47.6%) was found be anemic(Figure 2). Females were affected more than males. Of 143 anemic cases, 82(57.3%) were females and 61(42.6%) were males (Figure 3). Proportion of anemia within total population of female subjects was found to be 69.49%(Figure 4).

Table 1: Distribution of total study subjects according to their age and sex

Age group (Years)	**Males**	**Females**	**Total**
60-70	103	73	176
71-80	62	35	97
Above 80	17	10	27
Total	182	118	300

Figure 1: Sexwise distribution of total study subjects

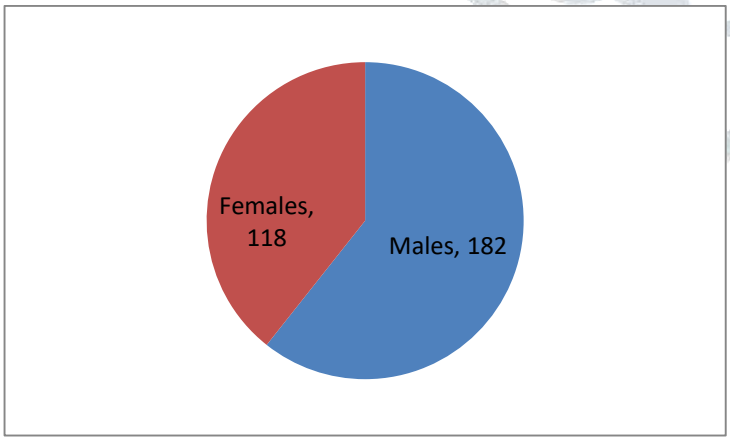


Figure 2: Percentage of Patients with Anemia

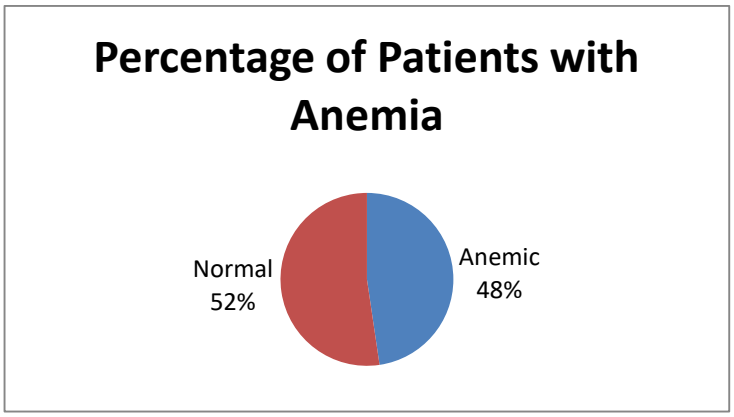


Figure 3: Distribution of Anemia according to sex

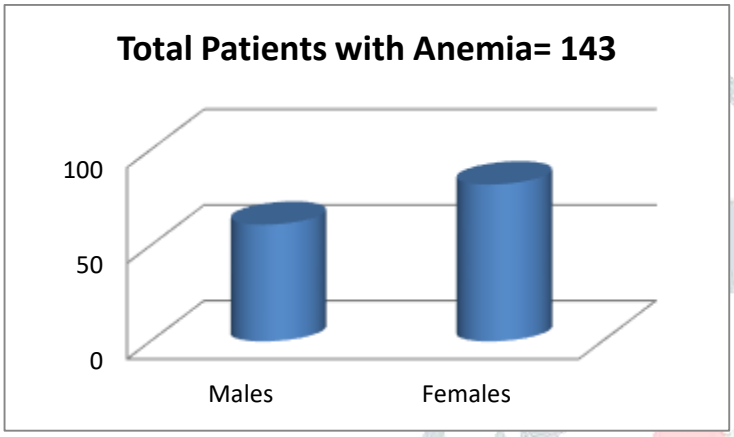
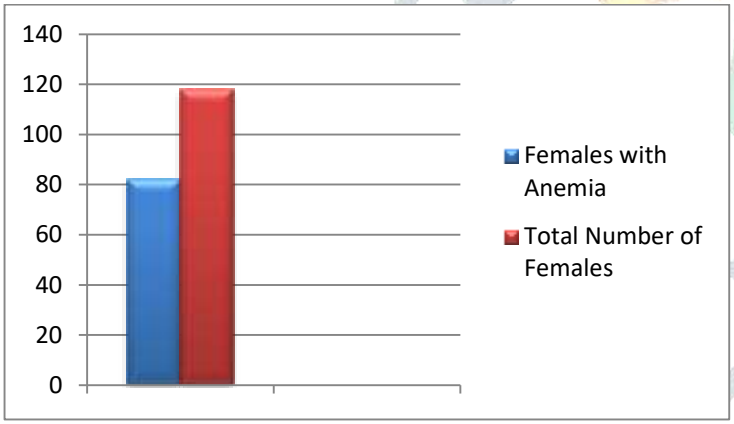


Figure 4: Proportion of Anemia among females



Normocytic Normochromic was the most common morphological type of anemia(Table 2). Etiologically, anemia of chronic disease followed by anemia due to blood loss and nutritional anemia were the common types.

Table 2: Distribution of patients according to morphological type of anemia

Morphological Type	**Number**	**Percentage**
Normocytic Normochromic	69	48.25
Microcytic Hypochromic	48	33.56
Macrocytic	12	8.39
Dimorphic	14	9.79

DISCUSSION

According to World Health Organization definition of anemia, more than 10 percent of persons aged more than 65 years are anemic. This prevalence goes on increasing with age, and reaches upto 50 percent in chronically ill and debilitated patients. It is also evident that even mild anemia is also associated with increased morbidity and mortality. It is necessary to evaluate anemia in older patients. About one third of patients have anemia secondary to a nutritional deficiency, one third have anemia caused by chronic inflammation and one third have unexplained anemia.[10]

There is significant prevalence of anemia in geriatric age group in India. Though nutritional anemia is not a rare etiological finding India, normocytic is the commonest morphological type of anemia in geriatric age group. Anemia may only be the presentation in old age with many other chronic illnesses, it should be completely evaluated in these patients in order to improve the quality of life and decrease morbidity and mortality in elderly patients. Similar findings were noted in a Study conducted in Karnataka state in India, with nutritional anemia being the commonest etiological type and normocytic as the most common morphological finding on peripheral smear. Prevalence of anemia was found to be 37.88% in elderly with more than half of the patients having mild to moderate anemia.[11]

In a Study conducted in uttarakhand region in India, prevalence of anemia was found to be as higher as 92.1% in elderly, population belonging to female sex, lower socioeconomic class and literacy rate, those malnourished and those with low iron and vitamin C intake.[3] In an another study done in National capital of India-Delhi, prevalence anemia was found be 68.7%. Around 95% patients had mild to moderate anemia.[12] In an another urban population based study in Hyderabad, India, overall prevalence of anemia was found to be 20.6% with 56% presenting as nutrient deficient anemia. As anemia has adverse effects and negative impact on overall health, it is important to identify all the factors associated with anemia.[13] Various studies conducted in different parts of India in Delhi (57.8%),[14] Kerela (76%),[15] Assam (45.5%)[16] have also reported high prevalence of anemia in geriatric population. FRADEA study conducted in Spain to analyse the relation of anemia nd frailty found the prevalence of anemia to be 19.6% in older ones with mean age of 79 years. The prevalence of anemia was significantly higher in frail subjects as compared to prefrail and robust ones.[17]

Elderly patients are more prone to micronutrient deficiencies including iron, B12 and folic acid deficiency. There may be deficiency of these micronutrients in about one third of elderly patients with anemia and it is termed as nutritional anemia.[13] Though ageing causes an increase of anemia in eledery population,[1] it should be clear that ageing is not alone the culprit for anemia in elderly. It is essential to find out the underlying cause most commonly iron deficiency and chronic illness in older people for managing anemia.A thorough evaluation including bone marrow examination is needed before labelling unexplained anemia and using different available modalities to treat anemia. Treating anemia may not always be simple as managing anemia due to nutritional deficiency.[1,2] Cobalamin deficiency and other co-morbidities should also be taken into consideration while treating anemia in elderly.[18]

CONCLUSIONS

Considering huge global burden of anemia and significantly higher prevalence in elderly, there is need to understand it's complex etiology in geriatric age group in order to develop effective strategies for prevention and treatment of anemia.

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DECLARATIONS

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Ethical approval: Study was approved by institutional ethics committee

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