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## Study of anemia in geriatric patients attending a tertiary care hospital in Unnao district

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### Abstract

**Background:** Geriatric anemia is a worldwide health issue in view of its high prevalence and related critical morbidity and mortality. It is a typical issue in both elderly men and women of age greater than 65 years, and in men, the haemoglobin concentration below 13gm/dl and in women below 12 gm/dl respectively. Anaemia is often overlooked in elderly patients, despite being evident that physical and physiological decline is associated with low haemoglobin levels. Elderly patients with anemia are heterogeneous in terms of clinical history, coexisting medical conditions, and concomitant medication use than young adults.

**Aim:** The objectives of this study were to estimate the pattern of anemia in the elderly patients and the underlying etiology of anemia.

**Materials and Methods:** This study was a cross sectional study, conducted in patients aged 60 years and above at Department of Pathology, Saraswati Medical College, Unnao, India. Anemia is defined as hemoglobin level less than 13 g/dl in male and 12 g/dl in females. Total 100 elderly patients were included in the study over a period of one year from January 2018 to December 2018, who fulfilled the inclusion criteria of age more than 60 years with anaemia, as per World health organization (WHO). A detailed history, exhaustive clinical examination and symptom analysis, was done in all the patients. Haematological investigations, including peripheral smear and biochemical investigations were done in all patients. Morphological pattern of anaemia was classified based on red cell indices and peripheral smear.

**Results:** A total of 100 cases of anaemia were studied in elderly patients. Males 69% were dominant in numbers compared to females i.e. 31%. The mean age of elderly patients was found to be 68.5 years, with maximum patients in 60-70 age groups. The age group of patients ranged from 60 to 91 years and above. Distribution based on type of anaemia as per characteristics of peripheral smear, normocytic normochromic 49%, followed by microcytic hypochromic 19%, macrocytic 14%, dimorphic 12% and normocytic hypochromic 6%. Distribution of geriatric patients based on clinical presentation, the most common presentation was generalised weakness which constituted to 36%, followed by breathlessness which constituted to 25%, giddiness which constituted to 12%, abdomen pain which constituted to 9%, loss of weight which constituted to 8%, loss of appetite which constituted to 5%, headache which constituted to 3% and diabetes which constituted to 2%.

**Conclusion:** Hospitalized patients are more prone to severe anaemia than population based studies were mild anaemia is common. The morphological and etiological type of anaemia proportions is identical in both population and hospital-based studies. In elderly patients, anaemia is a common disease. It leads to severe morbidity and mortality, if not investigated properly. Early treatment of anemia in elderly patients can prevent severe morbidity.

**Keywords:** Anaemia, mortality, haemoglobin, Unnao

### Introduction

Anemia is a major health problem worldwide. It is most often a hidden deficiency, with a few overt symptoms<sup>[1]</sup>. Prevalence of anemia is high in the developing countries. Its causes are multifactorial, varying from micronutrient deficiencies such as iron, folate, and vitamin B12 to infectious diseases such as malaria and worm infections<sup>[2, 3]</sup>. It is a common problem in both elderly men and women of age greater than 65 years, and in men, the haemoglobin concentration below 13gm/dl and in women below 12 gm/dl respectively. It is associated with poor quality of life, increased morbidity<sup>[4-6]</sup>. 64 million elderly who constitute 23.9% of the global population suffer from anaemia. It increases the risk of death by 40%<sup>[7]</sup>. Anaemia can never be a normal physiological phenomenon as in elderly population, it is considered as age related changes. In geriatric patients, prevalence of anaemia is an ever increasing

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Problem in India. The decrease in oxygen carrying capacity thereby decreases the haemoglobin levels in elderly patients [8].

Anemia, by modern simple definition, is a condition characterized by an abnormal reduction in body's total red cell mass [9]. As routine measurement of red cell mass is not always easy, anemia is typically defined as reduction in the haemoglobin concentration below certain value. The normal reference values of haemoglobin concentration defined by WHO is 12.5 gm/dl for males and females [10]. Anemia is accordingly classified as mild anemia if haemoglobin level is between 10-11.9 gm/dl, moderate anemia if the haemoglobin level between 7-9.9 gm/dl and severe anemia if the haemoglobin level less than 7 gm/dl [11].

Elderly patients with anemia are heterogeneous in terms of clinical history, coexisting medical conditions, and concomitant medication use than young adults. In elderly, anemia is associated with poor performance status, increased frailty, dementia, depression, reduced mobility, increased risk of falls, and poor quality of life [12-19]. Anemia portends worse prognosis in elderly patients with cardiovascular and other chronic illnesses. Studies have reported a survival benefit with the treatment of geriatric anemia [20-21]. Present study was carried out to study the prevalence of anemia in elderly age groups and evaluate their clinicopathological characteristics of anaemia.

**Materials and Methods**

This study was a cross sectional study conducted in Department of Pathology, Saraswati Medical College, Unnao, Uttar Pradesh, India, over a period of one year from January 2018 to December 2018. A total of 100 geriatric patients (more than 60 years) who attending Medicine OPD or admitted to the medical ward of Hospital associated with Medical College were included in this study meeting the entire exclusion and inclusion criterion. All the patients were subjected to a detailed history and physical examination. All cases were examined in detail according to proforma, investigations and pathological examination were carried out. The study was approved by the institutional ethical committee. Informed consent was obtained from all patients who were participating in the study. According to WHO criteria, level of hemoglobin less than 13gm % in the case of male and less than 12gm % in female is considered as anemic [22].

**Inclusion criteria**

1. The patients who were above 60 years of age, the males should have hemoglobin levels of less than 13gm/dl and females should have haemoglobin levels of less than 12gm/dl.

**Exclusion criteria**

1. All patients who were under 60 years of age.
2. Patients with renal failure and on treatment.
3. Patients who already had diagnostic work-up elsewhere and on treatment.
4. Pregnant women patients were excluded from the study.
5. Post traumatic patients were excluded from the study.

Pattern of anemia is decided with the help of peripheral smear. A detailed hematological examination was carried out in each patient. Peripheral smear was prepared to know

the pattern of anemia. The investigations done were complete blood count (CBC), packed cell volume (PCV), red blood cell (RBC) count, RBC indices which mainly mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), mean corpuscular haemoglobin concentration (MCHC), Leishman stain was used to prepare peripheral stains. Pattern of anemia was classified on the basis of RBC indices and correlated with peripheral smear. Microcytic anemia was defined as MCV below 80fL, normocytic as MCV between 80 and 100fL and dimorphic anemia one suspected when Red cell distribution width (RDW) is more than its normal range (11-15%) and dimorphic was used for correlation peripheral smear.

**Results**

A total of 100 cases of anaemia were studied in elderly patients. Males 69% were dominant in numbers compared to females i.e. 31%. The age group of patients ranged from 60 to 91 years and above. The mean age of elderly patients was found to be 67 years, with maximum patients in 60-70 age groups i.e. 53%, followed by 22% in the age group of 71-80 years, 19% in 81-90 years and 6% in 91 and above age group. [Table 1].

Distribution based on type of anaemia as per characteristics of peripheral smear, the maximum patients shows normocytic normochromic constituted 49%, followed by microcytic hypochromic constituted 19%, macrocytic constituted 14%, dimorphic constituted 12% and normocytic hypochromic constituted 6%. [Table 2].

Distribution of geriatric patients based on clinical presentation, the most common presentation was generalised weakness i.e. 36%, followed by breathlessness which constituted to 25%, giddiness which constituted to 12%, abdomen pain which constituted to 9%, loss of weight which constituted to 8%, loss of appetite which constituted to 5%, headache which constituted to 3% and diabetes which constituted to 2%. [Table 3].

**Table 1:** Age and sex wise distribution of geriatric patients

	No. of patients	Percentage
<b>Age in years</b>		
60-70	53	53%
71-80	22	22%
81-90	19	19%
91 & above	6	6%
Total	100	100%
<b>Sex</b>		
Males	69	69%
Females	31	31%
Total	100	100%

**Table 2:** Distribution based on type of anaemia as per characteristics of peripheral smear

Type of anaemia	No of cases	Percentage
Normocytic normochromic	49	49%
Microcytic hypochromic	19	19%
Normocytic hypochromic	6	6%
Macrocytic	14	14%
Dimorphic	12	12%
Total	100	100%

**Table 3:** Distribution of geriatric patients based on clinical presentation

Clinical Presentation	No of cases	Percentage
Generalised Weakness	36	36%
Breathlessness	25	25%
Giddiness	12	12%
Abdomen pain	9	9%
Loss of weight	8	8%
Loss of appetite	5	5%
Headache	3	3%
Diabetes	2	2%
Total	100	100%

### Discussion

Using WHO criteria for anemia, 105 patients of age 60 years and above were included, and underwent complete clinical evaluation and laboratory investigations. Anemia was evaluated in a manner similar to that in younger adults. MCV was used to classify anemia into microcytic, normocytic, and macrocytic anemia. Normocytic anemia was the most common type in our study, seen in more than half of cases, similar to previous studies [23-24].

Anemia is a common problem in geriatric age group (more than 60 years age). In geriatric age group complications are more significant compared to younger adults and directly proportional to quality of life [1].

Of the total 100 patients, the total number of patients in age group 60-70 years was highest i.e. 53% may be due to presence of larger number of individuals of this age group in our country. Majority of patients (46.67%) had moderate anemia, while around 35% of the patients had severe anemia. This may be due to poor nutritional status of our patients and inability to seek medical advice. A similar study was conducted by Khatib WM, *et al.* [25] and Vojjala R and Paul MNPC [26].

In our study males 69% were dominant in numbers compared to females i.e. 31%. The age group of patients ranged from 60 to 91 years and above. Mann S *et al.* [27]; conducted a study on 42 patients (70%) were male and 18 patients (30%) were female. The mean age of elderly patients was found to be 67 years, with maximum patients in 60-70 age groups i.e. 53%, followed by 22% in the age group of 71-80 years, 19% in 81-90 years and 6% in 91 and above age group. Similar studies were conducted by Vojjala R and Paul MNPC [26] and Mann S *et al.* [27].

In our study, normocytic normochromic anemia was the most prevalent accounting for 49% of all the cases, followed by microcytic hypochromic constituted 19%, macrocytic constituted 14%, dimorphic constituted 12% and normocytic hypochromic constituted 6%. Similar studies were conducted by Vojjala R and Paul MNPC [26] and Mann S *et al.* [27]. The dominant presentation was considered among which the most common presentation was generalised weakness which constituted to 36%, followed by breathlessness which constituted to 25%, giddiness which constituted to 12%, abdomen pain which constituted to 9%, loss of weight which constituted to 8%, loss of appetite which constituted to 5%, headache which constituted to 3% and diabetes which constituted to 2%. A similar study was conducted by Vojjala R and Paul MNPC [26].

Steensma DP and Tefferi A [28] studied that anaemia signifies an underlying disease and is associated with poor clinical outcomes. Prakash KG *et al.* [29] reported that the

overlook anaemia in the elderly, since such symptoms as fatigue, weakness, or shortness of breath may be attributed to the aging process itself. Although the prevalence of anaemia does increase with age, healthy aging is not usually associated with anaemia. Aithal K, *et al.* [30] reported that the anaemia in the elderly is common and increasing as the population ages. In older patients, anaemia of any degree contributes significantly to morbidity and mortality and has a significant effect on the quality of life.

### Conclusion

This study concluded that a wide range of anemias is found in older people with the most elevated extent of normocytic normochromic anemia. However etiological analysis indicates that it is critical to comprehensively evaluate the etiology and treat anemia in this population and not to consider anemia a natural consequence of ageing. In geriatric patients, anaemia is a typical sickness. It prompts serious morbidity and mortality given the age, if anaemia is disregarded or not examined appropriately. Forceful treatment of iron deficiency in older patients can forestall extreme dismalness followed by auspicious recognition.

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