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PREVALENCE OF ANEMIA IN GERIATRIC POPULATION

Medical Science

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INTRODUCTION

The world's population is living longer and growing older. Embracing and planning for this massive demographic transition is one of the greatest social challenges of the 21st century.[1]

While India has the highest number of young people, ageing is rapidly progressing. The current elderly population of 153 million (aged 60 and above) is expected to reach a staggering 347 million by 2050. This demographic shift is not merely a statistic, it's a societal transformation of unparalleled magnitude with far-reaching implications.[1]

Ageing is a complex and intricate issue. The United Nations Decade of Healthy Ageing (2021-2030) recognises the far-reaching impact of ageing to encompass not just health systems but labour and financial markets, social protection, and education among other facets.[1]

In India, the loss of financial security is deeply witnessed with 40% of elderly being in the poorest wealth quintile while about one-fifth have no income at all. Social-cultural mindsets and norms that label the elderly as a "burden", elderly abuse, as well as a lack of comprehensive safety nets increase the vulnerability of older individuals manifold. It is important to highlight that the unique phenomena of feminisation and ruralisation places further strain on the elderly population. However, India's ageing story is not without hope.[1]

Ageing population

Traditionally, the "elderly" have been defined as persons of biological age of 65 years or greater, with "early elderly" going through to 74 years old, and "late elderly" including those older than 75 years of age [1]. In 2010, the elderly constituted 17.66% of the population in the European Union. This proportion increased to 20.78% by 2020 and is expected to continue rising in the coming decades. Additionally, the share of those aged 80 or older is projected to increase from 5.9 to 14.6% between 2020 and 2100. In conjunction with population aging, fertility rates of the western world have drastically decreased and this further skews society to an older distribution. However, there is negligible evidence suggesting that older people today are experiencing better health in their later years than in the past. This is especially true for mild to moderate disability, where there has been little change over the past 30 years. If people were to experience a few extra years in good health, their ability to do what they enjoy and perform at these tasks will be seldom different to that of a younger person. Although, if these extra years are eclipsed by declines in physical and mental health, the implications for society and the future ageing population are negative. It is therefore imperative that we change the way we think and feel towards the aging population, and to act sooner than later.[2]

One highly prevalent condition in the elderly causing decreased quality of life and life expectancy is anemia. The World Health Organization (WHO) proposed the definition for anemia more than 50 years ago and states it occurs when the hemoglobin level falls below 130 g L^{-1} (7.5 mmol L^{-1}) in men and 120g L^{-1} (8.1 mmol L^{-1}) in women. It is important to note that these values were based on individuals who had no underlying disease and did not include subjects >65 years of age. However, these averages were justified by 3 main reasons: erythropoietin level increases to compensate for optimal oxygenation of tissues when hemoglobin level falls below this standard, the risk of surgical complications increase below this level, and hemoglobin level below this value is used as an indication for the investigation and treatment for the cause of anemia.[2]

However, this standard has seen some controversy and several studies have proposed newer definitions for anemia with slight variations of hemoglobin levels. The third US National Health and Nutrition Examination Survey (NHANES) sampled an ambulatory population of 33,994 persons aged 2 months and older, with 26,372 participants receiving laboratory tests, including hemoglobin values. Other studies such as the Scripps-Kaiser study and data from the Central Clinical Laboratory of Mayo Clinic also propose differences with race, sex and age for lower limits of the haemoglobin cut-off range. In relation to the elderly, the Cardiovascular Health Study enrolled a cohort of 5,888 community-dwelling men and women aged 65 years or older, which with an 11-year follow up demonstrated that participants in the lowest quintile (<137 g L^{-1} for men; <126 g L^{-1} for women) also had an increase in mortality rate. This quintile would not be classified as anemic according to the WHO criteria and was shown to be independently associated with the increased mortality, as the adjustment for the causes and symptoms of anemia not reducing the correlations seen. As such, it has been suggested that the definition of anemia may be more correctly defined on the basis of a hemoglobin range correlated with the best possible health outcomes, even though this may include a greater proportion of people being classified as anemic. Nonetheless, because of the inherent limitations of observational epidemiology, a causal link would require greater investigation, particularly when defining new thresholds of hemoglobin concentrations.[2]

Prevalence of anemia

The prevalence of anemia is highly variable depending on the population studied and seems to vary between 2.9 and 61% for men and 3.3–41% in women [11]. According to the United States five National Health and Nutrition Examination Surveys (NHANES) that were analyzed every couple years from 2003 to 2012, the prevalence of anemia increased from 4.0% in 2003–2004 to 7.1% in 2011–2012. Additionally, for all age groups, blacks had the highest prevalence of anemia for both sexes and studies have found that anemia is 3.3 times more common in African Americans than in whites.[2]

A systematic review of 34 studies involving 85,409 individuals demonstrated that in those aged >65 years, the prevalence of anemia was 12%, 40% and 47% in community-dwelling, hospitalized, and nursing home residents, respectively. The higher rate of anemia in nursing home residents has been attributed to the poorer condition and more frequent comorbidities of elderly living in these homes when compared to those in the community. Gaskell et al. additionally mentions an increase in prevalence of anemia to >25% in those aged >80 years living in the community. Comparably, a more recent study carried out by Zaninetti et al. on the prevalence of anemia of 923 admitted patients in Italy, showed that anemia was prevalent in 62% of males aged ≥65 years vs 44.1% of those aged <65 years old. Similarly, the proportion of females with anemia aged ≥65 years was 60.1% when compared to the 53.5% of those aged <65 years of age.[2]

Nonetheless, based on the WHO definition, studies have estimated that, in people over 65 years, the prevalence of anemia is 12% in those living in the community, 40% in those admitted to the hospital, and as high as 47% in nursing home residents. All in all, an estimated 17% of those over 65 has been found to be anemic (Table 1).[6–14] Based on this proportion, the current number of anemic elderly persons in the European Union is estimated to be as many as 15 million. This number is likely to increase dramatically in the coming years due to an aging population in Western societies.[3]

Anemia in the elderly is particularly relevant as it has a number of serious consequences. Anemia has been associated with a higher

incidence of cardiovascular disease,[4] cognitive impairment,[15] decreased physical performance and quality of life,[16–18] and increased risk of falls and fractures.[16] Furthermore, presence of anemia is significantly associated with longer hospital stays[4,19] and with an increased risk of mortality, in particular, mortality related to cardiovascular disease.[4] More importantly, anemia might be an early sign of a previously undiagnosed malignant disease.[3]

Causes of anemia in the elderly are divided into three broad groups: nutritional deficiency, anemia of chronic disease (ACD) and unexplained anemia (UA). These groups are not, however, mutually exclusive. In any given patient, several causes may co-exist and may each contribute independently to the anemia.[3]

Nutritional deficiencies represent a treatable subgroup and include lack of iron, vitamin B_{12} or folate. The most frequent nutritional anemia is due to iron deficiency, which is characterized by low serum ferritin levels and transferrin saturation (Table 1). However, normal/high serum ferritin levels do not rule out iron deficiency, as ferritin represents an acute phase protein, which might be elevated in inflammatory processes and with advanced age. Thus, the diagnosis should be mainly based on decreased transferrin saturation. Diagnosis of iron deficiency should not be an end in itself but should rather be the initiation of a search for its cause, including looking for a possible site of blood loss and for possible underlying malignancy.[3]

The pathophysiology of ACD is multifactorial and relates to a reduced efficiency of iron recycling from red blood cells resulting in a functional iron deficiency. There is enhanced apoptosis of erythroid progenitor cells in the marrow, an inadequate production of erythropoietin (EPO) and impaired response to EPO. It has been proposed that elevated pro-inflammatory cytokines such as TNFα, IL-6, IL-1 and macrophage migration inhibitory factor (MIF) underlie ACD and a key mediator is the induction of hepcidin synthesis by IL-6. Hepcidin inhibits iron absorption in the intestine and the release of recycled iron from the macrophages, resulting in an iron-restrictive anemia (reviewed by Weiss and Goodnough.[3]

Unexplained anemia (UA) accounts for approximately one-third of all anemias in the elderly and represents primarily a diagnosis of exclusion, unclassifiable by currently available methods. The pathophysiology is complex and poorly understood. Although undiagnosed malignancy including myelodysplasia,[13] previously unrecognized chronic kidney disease, and other uncommon causes may explain a proportion of the UAs, their combined contribution is relatively small. In populations where thalassemia is prevalent, thalassemia trait may account for another proportion of the UAs.[3]

Anemia is a health condition that develops when you don't have enough healthy red blood cells in your body. Red blood cells deliver oxygen to your muscles and tissues. When this doesn't happen, it can leave you feeling weak and dizzy.[4]

If you are over the age of 65, you're at especially high risk for developing anemia and the complications that come from having anemia.[4]

Anemia is very treatable. Dietary changes and supplements often help, and there is a wide range of options.[4]

A cross-sectional study was conducted to assess the Risk factors of anemia amongst elderly population living at high-altitude region of India during the year 2015–2016 in District Nainital, Uttarakhand state, India. A total of 958 subjects were selected from 30 clusters (villages) identified using population proportional to size methodology. Information on socio demographic profile, nutritional status, body mass index, and dietary intake was obtained. Blood sample was collected from each subject on the filter paper for estimation of hemoglobin (Hb) level using cyanmethemoglobin method. The study results indicated that 92.1% of the elderly subjects were anemic. Moderate and severe anemia was found to be significantly higher among female subjects, unemployed, illiterates, subjects using smoke-producing fuel, subjects belonging to lower socioeconomic status, malnourished and underweight subjects, subjects with self-reported hyperacidity, and subjects who had not utilized health facility and had lower iron and vitamin C intake when compared with subjects with mild anemia and normal hemoglobin levels. The study concludes that high prevalence of anemia exists amongst elderly subjects living at high-altitude region of rural Uttarakhand State, India. There is a need to educate the elderly population about the importance of adequate intake of foods rich in iron and vitamin C to reduce the prevalence of anemia among them.[5]

Table 1 Sociodemographic characteristics according to anemia status of geriatric subjects

Parameters	Normal and mild anemia (*n*=331) (%)	Moderate and severe anemia (*n*=627) (%)	*P*
Age (years)			
60-70	198 (34.7)	372 (65.3)	0.941
70-80	95 (33.8)	186 (66.2)	
≥80	38 (35.5)	69 (64.5)	
Gender			
Male	171 (48.9)	179 (51.1)	<0.001†
Female	160 (26.3)	448 (73.7)	
Community			
Others	270 (34.8)	505 (65.2)	0.700
SC/ST/OBC	61 (33.3)	122 (66.7)	
Religion			
Christian/Muslim/Sikh	8 (50.0)	8 (50.0)	0.190
Hindu/Jain	323 (34.3)	619 (65.7)	
Marital status			
Married	222 (39.1)	345 (60.9)	<0.001†
Single/divorced/separated	109 (27.9)	282 (72.1)	
Occupation			
Skilled	106 (46.5)	122 (53.5)	<0.001†
Unskilled worker	74 (34.3)	142 (65.7)	
Unemployed	151 (29.4)	363 (70.6)	
Education			
High school certificate and above	71 (53.8)	61 (46.2)	<0.001†
Middle school certificate	34 (36.6)	59 (63.4)	
Primary school certificate	81 (34.8)	152 (65.2)	
Illiterate	145 (29.0)	355 (71.0)	
Income (INR)			
13,874 and above	50 (38.1)	81 (61.8)	0.131
9,249-13,873	28 (37.8)	46 (62.2)	
5547-9248	50 (35.2)	92 (64.8)	
1866-5546	116 (29.8)	273 (70.2)	
≤1865	87 (39.2)	135 (60.8)	
SES			
Lower SES	220 (32.0)	468 (68.0)	0.024‡
Middle SES	103 (40.7)	150 (59.3)	
Upper SES	8 (47.1)	9 (52.9)	
Household fuel			
Smokeless fuel (electricity/LPG)	206 (40.5)	302 (59.5)	<0.001†
Smoke-producing fuel (wood/coal)	125 (27.8)	325 (72.2)	
Dietary pattern			
Nonvegetarian	142 (32.7)	292 (67.3)	0.517
Eggetarian	17 (38.6)	27 (61.4)	
Vegetarian	172 (35.8)	308 (64.2)	
Body mass index			

SES: socioeconomic status, †Signifies *P*<0.001, ‡Signifies *P*<0.01, §Signifies *P*<0.05

How is anemia different in older people?

People over age 65 are one of the groups at high riskTrusted Source for anemia. This can be related to diet or to chronic health conditions.[4]

Chronic health conditions are another risk factor for anemia, and most people over 65 years old have at least one chronic health condition. In fact, according to 2018 data from the Centers for Disease Control and Prevention (CDC)Trusted Source, nearly 64% of Americans over age 65 have two or more chronic health conditions.[4]

Anemia often leads to weakness and fatigue. When older adults have these symptoms, it can contribute to an overall health decline.[4]

People with anemia might become less physically active. This can make chronic health conditions worse, and it can lead to a loss of muscle tone, balance, and strength.[4]

What are the symptoms of anemia in older people?

The symptoms of anemia can seem nonspecific and vague. They can be easily confused with feeling “a little run down” or even with simply getting older. However, it's important not to ignore the symptoms of anemia.[4]

Speak with your doctor or another healthcare professional to see what might be causing your symptoms, especially if they have lingered for more than a week or so.[4]

Possible symptoms of anemia include:

- fatigue
- weakness
- dizziness
- irritability
- cold hands and feet
- paleness
- heart palpitations
- shortness of breath
- chest pain
- headaches

What causes anemia in older people?

There are many causes of anemia in older adults. Often, anemia is the result of chronic conditions, medications, or nutritional deficiencies.[4]
Common causes include:

- certain medications, including ACE inhibitors and anticonvulsants
- chemotherapy treatment
- ulcers
- liver disease
- kidney disease
- thyroid conditions
- stomach inflammation
- intestinal inflammation
- nutritional deficiencies 4

Causes of anemia

Anemia in the elderly has been classically grouped into four major

categories according to the cause: 1) nutritional deficiencies; 2) chronic inflammation or disease; 3) chronic kidney disease; and 4) unexplained anemia (UA), which includes those which cannot be classified into the aforementioned categories. A fifth cause of anemia, known as clonal hematopoiesis, has been extensively studied in recent years and merits recognition, especially in the elderly. Nutritional deficiencies.[2]

What are the risk factors for anemia in older people?

Older adults have a higher risk of developing anemia due to age. But they may also have other risk factors.[4]

Risk factors include:

- any condition that causes chronic blood loss
- cancer
- kidney failure
- chronic health conditions
- recent infections
- certain autoimmune conditions
- alcohol dependence
- taking certain medications

How is anemia treated in older people?

Treatment for anemia depends on the underlying cause of anemia.

For instance, if anemia is caused by a nutritional deficiency, your doctor might recommend dietary changes or supplements. If amenia is caused by an ulcer, treating the ulcer will be part of anemia treatment.[4]

Other possible treatments include:

- changing medications or medication dosage
- blood transfusions
- corticosteroid treatments
- spleen surgery
- surgery to repair blood vessels

What's the outlook for older people who have anemia?

The outlook for anemia will vary depending on the cause of the anemia and how severe it is. However, most cases of anemia can be resolved or managed with diet and medications.

It's best to discuss your specific situation with your doctor to get an understanding of how long your anemia could last.[4]

How is anemia diagnosed in older people?

Anemia is typically diagnosed during a standard medical appointment. The most common test for anemia is a blood test called a complete blood count (CBC). This test measures white blood cells, red blood cells, and platelets in your blood. It can confirm an anemia diagnosis. If it does, you might have additional blood tests to help find the cause of anemia.[4]

Can older people prevent anemia?

Since anemia is often caused by health conditions, it's not always possible to prevent it. However, you can take steps to make sure your body has enough nutrients.

You can do this by eating iron-rich foods such as meats, lentils, dark green vegetables, and beans, as well as foods high in folates such as bread, pasta, rice, and fruits.

It's also a great idea to get more vitamin B-12 from meat and dairy products and vitamin C from foods such as citrus fruits, peppers, and melons.[4]

Treatment of anemia

Indication of treatment is the presence of clinical symptoms. The frailer the patient the more difficult to tolerate anemia. When anemia generates severe dyspnea, heart failure, or a profound impairment of brain blood circulation a fast intervention is needed. Red blood cell transfusion can quickly restore the impaired organ function. The main point, that treatment interventions should be determined according to the clinical state of the patient.[2]

Nutritional deficiency can be restored by supplementation of the missing material (iron, vitamin B12, folic acid).

In case of MDS, or chemotherapy-induced anemia, administration of EPO is recommended.

Patients with chronic renal failure require not only regular EPO substitution, but often parenteral iron supplementation is indicated.

In case of auto-immune, or allo-immune hemolysis immunosuppression is recommended, red blood cell transfusion is not the treatment of choice. It is indicated only in life threatening situation. Treatment of the underlying disease has upmost importance.[2]

Recommendations

1. A study to be conducted to assess the prevalence of anemia among geriatric population on a large sample for the generalization.
2. A similar study can be done A planned teaching programme regarding the importance of balanced diet in anemia among the geriatric population to be conducted in old age homes.
3. A teaching programme for the geriatric population about the complications of anemia in old age homes must be periodically done to enhance their knowledge.

CONCLUSION

Anemia is very frequent in the elderly population. It affects nearly 10% of the geriatric population. The prevalence of anemia is positively correlated with the age. It is an independent factor for mortality of the aged patient. One should keep in mind that anemia is a symptom and not a discrete disease. The underlying cause should be found and treated. If anemia is severe and causes symptoms, an effort has to be made to remove it. Red blood cell transfusion is advised when the patient needs a fast restoration of the erythrocyte number because of severe clinical symptoms. Supplementation of the missing material required for erythropoiesis such as iron, vitamin B12 and folic acid is necessary. Route of administration is also important in case of the shortage of intrinsic factor in case of pernicious anemia, or if malabsorption syndrome is in the background. Older patients should be vigorously observed towards anemia because anemia has a negative impact on frailty syndrome and also, frailty can negatively influence anemia.[2]

REFERENCES

1. https://india.unfpa.org/en/news/indias-ageing-population-why-it-matters-more-ever#:~:text=The%20current%20elderly%20population%20of,magnitude%20with%20far%2Dreaching%20implications.
2. https://akjournals.com/view/journals/2060/109/2/article-p119.xml
3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4077071/
4. https://www.healthline.com/health/anemia-in-elderly#preventionhttps://akjournals.com/view/journals/2060/109/2/article-p119.xml
5. Gupta, Aakriti1; Ramakrishnan, Lakshmy2; Pandey, Ravindra Mohan3; Sati, Hem Chandra3; Khandelwal, Ritika1; Khenduja, Preetika1; Kapil, Umesh2,. Risk factors of anemia amongst elderly population living at high-altitude region of India. Journal of Family Medicine and Primary Care 9(2):p 673-682, February 2020. | DOI: 10.4103/jfmpc.jfmpc_468_19