

Original Research Article

Prevalence of Anemia among elderly population attending
Rural Health Training Center in Kancheepuram, Tamil Nadu

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Abstract

Background: Iron deficiency anemia is the most common cause of anemia in India. It affects all age groups but more prevalent among geriatric population. Large numbers of studies including NFHS-4 have quantified the prevalence of anemia among other age group than the elderly population. Most of the studies have studied the prevalence of anemia among maternal and child population and there is lack of studies among the elderly population especially in rural areas. **Aim & Objectives:** To estimate the burden of anemia and its associated factors among the rural elderly population older than 60 years of age. **Material and Methods:** A cross sectional study was done among the patients aged 60 yrs and above who visited SRM RHTC, Mamandur during the period between July – December 2016. Socio demographic factors and other determinants were recorded using a semi-structured questionnaire. Clinical examination was done in all study subjects and Hemoglobin levels were detected using Sahli's technique. Informed consent from all participants was obtained. Data was entered on excel sheet and analyzed using statistical software SPSS. **Results:** Out of 240 study subjects 112 were males and 128 were females. Majority of them had mixed diet (85.83%) and were having normal BMI (70.42%). The study revealed that based on WHO definition of anemia, 67.08% of study population was anemic. The Mean \pm SD Hb% was 9 ± 1.4 . The prevalence of anemia was higher among females (72.66%) than males (60.71%). Among 161 subjects who were anemic, dyspnoea was present in 107 (66.46%), pallor in 78 (62.4%) and both were statistically significant. **Conclusion:** Anemia in elderly is often underreported and it is pertinent to do larger studies in India to identify the prevalence of anemia among elderly which will provide baseline data for planning appropriate interventional strategies.

Key words: anemia, elderly population, rural

Introduction

Globally, the number of persons aged 60 years or over is expected to nearly triple, increasing from 673 million in 2005 to two billion by 2050¹. In India, 8% of total population are above 60 years in 2010 and is likely to rise to 21% by 2050². Although the percentage of aged persons to the total population is low in comparison to the developed countries, nevertheless, the absolute size of aged population is considerable. Among the morbidities affecting elderly population, Iron deficiency (ID) is the most prevalent nutritional deficiency worldwide among

elderly. The main consequence of iron deficiency is anaemia, a common condition and significant problem in the older population. According to the WHO, ID is by far the most common and widespread nutritional disorder worldwide³, with estimated one billion people affected, thus constituting a public health condition of epidemic proportions. Anaemia is a late indicator of iron deficiency, so it is estimated that the prevalence of iron deficiency is 2.5 times that of anaemia^{4,5}. One of the largest population survey, i.e., the third US National Health and Nutrition Examination Survey (NHANES III), indicated that 10.2% of women and 11% of men >65 years of age were anaemic. These fractions rose to 26.1 and to 20.1% in subjects older than 85 years old, in males and females,

respectively⁶. The estimated prevalence of anaemia in developing countries is 39% in children <5 years, 48% in children 5–14 years, 42% in women 15–59 years, 30% in men 15–59 years, and 45% in adults >60 years⁴. These staggering figures have important economic and health consequences for low- and middle-income countries.

Anemia is a major health problem in India. In the 2005-2006 National Family Health Survey (NFHS-3), a household survey aimed at having national and state representative data on population health and nutrition, reported the prevalence of anaemia as 70% in children aged 6–59 months, 55% in females aged 15–49 years, and 24% in males aged 15–49 years⁷. Anaemia in the elderly is an under-diagnosed condition often not reported to the patient because its mostly perceived as a mere consequence of aging or as a disease marker. Iron Deficiency Anaemia reduces not only functional capacity and mobility of a person but also quality of life. However, many physicians continue to neglect the significance of anaemia as a serious clinical condition in the elderly.

Hemoglobin concentrations slightly below the lower limit of normal are a common laboratory finding in the elderly, but scant evidence is available on the actual occurrence of mild anemia despite its potential effect on health⁸. Although the NFHS-3 showed that the prevalence of anaemia was higher in rural areas, there is a paucity of data about the epidemiology of anaemia in rural settings.

The aim of this study is to describe the prevalence of anaemia and its associated factors among the rural elderly population older than 60 years of age who attended the outpatient clinics of a rural hospital in Tamilnadu, India.

Materials and Methods

A cross sectional study was done among the patients aged 60 yrs and above who visited the outpatient department of rural health centre of SRM medical college & RC at Kancheepuram during the period between July – December 2016. Socio demographic factors and other determinants were recorded using a semi-structured questionnaire. Socioeconomic status was obtained by using Modified Udai Pareek Scale and categorized as Low, Middle and High Income groups. Presence of breathlessness was graded into 5 categories (Grades 1-5) by using MRC Breathlessness Scale⁹. Anthropometry and Clinical examination was done in all study subjects by the investigator and BMI score was used to categorize nutritional status as underweight (<18.5), normal (18.5 – 24.99), overweight (25.0 – 29.99) & obese (>30.0). Venous blood sample was collected from all subjects and Hemoglobin levels were detected using Sahli’s technique.

Anemia was defined as hemoglobin < 12g/dL in women & < 13g/dL in men, in accordance with World Health Organization (WHO) criteria¹⁰. All consenting subjects aged 60 years and above of both genders were included in the study after obtaining informed consent from all participants. Institutional Ethical Clearance was obtained for the study. Data was entered on Microsoft excel sheet and analyzed using statistical software SPSS version 15. Descriptive statistics such as frequencies, proportions, mean and standard deviation were used. Chi-square used to check the association and p value <0.05 considered as statistically significant.

Results

During the study period, a total of 240 subjects were included. Of which 112(46.67%) were males and 128 (53.33%) were females. Majority of them (67.92%) were in the age group of 60 – 69 years. Hindus contributed major share (89.17%) of the sample and more than half (55.83%) of them were Illiterates. Socio demographic characteristics are shown in Table 1.

Table 1. Socio demographic characteristics of the respondents (n=240)

Category	Number	Percentage (%)
Gender		
Male	112	46.67
Female	128	53.33
Age group		
60 – 69 years	163	67.92
70 years & above	77	32.08
Religion		
Hindu	214	89.17
Muslim	21	8.75
Christian	5	2.08
Education		
Illiterate	134	55.83
Primary school	76	31.67
High school	23	9.58
Graduation & above	7	2.92
Occupation		
Business	24	10
Skilled	38	15.84
Semi-skilled	17	7.08
Coolie/unskilled	95	39.58
Unemployed/retired	66	27.5
Socio economic status		
Low	145	60.42
Middle	87	36.25
High	8	3.33

Haemoglobin levels were calculated for all 240 study subjects. The study revealed that based on WHO

definition of anemia¹⁰, 67.08% (161 subjects) of study population was anemic. The prevalence of anemia was higher among females (72.66%) than males (60.71%). The Mean \pm SD Hb% was 9 ± 1.4 . Females (8.76 ± 1.29) had a lesser Mean Hb% compared to males (9.26 ± 1.53). This is depicted in Figure 1.

Figure 1. Gender wise Haemoglobin levels Mean(\pm S.D)

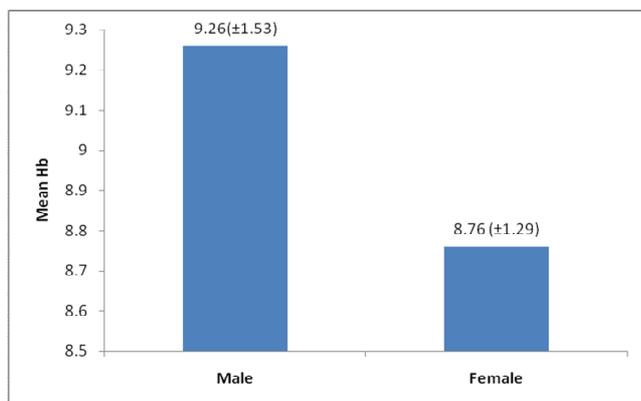


Table 2. Association between anaemia and study variables using Chi-Square test

Category	Anaemia n (%)	Normal n (%)	Total (n)	Chi square test-p-value
Diet				
Veg	13 (38.24)	21 (67.76)	34	0.054*
Mixed	148	58 (28.16)	206	
Pallor				
Present	78 (62.4)	47 (37.60)	125	<0.0001*
Absent	27 (23.48)	88 (76.52)	115	
Dyspnoea				
Absent	54 (46.96)	61 (53.04)	115	<0.0001*
Mild/Moderate	93 (87.74)	13 (12.26)	106	
Severe	14 (73.68)	05 (26.31)	19	
BMI				
Underweight	12 (66.67)	06 (33.33)	18	0.786
Normal	125	44 (26.04)	169	
Overweight & Obese	24 (45.28)	29 (54.72)	53	
Gender				
Male	68 (60.71)	44 (39.29)	112	0.345
Female	93 (72.66)	35 (27.34)	128	
Age group				
60 – 69 years	106	57 (34.97)	163	0.234
70 years & above	55 (71.43)	22 (28.57)	77	
Socio economic status				
Low	102	43 (29.66)	145	0.113
Middle & High	59 (62.11)	36 (37.89)	95	
Total	161	79	240	

*significant as p-value <0.05

Variables like Gender, socioeconomic status, age group, clinical pallor, diet, presence of dyspnoea and BMI were studied to find out any association with presence of anaemia among the study subjects. For ease of analysis, dyspnoea grades were regrouped into 3 categories as

follows: [1 – no dypnoea, 2 & 3 - mild & moderate and grades 4 & 5 – severe]. BMI score of > 24.99 were included as single category (overweight & obese). As very few subjects belonged to high socioeconomic status, middle and high income groups were analysed as one group. Out of these factors, subjects with mixed diet (71.84%), clinical pallor (62.5%) and presence of dyspnoea had higher chance of being anaemic and these differences were found to be statistically significant with a p-value of 0.054, <0.0001, <0.0001 respectively using Chi-square test analysis.

Discussion

The study revealed that 67.08% (161 elderly subjects) were anaemic which is similar to the study done by Agarwal S et al¹¹ in a rural area of Maharashtra, which reported that 62.6% of the population aged > 60 years suffered from anemia. A study carried out among urban slums in Bangalore reported a higher prevalence of anemia (82.9%) in the 60 years and above age group¹². The prevalence of anaemia among elderly in developed countries is considerably low (10%⁶, 14.2%⁸, 21.1%¹³). This difference might be due to better nutritional status among people in the developed countries compared to developing countries. The Mean \pm SD Hb% was 9 ± 1.4 in the present study. Also, the study found that females (8.76 ± 1.29) had a lesser Mean Hb% compared to males (9.26 ± 1.53). A study done in Austria¹³ among elderly aged 64 years and above reported that Median hemoglobin was 13.7 g/dL which is higher than the value found in the present study and women generally had lower hemoglobin levels than did men (median 13.4 g/dL versus 14.3 g/dL; $P < 0.001$). Similarly, Subasinghe AK and others in their study¹⁴ done in Andhra Pradesh reported that women were more deficient in iron than men in both low income ($P = 0.001$) and ‘not low’ income families ($P, 0.001$). But M Tettamanti et al in their study⁸ done in Italy found anaemia in elderly with a significantly higher frequency ($P = 0.0001$) in men (15.2%, 95% CI: 13.9-16.6) than in women (13.6%, 95% CI: 12.7-14.6). Various studies^{8,13,15} have reported that the prevalence of anaemia increases with increase in age. In the present study also 70 years and above subjects had higher (71.43% vs 65.03%) prevalence of anaemia compared to 60 – 69 years subjects, but statistical correlation was not obtained (p-value, 0.234). Though Yarlina et al¹⁶ in their study reported that anaemia is disproportionately concentrated in low socioeconomic groups, the present study did not reveal any difference in anaemia based on socio economic class (p-value, 0.113). Majority of the subjects with normal BMI (73.96%) were anaemic compared to underweight (66.67%) which was not statistically significant (p-value, 0.786). But a study¹⁷ done among Korean elderly population revealed that lower body mass index is an independent risk factor for anaemia. There is evidence to suggest that people who

consume highly bioavailable forms of iron like red meat promote high bodily iron stores compared to those who consume phytates like grains which decreases the stores¹⁸. But in the present study diet did not influence the presence of anaemia. This may be because the number of vegetarian subjects was very less (34 compared to 204). Among the 161 anaemic subjects, presence of pallor (78 subjects) and dyspnoea (107 subjects) were statistically found significant (p-value, <0.0001). This stresses the importance of clinical examination and history taking in the management of anaemia in the elderly.

Conclusion: The present study has highlighted a high prevalence of anaemia among the elderly in the rural area of Tamilnadu, India. Geriatric patients should be routinely screened for anemia and etiological causes of anemia individually assessed to allow timely initiation of appropriate therapy. Strengthening of geriatric health care services in accordance with the common existing problems, especially preventive and promotive services in the community are required. Further qualitative research is needed to explore the depth of the problems of the geriatric age group.

Recommendations: Anemia in elderly is often underreported and it is pertinent to do larger studies in India to identify the prevalence of anemia among elderly which will provide baseline data for planning appropriate interventional strategies.

Limitations: The study included subjects only who reported to the outpatient clinic the rural centre. Hence, the estimated prevalence of anaemia might be overestimated.

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