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Research Article

An epidemiological study on prevalence of anaemia among elderly population residing in rural Nalgonda,Telangana, India

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Abstract: Anaemia is a global health challenge, and India is no exception. Large number of studies including NFHS-3 have quantified the prevalence of anaemia among children, adolescents, women in reproductive age group, pregnant & lactating mothers and men in age groups below 50 years. However, there is lack of studies among elderly population. This study was conducted in rural areas of Nalgonda district to detect the prevalence of anaemia among elderly. 633 individuals (342 males: 291 Females) above the age of 50 years were included in the study through two stage random sampling. Haemoglobin levels were detected by Sahli technique. The data was analysed using statistical software OpenEpi version 3.03a. The study revealed that based on WHO definition of anaemia, 29.86% of study population was anaemic. The prevalence of anaemia was significantly higher among females than males. In both sexes the prevalence of anaemia increased with advancing age, although this trend was statistically significant only among males. The study identified that anaemia is an significant public health problem among elderly. The authors recommend that larger studies should be conducted to identify the prevalence of anaemia among elderly, as well as to identify type of anaemia and cause(s) of anaemia among our senior citizens to provide baseline data for planning appropriate interventional programme.
Keywords: Anaemia, Elderly, Rural, Nalgonda.

INTRODUCTION

Anaemia is defined as a condition in which the number of red blood cells, and consequently their oxygen-carrying capacity is insufficient to meet the body's physiological needs. Specific physiological needs of an individual vary with age, gender, altitude, smoking behaviour, and pregnancy. Iron deficiency is the most common cause of anaemia globally, but other nutritional deficiencies (folate, Vitamin B_{12}, and Vitamin A), acute and chronic inflammation, parasitic infections, inherited and acquired disorders of haemoglobin synthesis, RBC's production or RBC's survival, can all cause anaemia [1]. Although clinical evaluation of anaemia requires multiple laboratory tests to identify the severity, type and cause of anaemia, haemoglobin concentration is the most reliable indicator of anaemia at the population level [2].

Anaemia is an important public health problem globally. World Health Organization (WHO) estimates that 1.62 billion people globally (95% CI 1.50-1.74 billion) are affected with anaemia which corresponds to 24.8% of the world population [3]. The public health significance of anaemia among populations in India needs no reiteration. National Family Health Survey-3 (2005-06) identified that 69.5% of children aged 6-59 months, 55.3% of women in reproductive age-group (15-49 years), and 24.7% of men during most productive period of their lives (15-54 years) were anaemic [4]. In view of significant health implications of anaemia especially on maternal and children's health, as well as huge social and economic loss, the government of India has initiated programmes to decrease the burden of anaemia among children, adolescent girls, non-pregnant women in reproductive age group and pregnant and lactating women through direct as well as indirect interventions [5,6,7].

Indeed, anaemia is an important public health challenge among elderly also, both in developed and developing world. Anaemia in older individuals is associated with a wide range of complication, including increased risk of mortality, cardiovascular disease, cognitive dysfunction, reduced bone density and longer

periods of hospitalization for elective procedures and co-morbid conditions [8]. However, there is relatively lack of interest in identifying the burden of the disease among elderly in India. This may be due to belief that anemia is not a significant health issue in this group as the prevalence may be low in males, and cessation of menstruation in females would compensate for inadequate bio-availability of micronutrients. This misconception reflects as conspicuous lack of studies regarding prevalence of anaemia among senior citizens in India. In a database published by WHO [9] regarding studies on prevalence of anemia compiled more than 100 studies conducted in India from 1958 to 2003. The perusal of the database reveals that only three studies included individuals above the age of 50 years. Similarly National Family Health Survey-3 (NFHS-3) [4] reported the level of haemoglobin up to age of 50 in females, and 55 among males.

The present study was undertaken to study the prevalence of anemia among elderly (aged 50 and above) residing in rural Nalgonda (Telangana) with an aim to bring to centre-stage the importance of anaemia among this demographic group.

MATERIALS AND METHODS

A cross sectional study was conducted in Nalgonda district of Telangana during April-May 2015. A pilot study was conducted to refine the study instrument, standardize laboratory procedures and obtain approximate prevalence rate for calculation of sample size. A sample size of 400 was calculated based on prevalence of anaemia at 30% obtained after pilot study, level of significance 5% and allowable error of 15% of the estimated prevalence. The sampling units (households with individuals aged 50 years or more) were selected through two-stage random sampling technique. In the first stage, ten villages were selected, while second stage identified households with at least one individual qualifying for inclusion i.e. aged 50 years or more, of either sex, was residing. In case of presence of more than one individual in the selected household, all individuals meeting inclusion criteria were enrolled in the study. This sampling procedure led to inclusion of 633 individuals in the study. Haemoglobin estimation was done by Sahli technique by laboratory technicians at places of residence. WHO recommended levels for diagnosis and classification of anaemia[1] were utilized to classify the cases as mild, moderate and severe anaemia. Data was compiled on Window excel sheet and analysed using statistical software OpenEpi version 3.03a. Ethical clearance from the Institutional Ethical Committee and informed consent from all participants were obtained. Individuals diagnosed as anemic were provided referral services at the nearest health care unit.

RESULTS

A total of 633 individuals (342 males: 291 Females) aged 50 years and above of both sexes were included in the study. The study revealed that 189 (29.86%) individuals were anaemic, as defined by WHO definition i.e. less than 120 gms/litre in females, and less than 130 gms/litre in males. The prevalence of anaemia among study population as per severity is shown in Figure 1.

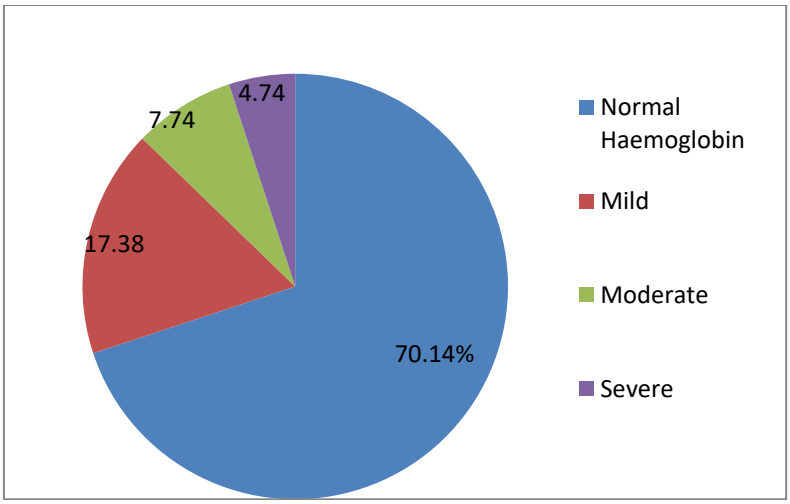

Fig-1: Prevalence of Anaemia in Study Population

Prevalence of anaemia as per age and sex is tabulated (Table 1). The prevalence among women was 39.86%, while males had a prevalence rate of 21.35%. The difference of the prevalence among two genders was statistically significant ($p<0.001$).

Table-1: Distribution of Severity of Anaemia as per Age and Sex

Age group	Females					Males				
	Severe < 80	Moderate 80-109	Mild 109-119	Normal ≥ 120	Total	Severe < 80	Moderate 80-109	Mild 110-129	Normal ≥ 130	Total
50-59	9	10	31	79	129	4	9	16	130	159
60-69	5	8	22	53	88	5	6	11	85	107
70-79	2	5	12	28	47	2	5	6	41	54
≥ 80	2	3	7	15	27	1	3	5	13	22
Total	18 (6.19)	26 (8.93)	72 (24.74)	175 (60.14)	291 (100)	12 (3.51)	23 (6.72)	38 (11.11)	269 (78.65)	342 (100)

The prevalence of anaemia showed a rising trend with advancing age among both sexes (Figure 2). Among women the prevalence increased from 38.76% among age-group 50-59 to 44.44% among those aged 80 years and above, but statistical analysis revealed that the trend was not significant ($p > 0.05$). Males also revealed similar results with the prevalence increasing from 18.24% among those in age group 50-59 to 44.44% among those aged 80 years and more. However, unlike females the increasing trend among males was statistically significant ($p=0.03$).

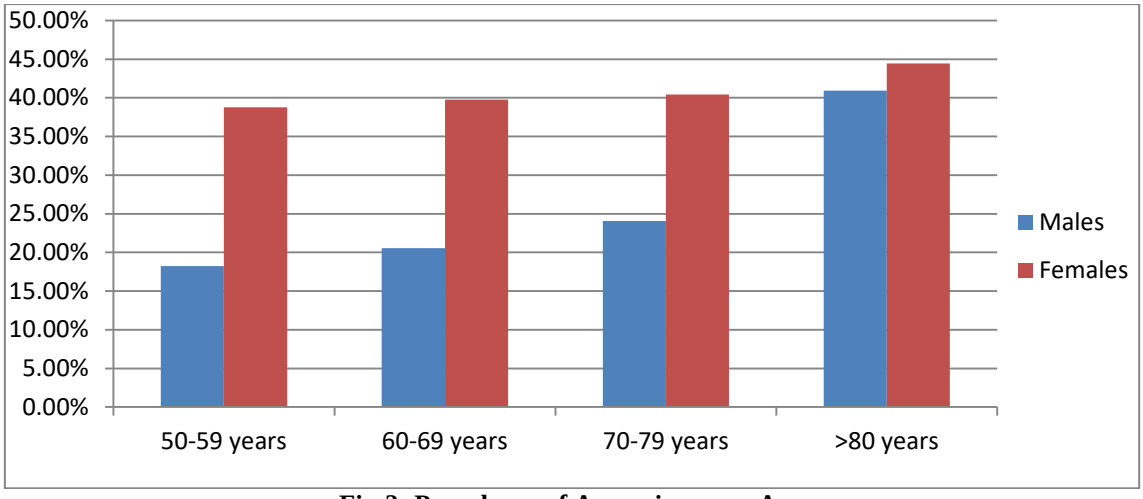

Fig-2: Prevalence of Anaemia as per Age

Figure 3 depicts the comparison of severity of anaemia between two sexes. It is seen that women had, not only the higher prevalence of anaemia, but also mild, moderate and severe anaemia were more prevalent among women as compared to males.

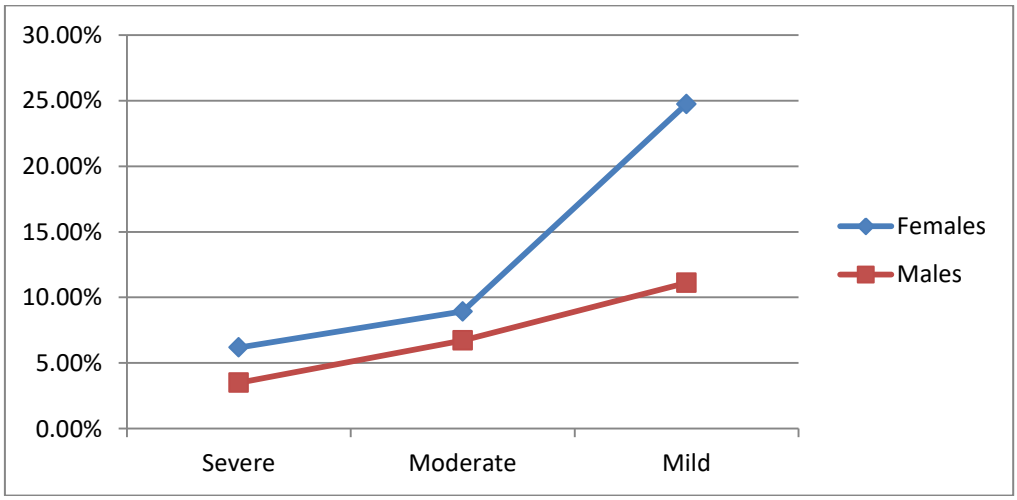

Fig-3: Comparison of Severity of Anaemia between Males and Females

DISCUSSION

The study revealed that anaemia is a significant public health challenge among elderly with prevalence rate of 29.86 (95% CI 26.39-33.51%). The prevalence rates among females was 39.86% (95 % CI 34.2-45.5%), while males had a prevalence rate of 21.35% (95% CI 17.0-25.7%). WHO estimates that 23.9% (95% CI 22.9-26.7%) of elderly are anaemic globally[3]. The findings of this study are also higher than the prevalence rates of 24.86% and 14.29% among females and males, respectively reported by Longitudinal Aging Study in India[9]. The present study revealed that the prevalence of anaemia increased with the advancing years in both women and men. This finding is consistent with study conducted in US that also reported that prevalence of anaemia increased as a function of age after 5th decade of life in both men and women; and age-associated increase in prevalence being more dramatic in men[10].

Anaemia among elderly is not only a game of numbers. Studies [11,12,13] in India and abroad have highlighted that anaemia among elderly is caused by multiple causative factors. A hospital based studies on anaemia in India has identified nutritional deficiency (30%), renal failure (22%), chronic blood loss (31%) and underlying malignancies (14%) as important causes of anaemia in elderly [13]. Thus, control strategies should include investigations to identify the type of anaemia (micro-, macro or normo-cytic), as well underlying cause(s) of anaemia, and not resort to micro-nutrients supplementation without ruling out co-morbidities.

CONCLUSION

As highlighted earlier, there is a lack of community based studies on prevalence of anaemia among elderly in India. The study reveals that anaemia among elderly is an important public health problem in India. This challenge will obviously gain more significance in coming decades when absolute numbers and relative proportion of elderly will increase because of demographic transition. The authors recommend that anaemia among elderly should be studied through larger studies e.g. NFHS-4, so that the public health importance of the disease can be quantified at State and national levels in this demographic group also. This will provide baseline data for planning intervention strategies to improve quality of life of our senior citizens. The Nation must ensure that its citizens, not only live longer, but enjoy a quality of life that they deserve. We feel that adding life to years is even more important than adding years to life.

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