

## Research Article

# A study to assess the prevalence of anemia and activities of daily living among elderly population residing in a South Indian rural community

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## ABSTRACT

**Background:** As we age the interface between health & illness blurs. Balance gradually shifts from health to disease. While health is usually inversely related to age, disease is directly related to ageing both in number & severity. Anaemia is defined as reduction in the red cell mass. The WHO criteria for anaemia are haemoglobin less than 13gm/dl for men and 12gm/dl for women. The same criteria can be applied for the elderly. The objective of the study was to assess the prevalence of anemia among the geriatric population group and their activities of daily living.

**Methods:** The study was carried out at the community level, of the field practice area of Department of Community Medicine, MGMC&RI, Puducherry from Jan 2010 to Dec 2010. All the persons aged 60 years and above were listed. Samples were selected proportionately according to geriatric population of individual villages. Simple Random Sampling was used to select the study sample of 360 from the list. House to house visits was made to collect the data. WHO criteria were used to classify anemia. PADL and IADL from KATZ scale were used for assessing ADL.

**Results:** In our study Anemia was prevalent in 344 of the subjects (96%). Females were more anemic (98%) than males (92%). Out of the 360 elderly studied five males (1%) were fully dependent followed by 101 (28%) partially dependent and 254 (71%) were independent for their daily activities. Only males were fully dependent. More elderly females were partially dependent. Majority of the males (73%) independently managed their day to day activities.

**Conclusions:** The increase of demographic ageing process in our country in general and in our study area in particular has a series of socio-economic problems as well as health problems. Problems of the elderly are mostly not due to ageing per se but also largely due to psychosocial environment, diminishing family system, support and changes in life situation.

**Keywords:** Geriatric, Rural, Anemia, ADL, Prevalence

## INTRODUCTION

Never before so many people lived so long. Now India is in a phase of demographic transition. It acquired the name of ageing nation with 7.7% of population being >60 years of age. This transition is attributed to decrease in fertility & mortality rate, due to availability of better health care facilities, increase in health awareness, living conditions, nutrition etc.<sup>1,2</sup>

As we age the interface between health & illness blurs. Balance gradually shifts from health to disease. While health is usually inversely related to age, disease is directly related to ageing both in number & severity.<sup>3</sup>

Successful ageing means remaining free of major, life-threatening chronic diseases i.e. no prior diagnosis of cancer, an absence of cardiovascular diseases, no chronic obstructive pulmonary diseases, no reported difficulty

with any activities of daily living, and a modified Mini-Mental State Examination score in the 80th percentile or higher, and having normal physical and cognitive functioning. Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age.<sup>4</sup>

“Aging is a biological process, experienced by mankind in all times. However, concern for aging of population is a relatively new phenomenon, which has raised due to significantly large increase in number and proportions of aged persons in the society.”<sup>5</sup>

“According to Hindu tradition, life has four Ashrams (Stages) – Brahmacharya, Grahastha, Vanaprastha and Sanyasa with a life regarded as one hundred years. Many divide life equally into these four Ashrams. It is said that “Vanaprastha and Sanyasa Ashrama” are meant for those whom we call the aged persons i.e. geriatrics.”<sup>6</sup>

The word Geriatrics<sup>7</sup> was coined by Nascher in 1914. The meaning of “gerus and iatra” being “old age and treatment”.

Anaemia is defined as reduction in the red cell mass.<sup>8</sup> The WHO criteria for anaemia are haemoglobin less than 13gm/dl for men and 12gm/dl for women. The same criteria can be applied for the elderly.<sup>9</sup> In the communities with better socioeconomic status the prevalence of anaemia in the elderly is same as that of the rest of the population; in communities with poor socioeconomic status the incidence of anaemia increases with age. The most common cause of anaemia is iron deficiency and is significantly prevalent in virtually all developing nations.<sup>10</sup>

### Objectives

To assess the prevalence of anemia among the geriatric population group and their activities of daily living.

### METHODS

The present study was carried out at the community level, of the field practice area of Department of Community Medicine, MGMC&RI, Puducherry. The total population of the study area was 6406 from the three villages. From the family folder the elderly population 60 years and above were listed. Sample size was calculated as 360 with 52% prevalence of morbidity among people >60 years in the population according to NSSO with 95% C.I.<sup>11</sup>

All the persons aged 60 years and above were listed. Samples were selected proportionately according to geriatric population of individual villages. Simple random sampling was used to select the study sample of 360 from the list. House to house visits were made to collect the data in a pretested semi-structured questionnaire. The data collection was done by personal

interview with questionnaire, clinical examination and Individual health record. Prior information was given for the subjects regarding the time and place before going to the house visits so that the study subjects made themselves available for the activity.

All aged people aged 60 years and above, willing to participate were included in the study.

People >60 years not willing to participate and completely bed ridden were excluded from the study.

Anemia was classified according to WHO Classification.<sup>12</sup>

**Table 1: WHO classification for anaemia.**

Severity	WHO classification
Grade 0 (WNL)	≥12 grams/dl
Grade 1 (Mild)	10-11.99 grams/dl
Grade 2 (Moderate)	7.1 – 9.99 grams/dl
Grade 3 (Severe)	<7 grams/dl

Physical Morbidity was assessed by ADL which included ADL for bodily functioning and instrumental ADL for activities basic to independence in the proper functioning in the family and community which was modified depending on the social-cultural practices prevalent in our society. PADL and IADL from KATZ scale were used for assessing ADL.<sup>13,14</sup> Depending upon the score obtained, subjects were divided into 3 categories (dependent, partially dependent, and not dependent).

The results obtained were analysed across SES and morbidity (diseases), SES and psychological morbidity, SES and activities of daily living by using SPSS 16.0 version.

### RESULTS

A descriptive study was undertaken among the elderly women in rural field practice area of Department of Community Medicine under Bahour commune panchayat during the period from January 2010 – Dec 2010. Information was collected from 360 elderly persons.

In our study the elderly (60+ years) constituted 8.03% of the total population. Majority of the elderly were in the age group of 60-69 followed by 70-79 and 80 and above. The percentage of females in the age group of 80 and above was low. However more number of females lived longer in age groups 60-69 and 70-79 compared to males.

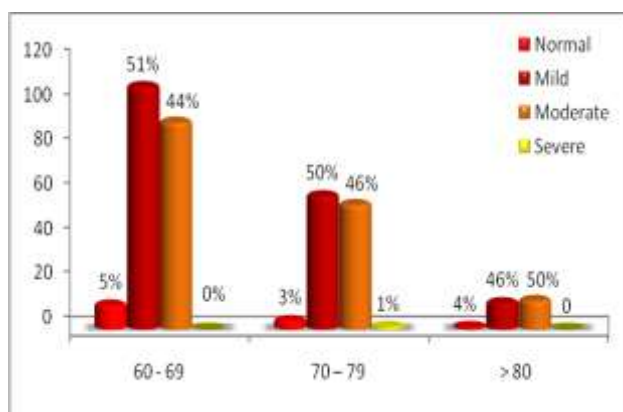
Anemia was prevalent in 344 of the subjects (96%). Females were more anemic (98%) than males (92%). Mild to moderate anemia was observed in all age groups but moderate anemia was seen more in females (50%) compared to males which was statistically.

Self-rating of health was assessed as good average and poor. 42% (150) of the elderly rated their health as good, 43% (154) rated as average and only 16% rated their

health as poor. No statistically significance difference was noted between males and females.

**Table 2: Sex wise distribution of subjects with anemia.**

Sex	Haemoglobin levels				Total	$\chi^2$	P value
	Normal	Mild	Moderate	Severe			
Male	10 (8 %)	70 (54 %)	47 (37 %)	1 (1 %)	128	10.67(3)	0.014
Female	6 (2 %)	111 (48 %)	115 (50 %)	0 (0 %)	232		
Total	16 (4 %)	181 (50 %)	162 (45 %)	1 (1 %)	360		



**Figure 1: Multiple bar diagram showing distribution of anemia according to age.**

**Table 3: Association of self rating of health between males and females.**

Self-rating of health	Male (%)	Female (%)	Total (%)	$\chi^2$ (df)	P value
Good	61(48)	89(38)	150(42)	2.934 (2)	0.231
Average	49(38)	105(45)	154(43)		
Poor	18(14)	38(16)	56(15)		
Total	128	232	360		

#### Activities of daily living

Out of the 360 elderly studied five males (1%) were fully dependent followed by 101(28%) partially dependent and 254 (71%) were independent for their daily activities. Only males were fully dependent. More elderly females were partially dependent. Majority of the males (73%) independently managed their day to day activities.

When compared with socio-economic status majority of the elderly who were fully and partially dependent were in below poverty line, poor and lower middle class. Logistic regression analyses show age as single predictor for ADL disabilities.

**Table 4: Sex wise distribution of subjects with disability (ADL).**

Sex	Fully dependent	Partially dependent	Not dependent	Total	$\chi^2$	P value
Male	5(4)	30 (23)	93(73)	128 (36)	10.6 (2)	0.005
Female	0(0)	71 (31)	161 (69)	232 (64)		
Total	5	101	254	360		

**Table 5: Distribution of subjects according to economic status with disability (ADL).**

Socio-economic status	ADL			Total	$\chi^2$	P value
	Fully dependent	Partially dependent	Not dependent			
Upper high	1	0	0	1	74.764 (10)	0
High	0	0	2	2		
Upper middle	0	2	6	8		
Lower middle	0	19	34	53		
Poor	2	33	81	116		
BPL	2	47	131	180		
Total	5	101	254	360		

**Table 6: Multiple logistic regression analyses showing association of study variables with activities of daily living.**

ADL <sup>a</sup>		B	Std. error	Wald	Df	Sig.	Exp (B)	95% C I for Exp (B) Lower Upper	
Fully dependent	Intercept	-32.799	2.584	161.1	1	0.000			
	Sex	-18.378	0.000	0.0	1	0.0	1.044E	1.044E-8	1.044E-8
	Age	0.923	0.609	2.300	1	0.129	2.518	0.763	8.303
	Per capita income	-0.447	0.406	1.211	1	0.271	0.639	0.288	1.418
	Smoking	-0.026	0.717	0.001	1	0.971	0.974	0.239	3.972
	Alcohol	0.545	0.645	0.713	1	0.398	1.725	0.487	6.111
	Tobacco	17.488	0.000	0.0	1	0.0	2.542E	2.542E-8	2.542E-8
Partially dependent	Intercept	-3.294	1.060	9.657	1	0.002			
	Sex	0.433	0.379	1.305	1	0.253	1.541	0.734	3.238
	Age	1.053	0.201	27.52	1	0.000	2.866	1.934	4.247
	Per capita income	-0.164	0.147	1.247	1	0.264	0.849	0.636	1.132
	Smoking	0.370	0.325	1.298	1	0.255	1.448	0.766	2.739
	Alcohol	0.060	0.262	0.052	1	0.820	1.061	0.636	1.772
	Tobacco	-0.178	0.279	0.407	1	0.524	0.837	0.484	1.447

a. The reference category is: 3.(Not dependent)

## DISCUSSION

In our study the elderly (60+ years) constituted 8.03% of the total population. Majority of the elderly were in the age group of 60-69 followed by 70-79 and 80 and above. The percentage of females in the age group of 80 and above was low. However more number of females lived longer in age groups 60-69 and 70-79 compared to males.

Ravishankar<sup>15</sup> observed that the elderly (60+ years) in Tamilnadu constituted 8.83% and in rural Tamilnadu it was 8.6%. Our study area also had the elderly population of 8.03% which was nearer to that observed by Ravishanker.

Subramanyam et al in their study of community based health care for the elderly in Pondicherry showed 66%, 25% and 8% for the ages 60 -69, 70 – 79 and 80 – 89 respectively which was similar to our findings.<sup>16</sup>

Sharma MK et al in their study showed 38.7% prevalence of anemia in the elderly population. Kaur et al demonstrated the prevalence of anemia in older persons was 97% in rural elderly which was similar to our observation.<sup>17</sup>

Ramachandra et al in their study of anemia in the rural elderly showed that females were more anemic than males.<sup>18</sup> The prevalence of anemia showed a rise with advancing age. Khokhar et al observed 24% of anemia in the elderly subjects.<sup>19</sup> Females were more anemic than males. This study was a urban based study.

Purty AJ et al in their study in a rural area of Tamilnadu observed that anemia was the commonest morbidity with 52.5% of the subjects suffering from it.<sup>20</sup> Even though

this study area is very near to our area of study we observed high prevalence of anemia which needs further analyses to look for the cause.

### Self rating of Health

Waweru et al showed that 25% of the elderly subjects reported that they were not healthy.<sup>21</sup> They also observed that those who lived alone reported unhealthy.

Medhi et al in their study observed that 20% of urban and 28% of rural elderly experienced problems in self-maintenance of activities of daily living.<sup>22</sup> Male elderly reported more disability in ADL. This was comparable to our study which showed 29% of the elderly experienced problems in ADL.

Sidik et al in their study of health problems in a rural community reported 15.7% dependency in activities of daily living.<sup>23</sup> The difference observed compared to our study may be due to different geographical setting, life style and living standards in rural Malaysia.

## CONCLUSION

The increase of demographic ageing process in our country in general and in our study area in particular has a series of socio-economic problems as well as health problems. Problems of the elderly are mostly not due to ageing per se but also largely due to psychosocial environment, diminishing family system, support and changes in life situation.

Anemia was prevalent in 96% of the elderly. Females were more anemic (98%) than males (92%). (1%) were fully dependent, 28% partially dependent and 71% independent for their daily activities. Majority of the

elderly who were fully and partially dependent were in below poverty line, poor and lower middle class. Logistic regression analyses showed age as a single predictor for ADL disabilities.

Few of the important recommended needs of the elderly are:

- Cooperation between GOs, NGOs, the private sector and the community;
- Family education;
- Elderly clubs/ elderly associations/ day care centres in villages;
- Homes or nursing homes for the aged, Mobile clinics;
- Strengthen all services: promotion, prevention, curative and rehabilitation services, and
- Low-cost improvements in housing for the elderly
- Pre-retirement counselling teams
- Research development;
- Income generation;
- Active ageing policy.

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