

## CLINICAL INVESTIGATION

# Morbidity Pattern Among the Elderly Population in the Rural Area of Tamil Nadu, India

Anil Jacob PURTY, Joy BAZROY, Malini KAR, Kavita VASUDEVAN, Anita VELIATH, Purushottam PANDA  
Department of Community Medicine, Pondicherry Institute of Medical Sciences, Kalapet, Pondicherry-605014, India

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**Abstract:** Globally there are an estimated 605 million people aged 60 years and above. From the morbidity point of view, almost 50 per cent of the Indian elderly have chronic diseases and 5 percent suffer from immobility. A major component of the burden of illness for the elderly derives from prevalent chronic disease. Hence a study was undertaken to assess the present morbidity pattern of rural elderly persons.

A community based cross-sectional study was undertaken in the rural service area of Pondicherry Institute of Medical Sciences (PIMS) between October 1, 2002 to October 31, 2003. All persons above the age of 60 years residing in the four villages of the area were randomly selected for this study. They were interviewed and examined in their houses using a predesigned and pretested questionnaire. A clinical examination and a set of basic laboratory tests including ECG was taken for each individual by a team of Medical Officers and field health staff.

Among 320 elderly persons studied, the average illness per person was 2.77. Pain in the joints and joint stiffness was the most common morbidity in 139 (43.4%), followed by dental and chewing complaints in 135 (42%), decreased visual acuity due to cataract and refractive errors in 182 (57%) and hearing impairment in 46 (15.4%). Other morbidities were hypertension in 42 (14%), diarrhoea in 38 (12%), chronic cough in 37 (12%), skin diseases in 38 (12%), heart illness in 27 (9%), diabetes in 26 (8.1%), asthma in 19 (6%) and urinary complaints in 18 (5.6%).

The mean BMI was 19.02 kg/m<sup>2</sup> and below 18 kg/m<sup>2</sup> in 49.61% of the study population. Anaemia was found in 168 (52.5%), elevated ESR in 118 (37%), elevated blood sugar in 41 (13%) and abnormal ECG findings in 111 (34.7%).

The average morbidity per person was 2.77. This highlights the need for their regular periodic medical examination and treatment at the primary care level, which will help prevent further deterioration of their health status.

**Key Words:** Elderly, morbidity, rural

## Introduction

Globally, there are an estimated 605 million people aged 60 years and above. Improvements in health care facilities have brought about longevity, which is considered to be one of the greatest achievements of the 20th century. The ratio of older persons has changed dramatically from approximately one in fourteen in the fifties to about one in four at present (1). From 1990 to 2025, the elderly population in Asia will rise from 50 per cent of the world's elderly to 58 per cent, in Africa and Latin America from 5 to 7 per cent, but in Europe the figure will drop from 19 to 12 per cent of the world's elderly. The life span has increased in India from 32 years

in 1947 to more than 62 years at present. From the morbidity point of view, almost 50 per cent of the Indian elderly have chronic diseases and 5 per cent suffer from immobility. There are several vulnerable groups and a large disadvantaged group are elderly females, who are one of the fastest growing segments and which will increase to become 4 times the current figure, by 2025 (2). The challenge in the 21st century is to delay the onset of disability and ensure optimal quality of life for older people.

A major component of the burden of illness for the elderly derives from prevalent chronic disease. India, in the associated epidemiological transition, is facing a

double burden of communicable and non-communicable diseases where nutrition plays an important role (3). For a substantial impact on this burden, preventive health care strategies specific to the elderly need to be clearly formulated and tested. Current recommendations for periodic health examinations and for preventive health care for the elderly include only minimal components for a geriatric preventive health care approach. Hence, this study was taken up with the objective of assessing the health status and morbidity pattern among the rural elderly with a view to improve our health care services for them.

### Material and Method

A community based cross-sectional study was undertaken in the rural service area of Pondicherry Institute of Medical Sciences (PIMS) between October 1, 2002 and October 31, 2003. Four villages namely Ileadu, Puthrankotai, Kainallur and Kavanoor of the Chunampet block in the Kancheepuram district of Tamil Nadu in India, were selected by simple random method from the list of twelve surrounding villages. In all there were 1264 families comprising of 4526 persons living in these four villages. The list of all persons aged 60 years residing in these villages was prepared and they were included to be part of this study after obtaining their consent. Ascertaining their correct ages was difficult, as many do not remember their date of birth, neither were there reliable records available, hence a well known historical event- (e.g. India's Independence in 1947) and if they had children, age at birth of the first living child and that child's present age was used. All were included in this study.

A team comprising of two medical officers, two medical social workers, two public health nurses and one laboratory technician were trained in the Department of Community Medicine, PIMS, Pondicherry, so as to collect uniform information from the study individuals. The information was collected on a predesigned and pretested questionnaire through personal interviews by house to house visits. Each individual was told about the purpose of the study, and confidentiality of the information was assured. In order to establish rapport and to ensure complete coverage, repeat home visits were made.

A detailed history was taken regarding present and past illness. The medical officer did a general physical

examination. Height was measured in the standing position with bare foot against the wall and was calculated to the nearest 0.5cm. Body weight was measured in kilograms using a spring weighing machine to the nearest 0.5 kg with light clothes on. Blood pressure was measured twice using a mercury sphygmomanometer from the right arm with the elderly in the sitting position. The Korotkoff phases I and V were recorded for systolic and diastolic pressures respectively. If high BP was detected, two more readings were taken on different occasions to confirm hypertension. They were subsequently graded as Normotensive: systolic BP <140, diastolic <90 mmHg, Hypertensive systolic BP >140 and diastolic >90 mmHg (WHO 1996) (4). Screening for vision was tested by Snellen's chart.

The laboratory tests done on each individual included haemoglobin estimation by Sahli's method, ESR by Wintrobe's method, and random blood sugar by electronic glucometer, urine examination for albumin and sugar and stool examination for ova, cysts and occult blood, and ECG was taken for all by a battery operated ECG machine. All these investigations were conducted at the same time or an appointment was given on following days as per the convenience of the individuals.

There were a total of 338 (7.7%) persons who were aged 60 years and above. Eighteen persons could not be interviewed due to absence or locked houses even on repeated visits. Hence the study population consisted of 320 elderly individuals. All the data collected was analyzed using Epi Info software Ver - 6.4. and the results are presented.

### Results

Altogether 320 elderly persons 132 (41.2%) males and 188 (58.8%) females were contacted at their homes. About 249 (78%) had been living here for the last 20 years. The mean age was 67.1 years, males 67.2years and females 66.3 years. Table 1. The largest age group was 60-64 (41.8%) and 1232 (10.3%) were above 80 years old. The majority (98.7%) were Hindus and 183 (57.3%) belonged to a scheduled caste group. Table 2. shows the education, occupation and socio-economic status of the study group. Most individuals were illiterates 252 (78.7%) and the very poor numbered 201 (62.8%). The predominant occupation was agricultural labour 204 (64.7%) and 95 (28.3%) were fully

Table 1. Age - sex distribution of study population.

Age group (yrs)	Males	Females	Total
60-64	55	79	134 (42.6)
65-69	42	56	98 (30.3)
70-74	14	26	40 (11.3)
75-79	17	19	36 (5.3)
> 80	4	8	12 (10.3)
Total	132 (41.2)	188 (58.8)	320 (100)
Mean age (yrs)	67.13	67.15	67.1
S.D.	5.6	5.6	

(\*figures in brackets indicates percentages)

Table 2. Education, Occupation and Socio-economic status of the study group.

Education	Occupation	Socio-economic status
Literate 68 (21.3)	1. Agriculture 204 (63.7)	1. Rich 2
	2. Service 8 (5.6)	2. Moderate 38
Illiterate 252 (78.7)	3. Buisness 3 (0.9)	3. Poor 79
	4. Others 95 (29.7)	4. Very poor 201

(\*figures in brackets indicates percentages)

dependent. 216 (67.5%) were living with their spouses and 104 (32.3%) were widowed. Regarding personal habits, 195 (61%) of the elderly group chewed tobacco, 44 (33.3%) of males were smokers and 38 (28.7%) regularly consumed alcohol. General health awareness regarding common causes of prevalent illness and their prevention (respiratory infections, diarrhoea) was found only among 20.3%.

The Figure shows the distribution of body mass index, defined as the weight in kilograms divided by the square of the height in meters. The average height was 1.53m. (SD 0.096), males 1.58m and females 1.48m. The average weight was 45.4 kgs (SD 10.9), males 49.4 kgs and females 42.2 kgs. The mean BMI was 19.02 kg/m<sup>2</sup> (SD 9.21), males 19.31 kg/m<sup>2</sup> (SD 12.7) and females 18.83 kg/m<sup>2</sup> (SD 8.95).

Table 3. The total number of illnesses among 320 subjects was 886. Therefore, the average number of illnesses per persons was recorded as 2.77. At the time of survey, 72.4% of the study population was suffering

from at least one ailment while 154 (48.1%), 77 (24.1%) of the population were suffering from two and three or more ailments respectively. As the table shows, complaints of joint pains/joint stiffness 139 (43.4%) was the most common, followed by dental and chewing problems 135 (45.3%). Visual problems due to cataract and refractive errors were seen in 203 (68%). Hypertension was found in 83 (25.9%) and diabetes in 26 (8.3%). Gastrointestinal complaints/diarrhoea in 38 (12%), dermatological in 28 (9.4%), heart illnesses in 27 (9%) and respiratory in 22 (7.3%) were less common.

Table 4. Laboratory investigations on the study population reveals only 47.5% of the subjects had normal Haemoglobin (of over 12 gm%) whereas in the remaining 168 (52.5%) anaemia was prevalent in varying severity. Elevated ESR was found in 118 (36.9%). Random blood sugar above 180 mgm% was observed in 41 (12.8%). ECG readings of 111 (32.4%) were interpreted as abnormal indicative of cardiac vascular, rheumatological, muscular and rhythm abnormalities.

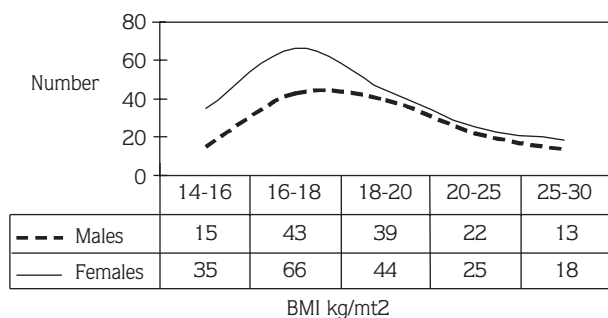


Figure. BMI distribution among rural elderly.

Table 3. Morbidity observed in the study population (n=320)

Morbidity condition	No. (%)
1. Joint pains/ joint stiffness	139 (43.4)
2. Chewing problems/Edentulous mouth	135 (42.1)
3. Reduced visual acuity (cataract)	103 ( 32.1)
4. Generalized body pain	96 (30.0)
5. Hypertension	83(25.9)
6. Reduced visual acuity (refractive error)	79 (24.6)
7. Impaired hearing	46 (14.3)
8. Gastrointestinal pain/Diarrhoea	38 (12.7)
9. Dermatological complaints/pruritis	37 (11.9)
10. Chronic cough	36 ( 11.3)
11. Known cardiac illness	27 (8.4)
12. Known Diabetes	26 (8.1)
13. Asthma	19 (5.9)
14. Urinary symptoms	18 (5.6)
15. Tuberculosis under treatment	4 (1.3)
<b>Total Morbidity</b>	<b>886</b>
<b>Average Morbidity prevalent</b>	<b>2.77</b>

Table 4. Results of Laboratory Tests on Elderly population.

Abnormal reports from Laboratory tests	N = 320 (%)
1. Haemoglobin level <12.0 gms %	168 (52.5)
2. Erythrocyte Sedimentation Rate (> 30 mm 1 hr)	118 (36.9)
3. Random Blood Sugar (> 180 mg/ml)	41(12.8)
4. Urine Examination (a) Urine Albumin present	37(11.6)
(b) Urine Sugar present	52(16.3)
5. Stool Examination- Ova, cyst present	26 (8.1)
6. Electrocardiogram - abnormal findings	111 (34.7)

## Discussion

The well being of older persons has been mandated in Article 41(5) of the Constitution of India, which directs that the state shall within the limits of its economic capacity and development, make effective provision for securing the right to public assistance in old age. The literacy and dependency found among in this study among the elderly was similar to the study by Manandhar et al (1997) (6).

It was observed that the average number of illnesses per person was 2.77. Other studies among the elderly in North and South India reported it as 2.627 and 2.42, respectively (7). The presenting symptoms of the elderly are significant because patients report to health care providers with these ailments. Thus, health workers and general physicians should be aware of the underlying diseases related to these symptoms. The presenting symptoms of the same disease may vary in elderly in comparison to younger population (8).

The body mass index (BMI) is a useful index of relative weight that can be applied to define obesity and chronic energy deficiency (CED) at the community level (9). 49 % of the elderly were thin (BMI <18 kg/m<sup>2</sup>) and 9.7% were overweight (BMI>25kg/m<sup>2</sup>). Although less directly “preventable” CED is associated with impaired physical activity (10) and increased mortality (11).

Anaemia was the commonest morbidity, with over half of population (52.5%) suffering from it. The present study considered the haemoglobin level of 12 gm% and below as anaemia for both males and females. Another study carried out in the Southern part of India reported a much higher prevalence of anaemia (82.9%) in the 60 years and above age group (7). Anaemia in elderly may be multifactorial with etiology as nutritional, physiological and pathological problems (11). The high prevalence of anaemia among women in the reproductive age group is related to multiple pregnancies, nutritional imbalance, menstruation and other gynaecological problems. The resulting anaemia in the reproductive age group continued to exist in elderly women, in absence of any corrective measures.

A high prevalence of arthritis / joint pain (43.2%) in the current study, especially among females, was also reported in other studies (7,12) possibly reflecting the hard life faced by women who never retire from household work unless totally disabled.

Only twenty six percent of the elderly were suffering from hypertension, unlike reports from other studies. A much higher prevalence level of 56% has been reported in a WHO report (13) and a study among the rural elderly from Haryana, India (14).

Thirty two percent of subjects were suffering from immature and mature senile cataract. Cataract in the rural population may be due to increased exposure to ultraviolet radiation during long hours of work in open fields (15). The prevalence of blindness in India is 14.9 per thousand-population (16). Eighty percent of this blindness is due to cataract alone (17). The National blindness control programme has an important role in reducing the quantum of cataract in the community by organizing eye camps.

Elevated ESR was found among 36.9%, among the elderly. This may not be characteristic of any one disease but it is important to recognize the clinical presentations and laboratory findings do not always corroborate. Changes in the immune system with aging (immunosenescence) include defects in both cellular and humoral immunity and these changes may contribute to unique presentations of inflammatory diseases in the elderly (17).

One third (33.7%) of the study population had abnormal ECG recordings. It has been estimated that approximately one quarter of all deaths in developing countries and almost half of all deaths in developed countries are attributable to cardiovascular diseases (13).

The presence of diabetes mellitus in 8% of the elderly further reflects the increasing life-style diseases in the

community. It was twice as prevalent in females as in males. In terms of health status, is the difference between male and female, females had a higher rate of morbidity. In the process of caring and nurturing other members of the family, women tend to neglect or overlook their own well being. The prevalence of high morbidity among the elderly requires the strengthening of geriatric health care services in accordance with the common existing problems in the community. Preventive, curative and rehabilitative programmes for the elderly are urgently required.

## Conclusion

The study among the elderly in the rural area of Tamil Nadu, India has highlighted a high prevalence of morbidity and identified common existing medical problems such as like anaemia, arthritis, cataract, hypertension, and diabetes mellitus. As there is a rapid expansion in the elderly population, there is an urgent need to develop geriatric health care services in the developing countries like India and provide training to health care providers to manage the commonly existing health problems in the community.

### *Corresponding author:*

*Anil Jacob PURTY*

*Department of Community Medicine,*

*Pondicherry Institute of Medical Sciences,*

*Kalapet, Pondicherry-605014, India*

*E-mail: purtyanil@sify.com*

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