

## Original Research Article

# A community based cross-sectional study on morbidity profile of elderly in a rural area of Puducherry

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## ABSTRACT

**Background:** The proportion of elderly increases worldwide. India entered into the list of “greying nation”. The process of biological ageing brings with it various illnesses. This study was conducted with the objective of determining the morbidity profile of elderly people residing in a rural area.

**Methods:** A community based cross-sectional study was conducted among elderly aged 60 years and above residing in rural area of Puducherry. Simple random sampling was used to select two sub-centre areas among four, under the field practice area and all the eligible elderly individuals were included. House to house visit was made and after obtaining informed consent, the data were collected using a pre-tested semi-structured questionnaire and examination.

**Results:** A total of 954 individuals were included in the study of which 66.4% and 33.6% of them were females and males respectively (Mean:  $68 \pm 6.8$  years). Acute and chronic illnesses were present among 4% and 47.7% of elderly individuals respectively. Hypertension (42.5%) was observed to be the predominant chronic illness followed by Diabetes (29.6%), Osteoarthritis (8.1%) and Asthma (7.9%), Visual problems (4.3%), Coronary artery disease (2.9%), Cerebrovascular accident (1.2%) and hearing problems (0.9%).

**Conclusions:** Chronic illnesses were more common among elderly than acute illnesses. Hence it is recommended to screen elderly individuals utilizing the platform of community based assessment for non-communicable diseases. The study also recommends implementing stringent tobacco control measures so as to curtail the silent epidemic of non-communicable diseases.

**Keywords:** Chronic and acute illness, Elderly, Morbidity profile

## INTRODUCTION

The proportion of elderly above 60 years of age was 962 million in 2017 worldwide.<sup>1</sup> According to Indian Population Census 2011, there are nearly 104 million elderly persons aged 60 years or above.<sup>2</sup> India has entered into the process of ageing as a result of demographic transition. Improvement in life expectancy and decline in

age-specific death rate among the elderly can be attributed to the improvements in public health and medical advances in the prevention of many fatal infectious diseases which has led to the increase in elderly population.

The process of biological ageing brings with it several accompanying health problems or diseases due to

deteriorating physiological conditions. It is apparent that people become more and more susceptible to chronic diseases, physical disabilities and mental incapacities in their old age. The elderly population is sandwiched by the dual burden of communicable and non-communicable diseases compounded by age-related sensory impairments.<sup>3</sup>

According to the Government of India statistics (2006), the chronic illnesses in the elderly usually include rheumatism, hypertension, coronary heart disease, and cancer. Cardiovascular disorders account for one-third of elderly mortality. Respiratory disorders account for 10% mortality while infections, including tuberculosis, account for another 10%. Neoplasms account for 6% and accidents, poisoning, and violence constitute less than 4% of elderly mortality. Hearing impairment was found to be the most common morbidity followed by visual impairment among elderly. A higher number of morbidities were associated with greater disability and distress.<sup>4</sup> Hence the study was done with the objective of determining the morbidity profile of elderly people residing in a rural area. The study would be helpful in setting priorities in health services required for the elderly.

## METHODS

This community based cross-sectional study was conducted in the rural field practice area of a medical college in Puducherry. Considering the prevalence of chronic illness as 50% which was reported in a study done at Puducherry 5, the minimum sample size obtained with an absolute precision of 5% and design effect of two was 800. Simple random sampling technique was used to select two sub-centre area among four, under the field practice area and all the eligible elderly individuals were included in the study. Ethical approval was obtained from the institute ethics committee before the start of the study. The study extended for a period of two years from November 2017 to October 2019.

House to house visit was made and elderly people aged 60 years and above and consenting for the study were included. Houses which were locked even after three visits and elderly persons who were sick were excluded. From the family folder the total population of elderly aged 60 years and above from the study area was 1047. After excluding 93 individuals, 954 elderly were finally included in the study. After obtaining informed consent, the data were collected by direct interview method using a pre-tested semi-structured questionnaire, verification of health records and by doing clinical examination. The study participants were also subjected to blood pressure measurements. Necessary arrangements were made for further evaluation and management.

The collected data were entered in MS Excel analysed using SPSS. Frequencies and percentages were calculated for categorical data. Chi-square test or Fisher's exact test,

whichever applicable, were used as tests of significance for analysing categorical data. A p-value of less than 0.05 was considered as statistically significant.

## RESULTS

The total number of elderly people in the two subcentre areas was 1047, of which, 55 were excluded. Among the 992 eligible elderly individuals, 38 could not be contacted even after 3 visits. Therefore 954 individuals were included in the study. The mean age of the study population was  $68 \pm 6.8$  years. Among 954 elderly subjects 66.4% of them were females and 33.6% of them were males. The mean age of elderly males in the study is observed to be  $69.3 \pm 6.7$  years. The mean age of females is  $68 \pm 6.8$  years. Majority of the elderly subjects lies in the age group of 60 to 64 years in both the genders. The proportion of oldest old (age  $\geq 80$  years) is 5.0% and 2.3% among females and males respectively. Majority (80.3%) of the elderly people in the study area were illiterates. Majority of the study participants in both the genders belong to middle socio-economic status as per modified B.G. Prasad classification. About 77.0% of females were widows and 58.4% of males were widowers (Table 1).

More than half of the males were smokers. About 40.3% of the males are current smokers and 11.2% had smoked a tobacco product in the past. Among 320 males, 48.4% reported that they do not smoke. Among females, 0.9% are current smokers and 0.5% had smoked a tobacco product in the past. About a quarter of the elderly people are currently using smokeless form of tobacco. Majority of the females were using smokeless tobacco product than males. The commonly used smoking form of tobacco products were bidi, cigarettes and cigars. Smokeless form of tobacco used by the study participants is betel quid with areca nut. About 38.4% of males are current users of alcohol and 8.4% of males have used it in the past. None of the females reported that they consume alcohol. The commonly used alcoholic beverages were arrack, toddy and brandy.

Acute illness was present among 4% of elderly individuals of which more than half were admitted in hospital in the previous month. About 3.5% of females and 5.0% of males gave history of acute illness. About 23.7% of those who had acute illness were admitted for surgery in hospital. Almost one fourth of the acute illnesses were due to an infectious cause. Among 954 elderly, 47.7% reported that they are suffering from chronic illness. A higher proportion of chronic illness was observed in females than males (Table 2). Hypertension was observed to be the predominant chronic illness among the elderly individuals (42.5%) followed by Diabetes Mellitus (29.6%). About 8.1% of them reported to have Osteoarthritis and 7.9% have Bronchial asthma. Visual and hearing problems were reported by 4.3% and 0.9% of the elderly individuals respectively. About 2.9% elderly people suffer from coronary artery disease and 1.2% suffer from cerebrovascular accident (Table 3).

**Table 1: Socio-demographic features among study participants.**

Socio-demographic variables		Gender		Total
		Female	Male	N (%) (n=954)
		N (%) (n=634)	N (%) (n=320)	
Age group (in years)	60-64	243 (38.3)	97 (30.3)	340 (35.6)
	65-69	148 (23.3)	61 (19.1)	209 (21.9)
	70-74	109 (17.2)	77 (24.1)	186 (19.5)
	75-79	86 (13.6)	63 (19.7)	149 (15.6)
	≥80	48 (7.6)	22 (6.9)	70 (7.3)
Education	Illiterate	527 (83.1)	239 (74.7)	766 (80.3)
	Literate	107 (16.9)	81 (25.3)	188 (19.7)
Socio-economic status	Upper	1 (0.2)	2 (0.6)	3 (0.3)
	Upper middle	47 (7.4)	42 (13.1)	89 (9.3)
	Middle	387 (61.0)	176 (55.0)	563 (59.0)
	Upper lower	160 (25.2)	89 (27.8)	249 (26.1)
	Lower	39 (6.2)	11 (3.4)	50 (5.2)
Occupation	Not working	375 (59.1)	164 (51.2)	539 (56.5)
	Working	259 (40.9)	156 (48.8)	415 (43.5)
Marital status	Unmarried	5 (0.8)	1 (0.3)	6 (0.6)
	Married	141 (22.2)	132 (41.2)	273 (28.6)
	Widow/Widower	488 (77.0)	187 (58.4)	675 (70.8)
Smoking status	Current user	6 (0.9)	129 (40.3)	135 (14.1)
	Ever user	3 (0.5)	36 (11.2)	39 (4.1)
	Non user	625 (98.6)	155 (48.4)	780 (81.8)
Alcohol usage	Current user	0 (0)	123 (38.4)	123 (12.9)
	Ever user	0 (0)	27 (8.4)	27 (2.8)
	Non user	634 (100)	170 (53.1)	804 (84.3)

**Table 2: Distribution of type of illness among elderly.**

Nature of illness		Gender		Total N (%)
		Female N (%)	Female N (%)	(n=954)
		(n=634)	(n=634)	
Acute illness	Present	22 (3.5)	16 (5.0)	38 (4.0)
	Absent	612 (96.5)	304 (95.0)	916 (96.0)
Chronic illness	Present	308 (48.6)	147 (45.9)	455 (47.7)
	Absent	326 (51.4)	173 (54.1)	499 (52.3)

**Table 3: Distribution of nature of acute and chronic illness among elderly.**

Nature of acute illness (n=38)	N (%)*	Nature of chronic illness (n=455)	N (%)*
Uncontrolled diabetes	5 (13.2)	Hypertension	247 (42.4)
Cataract surgery	4 (10.5)	Diabetes mellitus	172 (29.6)
Acute exacerbation of asthma	4 (10.5)	Osteoarthritis	47 (8.1)
Giddiness	4 (10.5)	Bronchial asthma	46 (7.9)
Fever	3 (7.9)	Defective vision	25 (4.3)
Lower respiratory infection	3 (7.9)	Coronary artery disease	17 (2.9)
Diabetic foot surgery	2 (5.3)	Cerebrovascular accident	7 (1.2)
Angioplasty	2 (5.3)	Hearing difficulty	5 (0.9)
Accident/trauma	2 (5.3)	COPD	4 (0.7)
Gastritis	2 (5.3)	Epilepsy	4 (0.7)
Diarrhoea	2 (5.3)	Thyroid disorders	4 (0.7)
Hypertensive emergency	1 (2.6)	Fracture hip bone	1 (0.2)
Haemorrhoids surgery	1 (2.6)	Hansen deformity	1 (0.2)
Angina	1 (2.6)	Psoriasis	1 (0.2)

Continued.

Nature of acute illness (n=38)	N (%)*	Nature of chronic illness (n=455)	N (%)*
Cellulitis	1 (2.6)	Mental illness	1 (0.2)
Urinary tract infection	1 (2.6)	---	---
Total	38 (100)		455 (100)

\*Multiple responses

## DISCUSSION

The present study was done to determine the morbidity profile of elderly people in a rural setting. The mean age of elderly observed in this study was  $68 \pm 6.8$  years and majority of them were women. This profile was noticed to be similar to other studies done in rural area of Puducherry.<sup>6,7</sup>

More than one third of males were current smokers and alcoholics in the present study. This adds fuel to the pathological process of ageing leading to development of chronic illnesses and its complications. The findings were similar to studies done by Purty et al, Laksham et al reported a lower prevalence of smoking.<sup>7,8</sup> The varied findings in the similar study setting might be due to varied frequency of male population. Also, there could be a possible social desirability bias among study subjects to report their habit of tobacco or alcohol usage. Smokeless form of tobacco usage in the form of betel quid with areca nut was reported more among females than males in the present study which was also observed by Sudharshan et al.<sup>5</sup>

Among the chronic illnesses majority of elderly had hypertension as predominant illness in the present study, whereas other studies had reported ocular and musculoskeletal problems as major illnesses.<sup>9-11</sup> But this finding was similar to a study done by Soni et al which had reported that majority had hypertension and cataract.<sup>12</sup> Kishore et al also reported that hypertension as predominant chronic illness.<sup>13</sup> This may be due to the reason that though hypertension was present more among elderly, majority would have reported visual and musculoskeletal pain as their predominant ailment as these may have limited their activities of daily living. In contrast the present study reported that only 4.3% and 0.9% of the elderly individuals had visual and hearing problems respectively. The probable reason could be that majority would have undergone cataract surgery and regained their vision.

More than one fourth of the elderly in the present study reported to have diabetes. This was almost similar to a study done in Puducherry which has reported that 22% had diabetes but another study by Laksham et al observed that almost 45% had diabetes and was more prevalent than hypertension.<sup>5,7</sup>

## CONCLUSION

This community based study was done to determine the morbidity profile of elderly residing in a rural area of Puducherry. Acute and chronic illnesses were present

among 4% and 47.7% of elderly individuals respectively. Hypertension (42.5%) was observed to be the predominant chronic illness among the elderly individuals followed by Diabetes mellitus (29.6%), Osteoarthritis (8.1%) and Bronchial asthma (7.9%), Visual problems (4.3%), Coronary artery disease (2.9%), Cerebrovascular accident (1.2%) and hearing problems (0.9%). About 40.3% and 0.9% of the males and females respectively are current smokers. About a quarter of the elderly people are currently using smokeless form of tobacco. About 38.4% of males are current users of alcohol.

## Recommendations

Chronic illness was found to be more among elderly than acute illness. Hence it is recommended to screen elderly individuals in the community utilizing the platform of community based assessment for non-communicable diseases. The study also recommends implementing stringent tobacco control measures so as to curtail the silent epidemic of non-communicable diseases.

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## REFERENCES

1. United Nations, Department of Economic and Social Affairs, Population Division. World population ageing, 2017 highlights. 2017. Available at [https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/undesa\\_pd-2020\\_world\\_population\\_ageing\\_highlights.pdf](https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/undesa_pd-2020_world_population_ageing_highlights.pdf). Accessed on 19 August 2020.
2. Elderly in India 2016. Available at [http://mospi.nic.in/sites/default/files/publication\\_reports/ElderlyinIndia\\_2016.pdf](http://mospi.nic.in/sites/default/files/publication_reports/ElderlyinIndia_2016.pdf). Accessed on 26 July 2017.
3. Jaspinder K, Sargun S, Kawaljit K. Impact of age on the prevalence of chronic diseases in geriatric population. Available at <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-019-7762-5>. Accessed on 20 August 2020.
4. Prakash O, Kukreti P. State of geriatric mental health in India. *Curr Transl Geriatr Exp Gerontol Rep*. 2013;2(1):1-6.
5. Sudarshan BP, Chethan TK. Morbidity pattern among the elderly population in the rural area of Pondicherry: a cross sectional study. *Int J Community Med Public Health*. 2016;3:414-8.
6. Vijayakumar K, Akkilagunta S, Kumar SG, Krishnamoorthy Y, Surendran G, Sarveswaran G.

- Prevalence of anemia and its associated factors among the elderly in rural Puducherry, South India. *Int J Med Sci Public Health*. 2018;7(11):854-8.
7. Laksham KB, Selvaraj R, Kameshvell C. Depression and its determinants among elderly in selected villages of Puducherry a community-based cross-sectional study. *J Family Med Prim Care*. 2019;8:141-4.
  8. Purty AJ, Bazroy J, Kar M, Vasudevan K, Veliath A, Panda P. Morbidity pattern among the elderly population in the rural area of Tamil Nadu, India. *Turk J Med Sci*. 2006;36:45-50.
  9. Piramanayagam A, Bayapareddy N, Pallavi M, Madhavi E, Nagarjuna RN, Radhakrishna L. A cross sectional study of the morbidity pattern among the elderly people: South India. *Int J Med Res Health Sci*. 2013;2(3):372-9.
  10. Seth RK. Morbidity pattern and psychosocial problems of elderly in a rural population of Uttar Pradesh, India: a cross-sectional study. *Int J Res Med Sci*. 2017;5:162-5.
  11. Hameed S, Kumar N, Naik PM, Sachidananda K, Prasanna KS. Morbidity pattern among the elderly population in a rural area of Dakshina Kannada, Karnataka - a cross sectional study. *Ntl J Community Med*. 2015;6(2):89-92.
  12. Soni A, Mathur M. Prevalence of morbidities among elderly population of Jodhpur, India. *Med Res Chron*. 2018;5(3):267-76.
  13. Kishore S, Juyal R, Semwal J, Chandra R. Morbidity profile of elderly persons. *JK Science*. 2007; 9(2):87-9.

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