International Journal of Community Medicine and Public Health
*Polisetty S et al. Int J Community Med Public Health. 2017 Jul;4(7):2558-2563*
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20172859

**Original Research Article**

# Morbidity profile of elderly individuals in urban Visakhapatnam

**Sanjay Polisetty[1]*, Madhavi Seepana[2]**

[1]Andhra Medical College, Visakhapatnam, Andhra Pradesh, India
[2]Department of Community Medicine, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India

**Received:** 16 May 2017
**Revised:** 13 June 2017
**Accepted:** 14 June 2017

***Correspondence:**
Dr. Sanjay Polisetty,
E-mail: sanjay08031994th@gmail.com



## ABSTRACT

**Background:** India has acquired the label of "an ageing nation" with 7.7% of its population being more than 60 years old. Both perceived health and chronic illness are major elements of health status in elderly and there is growing evidence that older people are at risk for manifold co-morbidities.
**Methods:** A community based cross sectional study was conducted in the Allipuram urban-Field practice area, Visakhapatnam for a period of 2 months (May 1st to June 30th) using a pretested questionnaire in the native language. Study subjects were individuals above 60 years of age who are willing to participate. Data collected for this study was predominantly based on the symptoms experienced by the individuals and patient records.
**Results:** Almost the entire study population (99.6%) suffered from either some form of acute or chronic morbidity. More than 70% of individuals had eye problems, most common problem being cataract (60%). Hypertension was present in 49% of individuals (24.3% Males and 24.7% Females). About 74.2% of Diabetics were also hypertensives and the relation was found to be highly significant ($p<0.05$).
**Conclusions:** Old age is associated with increasing morbidity due to senile changes, lowered immunity and increased susceptibility to most diseases hence it is of paramount importance that efficient and appropriate means of health care delivery to the geriatric population is ensured.

**Keywords:** Elderly, Geriatric morbidity, Hypertension

## INTRODUCTION

India has thus acquired the label of "an ageing nation" with 7.7% of its population being more than 60 years old.[1] The elderly population in India increased from 20 million in 1951 to 57 million in 1991, and is expected to be 198 million in 2030 and 326 million in 2050.[2] The demographic transition is attributed to the decreasing fertility and mortality rates due to the availability of better health care services.[3] From the morbidity point of view, at least 50% of the elderly in India have chronic diseases.[4] This poses a greater responsibility on health services especially in developing countries like India where there is a greater strain on available health infrastructure.[5] Both perceived health and chronic illness are major elements of health status in elderly and there is growing evidence that older people are at risk for manifold co-morbidities.[6]

Previous studies highlight the increasing trend of burden of geriatric health problems in South India. For a substantial impact on this burden, unique preventive health care strategies specific to the elderly need to be clearly formulated and tested. Similar studies were conducted in Udaipur by Prakash et al and by Kishore et al in Dehradun. These studies revealed almost a twofold increase in the prevalence of different problems in the elderly and an overall rise in the morbidity of the geriatric

age individuals. The ageing population is both a medical and sociological problem. It makes a greater demand on the health services of a community. The community must assist the aged to fight the triple evils of poverty, loneliness and ill health.

A study conducted by Swami et al in elderly individuals in Chandigarh, India has highlighted a high prevalence of morbidity and identified common existing medical problems like anemia, arthritis, hypertension, deafness, gastritis and diabetes mellitus. As there is a rapid expansion in number of 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 country.

Thorough examination of the geriatric morbidity and related risk factors are required to improve the delivery of health care to the elderly.[7] Only limited data is available on problems of elderly in India which is essential to develop, plan and evaluate the programmes for the aged.[8] There is scant information available on the morbidity profile of geriatric age group in Andhra Pradesh, particularly Visakhapatnam district. Thus, this study was taken up for a primary assessment of morbidity among the elderly in the urban field practice area of Visakhapatnam.

## METHODS

A community based house to house cross sectional study was conducted in the Allipuram Urban-Field practice area under the Department of Community Medicine, Andhra Medical College, Visakhapatnam for a period of 2 months (May 1$^{st}$ – June 30$^{th}$). A total of 270 individuals were included in the study (calculated as per the prevalence value of 60% obtained from previous studies and using the formula $4pq/l^{2.}$

Data collection was done by means of a pretested questionnaire, measuring tape, weighing scale and sphygmomanometer. Data collection for this study was primarily based on symptoms faced by the individuals and hospital records. Individuals above the age of 60 years who were willing to participate were included in the study. Those individuals who did not respond to 2 home visits were excluded from the study. The purpose of the study was explained and confidentiality of the information assured. Informed consent was obtained from all the participants before including them in the study. Institutional Ethics Committee clearance was obtained prior to conducting this study.

Body mass index (calculated by using the collected values of height and weight) and waist/hip ratio were used as indicators of body fat. A value of <18.5 was taken as low BMI, 18.6-24.9 as normal BMI and more than 25 as high BMI further extended into obesity and morbid obesity.

Hypertension was graded into 4 categories by JNC 7 classification based on the systolic and diastolic blood pressure as normotensive, pre-hypertension, stage 1 hypertension and stage 2 hypertension.

*Duration of diabetes and hypertension was also noted for assessment of morbidity due to the chronic effects of these systemic diseases.

***Grouping criteria***

Individuals who smoked at least 100 cigarettes in their life time but were not smokers at the time of the study were grouped as ex-smokers.

- Who smoked at least 100 cigarettes in their lifetime and smoked at the time of the study was considered current smokers.
- Who never smoked was considered nonsmokers.

*These criteria were assumed on the basis of WHO report of Non-communicable diseases in Andhra Pradesh.

The study data was analyzed using SPSS ver. 20 and relevant statistical tests of significance were applied. A $p<0.05$ was considered significant.

## RESULTS

Of the 270 individuals included in the study, 142 (52.6%) were males while the rest were females (47.4%). The mean age was 67 years with 74.9% of individuals belonging to the age group 60-69 (Table 1).

**Table 1: Distribution of study population among different age groups in comparison with gender.**

| Age groups | Male (n1) | Female (n2) | Total n1+n2 (%) |
|---|---|---|---|
| **≤65** | 75 | 83 | 158 (58.5) |
| **66-70** | 32 | 24 | 56 (20.7) |
| **71-75** | 25 | 13 | 38 (14.1) |
| **76-80** | 5 | 5 | 10 (3.7) |
| **≥81** | 5 | 3 | 8 (3) |
| **Total** | 142 | 128 | 270 (100) |

Majority of the study population belonged to the Hindu religion (80.4%), while 19.6% belonged to other religious groups. 50.4% (136) of the study population belonged to backward caste, 28.5% (77) belonged to forward caste and the rest (21.1%) were of other minorities. A total of 191 individuals (70%) were married while 66 (24.4%) were widowed.

Of the study population, 116 (43%) of individuals were illiterate while others were educated to various ranges extending from primary school to post graduation. Among the individuals who received education, majority (24.6%) studied up to primary school, followed by those

who received up to high school education (24.02%). Most of the individuals were retired (47%) while 23% were engaged in business and small scale trading. 64 (23.7%) of the study population were actively involved in house hold activities.

The people predominantly lived as nuclear families (54.1%) while 36% of individuals still followed the joint family norm. Majority of the study participants (71%) lived with other members in the family. Most of the study population (40.7%) belonged to upper class based on BG Prasad classification of socioeconomic status, while a significant group (48.9%) belonged to upper middle and middle class.

The mean per capita income per month was Rupees 5749.17 ranging from Rupees 4,000 to Rupees 28,500.

39.3% (106) of the participants had their own source of income while 26.3% (71) of the group were drawing retirement pension.

Among the study population, 129 (47%) belonged to the obese category by BMI assessment. Half of the study participants had normal BMI. More than 90% of individuals had a waist/hip ratio of >0.85 i.e. belonging to the obese category (Table 2).

**Table 2: Assessment of body fat by means of body mass index and waist/hip ratio.**

| | Males n1 (%) | Females n2 (%) | Total n1+n2 (%) |
|---|---|---|---|
| **Body mass index** | | | |
| <18.5 | 1 (0.3) | 8 (2.9) | 9 (3.3) |
| 18.6-24.9 | 67 (24.8) | 66 (24.7) | 133 (49.2) |
| >25.0 | 74 (27.4) | 54 (20) | 128 (47.4) |
| Total | 142 | 138 | 270 (100) |
| **Waist/hip ratio** | | | |
| <0.79 | 1 (0.3) | 6 (2.2) | 7 (2.5) |
| 0.80-0.84 | 3 (1.1) | 7 (2.5) | 10 (3.7) |
| >0.85 | 138 (51.1) | 115 (42.5) | 253 (93.7) |
| Total | 142 | 138 | 270 (100) |

**Table 3: Distribution of study population of the basis of smoking, smokeless tobacco and alcohol.**

| | Frequency (N) | Percentage (%) |
|---|---|---|
| **Smoking** | | |
| Non-smoker | 206 | 76.3 |
| Current smoker | 39 | 14. |
| Ex-smoker | 25 | 9.3 |
| **Alcohol** | | |
| Current alcoholic | 44 | 16 |
| Non-alcoholic | 208 | 77 |
| Ex-alcoholic | 19 | 7 |
| **Smokeless forms of tobacco** | | |
| Yes | 44 | 16.3 |
| No | 226 | 83.7 |
| Total | 270 | 100 |

**Table 4: Utilization of physical aids by the study population.**

| Physical Aid | Male (%) | Female (%) | Total (%) |
|---|---|---|---|
| **Visual aids** | 44 (16.2) | 38 (14) | 82 (30.4) |
| **Hearing aids** | 6 (2.2) | 3 (1.1) | 9 (3.3) |
| **Wheel chair** | 2 (0.7) | 7 (2.5) | 9 (3.3) |
| **Walking stick** | 9 (3.3) | 6 (2.2) | 15 (5.6) |
| **Dentures** | 2 (0.7) | 0 | 2 (0.7) |
| **None** | 79 (29.2) | 74 (27.4) | 153 (56.7) |
| **Total** | 142 | 138 | 270 (100) |

Only 14.4% were smokers while 16.3% were alcoholics. Majority of the individuals were nonsmokers and non-alcoholics. A small portion of people belonged to ex-smokers (9.3%) and ex-alcoholic (7%). 16.3% of individuals consumed other forms of smokeless tobacco such as betel, khaini and gutka (Table 3).

**Table 5: Morbidity patterns of the study population.**

| Effected system/organ involved in disease | Males n1 (%) | Females n2 (%) | Total n1+n2 (%) |
|---|---|---|---|
| **Eye** | 110 (40.7) | 96 (35.5) | 206 (76.3) |
| **Ear** | 42 (15.5) | 37 (13.7) | 79 (29.3) |
| **Dental** | 60 (22.2) | 67 (24.8) | 127 (47) |
| **Skin** | 3 (1.1) | 7 (2.5) | 10 (3.7) |
| **Blood** | 7 (2.5) | 11 (4.07) | 18 (6.7) |
| **Cardiovascular system** | 75 (27.7) | 67 (24.8) | 143 (53) |
| **Respiratory system** | 30 (11.1) | 29 (10.7) | 59 (21.9) |
| **Central nervous system** | 15 (5.5) | 11 (4.07) | 26 (9.6) |
| **Endocrine system** | 42 (15.5) | 35 (12.9) | 77 (28.5) |
| **Gastrointestinal system** | 48 (17.7) | 28 (10.3) | 76 (28.1) |
| **Genitourinary system** | 18 (6.6) | 7 (2.5) | 25 (9.3) |
| **Musculoskeletal system** | 33 (2.2) | 43 (15.9) | 76 (28.1) |
| **Malignancy** | 2 (0.74) | 3 (1.1) | 5 (1.9) |

Among the individuals requiring physical aids, (43.3%) majority were using visual aids (30.4%). 5.6% (15) individuals were using walking sticks while 3.3% (9) individuals were using wheel chairs and hearing aids (Table 4).

Almost the entire study population (99.6%) suffered from either some form of acute or chronic morbidity. More than 70% of individuals had eye problems, majority being cataract (60%), followed by refractive errors (14.1%). More than half of the individuals (69.6%) having eye problems belonged to 60-65 age category. About 25.6% of individuals had difficulty in hearing while 30.4% of individuals had chewing problems. Respiratory disease was seen in 21.4% of individuals with the majority being bronchial asthma (5.9%) (Table 5).

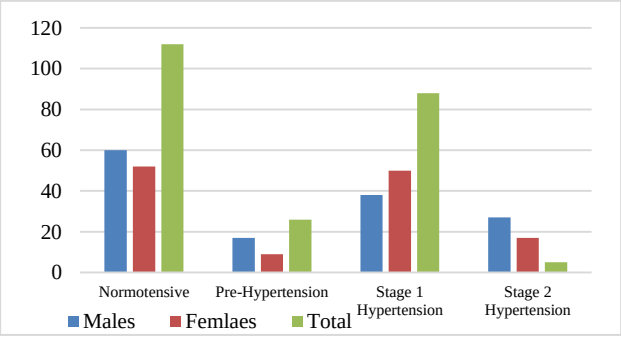


**Figure 1: Distribution of the study population based on Blood Pressure Recordings and classification into groups based on JNC 7.**

Hypertension was present in 49% of individuals (24.3% Males and 24.7% Females) with majority of individuals with hypertension belonged to the 60-65 yrs age group (25.6%). Higher levels of blood pressure (>140/90mm Hg) were noted thrice as frequently in the 60-65 category (7.7%) in comparison with 70-75 category (1.1%) (Figure 1).

Endocrine disease was found to have a prevalence rate of 28.5% with the majority being diabetes (24.4%), followed by thyroid disease (4.07%). About 74.2% of Diabetics were also hypertensives and the relation was found to be highly significant ($p<0.05$).

Only a third of the study population (33.3%) had hospital visits for receiving treatment for various conditions, while others were negligent about receiving proper health care.

## DISCUSSION

India is a federal country of more than thousand million people. It is estimated that the number of elderly persons will grow to 137 million by 2021 in our country. Wellbeing of older person has been mandated in the Article 41 of 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 case of old age. More than half of the study population (54.1%) lived as nuclear families, with the number of members in the house less than 4 (56%). The mean per capita income was Rupees 5417 and 40% of the individuals belonged to the upper class as per BG Prasad's socioeconomic classification based on per capita income. This may be due to urban living, increased in number of members of the family earning and nuclear families.

Almost half of the study population (47.4%) belonged to obese category based on their BMI, of which 27.4% were

males and 20% were males. More than 90% of individuals had a waist/hip ratio of >0.85 i.e. belonging to the obese category. This increase in the numbers in the obese category may be due to improper dietary fats and decrease in the physical activity due to sedentary life.

The present study recorded high rates of morbidity (99.6%) among the elderly individuals above the age of 60. Involvement of more than one system was seen in 98.4% of individuals. A study carried out in Southern part of India reported similar results that are a prevalence of 82.9% in the age group of 60 years and above. The study recorded morbidity rates higher than a similar study conducted by Swami et al which yielded a morbidity rate of 88.9%. This higher morbidity status of the individuals included in this study may be attributed to their negligence in utilizing health services despite suffering from different forms of disease. Even though 99.6% of the study population had some form of disease requiring care, only 33.3% visited hospitals and are receiving treatment. Over 60% of people were using over the counter medication for their various ailments. This may be indirectly the cause of rising morbidity among geriatric population because of incorrect and inadequate management of health problems.

Overall, 9.6% elderly were suffering from diseases of nervous system, this is in conformity with previous studies who reported the disorders of nervous system in 8.5%.[10] In the present study, 1.4% were suffering from neuralgia and 6.6%% were suffering with tremors and anxiety.

Hypertension was present in 49% of individuals (24.3% Males and 24.7% Females), which is comparable with the findings of Prakash in which 48% of the elderly persons were hypertensive.[10] Similarly, Chadha reported a prevalence rate of 52.2% and 58.4% among males and females respectively.[12] In contrast, Garg found prevalence of hypertension as16.5% in people >55 years in an urban area of U. P.[13]

Majority of individuals with hypertension belonged to the 60-65 age group (25.6%). Higher levels of blood pressure (>140/90 mm Hg) were noted thrice as frequently in the 60-65 category (7.7%) in comparison with 70-75 category (1.1%).

The leading cause of diminished vision in developing countries is cataract, which was found in present study in 61.4% and 51.3% males and females respectively, followed by refractive errors in 14%. Agarwal[15] reported cataracts in approximately 40% elderly in one or both eyes, whereas Purohit, Sharma and Mishra reported the same findings in 40% elderly and 25.8% respectively.[16,17]

21.4% of individuals were found to have respiratory disease out of which 0.7% males had chronic bronchitis and 5.9% had bronchial asthma. 66.6% elderly persons had musculoskeletal problems in which 7.78% males and 7.04% females were suffering from arthritis of knee. This may be attributed to the accelerated osteoporosis occurring in the knee joint and increased prevalence of obesity (47.4%).

Endocrine disease was found to have a prevalence rate of 28.5% with the majority being diabetes (24.4%), followed by thyroid disease (4.07%). About 74.2% of Diabetics were also hypertensives and the relation was found to be highly significant (Chi Square value of 28.22 at df-6). It has already been validated by many papers that there exists a relation between the occurrence of diabetes and hypertension. It may be due to the similarity of the vascular changes occurring in both diseases. Both these diseases are chronic systemic ones which after a duration of 10-15 years cause multiorgan damage.

With the changing pattern of family, migration and other socio-demographic factors, there is a continuous rise in the health problems of elderly in developing countries. In such circumstances, it would be beneficial to equip ourselves and the community with skills to tackle the physical as well as psychosocial problems related with the growing age in a holistic manner. In the current era, where preventive medicine takes the upper hand over curative medicine, it is of paramount importance that efficient and appropriate means of health care delivery to the geriatric population is ensured. Regular checkups, particularly blood pressure, blood sugar, ophthalmic examination and general physical examination may go a long way in decreasing the overall morbidity of elderly individuals in urban areas.

The results of the study may not be applicable to the entire geographic area around it due to the low sample size. But it may serve as a foundation for similar research work to be started in urban Visakhapatnam. Furthermore, the data collected was from the field practice area and consisted of a closed community. It cannot be determined if all the individuals included in the study are a correct population to represent everyone in the area.

## ACKNOWLEDGEMENTS

We would like to thank the Indian Council of Medical Research for sanctioning this study under the Short-Term Studentship (STS) program and the Department of Community Medicine, Andhra Medical College for their guidance and support during the period of this study.

*Funding: Indian Council of Medical Research under their Short-Term Studentship (STS) program-2015*
*Conflict of interest: None declared*
*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Gopal K Ingle, Anitha Nath. Geriatric Health in India: Concerns and Solutions. Indian J Community Med. 2008;33(4):214–8.

2. World Population Prospects. 1994 Revision, ST/ESA/SERA/145. United Nations, New York: 1995.
3. Age care statistics. Available at: http://www.helpageindia.com. Accessed on 7 January 2017.
4. Kumar V. Aging in India. Indian J Med Res 1997;106:257-64.
5. HM Swami, Vikas Bhatia, Rekha Dutt. A Community Based Study of the Morbidity Profile among the Elderly in Chandigarh, India. Bahrain Medical Bulletin. 2002;24(1):1-8.
6. Gijsen R, Hoeymans N, Schellevis FG, Ruwaard D, Satariano WA, van den Bos GA. Causes and consequences of comorbidity: A review. J Clin Epidemiol. 2001;54:661–74.
7. Joshi K, Kumar R, Avasthi A. Morbidity profile and its relationship with disability and psychological distress among elderly people in Northern India. Int J Epidemiol. 2003;32:978–87.
8. Niranjan GV, Vasundhra MK. A study of health status of aged persons in slums of urban field practice area, Bangalore. Indian J Com Med 1996;21:1-4.
9. Padda AS, Mohan V, Singh J, Deepti SS, Singh G, Dhillon HS. Health profile of aged persons in urban and rural field practice area of medical college Amritsar. Indian J Com Med. 1998;23:72-6.
10. Prakash R, Choudhary SK, Singh US. A study of morbidity pattern among geriatric population in an urban area of Udaipur Rajasthan. Indian J Community Med. 2004;29(1):35-40.
11. Kishore S, Juyal R, Semwal J, Chandra R. Morbidity Profile of Elderly Persons. JK Science; Department of Community Medicine, HIMS, Swami Rama Nagar, Dehradun (Uttaranchal). 2007;9(2):87-9.
12. Chadha SL, Radhakrishna S. Epidemiological Study of Coronary Heart Disease in Urban Population of Delhi. Ind J Med Res. 1990;92:424-30.
13. Garg BS, Gupta SC, Mishra VN, Singh RB. A Medico Social Study of Aged in Urban Area. Indian Med Gazette. 1982;14(3):95-9.
14. National Policy on older persons. 1996: 4-6.
15. Agrawal AP. studies on morbidity pattern in rural area of Delhi; 1992.
16. Purohit CK, Sharma R. A study of general health status of persons aged 60 years and above in RHTC area, Naila. Ind J Med Res. 1976;38(6):117-22.
17. Mishra VN, Srivastava BC. Prevalence of senile cataract in rural population. Ind J P&SM. 1980.

**Cite this article as:** Polisetty S, Seepana M. Morbidity profile of elderly individuals in urban Visakhapatnam. Int J Community Med Public Health 2017;4:2558-63.