



Assessment of Morbidity Pattern among the Rural and Urban Geriatric Population: A Cross Sectional Study

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Financial Support: None declared

Conflict of Interest: None declared

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How to cite this article:

Jain M, Prakash R, Jain R. Assessment of Morbidity Pattern among the Rural and Urban Geriatric Population: A Cross Sectional Study. *Natl J Community Med* 2017; 8(7):356-360.

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Date of Submission: 04-01-17

Date of Acceptance: 20-07-17

Date of Publication: 31-07-17

ABSTRACT

Introduction: Aging has been define as progressive, generalized impairment of function leading to lose of adaptive response to stress and growing risk of age related disease. **Objective:** to assess the morbidity pattern among the rural and urban elderly population and to identify possible factors influencing the morbidity pattern.

Material and method: A cross- sectional study was carried out in rural and urban field practice areas of RNT Medical College, Udaipur, Rajasthan from January, 2015 to December, 2015. Study participants were subjected to- (a) Personal Interview and (b) Clinical Examination. Medical records if available with the respondents were scrutinized to confirm medical conditions.

Results: Average numbers of illnesses per persons were recorded as 3.03 among rural and 3.08 among urban geriatric participants. Among rural elderly, Eye diseases were reported most commonly (63.6%) followed by diseases of cardio-vascular system (48.8%). Among urban geriatric participants, Diseases of cardio-vascular system were reported most commonly (59.2%) followed by eye diseases (57.6%). Psychosocial problems were more common among urban elderly.

Conclusion: Overall morbidities were high among the study population, with non-communicable and degenerative diseases comprising the major burden of diseases.

Key Words: Aging, Elderly, Morbidity, Cross- sectional study

INTRODUCTION

Aging has been define as progressive, generalized impairment of function leading to lose of adaptive response to stress and growing risk of age related disease, resulting in progressive increase in age specific mortality.¹ The boundary of old age cannot be defined exactly because it does not have the same meaning in all societies. Government of India adopted 'National Policy on Older Persons' in January, 1999 which defines 'senior citizen' or 'elderly' as a person who is of age 60 years or above.²

Census 2011 figures say that in India 8.6 per cent of the people are aged 60 and above, compared to 7.4 per cent in 2001. Old age Dependency Ratio is rising (142 in 2011 as compared to 131 in 2001) due to higher life expectancy at birth. Both the share and

size of elderly population is increasing over time from 5.6% in 1961 it is projected to rise to 12.4% of population by the year 2026.³

Care of the elderly has till date focused on managing chronic disorders rather than on the promotion of healthy lifestyle and prevention of chronic diseases. However changes in lifestyle and medical care can prevent, postpone, or reverse age-related morbidity; thus low cost strategies to avoid disease and disability in this age group are imperative in the 21st century.⁴ Many health problems are known to increase with age and this demographic trend may lead to an increase in the absolute number of health conditions in the population.⁴

If people can experience these extra years of life in good health and if they live in a supportive envi-

ronment, their ability to do the things they value will be little different from that of a younger person. If these added years are dominated by declines in physical and mental capacity, the implications for older people and for society are more negative. With this background, the present study was conducted to assess the morbidity pattern among the rural and urban elderly population and to identify possible factors influencing the morbidity pattern.

MATERIAL AND METHOD

An Observational, Cross-sectional study was carried out in rural and urban field practice areas of Department of Community Medicine, RNT Medical College, Udaipur, Rajasthan from January, 2015 to December, 2015. Elderly people aged 60 years or more, residing in rural area Vallabh Nagar (Rural health training center) and urban area Dhanmandi (Urban health training center) were included for the study after satisfying inclusion and exclusion criteria. Elderly people aged 60 years or more attending out-patient departments of Rural and Urban Health Training Center during the study period, who were willing to participate in study, without compulsion, were included. Elderly persons with missing information in socio-demographic profile and diagnosis or patients not providing available medical records, non cooperative patients, not willing to participate in the study or not giving written consent for participation or seriously ill requiring immediate hospitalisation were excluded from the study. The sample size was calculated using the formula,⁵

$$N = Z^2_{(1-\alpha/2)} pq/d^2$$
 (Where $Z_{(1-\alpha/2)} = 1.96$ at 95% confidence level; p = prevalence of morbidity, $q = 1-p$; d =allowable error). Using the above formula, a sample size of 209 elderly people was derived on the basis of morbidity prevalence rate of 64.8% as per reports of 'Building a Knowledge Base on Population Ageing in India (BKPAI)', a multi-centric study, by the United Nations Population Fund (UNFPA), India in Cooperation with the Government of India (2008-12)⁶with 95% confidence interval and allowable error $d=10\%$ of p . Taking into account 10% as non-respondents, the total number came out to be 230. In all, 250 elderly persons aged 60 years and above, were selected from each field practice area for assessment and making comparison in morbidity pattern among rural and urban elderly population for the present study. Nature and Purpose of the study was fully explained to the study participants before the study. Persons satisfying the inclusion and exclusion criteria, were instructed to attend a specific day of the week (Thursday for UHTC and Saturday for RHTC) at the outpatient departments of

Rural and Urban Health Training Centres with the previous medical records (if available). Every week, on that specific day, people were examined and data obtained until the requisite number of sample size met.

A pre-tested, semi-structured questionnaire was used for data collection after taking an informed written consent from each individual. Each individual included in the study was subjected to- (a) Personal Interview and (b) Clinical Examination. Medical records if available with the respondents were also scrutinized to confirm medical conditions. Elderly were examined physically from head to toe and any signs and symptoms of illness were recorded. A person was considered to be a hypertensive if he/she was an already diagnosed case of hypertension and /or on treatment for hypertension or with a Systolic Blood Pressure ≥ 140 and/or Diastolic Blood Pressure ≥ 90 (JNC VII classification)⁷at the time of examination. Moreover Respiratory diseases, cardiovascular diseases, musculoskeletal disorders and nervous system disorders, endocrine and genitourinary disorders already diagnosed by clinicians with necessary investigations if present were recorded and accepted as such. Chronic diseases from at least three months and acute disease from at least one month duration as per WHO's International Classification of Diseases were included for assessing morbidity of geriatric people.² Snellen's chart was used to assess the visual acuity. Impaired hearing was defined as inability to hear a whisper at a distance of 1 meter.⁸ Anaemia was judged clinically by examination of palpebral conjunctiva, oral mucosa and palms. If any of the examined part was pale, then was considered as anaemic.⁸ Psychosocial problems were elicited by large discussion on some of the personal problems related with psychosocial trouble. Illiterate was defined as 'a person who is unable to read and write in any language² and Literate as 'a person who can read and write with understanding in any language. A person who can merely read but cannot write was not classified as literate.⁹ Modified B.G. Prasad's socio-economic status classification was adopted and modified for the year 2015 using AICPI for the base year 2015 i.e. 254 (as of January 2015)¹⁰. Currently married were defined as those who were currently living with their spouse at the time of study. Widowed were defined as a person whose husband or wife has died.¹¹ Data was entered in MS Excel 10 and analyzed using Epi-info 7 software. P-value of <0.05 was considered to be statistically significant. The study protocol was submitted to the Institutional Ethical Committee before the study and ethical approval was obtained. Besides, informed written consent of the each study participant was taken before the study.

RESULTS

Total 250 elderly from rural and 250 elderly from urban area were assessed in present study. The socio-demographic characteristics of the rural and urban study subjects are depicted in table 1. Mean age for the rural and urban study participants was 67.8 ± 6.7 years and 68.0 ± 7.2 years respectively. The system wise morbidities observed among rural and urban elderly persons are shown in table 2. Among rural elderly, Eye diseases were reported most commonly (63.6%) followed by diseases of cardio-vascular system (48.8%). Average morbidities per person were 3.03 among rural geriatric study participants. Among urban geriatric participants, Diseases of cardio-vascular system were reported most commonly (59.2%) followed by eye diseases (57.6%). Average numbers of illnesses per persons were recorded as 3.08 among urban geriatric participants. Hypertension was found to be most frequent morbidity (49.0%) among both in rural and urban geriatric people. However, hypertension was more prevalent in urban elderly (55.2%) as compared to rural elderly (42.8%) and difference was statistical significant (p <0.05).

At the time of study, 73.2% of the rural and 77.6% of the urban participants were suffering from at least one morbidity. Overall, prevalence of morbidity was 75.4% among geriatric people (Table 3).

Table 1: Socio-demographic characteristics of the rural and urban geriatric study participants

Characteristic	Rural (n=250) (%)	Urban (n=250) (%)
Age group (years)		
60-69	156 (62.4)	148 (59.2)
70-79	71 (28.4)	77 (30.8)
≥80	23 (9.2)	25 (10.0)
Gender		
Male	153 (60.8)	133 (53.2)
Female	97 (39.2)	117 (46.8)
Religion		
Hindu	168 (67.2)	148 (59.2)
Muslim	71 (28.4)	72 (28.8)
Others	11 (4.4)	30 (12.0)
Literacy Status		
Illiterate	98 (39.2)	77 (30.8)
Literate	152 (60.8)	173 (69.2)
Socio-Economic Status¹⁰		
Class I	20 (8.0)	26 (10.4)
Class II	53 (21.2)	87 (34.8)
Class III	71 (28.4)	59 (19.6)
Class IV	55 (22.0)	45 (18.0)
Class V	51 (20.4)	33 (13.2)
Occupational Status		
Unemployed	182 (72.8)	205 (82.0)
Employed	68 (27.2)	45 (18.0)
Marital Status		
Currently Married	179 (71.6)	190 (76.0)
Widowed or Divorced	71 (28.4)	60 (24.0)

(Figures in parenthesis indicate percentages)

Table 2: System wise classification of the morbidities in rural and urban geriatric study subjects

System involved*	Rural (%) (n = 250)	Urban (%) (n = 250)
Endocrine, Nutritional & Metabolic diseases	81 (32.4)	92 (36.8)
Diseases of Respiratory system	85 (34.0)	40 (16.0)
Diseases of Digestive system	47 (18.8)	56 (22.4)
Diseases of Cardio-vascular system	122 (48.8)	148 (59.2)
Diseases of Oral cavity & Dental problems	101 (40.4)	97 (38.8)
Diseases of Musculoskeletal system	107 (42.8)	124 (49.6)
Diseases of the Eye	159 (63.6)	144 (57.6)
Diseases of the Ear	27 (10.8)	33 (13.2)
Diseases of Nervous System	22 (8.8)	15 (6.0)
Diseases of Genitourinary System	33 (13.2)	25 (10.0)
Diseases of Skin & Subcutaneous tissue	22 (8.8)	16 (6.4)

*Multiple Responses; (Figures in parenthesis indicate percentages)

Table 3: The most frequent morbidities among rural and urban elderly

Morbidity*	Rural (%) (n = 250)	Urban (%) (n = 250)	Total (%) (n = 500)	P value
Cataract	99 (39.6)	87 (34.8)	186 (37.2)	0.26
Hearing impairment	27 (10.8)	33 (13.2)	60 (12.0)	0.40
Anaemia	47 (18.8)	40 (16.0)	87 (17.4)	0.41
Diabetes Mellitus	27 (10.8)	41 (16.4)	68 (13.6)	0.06
Hypertension	107 (42.8)	138 (55.2)	245 (49.0)	0.006
Dental Caries	81 (32.4)	69 (27.6)	150 (30.0)	0.24
Osteoarthritis	87 (34.8)	104 (41.6)	191 (38.2)	0.11
COPD	45 (18.0)	15 (6.0)	60 (12.0)	<0.001
APD	22 (8.8)	30 (12.0)	52 (10.4)	0.24
Any Medical Problem	183 (73.2)	194 (77.6)	377 (75.4)	0.25

*Multiple Responses; (Figures in parenthesis indicate percentages)

Table 4: Distribution of study subjects according to number of morbidities per person

No of Morbidities	Rural (n = 250)	Urban (n = 250)
1	11 (4.4)	15 (6.0)
2	22 (8.8)	33 (13.2)
3	50 (20.0)	42 (16.8)
4	64 (25.6)	61 (24.4)
≥5	36 (14.4)	43 (17.2)

*Figures in parenthesis indicate percentage

The proportion of COPD was significantly higher among males ($p < 0.05$) while the proportion of Osteoarthritis was significantly higher among female participants ($p < 0.05$). Proportion of Osteoarthritis was significantly higher among Hindu geriatric participants ($p < 0.05$). The proportion of Diabetes Mellitus was significantly higher among partici-

pants who belonged to socio-economic class I and class II ($p < 0.05$). None of the morbidities were significantly associated with the marital status of elderly in rural area ($p > 0.05$).

Out of 250 rural elderly participants, 26.8% were not suffering from any form of morbidity. Majority (25.6%) were suffering from 4 morbidities followed by 20.0% participants suffering from 3 morbidities. Among urban elderly, 22.4% elderly had no morbidity. Majority (24.4%) of elderly were suffering from 4 morbidities. 17.2% participants had 5 or more morbidities (Table 4). Table 5 depicts the psychosocial problems reported by study participants. Psychosocial problems were more common among urban elderly and the differences were statistically significant ($p < 0.05$).

Table 5 - Psycho-social symptoms reported by geriatric study participants

Psycho-social symptoms*	Rural			Urban			P value
	Male (n=153)	Female (n = 97)	Total (n=250)	Male (n=133)	Female (n=117)	Total (n=250)	
Lack of Sleep	18 (11.7)	6 (6.2)	24 (9.6)	30 (22.6)	16 (13.6)	46 (18.4)	0.005
Feeling of Loneliness	3 (2.0)	7 (7.2)	10 (4.0)	9 (6.8)	17 (14.5)	26 (10.4)	0.006
Feeling of Neglect	8 (5.2)	8 (8.2)	16 (6.4)	16 (12.0)	23 (19.6)	39 (15.6)	0.001

*Multiple Responses; (Figures in parenthesis indicate percentages)

DISCUSSION

The present study was conducted to assess the morbidity patterns among the geriatric people and to identify possible factors influencing the morbidity pattern among elderly population of the rural and urban field practice areas. 250 elderly people were selected as study participants from each area.

In present study, 62.4% rural elderly belonged to the age group of 60-69 years, 28.4% belonged to 70-79 years age group and 9.2% belonged to ≥ 80 years age group. Among urban elderly persons, 59.2 % were in age group 60-69 years, 30.8 % were in age group 70-79 years and 10.0% were in age group ≥ 80 years. Mean age for the rural study participants was 67.8 ± 6.7 while Mean age for the urban participants was 68.0 ± 7.2 . These findings are in accordance with the life expectancy projected in 2011-2016 which is 67 years for men and 69 years for women in India¹² and could be explained by the fact that there is a gradual decline in the number of persons surviving with increasing age.

In present study, average morbidity per person was 3.03 among rural and 3.08 among urban participants. The findings of present study are much higher than the report of research project 'Building a Knowledge Base on Population Ageing in India (BKPAI)',⁶ which revealed that average number of chronic ailments per elderly person was 1.2 in both rural and urban area. In contrary to our study, a study by Swami HM et al¹³ (2002) in urban area of

Chandigarh revealed that average number of illnesses per person was 1.79. A study carried out by Purtyet al¹⁴ (2006) in rural area of Tamil Nadu revealed that the average illness per person was 2.77.

In present study, overall prevalence of morbidity was 75.4% among geriatric people. At the time of study, 73.2% of the rural and 77.6% of the urban study participants were suffering from at least one medical ailment indicating higher prevalence of morbidities among urban elderly people. This could be due to increased number of life style diseases among urban people. 65.8% rural and 62.1% urban elderly were suffering from at least one ailment in the report of research project 'Building a Knowledge Base on Population Ageing in India (BKPAI)',⁶ A study by Srinivasan et al (2010)¹⁵ in urban area of Bengaluru revealed that majority of the respondents (85%) had at least one morbidity.

In present study, among rural elderly, eye diseases were found most commonly (63.6%) followed by diseases of cardio-vascular system (48.8%). This Morbidity pattern is comparable to study by Kumar A et al (2012)¹⁶ in a rural area of Southern India, which revealed that the most common morbidity among elderly in rural area were Eye problems (62.6%) followed by Hypertension (44.3%).

In present study, among urban elderly, diseases of cardio-vascular system were most common (59.2%) followed by eye diseases (57.6%). In accordance to our study, Hypertension was reported by majority

elderly (76.19%) in the study conducted by Kanfode M et al (2012)¹⁷ in urban area of Nagpur city.

In present study, hypertension was higher significantly in urban elderly (55.2%) as compared to rural elderly (42.8%). It could be because of sedentary and modern life style and stress in urban areas. A study by Sharma et al (2013)¹⁸ in an urban and rural area of Shimla hills found that Hypertension was more prevalent in urban elderly (56%) as compared with rural counterparts (25%). Prevalence of hypertension among the elderly in urban areas was about twice that in rural areas in Chandigarh in a study by Swami HM et al.¹³

In present study, common psychosocial symptoms reported by elderly were lack of sleep (9.6% in rural and 18.4% in urban), feeling of loneliness (4.0% in rural and 10.4% in urban) and feeling of neglect by family members (6.4% in rural and 15.6% in urban). All these psychosocial symptoms were significantly more common among urban elderly participants. The main reasons could be loss of spouse, ignorance by the family and co-morbid illnesses which were expressed in form of sadness, crying and a feeling of hopelessness. In contrast to our study, only 3.7% of elderly had psychosocial problems in study by Bhatt R et al (2011)¹⁹. In study by Barman et al (2014)²⁰, 26.88% had a complaint of feeling of loneliness and 31.25% had a feeling of neglect. Study conducted by Kumar A et al (2012)¹⁶ revealed that psychological distress and symptoms were present in 29.2% rural elderly.

CONCLUSION AND RECOMMENDATIONS

Overall morbidities were high among the study population, with non-communicable and degenerative diseases comprising the major burden of diseases. High prevalence of morbidities among elderly people need strengthening of geriatric health care services in the community. Promotive, Preventive, curative and rehabilitative programmes for the elderly are required for the control and management of later part of the life. Effective joint family system, right mental attitude and a healthy life style in adult life are the keys for enjoying the active ageing. There is also a need to increase awareness among the elderly group by IEC activities to utilize the available health care services and periodic health checkups to allow early detection and treatment of their morbidities.

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