

Morbidity pattern and its sociodemographic determinants among elderly population of Raichur district, Karnataka, India

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ABSTRACT

Context: India is an “aging nation” with 7.7% of its population being above 60 years of age. It has resulted in a rise of both physical and mental health morbidities. **Aims:** This study aimed to gather information regarding the morbidity pattern and its sociodemographic determinants among the elderly residing in the rural villages of Raichur, to understand the need for geriatric health-care facilities. **Settings and Design:** This community-based cross-sectional study was carried out in six rural villages of Raichur District, of which 230 elderly were selected randomly. **Subjects and Methods:** The data were collected using a questionnaire, clinical history, examination, and cross-checking of medical records. **Statistical Analysis Used:** Data were analyzed using Epi Info version-3.5.3. **Results:** The prevalence of morbidity was 91.7% with an average of 3/person. Females (58.9%) had more morbidities than men (41.1%). The 3 most common morbidities were orthopedic (50.5%), cataract (50.4%), and respiratory (31.3%). 26.6% suffered from gastrointestinal morbidities while 23.9% had dental problems. 20.9% had hypertension with equal prevalence among both sexes. Only 17.4% were diabetics with majority being women. Central nervous system morbidities were 14.2% while 9.6% suffered from hearing loss and varicose veins. 8.2% had genitourinary-urinary morbidities and incontinence (1.7%) was common among both sexes. Depression (71.1%) and dermatological morbidities (4.7%) were prevalent among women. Only 3.5% suffered from cardiac morbidity and 0.4% from cancer. Significant association was found between age and morbidity and also between socioeconomic class and morbidity pattern. **Conclusions:** Geriatric care should become an integral part of primary health care. Regular screening and Information, Education, and Communication activities need to be provided early in life for ensuring healthy aging.

Keywords: Elderly, geriatric care, morbidity pattern

Introduction

We are living in a world that is graying rapidly. The current global and national demographic structure is shifting toward a higher proportion of the elderly resulting in “population aging.” India too is an aging nation since 7.7% of its population is

above 60 years of age.^[1] This demographic change of increasing proportion of the elderly in the population is a result of the decline in mortality rates accompanied with improvement in child survival and increased life expectancy. It is expected that by the year 2025, majority of the elderly worldwide will be residing in developing countries.^[2] According to population census 2011, there are nearly 104 million elderly persons (aged 60 years or above) in India; 53 million females and 51 million

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males. It is estimated that it will increase to 198 million by the year 2030.^[3]

The speed at which the population is aging is causing a serious concern in all countries of the world. The three areas where the impact is being felt the most are health, economy, and social areas. The rise in the proportion of the elderly persons is resulting in an increase in the economically nonproductive dependent individuals. This coupled with rapidly increasing urbanization has resulted in the nonproductive elderly population in rural areas being left with very little of social and economic support. This has also led to an increase in the morbidities of both physical and mental health due to social isolation.^[3]

With this perspective, the present research was undertaken to study the morbidity pattern and the sociodemographic profile of the elderly residing in the villages of Raichur District, which is known to be one of the most rural and backward areas of the state of Karnataka in India. This study will help us to understand and evaluate their health problems, so that a comprehensive health-care plan covering all aspects of preventive, promotive, curative, and rehabilitative services can be planned for the care of the elderly residing in this rural part of the world.

Subjects and Methods

This community-based cross-sectional study was carried out in six rural most villages of Raichur district, namely, “Siganodi,” “Siganodi thanda,” “Mandalagiri,” “Bhapur,” and “Bhapur thanda.” An initial house-to-house survey was carried out in all these villages and it was identified that there were a total of 576 elderly people aged above 60 years who were permanent residents in this area. A pilot study carried out which revealed that the prevalence of morbidities was (p) 50% and using the formula $n = Z^2 pqN / e^2 (N - 1) + Z^2 pq$, where, acceptable error $e = 5\%$, total population $n = 576$, $q = 1 - p$, and level of significance $\alpha = 5\%$. The required sample size was calculated to be 230. Using random number table, 230 elderly were selected for the study. Sixty years and above were considered to be elderly in our study as per the United Nations definition.^[4] The Institutional Ethical Committee approval and the written informed consent of the participants were obtained before the start of the study.

The data were collected by interviewing the study participants using a predesigned and pretested questionnaire. They were interviewed about their sociodemographic and morbidity profile. This was then followed by a complete general physical examination, systemic examination, and blood sugar estimation using a standardized glucometer. A fasting blood sugar level >120 mg/dl² and postprandial blood sugar >180 mg/dl² were taken as the diagnostic criteria for diabetes mellitus.^[5] The blood pressure was measured using a standard mercury sphygmomanometer with the patient made to sit comfortably and it was measured on the left arm of the patient. An average of two readings was taken. Hypertension was defined as systolic blood pressure ≥ 140 mm of Hg and/or a diastolic

blood pressure ≥ 90 mm of Hg when the participant was taking antihypertensive medications.^[6] The interviewees were asked to display all medications they were taking and also asked to show all the medical reports that they possessed. Subsequently, based on the reported illness, clinical examination findings, cross checking of medical records, and the medication that they had with them, a provisional clinical diagnosis was made. The data obtained were analyzed using Epi Info version - 3.5.3.

Results

The mean age of the study population was found to be 65 years (standard deviation + 5.44) and most of the elderly were in the age group of 65–69 years (37%). Out of the total study population of 230, majority were elderly women 134 (58%), married (62.2%), Hindu by religion (89.6%), illiterate (57.8%), and part of a joint family (76.1%). The modified B. G. Prasad classification^[7] was used to assess the socioeconomic status of the elderly since it is the most appropriate tool for rural India. It was observed that most of the elderly belonged to class IV (43.9%) and more than half (55%) of the elderly were not working. The only social security measure available for the elderly was the Indira Gandhi national old age pension scheme^[8] which provided Rs. 400/month to those above 65 years of age. This study revealed that only a mere 24% of them were receiving the social security benefit while a majority of them (92.2%) were financially dependent on their children. The details of these sociodemographic data along with their physical activity (based on Centers for Disease Control recommendations)^[9] and personal habits are mentioned in Table 1 below.

The most common morbidities suffered by the elderly were musculoskeletal (50.5%) and cataract (50.4%). Both these morbidities were found to be more among females than males. Of the musculoskeletal morbidities, arthritis topped the list with fractures due to falls being equally distributed among both groups. It was then followed by respiratory illnesses (31.3%), gastrointestinal problems (26.6%), dental problems (23.9%), hypertension (20.9%), and diabetes mellitus (17.4%). Among the respiratory illnesses, chronic bronchitis was the most common (13.5%) morbidity and 14 of them suffered from tuberculosis. Gastrointestinal problems that were common to both males and females were constipation and gastritis. Hypertension too was found to be equally distributed among both sexes while females (60%) were found to suffer more from diabetes mellitus than males (40%).

The prevalence of depression among our study population was 16.5%, with majority of them being females (71.1%) than males (28.9%). However, this finding was not found to be statistically significant ($P > 0.05$). 14.2% of them suffered from disorders of the central nervous system (CNS), with epilepsy and cerebrovascular accident being more among males than females and the rest of the CNS morbidities were found to be distributed vice versa. 9.6% of the elderly suffered from hearing loss and varicose veins which were again found to be

more common among the females. Out of the 8.2% of the elderly with genitourinary problems, 4.3% suffered from benign prostrate hypertrophy, 2.2% from uterine prolapse, and 1.7% suffered from urinary incontinence which was found to be evenly

distributed. The rest of the morbidities suffered by the elderly were dermatological problems (4.7%), cardiac illness (3.5%), and cancer (0.4%). The details of the gender-wise distribution of morbidity pattern of the elderly are given in Table 2.

Table 1: Sociodemographic profile of the elderly population

Sociodemographic profile	Total (%)
Age	
60-64	33
65-69	37
70-74	20
75-79	7
80-99	3
Sex	
Male	42
Female	58
Religion	
Hindu	89.6
Muslim	10.4
Education	
Illiterate	57.8
Primary school	35.2
Middle school	5.2
High school	0.9
Preuniversity course	0.9
Marital status	
Married	62.2
Unmarried	0.9
Widow	31.3
Widower	5.6
Type of family	
Nuclear	19.56
Joint	76.08
Living alone	4.36
Socioeconomic status (modified B. G. Prasad)	
Class I	2.6
Class II	12.2
Class III	30.9
Class IV	43.9
Class V	10.4
Occupational status	
Not working	55.6
Agriculture	14.3
Coolie	30.1
Indira Gandhi national old age pension scheme	
Receiving	24
Not receiving	76
Financial dependency	
Dependent	92.2
Independent	7.8
Physical activity	
<30 min	72.6
>30 min	3.9
Sedentary	23.5
Personal habits	
Current smoker	49
Current oral tobacco user	27
Alcoholic	24

When analyzing the sociodemographic factors that are associated with the morbidity pattern of the elderly, it was observed that morbidity increased with age and this was found to be statistically significant ($P < 0.05$). Even though it was observed that the

Table 2: Gender-wise distribution of the morbidity pattern of the elderly

Morbidity pattern	Male (n=96)	Female (n=134)	Total (n=230)
Diabetic	16 (40)	24 (60)	40 (17.4)
Hypertension	24 (50)	24 (50)	48 (20.9)
Cataract	49 (42.2)	67 (57.8)	116 (50.4)
Hearing loss	7 (31.8)	15 (68.2)	22 (9.6)
Dental			
Carries	2 (33.3)	4 (66.7)	6 (2.6)
Ache	9 (36)	16 (64)	25 (10.9)
No teeth	9 (37.5)	15 (62.5)	24 (10.4)
Dermatological			
Vitiligo	1 (25)	3 (75)	4 (1.7)
Pediculosis	0	1 (100)	1 (0.4)
Ichthyosis	1 (16.7)	5 (83.3)	6 (2.6)
Respiratory			
Chronic bronchitis	20 (64.5)	11 (35.5)	31 (13.5)
TB	6 (42.9)	8 (57.1)	14 (6.1)
Asthma	6 (27.3)	16 (72.7)	22 (9.6)
URTI	5 (100)	0	5 (2.2)
Musculoskeletal			
Arthritis	36 (44.4)	45 (55.6)	81 (35.2)
Spondylitis	4 (25)	12 (75)	16 (7.0)
Kyphosis	4 (23.5)	13 (76.5)	17 (7.4)
Fracture	1 (50)	1 (50)	2 (0.9)
Gastrointestinal			
Loss of appetite	6 (37.5)	10 (62.5)	16 (7.0)
Constipation	5 (25)	15 (75)	20 (8.7)
Gastritis	5 (25)	15 (75)	20 (8.7)
Hernia	5 (100)	0	5 (2.2)
Genitourinary			
BPH	10 (100)	0	10 (4.3)
Urinary incontinence	2 (50)	2 (50)	4 (1.7)
Prolapse	0	5 (100)	5 (2.2)
Cardiac			
MI	6 (75)	2 (25)	8 (3.5)
Nervous system			
Neuralgia	1 (25)	3 (75)	4 (1.7)
Tremors	7 (41.2)	10 (58.8)	17 (7.4)
Epilepsy	3 (75)	1 (25)	4 (1.7)
CVA	3 (75)	1 (25)	4 (1.7)
Dementia	0	3 (100)	3 (1.3)
Anxiety	0	1 (100)	1 (0.4)
Sad and depression	11 (28.9)	27 (71.1)	38 (16.5)
Cancer	0	1 (100)	1 (0.4)
Varicose veins	8 (36.4)	14 (63.6)	22 (9.6)
Total morbidities	273 (41.1)	389 (58.9)	662

TB: Tuberculosis; URTI: Upper respiratory tract infection; BPH: Benign prostrate hypertrophy; MI: Myocardial infarction; CVA: Cerebrovascular accident

elderly males had more number of morbidities than females, this was not found to be statistically significant. Similarly, no statistical association was found with occupational status even though it was observed that the morbidities were among the elderly who were not working than with those who were working. The level education also did not have any association with the morbidity pattern of the elderly. However, it was observed that the morbidity was found to be more among the elderly who belonged to the lower socioeconomic group than those who belonged to the higher group and this difference in the prevalence of morbidity was found to be highly significant ($P < 0.01$). The details of which are provided in Table 3.

Discussion

In our study, 70% of our elderly belonged to the “young old;” 27% were “old old” while a very small proportion, i.e., 3% belonged to the category of “very old.” This finding was similar to Kant *et al.*^[10] with 67.8%, 21.9%, and 10.3% falling into each of these categories, respectively. There was a feminization of the elderly population, similar to Munshi *et al.*^[11] with 58% being women and rest being men. This could probably be due to the fact that the life expectancy of average Indian women is 64.2 years which is higher when compared to men which is 62.6 years. Since our study was carried out in the most rural and backward areas of Karnataka, more than half (57.8%) of the elderly were illiterate,

which was very much similar to the finding of the 52nd round of the National Sample Survey Organisation (NSSO) (63%).^[12] Health is intimately linked with the level of literacy since literacy enables greater awareness about their health needs, utilization of health-care services, and appropriate intake of medications. Our study also revealed that 4.3% of the elderly were living alone and 44.4% had to earn a daily living with a huge majority of 92.2% being financially dependent on others. The 52nd round of NSSO also showcased a similar picture of the poor situation of the elderly in India.^[12] Even though social security measures such as the Indira Gandhi national old age pension scheme are made available for the upliftment of these elderly people, it was quite disappointing to note that only mere 24% of them were found to be utilizing these benefits. This could probably be due to the fact that majority of them were illiterate resulting in lack awareness regarding their benefits and rights.

The average number of morbidity per person in our study was calculated to be 3, with only 8.3% of them being free from any form of morbidities. These findings are similar to the study done by Purty *et al.* in the rural areas of Tamil Nadu, where the average number was recorded as 2.77^[13] and Swami *et al.*^[14] reported 3.28 among the elderly in Chandigarh. It was also observed that there were a total of 662 morbidities among the 230 elderly with females contributing to 58.9% of the morbidities. This was found to be similar to the Kashmir study by Parray *et al.* where there were a total of 632 morbidities and the average number of illness per person was calculated to be 3.28.^[15]

The most common morbidities suffered by the elderly in this study were cataract (50.4%) and orthopedic problems (50.4%). This was followed by respiratory illnesses (31.3%), gastrointestinal problems (26.5%), and dental problems (23.9%). Only 21.3% of them were hypertensive and 17.4% were diabetics. A very small proportion of elderly persons were suffering from cardiac illness (3.5%) and cancer (0.4%). Similar findings were seen in a study conducted by Prakash *et al.* in Udaipur, where cataract (44%) was the most common morbidity among the elderly.^[16]

While in Kashmir valley, Munshi *et al.* found out that 56% of the elderly suffered from cataract. It was followed by musculoskeletal disorders amounting to 44.7%; gastrointestinal disorders were 17.1%. Genitourinary ailments were present in 15.2% of the people and respiratory disorders were present in 11.4% of the people.^[11]

In this study, it was observed that as age increased, the morbidity too increased and this difference in the prevalence of morbidity among different age groups was found to be statistically significant ($P < 0.05$). Similar findings were found in a study conducted by Medhi *et al.*^[17] and by Joshi *et al.*^[18] in North India, where it was observed that as age advanced, there was a significant increase in the morbidity among the elderly.

Our study did not find any association between gender, level of education, occupation, and morbidity pattern of the elderly.

Table 3: Association between various sociodemographic variables and morbidity pattern of the elderly

	Morbidity pattern of the elderly		P
	Yes (%)	No (%)	
Association between age and morbidity pattern of the elderly			
Age (years)			
60-65	63 (84)	12 (16)	0.012*
66-70	81 (95.3)	4 (4.7)	
71 and above	67 (95.7)	3 (4.3)	
Association between gender and morbidity pattern of the elderly			
Sex			
Male	90 (93.8)	6 (6.2)	0.348
Female	121 (90.3)	13 (9.7)	
Association between education and morbidity pattern of the elderly			
Education			
Illiterate	122 (91.7)	11 (8.3)	0.995
Literate	89 (91.7)	8 (8.3)	
Association between occupation and morbidity pattern of the elderly			
Occupation			
Not working	120 (93.8)	8 (6.3)	0.215
Working	91 (89.2)	11 (10.8)	
Association between socioeconomic status and morbidity pattern of the elderly			
Socioeconomic status			
Lower socioeconomic class	91 (86.6)	14 (13.4)	0.010
Higher socioeconomic class	120 (96)	5 (4)	

*With Yates correction

This was found to be contrary to the findings of Joshi *et al.*^[18] and Rahaman MM.^[19] However, the prevalence of morbidity was more among the elderly who belonged to the lower socioeconomic class than those who belonged to the higher socioeconomic class and this difference was found to be highly significant ($P < 0.01$) as seen in the WHO health profile of the elderly in South East Asia region.^[20]

Limitation

Since this study was conducted among the elderly population residing in the rural most villages of Raichur district of Karnataka, the findings of the study cannot be generalized to the other elders, especially those living in the urban areas.

Conclusions

We conclude by saying that geriatric care should become an integral part of the primary health-care delivery system by establishing geriatric clinics at all levels of health care including the major referral hospitals. A multidisciplinary approach needs to be adopted with formation of medical teams consisting of doctors specialized in geriatric medicine, social workers, occupational therapists, physiotherapists, and psychiatrists. Regular screening programs, health education, and Information, Education, and Communication activities for the general population also need to be carried out for ensuring healthy aging by promoting healthy behavior early in life for the “elderly of tomorrow” and thereby “adding healthy life to years.”

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Conflicts of interest

There are no conflicts of interest.

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