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Original Research Article

Morbidity Patterns Among the Geriatric Population in Field Practice Area of a Tertiary Care Teaching Hospital in Ahmedabad: A Cross-sectional Study

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ABSTRACT

Objective
India is witnessing a demographic transition with the elderly population (≥ 60 years) projected to rise to 19% by 2050. This shift is associated with increased multimorbidity and a dual burden of communicable and non-communicable diseases, posing significant public health challenges. In this context, the present study aimed to assess the prevalence and pattern of self-reported morbidities among the elderly, identify common health conditions, and examine their association with socio-demographic factors in the field practice area of B.J. Medical College, Ahmedabad.

Materials and Methods
A cross-sectional study was carried out from August 2021 to August 2022 among 700 elderly individuals (≥60 years) attending health camps in five urban field practice areas. Data were collected using a pre-tested structured proforma through personal interviews, including socio-demographic profile, morbidity history, and age-related health conditions. Anthropometric measurements were also taken. Analysis was performed using descriptive statistics, chi-square test, Fisher's exact test, and z-test, with significance set at $p < 0.05$.

Results
Of the 700 participants (mean age 72.1±5.4 years), 70.7% reported at least one morbidity. Hypertension (53.4%) and diabetes (25.1%) were the leading chronic conditions, while visual problems (62.4%), oral issues (45.0%), and joint pain (38.7%) were the most frequent age-related conditions. Females had significantly higher prevalence of hypertension (60.4%) and visual problems, whereas males had higher ischemic heart disease (6.1%) and asthma (10.2%). The 60-79 year age-group had more hypertension (55.5%) and diabetes (42.3%), while those ≥80 years had higher ischemic heart disease (10.7%) and cancer (6.5%). Morbidity was significantly associated with age, sex, type of family, occupation, and BMI.

Conclusions
A substantial burden of chronic and age-related conditions was observed among the elderly, with clear socio-demographic variations. Females and the oldest-old were especially vulnerable. Strengthening community-based screening, promoting lifestyle modification, and providing gender- and age-sensitive interventions are essential for improving geriatric health outcomes.

Keywords
Elderly, Morbidity pattern, Hypertension, Diabetes, Geriatric health

INTRODUCTION

The aging process is an inevitable biological reality with its own dynamics, largely beyond human control. In India, the National Policy on Older Persons, introduced in January 1999, defines individuals aged 60 years and above as elderly or senior citizens.[1]

Seneca once remarked, "Old age is an incurable disease," whereas Sir James Sterling Ross emphasized, "You do not heal old age. You protect it, promote it, and extend it."[2] Globally, the proportion of people over 60 years is projected

to rise from 12% in 2015 to 22% by 2050. Moreover, the number of individuals aged 80 years and above is expected to triple between 2020 and 2050, reaching approximately 426 million.[3]

In India, the elderly population (≥ 60 years) constituted 7.4% of the total population in 2001 and increased to 8.6% (104 million; 53 million females and 51 million males) in 2011. This proportion is projected to rise further to 19% by 2050.[4] Based on age, the elderly can be categorized into three groups: "young-old" (60s–early 70s) who are generally active and healthy, the "old" (70s–80s) who begin to experience chronic illnesses and functional decline, and the "old-old" (advanced age) who often suffer from frequent illnesses, disabilities, and dependency.[5]

The geriatric population in India faces a dual burden of communicable and non-communicable diseases. Many require lifelong treatment for chronic conditions, while age-related decline in immunity and sensory functions such as vision and hearing further aggravates their health problems.[4] Common morbidities in this age group include hearing loss, cataracts, refractive errors, musculoskeletal disorders such as back and neck pain and osteoarthritis, metabolic diseases like diabetes, as well as depression, chronic obstructive pulmonary disease, and dementia. Multiple coexisting conditions are frequent among the elderly.[3]

Given the increasing burden of chronic illnesses and age-related functional decline, geriatric health demands focused attention in public health practice. However, there is a paucity of locally relevant data on morbidity patterns and their association with socio-demographic determinants in the field practice area of B.J. Medical College, Ahmedabad. Therefore, this study was undertaken to determine the prevalence and pattern of self-reported morbidities among the elderly, identify common health conditions affecting them, and examine their association with socio-demographic factors, thereby generating evidence to strengthen geriatric health services.

MATERIALS AND METHODS

This cross-sectional study was conducted in the field practice area of the Community Medicine Department of B.J. Medical College, Ahmedabad, from August 2021 to August 2022, to determine the prevalence of morbidity patterns among the geriatric age group (aged > 60 years). Ethical approval was obtained from the Institutional Ethical Committee prior to the study (Ref. No. 166/2021).

Sampling

The field practice area of B.J. Medical College includes five locations: Bhogilalni Juni Chali, Parmeshwar Park Na Chhapra, Malino Kuvo, Kalapinagar, and Ranchhodpura. Weekly health camps are organized in each of these areas to provide treatment for common health issues and deliver health education to the local population. On average, each camp receives approximately 50 to 70 patients, of whom 12 to 15 belong to the geriatric age group. For this study, all geriatric patients who attended the health camps for any health problem during the study period were included. A convenience sampling method was used, prioritizing participant availability over random selection, which limits the generalizability of findings. As power analysis relies on random sampling assumptions, it was not conducted, and instead, the sample size was determined based on practical considerations and research objectives. All 700 Participants aged over 60 years who provided informed consent were included in the study. Individuals who visited the health camps multiple times during the study period were considered as a single study participant.

Data collection tool

A pre-designed proforma was developed specifically for this study to ensure relevance and comprehensiveness, as it was not based on standardized scales or established guidelines. To validate its appropriateness and reliability, the proforma was pilot-tested on a small, representative sample, and feedback was used to refine the questions for clarity and relevance. All participants were personally interviewed during their health camp visits to collect information on their socio-demographic profile, morbidity patterns (acute and chronic illnesses), and other health conditions, including oral and skin manifestations, self-reported hearing and memory impairments, sleep disturbances, urinary issues, joint problems, and visual impairments. Additionally, anthropometric measurements were recorded for each participant.

Data analysis

Data entry was performed using Microsoft Excel 2019, and analysis was conducted using IBM SPSS software. Descriptive statistics, including frequency, mean, and standard deviation, were calculated. Statistical significance was assessed using the chi-square test, Fisher's exact test, and z-test, with a significance level set at $p < 0.05$.

RESULTS

Among 700 geriatric participants, 70.7% (495 individuals) reported having a history of morbidity, while 29.3% (205 individuals) were free from any morbidity. A significant association was found between the respondents' sex and the presence of morbidity, with females (68.48%) being more likely to experience morbidities than males (31.52%) ($P = 0.015$). 700 geriatric participants had mean age of 72.13± 5.39.

A significant portion of the population (86.71%) belonged to the age group of 60–79 years. There was a statistically significant association between the respondents' age group

and morbidity (P = 0.000). The majority (60.14%) lived in joint families, while 37.14% and 2.71% resided in nuclear and extended families, respectively; this observed difference was statistically significant. More than half (52.9%) of underweight elderly individuals had morbidity, whereas 84.2% of obese elderly individuals reported the presence of morbidity. The association between BMI and chronic illness was also statistically significant (P < 0.0001) (Table-1).

Table-1: Association of socio-demographic characteristics with presence of morbidity (n=700)

Variables	Morbidity			
	Present	Absent	Frequency (%)	P value
Gender*				
Male	156 (31.52%)	90 (43.9%)	246 (35.14%)	0.0023 Fisher test
Female	339 (68.48%)	115 (56.1%)	454 (64.86%)	
Total	495 (100%)	205 (100%)	700 (100%)	
Age* (years)				
60-79	445 (89.9%)	162 (79.02%)	607 (86.71%)	≤ 0.0002 Fisher test
≥ 80	50 (10.1%)	43 (20.98%)	93 (13.29%)	
Total	495 (100%)	205 (100%)	700 (100%)	
Marital status*				
Married	326 (65.86%)	126 (61.46%)	452 (64.57%)	0.0002 $\chi2$ test
Unmarried	(0%)	7 (3.41%)	7 (1%)	
Widow	169 (34.14%)	71 (34.63%)	240 (34.29%)	
Divorced	0 (0%)	1 (0.49%)	1 (0.14%)	
Total	495 (100%)	205 (100%)	700 (100%)	
Education				
Illiterate	188 (37.98%)	70 (34.15%)	258 (36.86%)	0.34 Fisher test
Literate	307 (62.02%)	135 (65.85%)	442 (63.14%)	
Total	495 (100%)	205 (100%)	700 (100%)	
Occupation*				
Working	83 (16.77%)	49 (23.9%)	132 (18.86%)	0.033 Fisher test
Not working	412 (83.23%)	156 (76.1%)	568 (81.14%)	
Total	495 (100%)	205 (100%)	700 (100%)	
Family type*				
Joint	295 (59.6%)	126 (61.46%)	421 (60.14%)	0.0023 $\chi2$ test
Nuclear	193 (38.99%)	67 (32.68%)	260 (37.14%)	
Extended	7 (1.41%)	12 (5.85%)	19 (2.71%)	
Total	495 (100%)	205 (100%)	700 (100%)	
Financial dependency				
Dependent	390 (78.79%)	152 (74.15%)	542 (77.43%)	0.19 Fisher test
Independent	105 (21.21%)	53 (25.85%)	158 (22.57%)	
Total	495 (100%)	205 (100%)	700 (100%)	
BMI*				
Underweight	74 (14.95%)	66 (32.2%)	140 (20%)	≤ 0.0001 $\chi2$ test
Normal	224 (45.25%)	87 (42.44%)	311 (44.43%)	
Overweight	80 (16.16%)	30 (14.63%)	110 (15.71%)	
Obese	117 (23.64%)	22 (10.73%)	139 (19.86%)	
Total	495 (100%)	205 (100%)	700 (100%)	

* p < 0.05 is considered a statistically significant difference.

Figure-1 illustrates that among the 700 geriatric participants, over half (53.4%) had hypertension, followed by diabetes (25.1%), arthritis (6.7%), asthma (6.6%), and ischemic heart disease (IHD) (3.6%). Only a small proportion (1.6%) had a history of thyroid disorders.

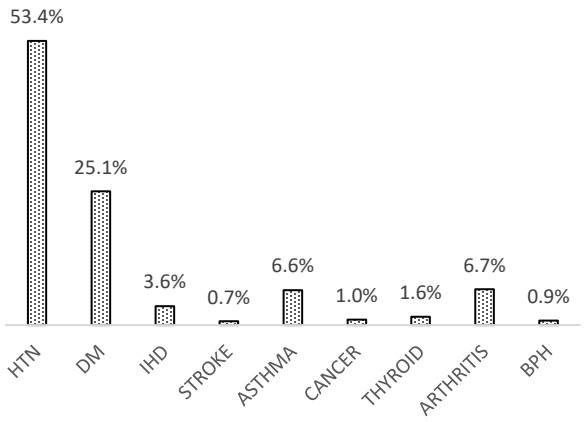

Figure-1: Distribution of morbidity pattern among geriatrics (N=700) #

Multiple responses

The majority of the elderly (62.4%) reported visual problems, followed by oral issues (45.0%) and joint problems (38.7%). Additionally, 28.9% experienced self-reported hearing impairment, 17.6% had sleep disturbances, 16.7% reported skin manifestation, 13.1% had urinary issues, and 8.0% reported memory impairment. Visual problems were more prevalent among female elderly (65%) compared to males (57.7%). Similarly, knee joint issues, dental problems, and self-reported hearing impairments were more common in female elderly than in their male counterparts. (Figure-2).

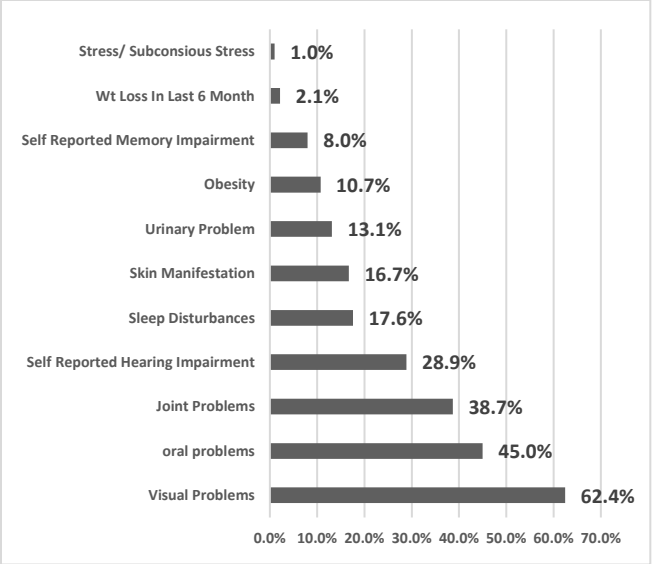

Figure-2: Distribution of other age-related health condition among geriatric population (n=700) #

Multiple responses

In our study, hypertension was significantly more prevalent among elderly females (60.4%) compared to elderly males (40.7%), with a p-value of <0.0001. Similarly, diabetes was slightly more common in elderly females (25.6%) than in males (24.4%), also showing statistical significance ($p < 0.0001$). Conversely, elderly males had significantly higher prevalence rates of ischemic heart disease (IHD) (6.1%) and asthma (10.2%) compared to females (2.2% and 4.6%, respectively), with p-values of 0.008 and 0.004, respectively (Table-2).

Table-2: Association and distribution of morbidity pattern according to gender (n=700)

Type of morbidity	Male (n=246)	Female (n=454)	Total (n=700) #	Z value	P value
HTN*	100 (40.7%)	274 (60.4%)	374 (53.4%)	4.98	< 0.0001
DM*	60 (24.4%)	116 (25.6%)	176 (25.1%)	4.98	< 0.0001
IHD*	15 (6.1%)	10 (2.2%)	25 (3.6%)	2.65	0.008
Stroke	3 (1.2%)	2 (0.4%)	5 (0.7%)	1.22	0.21
Asthma*	25 (10.2%)	21 (4.6%)	46 (6.6%)	2.85	0.004
Cancer*	6 (2.4%)	1 (0.2%)	7 (1%)	2.83	0.004
Thyroid	1 (0.4%)	10 (2.2%)	11 (1.6%)	1.83	0.06
Arthritis	11 (4.5%)	36 (7.9%)	47 (6.7%)	1.71	0.08
BPH	6 (2.4%)	0 (0%)	6 (0.9%)	-	-

Multiple responses
* $p < 0.05$ is considered a statistically significant difference

Hypertension and diabetes were more prevalent among elderly individuals aged 60–79 years compared to those aged ≥ 80 years, with the observed difference being statistically significant. Conversely, ischemic heart disease (IHD) and cancer were more common in the ≥80 years age group compared to those aged 60–79 years, and this difference was also statistically significant (Table-3).

Table-3: Association of morbidity with age group among the geriatric population(n=700) #

Chronic illness	60-79 years (n=607)	≥ 80 years (n=93)	Total (n=700)	Z value	p value
HTN*	337 (55.5%)	37 (39.8%)	374 (53.4%)	2.82	0.004
DM*	157 (42.3%)	19 (20.4%)	176 (25.1%)	4	< 0.000 01
IHD*	15 (2.5%)	10 (10.7%)	25 (3.6%)	3.95	0.000 08
Stroke	3 (0.5%)	2 (2.1%)	5 (0.7%)	1.70	0.08
Asthma*	35 (5.8%)	11 (11.8%)	46 (6.6%)	2.17	0.03
Arthritis	44 (7.2%)	3 (3.2%)	47 (6.7%)	1.4	0.14
Cancer*	1 (0.2%)	6 (6.5%)	7 (1%)	5.58	< 0.000 01
Thyroid	11 (1.8%)	0 (0%)	11 (1.6%)	1.30	0.19
BPH	5 (0.8%)	1 (1%)	6 (0.8%)	0.75	0.45

Multiple response
* $p < 0.05$ is considered a statistically significant difference

Table-4 indicates that knee joint problems and sleep disturbances were more prevalent among elderly individuals aged 60-79 years, whereas cataracts were more common in those aged ≥ 80 years. These observed differences were statistically significant.

Table-4: Association of specific health-related conditions with age group (n=700)

Specific health related condition	Age group (years)		Total (n=700)	Fisher test p value
	60-79 (n=607)	> 80 (n=93)		
Knee joint problem*	259 (42.7%)	27 (29%)	286 (40.9%)	0.01
Sleep disturbance*	117 (19.3%)	6 (6.5%)	123 (17.6%)	0.001
Cataract*	287 (47.3%)	56 (60.21%)	343 (49%)	0.02

* $p < 0.05$ is considered a statistically significant difference

Table-5 indicates that knee joint problems and sleep disturbances were significantly more frequent among female elderly individuals compared to males, observed differences were statistically significant. At the same time, cataracts were more prevalent among male elderly individuals than females.

Table-5: Association of specific health-related conditions with gender (n=700)

Specific health related condition	Gender		Total (n=700)	Fisher test p value
	Male (n=246)	Female (n=454)		
Knee joint problem*	43 (17.5%)	243 (53.5%)	286 (40.9%)	≤ 0.0001
Sleep disturbance*	16 (6.5%)	107 (23.6%)	123 (17.6%)	≤ 0.0001
Cataract	223 (90.65%)	120 (26.43%)	343 (49%)	0.87

* $p < 0.05$ is considered a statistically significant difference

DISCUSSION

This study found more female elderly participants than males, likely due to higher female life expectancy. Key demographics included 18.9% working, 36.9% illiterate, and 64.6% married, similar to findings from a study done by Kulothungan K. et al. in Tamil Nadu,[6] which reported that 22.5% of the elderly were working, 37.2% were illiterate, and 49.2% were married. In the present study, 60.1% of the elderly participants belonged to joint families, 37.1% to nuclear families, and 2.7% to extended families. In contrast, a study by Sharma D. et al.[7] reported that 89.5% of the elderly were from joint families and 10.5% from nuclear families. Additionally, 20% of the elderly in this study had an abnormally low BMI, while 19.9% were classified as obese, findings comparable to those reported by Thakur R. et al.[8] A sedentary lifestyle combined with obesity increases the risk of various non-communicable diseases among the elderly, including coronary heart disease, diabetes, and osteoarthritis.

Present study found that females (68.48%) had higher morbidities as compared to males (31.52%) which was comparable with the study done by Sharma D et al.[7] In our study prevalence of hypertension and diabetes were 53.4% and 25.1% while 47.09% and 22.09% in study done by Prajapati K. et al.[9] and 40.5% and 5.8% in study done by Sharma D et al.[7] In present study, morbidities like asthma and stroke were 6.6% and 0.7% which was comparable with 4% and 1.5% study done Sharma D et al.[7] In our study prevalence of cataract was 78.5% while study done by Prajapati K. et al[9] and Sharma K[10] shows 62.79% and 30% respectively.

The prevalence of hypertension in the present study was 53.4% (40.7% in males and 60.4% in females), while a study done in Ahmedabad and Gandhinagar by Brahmbhatt N. et al[12] found prevalence of 59% (53.55% in male and 63% in female) and also 59.1%. found in study done by Lena A et al.[11] In present study 25.1% of participants had diabetes. The findings of the present study were comparable to the findings of previous studies which showed that the prevalence of diabetes was 13.8% by Brahmbhatt N. et al[12] and 10.3% by Lena A et al.[11] The significant difference was found in the occurrence of diabetes between males and females in the present study. Hypertension and Diabetes are known as one of the diseases related to lifestyle. Hence, lifestyle is one of the major determinants of the occurrence of this. The occurrence of cancer in elderly in present study was 1%, which is quite comparable with the previous studies done by Brahmbhatt N. et al.[12] found that the prevalence of cancer was 1.20%.

Comparison with other studies

	Prajapati K[10]	Sharma D[9]	Lena A[12]	Our study
Hypertension	47.09%	40.5%	59.1%	53.4%
DM	22.09%	5.8%	10.3%	25.1%
Cataract	62.79%	30%	-	78.5%
Dental problem	-	30%	-	29.7%
Asthma	-	4%	10.7%	6.6%
Stroke	-	1.5%	-	0.7%

Cataract is the leading cause of diminished vision in India. The study found a high prevalence of visual impairment (62.4%) and cataracts (78.5%) among the elderly, with 90% having undergone surgery. Despite successful eye camps, the study suggests these services haven't had a significant impact in the surveyed areas.[8]

Hearing problems were present in 28.9% of the elderly, while study done by Thakur R. et al.[8] showed that 63.1% had hearing problems. There is a need for further evaluation and management of hearing problems among the elderly. The study found significant health issues among the elderly, including urinary problems (13.1%), more prevalent in females which was consistent with study done by Thakur R. et al.[8] The Oral problems were common (45%), and knee joint pain affected 40.9%, with females being more affected than males. These findings are consistent with study done by Nikumb Vandana et al.[13]

CONCLUSION

This study among 700 elderly individuals in the field practice area of B.J. Medical College, Ahmedabad, found that over two-thirds (70.7%) reported at least one morbidity. Hypertension (53.4%) and diabetes (25.1%) were the leading chronic diseases, while visual problems (62.4%), oral issues (45%), and joint pain (38.7%) were the most common age-related conditions. Morbidity was significantly associated with age, sex, occupation, family type, and BMI. Females had more hypertension and visual problems, while males were more affected by ischemic heart disease and asthma. The oldest-old (≥ 80 years) were

more prone to cancer and heart disease, whereas the younger elderly (60-79 years) had higher rates of hypertension, diabetes, and sleep disturbances.

Recommendations

Community-based screening for hypertension, diabetes, cataract, and joint disorders should be strengthened. Lifestyle modification programs addressing diet, exercise, and obesity are needed, with special focus on elderly women who show higher morbidity. Targeted care for the oldest-old should prioritize cardiovascular disease, cancer, and vision problems. Family-centered counselling and caregiver support can enhance chronic disease management in joint families. Further longitudinal research is recommended to track morbidity progression and support long-term geriatric health planning.

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