ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 15, Issue 1, 2022

Online - 2455-3891
Print - 0974-2441

Research Article

# A COMMUNITY BASED CROSS-SECTIONAL STUDY ON MORBIDITY PATTERN OF ELDERLY IN RURAL AREA OF JHALAWAR, RAJASTHAN

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***Received: 08 November 2021, Revised and Accepted: 15 December 2021***

**ABSTRACT**

**Objectives**: The aim of the study was to study the morbidity pattern and burden among the elderly residing in the field practice area of Rural Health Training Centre Mandawar. The aim of the study was to identify the various factors associated with morbidity among the study population. Assessment of the morbidity profile will help in the application of interventions, to improve the health status and the quality of life of the elderly.

**Methods:** Therefore, a total of 880 elderly were selected. Multiple house visits were done and data were collected by interviewer method, observation, and clinical examination of the study population. Diagnosis of the disease was made on the basis of history, investigations, clinical examination, and treatment report. Statistical analysis was done using Statistical Package for the Social Sciences 25 trial version.

**Results:** Out of 880 elderly, 83.9% belonged to the age group of 60–74 years, the majority (87.4%) were found to be Hindus, 44% lived in three generation families. The most of the elderly were illiterate (46.7%) and the majority (44.2%) belonged to class IV socio-economic status. The morbidity load was 2370. The average morbidity per person was 1.56. The majority of the elderly (32%) had two morbidities. Visual impairment was the most common morbidity and it was more common in males. The association of morbidity was found to be statistically significant with gender, age category, and financial status.

**Conclusion:** The present study revealed that the prevalence of morbidity among the elderly is very high.

**Keywords:** Elderly, Morbidity, Prevalence, Rural area.

 DOI: http://dx.doi.org/10.22159/ajpcr.2022v15i1.43548. Journal homepage: https://innovareacademics.in/journals/index.php/ajpcr

## INTRODUCTION

Ageing is a universal process. In the words of Seneca, "Old age is an incurable disease" but more recently Sir James Sterling Ross commented, "You do not heal old age, you protect it, you promote it, and you extend it" [1]. These are the principles of preventive medicine [2]. Old age is associated with deterioration of health and an increase in morbidity [3]. Our country is experiencing a rapid demographic transition. The country will face the challenge of dealing with the various problems of population ageing in the coming years. Increasing life expectancy raises the question of whether longer life spans result in more years of life in good health, or whether it is associated with increased morbidity and more years spent in prolonged disability and dependency [4]. Amidst socio-economic consequences, health risks among the geriatric population are rising rapidly especially on account of non-communicable diseases. Health care of the elderly has not received adequate attention from policymakers in developing countries like India, as they were preoccupied with maternal and child health, communicable diseases, malnutrition, and increasing population [5]. Due to recent sociological trends toward the nuclearization of family structure and the resultant decline of extended families, falling fertility rates, increasing life expectancy, widowhood, singlehood, or strained inter-generational relationships, an increasing number of elderly is living alone in India [6]. Assessment of the morbidity profile will help in the application of interventions, to improve the health status and the quality of life of the elderly.

### Objectives

The objectives of the study are as follows:

1. To study the morbidity pattern among the elderly residing in the rural field practice areas of Jhalawar
2. To study the morbidity load among the elderly population
3. To identify the various factors associated with morbidity among study participants.

## METHODS

### Study design

This was a community-based cross-sectional study.

### Study area

The study area was rural health training centre (RHTC) Mandawar, Jhalawar, Rajasthan.

### Study period

The study period was 2 years; September 2019–September 2021.

### Sample size

The sample size was calculated to be around 880 using the formula, n=4pq/l2 on the basis of assuming 50% prevalence rate of general morbidity in rural areas with 95% confidence interval and a relative error of 10% of p.

### Sampling design

In the present study, simple random sampling without replacement technique is used at two stages. In the first stage, we selected 32 villages under RHTC Mandawar, Jhalawar. Then, in the second stage, we have randomly selected one village and doing complete enumeration or representing all villages in proportion to the elderly population residing in the selected village was obtained. If our desired sample size is not obtained then we again do the random sampling (SRS without replacement) of the village till fulfillment of the required sample size. Therefore, a total of 880 elderly will be taken for study. House to house visit was done of elderly persons. In each selected household, all the elderly meeting the inclusion criteria were included in the study.

If there were more than one elderly in the household, then both are included in the study. Information was verified with the caregivers wherever necessary.

**Inclusion criteria**

The following criteria were included in the study:

a. Elderly persons aged 60 years and above, who are permanent residents (living for more than 6 months) in the rural areas of Jhalawar
b. Elderly persons who are willing to participate in the study.

**Exclusion criteria**

The following criteria were excluded from the study:
Seriously ill elderly who are not able to respond.

**Data collection tool**

Pre-designed and pre-tested schedule was used. Anthropometric measurements (weight, height, blood sugar, hemoglobin, and blood pressure) were recorded. For this, standard and calibrated digital sphygmomanometer, glucometer, hemoglobin estimation, standard measuring tape, and weighing machine were carried during visits. Modified B.G Prasad scale was used for socio-economic status classification.

**Data collection technique**

House to house visit was done and interviewer method was used. Along with that clinical examination was conducted of the study participants. Ethical clearance was obtained before conducting the study from the Ethical Committee of Jhalawar Medical College, Jhalawar. During the survey, informed written consent was taken from the study subjects. Various tests such as the hemoglobin test and visual acuity test were conducted.

Assurance was given that the confidentiality concerning their information will be maintained strictly. In statistical analysis, data collected were entered and analyzed using Statistical Package for the Social Sciences trial version 25.0. Proportions were calculated for different study variables such as hyperglycemia/diabetes (known or newly diagnosed). Blood pressure according to the Joint National Committee -4 classification and anemia based on the WHO criteria were taken into consideration. The Chi-square test was used for the analysis of categorical variables.

## RESULTS

The demographic characteristics of the elderly are summarized in Table 1. Out of 880 elderly, 83.9% belonged to the age group of young-old, 14.1% belonged to the middle old age group, and 2% belonged to the oldest-old age group. About 573 (65.1%) of the respondents were females and 307 (34.9%) of the elderly were males. The majority (87.4%) were found to be Hindus, 11.8% were Muslims, 0.7% were Jains, and the remaining 0.1% were Sikh. A majority (44%) lived in three generation families, 34% were joint family and only 22% lived in nuclear families. Maximum elderly 411 (46.7%) were illiterate, 175 (19.9%) studied up to primary level, 145 (16.5%) studied till middle school, 100 (11.4%) studied till secondary school, while 34 (3.9%) were senior secondary passed, and only 15 (1.7%) were graduate or above. The majority of the elderly 389 (44.2%) belonged to the class IV category, 254 (28.9%) were from the class III category, 195 (22.2%) belonged to class V, while only 42 (4.8%) belonged to the class II category.

Table 2 shows the common morbidity pattern of the elderly. The most common morbidity was visual impairment 53.6%, followed by osteo-arthritis 48.4%, hypertension 44.8%, hearing impairment 29.1%, genito-urinary diseases 23.1%, diabetes 13.8%, and history of fall within 1 year having 8.5% cases.

Table 3 shows that the morbidity count was 1379. The average morbidity per person was 1.56. The majority of the elderly (32%) had two morbidities, 30.6% had single morbidity, 14.3% had three morbidities, and only 4.7% had more than three morbidities also whereas 162 (18.4%) are individuals who do not have any morbidities.

Table 4 shows the relationship of morbidity with sociodemographic variables. The association of morbidity was found to be statistically significant with gender, age category, literacy status, and financial dependence and it was found to be statistically insignificant with socio-economic class and marital status.

**Table 1: Socio-demographic characteristics**

| Demographic characteristics | N | % |
|---|---|---|
| Age category | | |
| Young old | 738 | 83.9 |
| Middle old | 124 | 14.1 |
| Oldest old | 18 | 2.0 |
| Gender | | |
| Male | 307 | 34.9 |
| Female | 573 | 65.1 |
| Religion | | |
| Hindu | 769 | 87.4 |
| Muslim | 104 | 11.8 |
| Sikh | 1 | 0.1 |
| Jain | 6 | 0.7 |
| Type of family | | |
| Nuclear | 194 | 22.0 |
| Joint | 299 | 34.0 |
| Three Generation | 387 | 44.0 |
| Literacy status | | |
| Illiterate | 411 | 46.7 |
| Primary | 175 | 19.9 |
| Middle | 145 | 16.5 |
| Secondary | 100 | 11.4 |
| Senior Secondary | 34 | 3.9 |
| Graduate or Post Graduate | 15 | 1.7 |
| Occupation status (currently) | | |
| Unemployed | 484 | 55.0 |
| Unskilled worker | 41 | 4.7 |
| Semi-skilled worker | 24 | 2.7 |
| Skilled worker | 8 | 0.9 |
| Farmer | 233 | 26.5 |
| Shop-owner | 90 | 10.2 |
| Socio-economic class | | |
| Class II | 42 | 4.8 |
| Class III | 254 | 28.9 |
| Class IV | 389 | 44.2 |
| Class V | 195 | 22.2 |

**Table 2: Morbidities profile**

| Morbidity | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Vision Impairment | 183 | 59.6 | 289 | 50.4 | 472 | 53.6 |
| Hearing Impairment | 100 | 32.6 | 156 | 27.2 | 256 | 29.1 |
| Hypertension | 164 | 53.4 | 230 | 40.1 | 394 | 44.8 |
| Osteo-arthritis | 126 | 41.0 | 300 | 52.4 | 426 | 48.4 |
| Diabetes | 29 | 9.4 | 92 | 16.1 | 121 | 13.8 |
| Genito-urinary diseases | 69 | 22.5 | 134 | 23.4 | 203 | 23.1 |
| Dental problems | 90 | 29.3 | 156 | 27.2 | 246 | 28.0 |
| History of fall (within a year) | 22 | 7.2 | 53 | 9.2 | 75 | 8.5 |
| CAD | 8 | 2.6 | 31 | 5.4 | 39 | 4.4 |
| COPD | 33 | 10.7 | 38 | 6.6 | 71 | 8.1 |
| Psychiatric Illness | 6 | 2.0 | 15 | 2.6 | 21 | 2.4 |
| Corns | 3 | 1.0 | 22 | 3.8 | 25 | 2.8 |
| Peptic Ulcer Disease | 8 | 2.6 | 59 | 10.3 | 67 | 7.6 |
| Pterygium | 1 | 0.3 | 10 | 1.7 | 11 | 1.3 |
| Others | 4 | 1.3 | 69 | 12.0 | 73 | 8.3 |

CAD: Coronary artery disease, COPD: Chronic obstructive pulmonary disease

**Table 3: Morbidities count**

| Total Morbidity load | Count | % |
|---|---|---|
| Morbidities load | | |
| 0 | 162 | 18.4 |
| 1 | 269 | 30.6 |
| 2 | 282 | 32.0 |
| 3 | 126 | 14.3 |
| More than 3 | 41 | 4.7 |

**Table 4: Association of morbidities with socio-demographic variables**

| Variables | Morbidities present | | Morbidities absent | | Total | p-value |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | |
| Gender | | | | | | |
| Male | 233 | 75.9 | 74 | 24.1 | 307 | 0.001 |
| Female | 485 | 84.6 | 88 | 15.4 | 573 | |
| Age category | | | | | | |
| Young old | 587 | 79.5 | 151 | 20.5 | 738 | 0.001 |
| Middle old | 113 | 91.1 | 11 | 8.9 | 124 | |
| Oldest old | 13 | 97.3.0 | 5 | 2.7.0 | 18 | |
| Literacy status | | | | | | |
| Illiterate | 344 | 83.7 | 67 | 16.3 | 411 | 0.000* |
| Primary | 153 | 87.4 | 22 | 12.6 | 175 | |
| Middle | 112 | 77.2 | 33 | 22.8 | 145 | |
| Secondary | 74 | 74.0 | 26 | 26.0 | 100 | |
| Senior secondary | 24 | 70.6 | 10 | 29.4 | 34 | |
| Graduate or post graduate | 11 | 73.3 | 4 | 26.7 | 15 | |
| Socio-economic class | | | | | | |
| Class II | 36 | 85.7 | 6 | 14.3 | 42 | 0.14 |
| Class III | 197 | 77.6 | 57 | 22.4 | 254 | |
| Class IV | 323 | 83.0 | 66 | 17.0 | 389 | |
| Class V | 162 | 83.1 | 33 | 16.9 | 195 | |
| Marital status | | | | | | |
| Married | 435 | 78.9 | 116 | 21.1 | 551 | 0.25 |
| Widower | 60 | 89.6 | 7 | 10.4 | 67 | |
| Widow | 190 | 86.0 | 31 | 14.0 | 221 | |
| Divorced | 9 | 100.0 | 0 | 0.0 | 9 | |
| Separated | 24 | 75.0 | 8 | 25.0 | 32 | |
| Financial status | | | | | | |
| Dependent | 587 | 83.3 | 118 | 16.7 | 705 | 0.010 |
| Independent | 131 | 74.9 | 44 | 25.1 | 175 | |

## DISCUSSION

The present study showed that the most of the elderly 83.9% belonged to the age group of young old, 14.4% belonged to the middle old age group, and only 2% belonged to the oldest old age group. Hakmaosa *et al*. [6] in their study conducted in Kamrup (rural) district, Assam found that the most of the elderly 68.5% belonged to the age group of 60–69 years, 24.4% belonged to 70–79 years age group, and only 7.2% belonged to ≥80 years age group. Madhukumar and Naik [7] in their study conducted in Miraj, Maharashtra where 64.5% belonged to the age group of 60–69 years, 28.2% belonged to the 70–79 years age group, and 7.2% belonged to > 80 years age group. Sharma *et al*. [8] in their study conducted in Shimla found that in a rural area 58.5% belonged to the age group of 60–69 years, 30% belonged to the 70–79 years age group, and 11% belonged to >80 years age group. In the present study, majority 65.1% of the elderly were females and 34.9% of the elderly were males. Hakmaosa *et al*. [6] majority 59.7% of the elderly were females and 40.3% of elderly were males. Shraddha *et al*. [9] in their study conducted in Mysore, Karnataka found that 39.4% were males and 60.6% were females. Chauhan and Chandrashekar [10] in a study conducted in Venkatachalem village in Nellore district, AP found that 33.4% were males and 66.2% were females. The present study revealed that 46.7% were illiterate, 19.9% studied up to primary level, 16.5% studied till middle school, 11.4% studied till secondary, 3.9% were senior secondary, and 1.7% were graduate or above. Hakmaosa *et al*. [6] revealed that 69.5% were illiterate. Purty and Bazroy [11] in their study in a rural area of Tamil Nadu found that 78.7% of the elderly were illiterate. Narapureddy *et al*. [12] in a study conducted in a rural area of Allahabad District, UP found that 70.1% of the elderly were illiterate. Parray *et al*. [13] in their study conducted in Kashmir found that 67.8% of the elderly in rural areas were illiterate. The present study revealed that the most common chronic morbidity was visual impairment (53.6%), followed by 39.5%. Hakmaosa *et al*. [6] revealed that the most common chronic morbidity was arthritis 43%, followed by anemia 39.5%. Shankar *et al*. [14] in a study conducted in a rural area of Varanasi district also reported that the most common morbidity was arthritis (57.08%). Padda and Mohan [15] in their study conducted in Amritsar reported that arthritis (60.60%) was the commonest cause of illness. Purty and Bazroy [11] in a study conducted at Tamil Nadu reported that osteoarthritis (40%) was the most common morbidity followed by anemia (30%). The present study revealed that the majority of the elderly (32%) had two morbidities, 30.6% had single morbidity, 14.3% had three morbidities, 4.7% had more than three morbidities, and 18.4% had no morbidity, whereas morbidity load was 1379 with the average morbidity per person being 1.56. Hakmaosa *et al*. [6] revealed that the majority of the elderly (33.1%) had two morbidities, 30.8% had more than three morbidities, 23.1% had one morbidity, and only 3.1% had no morbidity. Padda and Mohan [15] in a study conducted in a rural area of Amritsar found that 12.8% had no morbidity, 25.9% had one morbidity, 22.6% had two morbidities, 24.6% had three morbidities, and 13.3% had more than three morbidities. Average morbidity per morbid person was found to be 2.3 and average morbidity per person was 2.01. Padda and Mohan [15] in their study conducted at an urban slum in Amritsar found that 400 morbid individuals suffered from 1268 illnesses and the average morbidity per morbid person was 3.17. A majority (74%) suffered from more than three morbidities, 32.5% had three morbidities, 23.5% had two morbidities, and 1.25% had single morbidity. Hakmaosa *et al*. [6] shows a statistically significant association of morbidity with sex, socio-economic status, and financial dependence but it was found to be statistically insignificant with age, education, and marital status. Madhukumar and Naik [7] also found a statistically significant association of morbidity with sex, age group, education, marital status, and socio-economic status.

## CONCLUSION

The present study revealed that the prevalence of morbidity is very high (81.6%). Visual impairment was the most common morbidity followed by osteo-arthritis and hypertension. Multiple morbidities are common among the elderly. The prevalence of morbidity is higher among females, those belonging to the lower socio-economic status and among those who are financially dependent on others. This calls for the development of community-based geriatric care in our country in line with maternal and child care.

## ACKNOWLEDGMENT

We are grateful to the elderly and their family members who participated in the study and extended their full cooperation.

## AUTHOR'S CONTRIBUTIONS

All the authors have made vast contributions from conception, designing, data collection, and smooth completion of the study by providing valuable intellectual content and formulation of manuscript.

## CONFLICTS OF INTEREST

There are no conflicts of interest.

## AUTHOR'S FINANCIAL SUPPORT AND SPONSORSHIP

No funding or sponsorship was received for the research work.

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