



MORBIDITY PROFILE OF THE GERIATRIC POPULATION IN RURAL AREAS OF BARABANKI, UTTAR PRADESH: A COMMUNITY-BASED CROSS-SECTIONAL STUDY

Community Medicine

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ABSTRACT

Background: Population ageing is increasing the burden of chronic disease and functional decline among older adults, and rural elderly populations remain particularly disadvantaged because of limited healthcare access and infrastructure. Comprehensive local evidence on geriatric morbidity is needed to guide community-level health planning. **Objectives:** To estimate the prevalence of morbidity and its socio-demographic, behavioural, and psychological correlates, and to describe the health-seeking behaviour of the geriatric population in rural Barabanki. **Methods:** A community-based cross-sectional study was conducted over 18 months among 280 individuals aged ≥ 60 years selected from 30 villages of rural Barabanki using multistage random sampling. Data on socio-demographic characteristics, morbidity status, lifestyle factors, and health-seeking behaviour were collected through house-to-house interviews using a pre-designed semi-structured questionnaire, supplemented by clinical examination. Depression was assessed using the Geriatric Depression Scale (GDS). Data were analysed in SPSS version 23 using the chi-square test, independent t-test, and Pearson correlation. **Results:** Participants were predominantly aged 60–64 years (30.0%) and female (70.0%). At least one morbidity was present in 216 participants (77.1%); musculoskeletal (56.4%) and cardiovascular disorders (40.0%) were the leading categories. Morbidity did not vary significantly by socioeconomic class ($\chi^2 = 3.925$, $p = 0.416$), education ($\chi^2 = 1.163$, $p = 0.762$), smoking, alcohol use, or physical activity. Smoking was significantly associated with cardiovascular disorder ($\chi^2 = 5.055$, $p = 0.025$). Treatment-seeking behaviour was strongly associated with morbidity ($\chi^2 = 130.153$, $p < 0.001$), and government facilities were the most utilised source of care (38.9%). Neither age nor depression category correlated significantly with the number of morbidities. **Conclusion:** More than three-quarters of the rural geriatric population of Barabanki carried at least one morbidity, distributed broadly across social strata rather than concentrated in any single group. These findings support strengthening community-based geriatric screening, chronic disease management, and mental health services within primary healthcare in rural India.

KEYWORDS

Geriatric Morbidity; Rural Health; Elderly; Cross-Sectional Study; Health-Seeking Behaviour; Barabanki

INTRODUCTION

Population ageing is one of the defining public health challenges of the twenty-first century. Improvements in healthcare, control of infectious disease, and better nutrition have steadily raised life expectancy, so that the proportion of older persons is growing rapidly, especially in developing countries such as India.[1] The elderly, conventionally defined as individuals aged 60 years and above, form an expanding segment of the Indian population, with important implications for the healthcare system, social support structures, and economic resources.[2]

Ageing is accompanied by degenerative change across multiple organ systems, declining immunity, and altered metabolism, which together increase susceptibility to both communicable and non-communicable disease. Cardiovascular disorders, diabetes, respiratory illness, musculoskeletal disease, sensory impairment, and mental health conditions commonly coexist in older adults, a pattern often described as multimorbidity.[3] This burden is compounded by lifestyle exposures accumulated over the life course — tobacco use, alcohol consumption, physical inactivity — and by psychosocial stressors such as bereavement, social isolation, and loss of economic independence.[4]

Socio-demographic characteristics further shape the morbidity experience of older adults. Elderly women often carry a disproportionate burden of chronic disease owing to longer survival and cumulative disadvantage in healthcare access, while low education and poor socioeconomic status are linked to delayed care-seeking and reduced health awareness.[5] Rural elderly populations face additional, distinct barriers: limited healthcare infrastructure, shortage of trained personnel, poor transport, and reliance on traditional remedies, all of which can delay diagnosis and worsen outcomes.[6]

Mental health problems, particularly depression, are increasingly recognised as an integral component of geriatric morbidity but frequently remain underdiagnosed, especially in rural settings where

stigma and limited specialised services persist.[7] Health-seeking behaviour — shaped by perceived illness severity, cultural beliefs, financial capacity, and prior experience with the health system — is a critical determinant of whether morbidity translates into timely care.[8]

Assessment of the morbidity profile of the geriatric population provides valuable insight into prevailing health problems and unmet healthcare needs, informing the planning of targeted preventive, promotive, curative, and rehabilitative services at the community level. Strengthening primary healthcare with a specific focus on geriatric care, promoting healthy lifestyles, and improving awareness of age-related health issues are recognised strategies for addressing the growing burden of geriatric morbidity in resource-limited rural settings.

Barabanki, a predominantly rural district of Uttar Pradesh, has a substantial and growing elderly population, yet comprehensive local data on its morbidity profile and health-seeking patterns remain limited.[3] Generating such context-specific evidence is essential for informed geriatric health planning. The present study was therefore undertaken to estimate the prevalence of morbidity and its socio-demographic and behavioural correlates, and to describe the health-seeking behaviour of the geriatric population residing in the rural areas of Barabanki district.

MATERIALS AND METHODS

Study Design, Setting, and Duration

This was an observational, community-based cross-sectional study conducted in the rural areas of Barabanki district, Uttar Pradesh (population approximately 32,66,671, distributed across 1,845 villages), over a period of 18 months. The cross-sectional design was chosen to capture morbidity status, its correlates, and health-seeking behaviour among elderly residents at a single point in time.

Study Participants

Individuals aged 60 years and above, permanently residing in the

selected rural areas and providing written informed consent, were included. Elderly individuals who were critically ill at the time of the survey or who were non-responsive or non-cooperative were excluded.

Sampling and Sample Size

A multistage random sampling technique was used. In the first stage, 30 villages were randomly selected from the 1,845 villages of the district; in the second stage, eligible elderly participants were recruited from each selected village by simple random sampling until the required sample size was achieved. The minimum sample size, calculated using a previously reported morbidity prevalence of 76.9%, a 95% confidence level ($Z = 1.96$), and a 5% margin of error, was 280, which constituted the final study sample.

Data Collection

Data were collected through house-to-house visits using a pre-designed, semi-structured interview schedule administered face-to-face in Hindi or the local language. Information was recorded on socio-demographic characteristics (age, sex, religion, education, marital status, occupation, socioeconomic class, and family size), morbidity status across major systems (cardiovascular, musculoskeletal, neurological, endocrine, respiratory, genitourinary, and mental health), lifestyle factors (smoking, alcohol use, regular physical activity), and health-seeking behaviour (type of treatment and facility used, health insurance coverage). Self-reported morbidity was corroborated with basic clinical examination wherever feasible. Depressive symptoms were assessed using the Geriatric Depression Scale (GDS). Completed schedules were checked for consistency and completeness at the point of collection.

Statistical Analysis

Data were entered in Microsoft Excel and analysed using SPSS version 23.0. Descriptive statistics (frequencies, percentages, means, and standard deviations) summarised socio-demographic and morbidity characteristics. The chi-square test, independent samples t-test, and Pearson correlation coefficient were used to examine associations between morbidity and socio-demographic, behavioural, and psychological variables. A p-value <0.05 was considered statistically significant.

Ethical Considerations

The study protocol was approved by the Institutional Ethics Committee of Dr. K.N. Singh Memorial Institute of Medical Sciences, Barabanki. Written informed consent was obtained from all participants after explaining the study objectives and procedures. Participation was voluntary, confidentiality was maintained throughout, and the study involved no intervention, medication, or invasive procedure.

RESULTS

A total of 280 elderly participants were enrolled. The largest age group was 60–64 years (84; 30.0%), followed by 65–69 years (78; 27.9%), 70–74 years (56; 20.0%), 75–79 years (38; 13.6%), and ≥80 years (24; 8.6%). Females predominated, comprising 196 participants (70.0%) compared with 84 males (30.0%). Marital status was fairly evenly distributed — widowed 74 (26.4%), never married 73 (26.1%), divorced/separated 67 (23.9%), and married 66 (23.6%). Regarding education, 80 (28.6%) had secondary schooling, 72 (25.7%) primary education, 71 (25.4%) higher secondary education or above, and 57 (20.4%) were illiterate. Farming was the commonest occupation (80; 28.6%), followed by self-employment (74; 26.4%), with labourers and pensioners each constituting 63 participants (22.5%) (Table 1).

Table 1. Socio-demographic Characteristics of Study Participants (n = 280)

Characteristic	Category	Frequency	Percentage
Age group (years)	60–64	84	30.0
	65–69	78	27.9
	70–74	56	20.0
	75–79	38	13.6
	≥80	24	8.6
Gender	Female	196	70.0
	Male	84	30.0
Marital status	Widowed	74	26.4
	Never married	73	26.1
	Divorced/Separated	67	23.9

Education	Married	66	23.6
	Secondary	80	28.6
	Primary	72	25.7
	Higher secondary & above	71	25.4
	Illiterate	57	20.4
Occupation	Farmer	80	28.6
	Self-employed	74	26.4
	Labourer	63	22.5
	Pensioner	63	22.5

Overall, 216 participants (77.1%) had at least one morbidity, while 64 (22.9%) had none. Musculoskeletal disorders were the commonest morbidity, present in 158 participants (56.4%), followed by cardiovascular disorders in 112 (40.0%). Lifestyle factors were common: 148 participants (52.9%) reported smoking, 143 (51.1%) reported alcohol consumption, and 138 (49.3%) engaged in regular physical activity (Table 2).

Table 2. Overall Morbidity Burden and Distribution of Lifestyle Factors (n = 280)

Variable	Category	Frequency	Percentage
Overall morbidity	Present	216	77.1
	Absent	64	22.9
Musculoskeletal disorder	Present	158	56.4
Cardiovascular disorder	Present	112	40.0
Smoking	Yes	148	52.9
Alcohol consumption	Yes	143	51.1
Regular physical activity	Yes	138	49.3

Morbidity was present across all socioeconomic classes — 68.4% in Class I, 90.5% in Class II, 75.0% in Class III, 80.5% in Class IV, and 74.7% in Class V — without a statistically significant association ($\chi^2 = 3.925$, $df = 4$, $p = 0.416$). Similarly, morbidity did not differ significantly by educational status (73.2%–80.7% across categories; $\chi^2 = 1.163$, $p = 0.762$), regular physical activity (75.4% vs 79.0%; $\chi^2 = 0.524$, $p = 0.469$), smoking (72.7% vs 81.1%; $\chi^2 = 2.761$, $p = 0.097$), or alcohol use (79.6% vs 74.8%; $\chi^2 = 0.890$, $p = 0.345$).

Cardiovascular disorder did not differ significantly by gender (38.8% females vs 42.9% males; $\chi^2 = 0.408$, $p = 0.523$), but showed a statistically significant association with smoking status, being present in 47.0% of non-smokers compared with 33.8% of smokers ($\chi^2 = 5.055$, $df = 1$, $p = 0.025$). Musculoskeletal disorder was numerically, though not significantly, more common among physically inactive participants (59.9% vs 52.9%; $\chi^2 = 1.379$, $p = 0.240$).

The mean GDS score was comparable between females (5.31 ± 4.527) and males (5.76 ± 4.559 ; $t = -0.770$, $df = 278$, $p = 0.442$). Depression category was not significantly associated with morbidity ($\chi^2 = 0.546$, $df = 2$, $p = 0.761$), nor was bathing difficulty ($\chi^2 = 2.783$, $p = 0.095$). Pearson correlation revealed no significant relationship between age and number of morbidities ($r = -0.010$, $p = 0.863$) or between number of morbidities and depression category ($r = 0.027$, $p = 0.655$).

Treatment-seeking behaviour showed a strong, statistically significant association with morbidity: all 171 participants who had sought treatment had morbidity, compared with 41.3% of the 109 who had not sought treatment ($\chi^2 = 130.153$, $df = 1$, $p < 0.001$). Government health facilities were the most frequently utilised source of care overall (109; 38.9%), followed by private (59; 21.1%), traditional (59; 21.1%), and other facilities (53; 18.9%), with no significant variation by socioeconomic class ($\chi^2 = 9.413$, $p = 0.667$). Health insurance coverage, present in 144 participants (51.4%), was not significantly associated with the type of facility used ($\chi^2 = 1.480$, $p = 0.687$) or with socioeconomic class ($\chi^2 = 4.241$, $p = 0.374$) (Table 3).

Table 3. Association Between Selected Variables and Morbidity/ Cardiovascular Disorder (n = 280)

Variable	Comparison groups	χ^2 / t value	p-value
Socioeconomic class vs morbidity	Class I–V	$\chi^2 = 3.925$, $df = 4$	0.416
Education vs morbidity	4 categories	$\chi^2 = 1.163$, $df = 3$	0.762
Physical activity vs morbidity	Yes vs No	$\chi^2 = 0.524$, $df = 1$	0.469
Smoking vs morbidity	Yes vs No	$\chi^2 = 2.761$, $df = 1$	0.097
Alcohol use vs morbidity	Yes vs No	$\chi^2 = 0.890$, $df = 1$	0.345

Gender vs cardiovascular disorder	Female vs Male	$\chi^2 = 0.408$, df = 1	0.523
Smoking vs cardiovascular disorder	Yes vs No	$\chi^2 = 5.055$, df = 1	0.025
Gender vs mean GDS score	Female vs Male	t = -0.770, df = 278	0.442
Treatment-seeking vs morbidity	Yes vs No	$\chi^2 = 130.153$, df = 1	<0.001

DISCUSSION

This community-based study found that 77.1% of elderly participants in rural Barabanki had at least one morbidity, confirming that ill-health is highly prevalent among rural older adults. This figure is higher than the 64% reported by Srinivas and Manjubhashini[13] and the 43% reported by Bhawalkar et al.,[10] but lower than the very high prevalence documented by Nikumb et al. (93.1%)[14] and Yasmeen et al. (92.8%).[15] A comparably heavy burden was reported by Singh et al. in an urban slum population of Central India, where anaemia, hypertension, and arthritis were all highly prevalent.[11] The present estimate therefore falls within the wide range described in Indian community-based geriatric literature and reaffirms that old age carries a substantial multi-system disease burden requiring sustained screening and care.

The study population was concentrated in the younger-old age bands (60–64 years, 30.0%; 65–69 years, 27.9%), a pattern consistent with Bhawalkar et al.[10] and Reddy et al.,[16] and likely reflecting declining representation of the oldest-old due to survival and mobility constraints. Female predominance (70.0%) in the present sample contrasts with the more balanced or male-predominant distributions reported by Barman et al.[12] and Sakkarapani and Vidyalakshmi,[18] and may reflect greater longevity among women as well as household availability during data collection; because women formed the majority, the overall morbidity findings may disproportionately reflect the health experience of elderly women, a group repeatedly described as facing compounded vulnerability from widowhood and reduced economic independence.[15]

Morbidity did not vary significantly across socioeconomic class or educational level, remaining high in every stratum (68.4%–90.5% by class; 73.2%–80.7% by education). This pattern echoes Reddy et al., who found high morbidity even where the majority of participants belonged to the lowest socioeconomic class,[16] and suggests that in rural elderly populations, accumulated age-related physiological decline and lifelong occupational and nutritional exposures may drive morbidity across social strata rather than any single stratum bearing a disproportionate burden. Similarly, Kakkar et al. found that occupational inactivity and obesity, rather than socioeconomic class alone, were more strongly linked to morbidity in a Dehradun geriatric population.[9] This has the practical implication that geriatric health interventions in such settings should be delivered universally rather than targeted narrowly by socioeconomic group.

Musculoskeletal disorder, present in 56.4% of participants, was closely comparable to the 55.6% reported by Nikumb et al.,[14] though lower than the 76.9% and 77.2% reported by Reddy et al.[16] and Usha et al.[17] respectively, and higher than the 39–43% reported by Srinivas and Manjubhashini[13] and Bhawalkar et al.[10] Cardiovascular disorder, present in 40.0% of participants, exceeded the 28.1% and 33.1% reported by Nikumb et al.[14] and Usha et al.[17] respectively, pointing to a comparatively heavy cardiovascular burden in this rural population. The association observed between smoking and cardiovascular disorder was statistically significant but in a direction contrary to conventional expectation, with disease more frequent among non-smokers; this counter-intuitive finding is most plausibly explained by reverse causation, smoking cessation following diagnosis, or survivor bias, all recognised limitations of cross-sectional smoking data in elderly cohorts, and should not be interpreted as evidence that smoking is protective.

Depressive symptoms, assessed using the GDS, did not differ significantly by gender and were not significantly associated with the number of morbidities, consistent with the view that geriatric mental health is shaped by social and functional circumstances — loneliness, bereavement, loss of income — rather than by disease count alone, a pattern also noted by Barman et al.[12] Comparable community studies have reported considerable psychosocial morbidity, including 59.4% by Nikumb et al.[14] and 35.2% depression by Sakkarapani and Vidyalakshmi,[18] reinforcing that mental health screening deserves a

place alongside physical morbidity assessment in geriatric care programmes.

Treatment-seeking behaviour was strongly linked to morbidity, yet a substantial minority of participants with morbidity had not sought treatment, indicating unmet healthcare needs consistent with the wide gap between morbidity and facility utilisation described by Bhawalkar et al., where only 8% of elderly with health problems had visited a health facility.[10] Government facilities remained the dominant source of care in the present study, underscoring the centrality of public healthcare to rural elderly populations, while the lack of association between insurance coverage and facility choice suggests that expanding insurance alone, without parallel improvements in availability and accessibility, may not translate into improved service utilisation.

Strengths and Limitations

The community-based design captured elderly individuals irrespective of whether they accessed formal healthcare, and the study integrated socio-demographic, behavioural, psychological, and health-system dimensions within a single framework, rather than restricting analysis to a single disease or organ system. The use of chi-square, t-test, and correlation analysis allowed associations to be assessed objectively rather than relying on descriptive findings alone, and the inclusion of treatment-seeking behaviour and facility utilisation adds direct relevance for local health-system planning. However, the cross-sectional design precludes causal inference, self-reported behavioural data are susceptible to recall and reporting bias, and morbidity was recorded as presence or absence without grading severity, duration, or multimorbidity complexity. Functional assessment was limited to selected indicators, and factors such as family support, loneliness, and financial dependency were not explored in depth. Findings from this single rural district may also have limited generalisability to other settings with differing healthcare access or cultural context.

CONCLUSION

More than three-quarters of the geriatric population studied in rural Barabanki carried at least one morbidity, distributed broadly across socioeconomic and educational strata rather than concentrated in any single vulnerable group. Musculoskeletal and cardiovascular disorders formed the dominant physical morbidity burden, while treatment-seeking behaviour, though strongly linked to morbidity, left a meaningful proportion of ill elderly individuals without care. These findings support the integration of regular geriatric screening, chronic disease management, and mental health assessment into rural primary healthcare, alongside strengthening of government health facilities that remain the principal source of elderly care in such settings.

Conflict of Interest

The author declares no conflict of interest.

Source of Funding

None declared.

REFERENCES

1. Wan Ahmad WI, Astina IK, Budijanto B. Demographic transition and population ageing. *Mediterr J Soc Sci*. 2015;6(3 S2):213-8.
2. Kumar A, Gupta K. A comparative analysis of the morbidity profile among the geriatric population of urban and rural areas. *Int J Acad Med Pharm*. 2023;5(3):2522-7.
3. Singh P, Gupta RK, Jan R, Shora TN. Morbidity profile of rural geriatric population in North India: a community based cross-sectional study. *JK Sci*. 2016;18(2):98.
4. Khokhar A, Mehra M. Life style and morbidity profile of geriatric population in an urban community of Delhi. *Indian J Med Sci*. 2001;55(11):609-15.
5. Mohan CR, Sekhar KC, Tayoob MI, Reddy S, Deotale PG. A study of morbidity profile among the geriatric age group in urban population of Eluru. *Indian J Public Health Res Dev*. 2013;4(4):93-7.
6. Samanta T, Saha SN, Sen M, Chaudhuri A, Sahu BK. A cross-sectional study on the etiological spectrum and morbidity profile among geriatric patients: a hospital-based study. *Asian J Med Sci*. 2024;15(1):119-26.
7. Joshua V, Sunitha K, Muthu G, Sinduja V, Venkatesh P, Nandini P, et al. Self-reported morbidity profile among geriatric population in ICMR-model rural health research unit, Kallur, Tirunelveli. *J Indian Acad Geriatr*. 2020;16(3):95-100.
8. Dabade KJ, Kalasker PS, Gududur AK. Prevalence of morbidity profile among geriatric population in urban field practice area, Manikeshwari. *Natl J Community Med*. 2020;11:206-10.
9. Kakkar R, Aggarwal P, Kandpal SD, Bansal SK. An epidemiological study to assess morbidity profile among geriatric population in District Dehradun. *Indian J Community Health*. 2013;25(1):39-44.
10. Bhawalkar JS, Dhone AB, Jethani S, Singru S, Jadhav SL, Adanthaya S. A study of morbidity profile among geriatric population in an urban area. *J Evol Med Dent Sci*. 2013;2(36):6963-7.
11. Singh JP, Singh S, Kasturwar NB, Hassan A. Geriatric morbidity profile in an urban slum, Central India. *Indian J Community Health*. 2013;25(2):164-70.
12. Barman SK, Lata K, Ram R, Ghosh N, Sarker G, Shahnaaz K. A study of morbidity profile of geriatric population in an urban community of Kishanganj, Bihar, India. *Glob J Med Public Health*. 2014;3(1):1-7.
13. Srinivas PJ, Manjubhashini S. A study on morbidity profile among elderly population in Visakhapatnam District, Andhra Pradesh. *J Dent Med Sci*. 2014;13(9):21-5.

14. Nikumb V, Patankar F, Behera A. A study of morbidity profile among geriatric population in an urban area. *Sch J App Med Sci*. 2015;3(3):1365-9.
15. Yasmeen N, Ali I, Ganai AM, Bashir N, Naqshbandi I. Morbidity profile of geriatric population in a rural field practice area of a tertiary care institute in Kashmir Valley. *J Med Sci Clin Res*. 2015;3:8122-30.
16. Reddy ES, Nagaraj K, Takalkar A. Morbidity profile of geriatric population of rural Telangana: a cross sectional study. *Med Pulse Int J Community Med*. 2018;8(2):07-10.
17. Usha P, Kishore S, Singh M, Jain B, Kumar D, Reddy NK, et al. A study of morbidity profile among geriatric population in Uttarakhand: a community based cross-sectional study. *J Family Med Prim Care*. 2020;9(7):3677-81.
18. Sakkarapani TR, Vidyalakshmi M. A study of morbidity profile in south Indian geriatric population in a rural community at Thiruverkadu, Thiruvallur district. *Ann Geriatr Educ Med Sci*. 2023;7(2):73-7.