

Healthcare Utilization and Its Determinants Among the Elderly Population in Rural North India: A Community-Based Cross-Sectional Study

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Background: Utilization of healthcare services becomes increasingly important with advancing age because of multimorbidity, functional decline, and the need for preventive as well as chronic care. Elderly people in rural settings often face barriers related to awareness, accessibility, dependency, and socioeconomic disadvantage.

Objectives: To assess healthcare utilization among elderly people and identify its determinants in a rural district of North India.

Methods: This community-based cross-sectional study was conducted among elderly individuals aged 60 years and above in rural North India. A multistage random sampling technique was used to recruit 384 participants. Information was collected using a pretested semi-structured questionnaire. Descriptive analysis and chi-square test or logistic regression were planned to identify determinants of utilization.

Results: Among 384 participants, 53.4% were males and 46.6% females. Most participants were in the 60 to 65 years age group (64.3%), 65.9% were married, 60.9% belonged to the lower socioeconomic class, and 64.1% were illiterate. Awareness of healthcare services was reported by 93.8% of participants. Regarding healthcare utilization, 31.5% visited a healthcare provider annually, 25.5% visited every few years, and 42.7% never visited a healthcare provider. Chronic morbidity was present in 40.6% of participants, and 31.5% were taking medications for chronic morbidity. Healthcare utilization was significantly associated with socioeconomic status ($p = 0.021$), type of family ($p < 0.001$), and chronic morbidity status ($p = 0.004$) and awareness of healthcare services ($p < 0.001$).

Conclusion: Healthcare utilization among the elderly was independently associated with awareness of healthcare services, family structure, and chronic morbidity. Strengthening awareness, family-based support, and geriatric outreach services may improve healthcare utilization among elderly persons in rural settings.

Access this article online

Website:

www.cijmr.com

DOI:

10.58999/cijmr.v5i02.442

Keywords:

Elderly, healthcare utilization, rural health, chronic illness, awareness, cross-sectional study.

Introduction

Population ageing is a major demographic transition occurring worldwide,¹ and India is no exception. With increasing life expectancy, the proportion of elderly people is steadily rising, with the elderly population in India projected to reach approximately 230 million by 2036, resulting in a 9.1% elderly proportion within the statewide growth of 12%.²⁻⁴ Making age-related healthcare needs a growing public health concern.

Older adults are more likely to live with chronic diseases like non-communicable diseases, functional limitations, and dependency for day-to-day activities.⁵ This increases their need for regular contact with health services, preventive screening, continuity of care, and timely treatment. In rural areas, however, healthcare utilization may be constrained by low awareness, limited access, financial dependence,⁶ poor mobility, and under-recognition of symptoms.^{7,8}

Healthcare utilization among the elderly is therefore not only a measure of service use but also a reflection of health-system responsiveness, personal health literacy, and social support. Identifying determinants of utilization can help public health planners design community-based interventions,⁹ strengthen primary care, and improve equitable access for older adults.

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Submitted: 26/05/2026

Revision: 27/05/2026

Accepted: 13/06/2026

Published: 15/08/2026

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How to cite this article: Kumar A, Kureel K, Shukla SK, Baraily P, Singh D. Healthcare Utilization and Its Determinants Among the Elderly Population in Rural North India: A Community-Based Cross-Sectional Study. Central India Journal of Medical Research. 2026;5(2):159-166.

The present study was planned to assess healthcare utilization and its determinants among elderly individuals in a rural district of North India.

Aims and Objectives

- To assess the level of healthcare utilization among elderly people in a rural district.
- To determine the awareness of available healthcare services among elderly participants.
- To identify sociodemographic, clinical, and social determinants associated with healthcare utilization.

Subjects and Methods

Study Design and Setting

This was a community-based cross-sectional study carried out in the rural areas of north India. Three blocks were selected through simple random sampling, and households were surveyed door to door.

Study Population

The study population consisted of elderly men and women aged 60 years and above who had been residing in the selected villages for at least six months and consented to participate.

Inclusion Criteria

- Age 60 years and above.
- Permanent residents of the selected rural area.
- Provided informed consent.

Exclusion Criteria

- Seriously ill elderly persons were unable to participate in the interview at the time of data collection.
- Elderly persons with severe cognitive impairment or psychiatric illness affecting reliable communication.
- Elderly persons with severe hearing or speech impairment prevent the administration of the questionnaire.

Sample size and sampling technique

The sample size was calculated using the standard formula for cross-sectional studies with a 95% confidence level and 5% absolute precision. Taking the anticipated prevalence as 50%, the minimum sample size was 384.^{10,11} Multistage random sampling was used to select blocks, villages, and eligible households.

Study tool

Data were collected using a pretested¹¹ semi-structured questionnaire.¹² The instrument included sociodemographic information and questions on

healthcare utilization, such as awareness of community healthcare services, frequency of routine check-ups, and history of chronic physical illness. Additional items captured social activity, dependency, and behavioral variables that may influence service use.

Statistical Analysis

Data were entered in Microsoft Excel and analyzed using SPSS version 25. Descriptive statistics were used to summarize the characteristics of the study participants. Associations between healthcare utilization and explanatory variables were assessed using the Chi-square test. For logistic regression analysis, healthcare utilization was dichotomized as utilization (annual/every few years) and non-utilization (never). Variables found to be relevant were entered into a multivariable logistic regression model to identify independent determinants of healthcare utilization. A p-value of less than 0.05 was considered statistically significant.

Ethical consideration

Ethical approval was obtained from the Institutional Ethics Committee with Approval No. 2796 before the study. Written informed consent was obtained from all participants, and confidentiality and anonymity were maintained throughout the study.

Results

Table 1 suggests that the study population was predominantly male (53.4%) and most participants belonged to the 60 to 65 years age group (64.3%). A large proportion were married (65.9%), while 31.8% were widowed. Socioeconomically, most participants belonged to the lower class (60.9%). Almost half lived in joint families (47.9%) and nearly half in nuclear families (46.4%). Educational status was poor, with 64.1% being illiterate.

Table 2 suggests that the awareness of healthcare services was high, as 93.8% of participants reported being aware of available services. However, actual utilization was suboptimal: 42.7% never visited a healthcare provider, 25.5% visited every few years, and only 31.5% visited annually. Chronic morbidity was present in 40.6% of participants, and 31.5% were on medications for chronic morbidity. This shows a gap between awareness and regular healthcare use.

Table 3 suggests that the healthcare utilization showed significant associations with socioeconomic status, type of family, and chronic morbidity status. No statistically significant association was found with gender,¹³ educational qualification, or physical activity status.¹⁴

Table 1: Sociodemographic profile of the elderly participants

S.N.	Variables	Category	n	%
1.	Gender	Male	205	53.4
		Female	179	46.6
2.	Age classification	60–65 years	247	64.3
		66–70 years	75	19.5
		71–75 years	37	9.6
		>75 years	25	6.5
3.	Marital status	Married	253	65.9
		Widow/Widower	122	31.8
		Divorced	5	1.3
		Unmarried	4	1.0
4.	Socioeconomic status	Lower class	234	60.9
		Lower middle class	90	23.4
		Middle class	32	8.3
		Upper class	17	4.4
		Upper middle class	11	2.9
5.	Type of family	Joint family	184	47.9
		Nuclear family	178	46.4
		Only with wife/husband	16	4.2
		Living alone	6	1.6
6.	Educational qualification	Illiterate	246	64.1
		Less than primary school	27	7.0
		Primary school completed	31	8.1
		Middle school completed	22	5.7
		Secondary school completed	15	3.9
		Higher secondary/intermediate completed	26	6.8
		Graduate degree completed	17	4.4

Table 2: Healthcare utilization profile of the study participants (N=384)

S.N.	Variables	Category	n	%
1.	Awareness of healthcare services	Yes	360	93.8
		No	24	6.3
2.	Visit to health care provider	Annually	121	31.5
		Every few years	98	25.5
		Never	165	42.7
3.	Any diagnosed chronic morbidity	Present	156	40.6
		Absent	228	59.4
4.	Any medications for chronic morbidity	Yes	121	31.5
		No	263	68.2

Table 3: Association of healthcare utilization with selected sociodemographic and clinical variables among elderly participants (N = 384)

S.N.	Variables	Chi-square value	p-value
1.	Gender	2.17	0.339
2.	Age classification	12.2	0.058
3.	Socioeconomic status	18.1	0.021
4.	Educational qualification	8.74	0.725
5.	Type of family	29.6	<0.001
6.	Chronic morbidity status	11	0.004
7.	Physical activity status	3.74	0.154
8.	Awareness of healthcare services	15.8	<0.001

Table 4: Distribution of healthcare utilization according to selected sociodemographic and clinical characteristics among elderly participants (N = 384)

S.N.	Variables	Category	Never N (%)	Every few years N (%)	Annually N (%)	p-value
1.	Age classification	60–65 years	94 (38.1)	62 (25.1)	91 (36.8)	0.058
		66–70 years	35 (47.3)	19 (25.7)	20 (27.0)	
		71–75 years	22 (59.5)	10 (27.0)	5 (13.5)	
		>75 years	13 (52.0)	7 (28.0)	5 (20.0)	
2.	Gender	Male	90 (44.1)	46 (22.5)	68 (33.3)	0.339
		Female	74 (41.3)	52 (29.1)	53 (29.6)	
3.	Educational qualification	Illiterate	115 (46.9)	61 (24.9)	69 (28.2)	0.725
		Less than primary	9 (33.3)	8 (29.6)	10 (37.0)	
		Primary completed	10 (32.3)	10 (32.3)	11 (35.5)	
		Middle school completed	9 (40.9)	5 (22.7)	8 (36.4)	
		Secondary completed	5 (33.3)	4 (26.7)	6 (40.0)	
		Higher secondary completed	12 (46.2)	5 (19.2)	9 (34.6)	
		Graduate degree	4 (23.5)	5 (29.4)	8 (47.1)	
4.	Socioeconomic status	Lower class	114 (48.7)	57 (24.4)	63 (26.9)	0.021
		Lower middle class	29 (32.2)	27 (30.0)	34 (37.8)	
		Middle class	9 (29.0)	7 (22.6)	15 (48.4)	
		Upper middle class	6 (54.5)	0 (0.0)	5 (45.5)	
		Upper class	6 (35.3)	7 (41.2)	4 (23.5)	
5.	Marital status	Married	107 (42.5)	56 (22.2)	89 (35.3)	0.081
		Widow/Widower	53 (43.4)	39 (32.0)	30 (24.6)	
		Divorced	1 (20.0)	3 (60.0)	1 (20.0)	
		Unmarried	3 (75.0)	0 (0.0)	1 (25.0)	
6.	Type of family	Joint family	103 (56.3)	36 (19.7)	44 (24.0)	<0.001
		Nuclear family	52 (29.2)	57 (32.0)	69 (38.8)	
		Only with wife/husband	6 (37.5)	5 (31.2)	5 (31.2)	
		Living alone	3 (50.0)	0 (0.0)	3 (50.0)	
7.	Physical activity	Physically active	126 (40.9)	78 (25.3)	104 (33.8)	0.154
		Physically inactive	38 (50.7)	20 (26.7)	17 (22.7)	
8.	Awareness of healthcare services	Yes	145 (40.3)	96 (26.7)	119 (33.1)	<0.001
		No	19 (82.6)	2 (8.7)	2 (8.7)	
	Chronic morbidity	Absent	85 (36.6)	61 (26.3)	86 (37.1)	0.004
		Present	79 (52.3)	37 (24.5)	35 (23.2)	

Age showed a borderline association. This suggests that healthcare use in the elderly is shaped more by social and clinical factors than by demographic factors alone.

Table 4 suggests that annual healthcare utilization was more common among participants from middle and lower-middle socioeconomic classes, those living in nuclear families, and those aware of available healthcare services. In contrast, participants belonging

to lower socioeconomic classes and joint families had a higher proportion of “never” utilization. The findings suggest that economic status, family structure, and awareness play important roles in influencing healthcare-seeking behavior among elderly individuals. Healthcare utilization was significantly associated with socioeconomic status, type of family, awareness of healthcare services, and chronic morbidity, whereas

Table 5: Spearman's correlation matrix between key variables (N=384)

S.N.	Variables	Healthcare utilization	Age	Socioeconomic status	Family type	Chronic morbidity	Awareness of health care services
1.	Healthcare utilization	1	0.09 (0.07)	0.21 (0.001)	0.32 (<0.001)	0.19 (0.003)	0.41 (<0.001)
2.	Age	0.09 (0.07)	1	-0.12 (0.03)	-0.05 (0.31)	0.27 (<0.001)	-0.06 (0.22)
3.	Socioeconomic status	0.21 (0.001)	-0.12 (0.03)	1	0.14 (0.02)	-0.09 (0.08)	0.18 (0.002)
4.	Family type	0.32 (<0.001)	-0.05 (0.31)	0.14 (0.02)	1	-0.29 (<0.001)	-0.06 (0.21)
5.	Chronic morbidity	0.19 (0.003)	0.27 (<0.001)	-0.09 (0.08)	-0.06 (0.21)	1	-0.22 (0.001)
6.	Awareness of health care services	0.41 (<0.001)	-0.06 (0.22)	0.18 (0.002)	0.17 (0.003)	0.08 (0.12)	1

*Values represent Spearman's correlation coefficient (r), with p -values in parentheses

Table 6: Logistic regression analysis for determinants of healthcare utilization

S.N.	Variable	Adjusted Odds Ratio (AOR)	95% CI	p -value
1.	Female gender	1.39	0.87 – 2.23	0.171
2.	Age >70 years	0.46	0.06 – 3.60	0.460
3.	Higher socioeconomic status	1.32	0.80 – 2.17	0.273
4.	Education $\geq$ Secondary level	1.10	0.55 – 2.19	0.794
5.	Nuclear family	2.28	1.44 – 3.61	<0.001
6.	Awareness of healthcare services	5.06	1.79 – 14.32	0.002
7.	Chronic morbidity present	0.56	0.36 – 0.88	0.011
8.	Physically inactive	0.76	0.44–1.32	0.332

***Reference Categories:** Male gender, age ≤ 70 years, lower socioeconomic status, education below secondary level, joint/other family type, no awareness of healthcare services, absence of chronic morbidity, and physically active participants.

gender, age, educational status, and physical activity were not significantly associated.

Table 5 suggests that healthcare utilization showed a positive correlation with awareness of services, family type, socioeconomic status, and chronic morbidity. The strongest positive association was seen with awareness of healthcare services. This indicates that awareness and social support are closely linked with improved healthcare use among elderly persons. Spearman's correlation analysis showed that healthcare utilization had a significant positive correlation with awareness ($r = 0.41$, $p < 0.001$), family type ($r = 0.32$, $p < 0.001$), socioeconomic status ($r = 0.21$, $p = 0.001$), and chronic morbidity ($r = 0.19$, $p = 0.003$).

Table 6 multivariable logistic regression analysis revealed that awareness of healthcare services (AOR = 5.06, 95% CI: 1.79–14.32, $p = 0.002$) and living in a nuclear family (AOR = 2.28, 95% CI: 1.44–3.61, $p < 0.001$) were significant independent predictors of healthcare utilization among elderly participants. Participants with chronic morbidity had significantly lower odds of healthcare utilization (AOR = 0.56, 95% CI: 0.36–0.88, $p = 0.011$). Gender, age, socioeconomic status, educational status, and physical activity were not significantly

associated with healthcare utilization after adjustment for other variables.

Discussion

The study findings highlight a significant disparity between the awareness of healthcare services and their actual utilization among the elderly in rural North India. Although an overwhelming 93.8%¹⁵ of the participants were aware of the available healthcare facilities, a substantial 42.7%¹⁶ reported that they had "Never" visited a healthcare provider in the past year,¹⁷ indicating that knowledge of services does not automatically translate into access.¹⁸ This high percentage of non-utilization is consistent with studies from other parts of North India. Like Yadav *et al.*, 2022, and Nipun *et al.*, 2015.¹⁹ This gap is deeply rooted in the sociodemographic landscape of the region, where 60.9% of the elderly belong to the lower socioeconomic class¹⁹ and 64.1% are illiterate.¹² Statistical analysis via the chi-square test (Table 3) identified type of family¹⁹ ($p < 0.001$), Chronic Morbidity¹⁶ ($p = 0.004$), and Socioeconomic Status²⁰ ($p = 0.021$) as the primary determinants of healthcare-seeking behaviour. Financial capacity remains a major hurdle. This is supported by Srivastava *et al.* (2021) and Pandey *et al.* (2023), who

identified socioeconomic inequality as the primary predictor of geriatric care.”

One of the most striking findings is the role of family structure. Those residing in Joint Families were significantly more likely to neglect professional medical care, with 56.3% reporting “Never” visiting a doctor, compared to only 29.2% of those in nuclear families.¹⁹ Our study found that Joint Family members seek care less than those in Nuclear Families. This mirrors the findings of Kumar *et al.* (2015) in Varanasi and Brinda *et al.* (2020), who noted that elder care is often compromised in larger households.” This suggests that in larger rural households, the healthcare needs of the elderly may be deprioritized or overshadowed by the needs of younger family members. Furthermore, financial capacity remains a major hurdle; this is supported by Srivastava *et al.* (2021)²¹ and Pandey *et al.* (2023),²² who identified socioeconomic inequality as the primary predictor of geriatric care. This economic barrier persists despite the high prevalence of illness, as 40.6% of participants suffered from at least one chronic morbidity. Chronic morbidity was significantly associated with healthcare utilization ($p = 0.004$). However, multivariable logistic regression demonstrated that elderly participants with chronic morbidity had significantly lower odds of healthcare utilization (AOR = 0.56, 95% CI: 0.36–0.88, $p = 0.011$). This finding suggests that despite having greater healthcare needs, elderly individuals with chronic illnesses may face barriers such as financial constraints, mobility limitations, dependency on family members, or difficulties in accessing healthcare facilities. Similar challenges have been reported in the findings of Singh & Pandey (2016)¹² and Bano *et al.* (2023).¹⁵

Interestingly, the study found that formal education is not a prerequisite for healthcare utilization in this demographic. Educational qualification was found to be statistically non-significant ($p = 0.725$), yet Awareness of Services was a powerful predictor.²³ According to Table 6, participants who were aware of specific healthcare services were 5.06 times more likely to visit a provider. This implies that targeted community-based awareness programs are far more effective than general literacy in improving health outcomes. Additionally, while factors like gender ($p = 0.339$) and Physical Activity ($p = 0.154$) showed no significant impact, age ($p = 0.058$) showed a borderline trend, suggesting that as frailty increases, the necessity—rather than the choice—to seek care becomes more prominent. The lack of gender difference ($p=0.339$) contrasts with global trends but is similar to rural studies by Sarma *et al.* (2020) and Patil *et al.* (2016)(24)

Awareness of healthcare services emerged as the strongest predictor of healthcare utilization, highlighting the importance of health education and information dissemination among rural elderly populations. Elderly individuals residing in nuclear families were more likely to utilize healthcare services than those living in joint families. Interestingly, participants with chronic morbidity demonstrated lower odds of healthcare utilization despite having greater healthcare needs, suggesting the presence of barriers such as financial constraints, limited mobility, dependency, or inadequate access to healthcare facilities.

Conclusion

The present study demonstrated that healthcare utilization among rural elderly individuals was independently associated with awareness of healthcare services, family structure, and chronic morbidity, whereas age, gender, education, and physical activity were not significant predictors after adjustment. In this rural elderly population, healthcare access appears closely linked to social and financial support systems, which is consistent with the broader thesis focus on multiple geriatric vulnerabilities and determinants of health-seeking behaviour.(3) Overall, the findings suggest that improving healthcare utilization in the elderly will require more than expanding services; it will also require reducing practical barriers, strengthening family and community support, and ensuring that chronic conditions are recognized early and followed up regularly.

Recommendations

- Strengthen geriatric healthcare services at the primary care level through regular outreach activities, village health camps, and screening programs for elderly persons.
- Enhance awareness regarding available healthcare services among elderly individuals and their family members through community-based health education activities.
- Give special attention to elderly persons belonging to lower socioeconomic groups by improving accessibility and affordability of healthcare services.
- Ensure regular follow-up and continuity of care for elderly individuals with chronic morbidities such as hypertension, diabetes, and other long-term illnesses.
- Utilize community health workers and primary healthcare teams to identify elderly persons who

underutilize healthcare services and facilitate their linkage with appropriate healthcare facilities.

These findings support the need for a more accessible, family-supported, and financially responsive geriatric healthcare system to improve utilization among the elderly population.

Conflict of interest

The authors declare no conflict of interest.

Funding

No external funding was received.

Limitations

As this was a cross-sectional study, causal relationships between healthcare utilization and its determinants could not be established. The study relied on self-reported information, which may be subject to recall and reporting bias. Additionally, the findings are limited to the rural areas studied and may not be generalizable to all elderly populations in India.

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