

Knowledge, Attitudes, Practices, and Barriers to Eye Care Utilization among Elderly Residents of Rural Uttar Pradesh: A Community-Based Cross-Sectional Study

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Received on: 16-07-2026

Published on: 31-08-2026

ABSTRACT

Objective: We examined what older adults in rural Uttar Pradesh knew about eye health, how they approached eye-care services, and which difficulties they reported when trying to obtain care.

Methods: The cross-sectional survey was conducted from August 2024 to January 2025 in selected rural communities of Uttar Pradesh. It included 240 residents aged 60 years or above, recruited by convenience sampling. Trained investigators interviewed participants in person using a structured questionnaire that had undergone pretesting. Findings were summarized with frequencies and percentages. Associations between categorical variables were examined with the chi-square test. Variables meeting the prespecified univariate criterion of $p < 0.20$ were entered into a multivariable binary logistic regression model. A two-sided p value below 0.05 was considered statistically significant.

Results: Of the 240 participants, 140 (58.3%) were men and 100 (41.7%) were women. Eighty-six participants (35.8%) described their eye-health knowledge as fair and 64 (26.7%) as poor. The largest group, 107 (44.6%), reported visiting an eye-care professional only after symptoms developed. Annual examinations were reported by 28 (11.7%), whereas 20 (8.3%) had never undergone an eye examination. Healthcare professionals were the most frequently cited source of information (53.3%). Cost was reported as a barrier by 133 participants (55.4%); 82 (34.2%) stated that reaching an eye-care facility took more than 30 minutes. No variable retained statistical significance in the adjusted analysis. Distance from the facility (AOR 2.37, 95% CI 0.85–6.63; $p = 0.099$) and use of private transport (AOR 1.92, 95% CI 0.91–4.07; $p = 0.088$) showed nonsignificant associations with inadequate eye-care practices.

Conclusion: In this rural sample, routine eye examinations were uncommon, and care was often sought after symptoms appeared. Financial costs and the practical difficulty of reaching services were frequently reported. Eye-health counselling during existing health contacts, together with locally accessible screening and referral pathways, may address some of these barriers.

KEYWORDS: Attitudes, Aged, Health Knowledge, Health Services Accessibility, Isual Impairment, Practice, Rural Population, Vision Disorders.

Era's Journal of Medical Research. 13(2);2026 [doi: 10.24041/ejmr.2026.32]

INTRODUCTION

Loss of vision affects more than visual function; it can make routine activities and independent living more difficult. The World Health Organization has estimated that about 2.2 billion people worldwide live with vision impairment, with a considerable share attributable to conditions that are preventable or treatable.¹ Access to appropriate eye care remains uneven, particularly in low- and middle-income settings.² In India, cataract and uncorrected refractive error continue to account for a large part of avoidable visual impairment.³

Advancing age increases the burden of several eye disorders. Cataract, glaucoma, diabetic retinopathy, and age-related macular degeneration are important causes of visual disability among older adults.^{4,5} Service use, however, is not determined by disease burden alone. Recognition of an eye problem, perceived need for treatment, beliefs about illness, affordability, and the effort required to reach a service can all affect whether an older person attends an eye clinic.⁶

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How to cite: Siddiqui F, Nigam B, Singh L, Dhavan C, Chaudhary J. Knowledge, Attitudes, Practices, and Barriers to Eye Care Utilization among Elderly Residents of Rural Uttar Pradesh: A Community-Based Cross-Sectional Study. *Era J Med Res.* 2026;13(2):164-168.

For older adults in rural settings, these issues may be compounded by transport limitations, fewer nearby facilities, and differences in health literacy.⁷ A knowledge-attitude-practice approach can help identify where gaps occur and can provide information useful for community-level service planning.⁸ Studies from India have reported shortcomings in awareness of eye disease, including glaucoma, as well as financial and access-related barriers.^{9,10}

Against this background, the present study assessed eye-health knowledge, attitudes, practices, and reported barriers among adults aged 60-years and above living in rural Uttar Pradesh. We also described patterns of eye-care use and examined selected factors associated with inadequate practices.

Materials and Methods

Study design

We conducted a community-based cross-sectional survey in selected rural communities of Uttar Pradesh between August 2024 and January 2025. Residents aged 60-years or older constituted the study population.

Participants

Individuals were eligible when they were permanent residents of the study area and provided consent. People who were unable to communicate adequately for the interview or who declined participation were excluded. Participants were recruited consecutively through convenience sampling until the planned sample size was reached.

Sample Size

The required number was estimated using $n = Z^2 P(1-P)/d^2$. We used $Z=1.96$, an expected prevalence of 50%, and an absolute precision of 6.5%. A prevalence of 50% was selected because an appropriate local estimate was not available, and this value gives a conservative sample-size estimate. The calculation yielded approximately 228 participants; the recruitment target was therefore set at 240 to accommodate incomplete responses or non-response.

Ethical Considerations

Approval was obtained from the Institutional Ethics Committee of Era's Lucknow Medical College and Hospital, Era University, Lucknow (IEC Registration No. ECR/717/Inst./UP/2015/RR-21; approval Ref. No. ELMC & H/R.Cell/2024/536, dated 10 July 2024). The study was conducted in accordance with the Declaration of Helsinki. Written informed consent was obtained from each participant before the interview, and information collected during the study was kept confidential.

Data Collection

The interview schedule was developed with reference to previously published work and was pretested in 20 older adults from a comparable rural population. The pretest participants were not included in the final analysis. Following consent, trained investigators conducted face-to-face interviews. Information was collected on demographic characteristics, knowledge and attitudes concerning eye health, previous eye-care practices, sources of information, and perceived barriers to obtaining services.

Statistical analysis

Data was entered in Microsoft Excel and analysed using statistical software. Categorical variables were summarized as frequencies and percentages. The chi-square test was used to examine associations between categorical variables. Variables with $p < 0.20$ in the initial analysis were taken forward to multivariable binary logistic regression, with inadequate eye-health practice defined as a practice score ≤ 4 . All tests were two-sided, and $p < 0.05$ was used as the significance threshold.

RESULTS

Participant characteristics: The study included 240 adults aged 60 years or older. Men accounted for 140 participants (58.3%) and women for 100 (41.7%). Most participants had no more than high-school education (158; 65.8%); 65 (27.1%) had completed college and 17 (7.1%) had postgraduate education (Table 1).

Table 1: Sociodemographic characteristics of participants (n=240).

Variable	Frequency	Percentage (%)
Male	140	58.3
Female	100	41.7
Education $\leq$ High school	158	65.8
College education	65	27.1
Postgraduate	17	7.1

Table 2: Self-rated knowledge regarding eye health (n=240).

Knowledge level	Frequency	Percentage (%)
Excellent	21	8.8
Good	69	28.8
Fair	86	35.8
Poor	64	26.7

Table 3: Frequency of eye examination among participants (n=240).

Eye-examination frequency	Frequency	Percentage (%)
Only when symptoms occur	107	44.6
Every 2-years	56	23.3
Annual examination	28	11.7
Every 6-months	29	12.1
Never examined	20	8.3

Table 4: Sources of eye-health information and barriers to eye care (n=240).

Variable	Frequency	Percentage (%)
Healthcare professionals	128	53.3
Internet	53	22.1
Family/Friends	104	43.3
Community programs	49	20.4
Financial barrier: Yes	133	55.4
Financial barrier: No	107	44.6
Walking distance	27	11.3
Private transport required	60	25.0
Public transport required	71	29.6
>30 minutes away	82	34.2
Health insurance: Yes	78	32.5
Health insurance: No	140	58.3
Health insurance: Not sure	22	9.2

Table 5: Multivariable logistic regression analysis of factors associated with inadequate eye-health practices.

Variable	AOR	95% CI	p-value
Age 60–65	0.96	0.35–2.60	0.94
Age 66–70	0.78	0.29–2.12	0.64
Age 71–75	1.12	0.43–2.96	0.80
Age 76–80	0.75	0.28–2.04	0.58
Male	0.94	0.53–1.66	0.83
Self-employed	1.39	0.51–3.79	0.51
Homemaker	1.85	0.72–4.70	0.19
Agriculture/Labour	1.96	0.78–4.91	0.15
Retired occupation	0.68	0.27–1.73	0.42
High school or below	2.07	0.69–6.24	0.19
Bachelor's degree	2.35	0.61–9.01	0.21
Employed	1.45	0.49–4.27	0.49
Retired employment status	1.69	0.54–5.24	0.36
Unemployed	0.90	0.27–2.98	0.87
Comfortable financial status	1.77	0.57–5.45	0.32
Adequate financial status	1.27	0.46–3.52	0.63
Struggling financial status	0.90	0.33–2.50	0.84
Financial barrier: Yes	0.88	0.31–2.52	0.82
Financial barrier: No	0.82	0.30–2.22	0.69
Walking distance	2.37	0.85–6.63	0.099
Private transport	1.92	0.91–4.07	0.088
Public transport	1.68	0.82–3.44	0.15

Reference categories: age 81–85 years, female gender, postgraduate education. AOR, adjusted odds ratio; CI, confidence interval.

Self-rated knowledge: Twenty-one participants (8.8%) rated their eye-health knowledge as excellent and 69 (28.8%) as good. Fair knowledge was selected by 86 (35.8%), while 64 (26.7%) selected poor. Thus, 150 participants (62.5%) placed themselves in either the fair or poor category (Table 2).

Eye-examination practices: The most common pattern was to seek an examination only after symptoms appeared; 107 participants (44.6%) gave this response. Fifty-six (23.3%) reported examination every two years, 29 (12.1%) every six months, and 28 (11.7%) annually. Twenty participants (8.3%) said they had never undergone an eye examination (Table 3).

Sources of information and barriers: Healthcare professionals were named by 128 participants (53.3%) as a source of eye-health information, followed by family or friends (104; 43.3%). Fifty-three participants (22.1%) reported using the internet and 49 (20.4%) mentioned community programmes. Financial difficulty was reported by 133 participants (55.4%). For travel, 27 (11.3%) walked, 60 (25.0%) used private transport, and 71 (29.6%) used public transport; 82 (34.2%) reported that the facility was more than 30 minutes away. Vision-care insurance was reported by 78 (32.5%); 140 (58.3%) had no coverage and 22 (9.2%) were unsure (Table 4).

Association analysis: Several relationships were statistically significant before adjustment. Financial barriers were associated with examination frequency ($p=0.036$) and confidence in recognizing an eye disease ($p=0.004$). Age group was related to awareness of presbyopia ($p=0.041$) and receipt of eye-health information from community sources ($p=0.039$). Awareness of hyperopia varied according to education ($p=0.033$) and employment status ($p=0.005$). Cataract awareness was associated with occupation ($p=0.042$), and difficulty with night vision was associated with financial barriers ($p=0.003$).

Multivariable analysis: None of the variables included in the final regression model reached statistical significance after adjustment. Participants reporting greater distance from the eye-care facility had higher estimated odds of inadequate practices, although the confidence interval was wide and crossed one (AOR 2.37, 95% CI 0.85–6.63; $p=0.099$). Private transport showed a similar nonsignificant association (AOR 1.92, 95% CI 0.91–4.07; $p=0.088$). The corresponding estimate for public transport was AOR 1.68 (95% CI 0.82–3.44; $p=0.15$) (Table 5).

DISCUSSION

Preventive attendance was limited to this group. Sixty-two and a half percent of participants placed their own eye-health knowledge in fair or poor categories. In addition, 107 participants (44.6%) reported that they went to an eye-care professional only when symptoms developed, whereas just 28 (11.7%) reported an annual examination. These responses point to a predominantly symptom-driven pattern of service use within the study sample.

The educational profile of the participants was relatively limited: 158 (65.8%) had studied only up to high school. In the present analysis, education was associated with awareness of hyperopia, and employment status was also related to that variable. These are observed associations in a cross-sectional dataset and do not establish that education or employment caused differences in awareness.

A symptom-based approach has particular implications for diseases that may remain unnoticed during their early course. Glaucoma and diabetic retinopathy, for example, can progress without prominent visual symptoms.¹⁶ If assessment is postponed until a person notices a change in vision, an opportunity for earlier detection may be missed. Findings from other rural Indian populations have similarly drawn attention to gaps in awareness and access.^{13–15}

Healthcare workers were the information source most often reported by participants, with family members or friends next. Community programmes were mentioned by 20.4%. Existing contacts with health workers and community networks therefore represent possible points at which simple information about eye disease and the value of routine examinations could be reinforced. Earlier work has also examined community-based education as a means of improving eye-health awareness.^{17,18}

Cost was the most frequently reported financial difficulty: 133 participants (55.4%) said that paying for care was a problem. Physical access was another concern. Eighty-two participants (34.2%) reported that the facility was more than 30 minutes away, and use of both public and private transport was common. Only 78 participants (32.5%) reported vision-care insurance. These observations fit with the broader literature describing affordability and travel as relevant obstacles to eye-care use in rural populations.¹⁹

Several associations were apparent in the unadjusted analysis, including those involving financial difficulty, examination frequency, and confidence in recognizing eye disease. Once the variables were considered together in the regression model, none was statistically significant. Although the point estimates for distance and private transport were above one, their confidence intervals included one. The findings should therefore be presented as nonsignificant associations rather than as established independent predictors.

The adjusted analysis may have been influenced by the

sample size, variation between participants, and the particular variables entered into the model. More importantly, the study used convenience sampling and cross-sectional design. These features limit the extent to which the results can be generalized to all older adults living in rural Uttar Pradesh.

Improving access may require services to be delivered closer to the communities in which older adults live. Community screening, mobile eye-care provision, and clearer referral links between primary-care services and ophthalmic facilities are approaches that have been discussed for populations with limited access.^{23–25} Within the present setting, explaining that some important eye diseases may be silent and simplifying the route from screening to specialist assessment could be useful components of such programmes.

Several limitations should be considered. Convenience sampling introduces a possibility of selection of bias and limits representativeness. The cross-sectional design does not permit assessment of temporal relationships or causality. Although the questionnaire was pretested in 20 participants, detailed psychometric validation and the full scoring framework were not reported. Some information was self-reported and may have been affected by recall or response bias. Finally, the survey covered selected rural communities rather than the whole of Uttar Pradesh; extrapolation beyond similar settings should therefore be cautious.

CONCLUSION

Among these older rural residents, routine preventive eye examinations were uncommon, while symptom-triggered visits were frequent. Financial difficulty, travel distance, and transport requirements were recurring concerns, and healthcare professionals were the leading reported source of eye-health information. Strengthening counselling during routine healthcare encounters and making screening and referral services easier to reach are practical areas for future service planning.

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