

Evaluation of the Awareness and Attitudes Towards Glaucoma in Rural Areas

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I. INTRODUCTION

Glaucoma is a chronic, progressive optic neuropathy characterized by damage to the optic nerve, often associated with raised intraocular pressure, and is one of the leading causes of irreversible blindness worldwide.¹ Unlike cataract, the vision loss caused by glaucoma is permanent; however, early diagnosis and timely treatment can significantly slow disease progression and preserve visual function.² A major challenge in glaucoma prevention is that the disease often remains asymptomatic in its early stages, causing many individuals to seek medical attention only after substantial visual loss has already occurred.

In rural areas, the burden of preventable blindness may be higher due to limited access to ophthalmic services, lower literacy levels, poor health-seeking behaviour, lack of awareness regarding eye diseases, and dependence on traditional beliefs and local remedies.³ Awareness of glaucoma includes knowledge about the disease, its potential to cause blindness, the importance of regular eye examinations, risk factors, treatment options, and the need for lifelong follow-up.⁴ Attitudes toward glaucoma include perceptions regarding seriousness of the disease, acceptance of screening, willingness to undergo treatment, trust in medical care, and motivation to seek timely ophthalmic consultation.⁵

Assessment of awareness and attitudes in rural populations is essential for planning targeted health education programs, strengthening community-based eye care services, and improving uptake of preventive eye examinations. This study is therefore designed to evaluate the awareness and attitudes towards glaucoma among individuals residing in rural areas.

II. REVIEW OF LITERATURE

Nirmala N et al. (2016) assessed awareness and knowledge of glaucoma in a rural population of Kerala, India, using a pretested semi-structured questionnaire and cluster sampling method. A total of 4,414 participants were included, comprising 2,052 males (46.5%) and 2,362 females (53.5%). Overall, 805 participants (18.23%) were aware of glaucoma. Awareness was significantly associated with age, with individuals aged 40–59 years demonstrating higher awareness levels. Among those aware of glaucoma, knowledge was significantly associated with educational status ($p=0.003$) but not with gender ($p=0.847$). Mass media was identified as the major source of information regarding glaucoma. However, only 34.4% of participants who were aware knew that glaucoma could be asymptomatic. These findings indicated that despite high literacy levels in Kerala, awareness of glaucoma remained relatively low, although knowledge among those aware of the disease was satisfactory. The study highlighted the gap between literacy and disease awareness and emphasized the need for improved public health education.⁶

Celebi AR et al. (2018) assessed awareness and knowledge of glaucoma among patients with glaucoma and their first-degree relatives. A structured questionnaire was administered to 91 participants aged over 40 years, with a mean age of 48.5 years, including 34 patients with glaucoma (37.4%) and 57 first-degree relatives (62.6%). Overall, 26 participants (76%) in the glaucoma group and 47 participants (82%) among relatives reported having heard of glaucoma, with no statistically significant differences observed based on age or gender. Awareness of glaucoma was significantly associated with education level in both

groups ($p < 0.0001$). Knowledge of the definition of glaucoma was higher among patients with glaucoma (20 participants, 58.8%) compared to their relatives (17 participants, 29.8%), and this difference was statistically significant ($p < 0.0001$). Higher educational status emerged as a strong predictor of both awareness and knowledge, with adjusted odds ratios of 75.2 (95% CI 11.80–366.65) for awareness and 148.7 (95% CI 14.07–1646.52) for knowledge among individuals with university-level education.⁷

Ahmed Z et al. (2019) assessed awareness and knowledge of glaucoma among individuals aged above 40 years attending an outpatient department. A total of 1,311 participants were included, and those who reported awareness of glaucoma were further evaluated for knowledge regarding symptoms, treatment options, and visual prognosis. Overall, awareness of glaucoma was found to be low among the study population. Among individuals who were aware of glaucoma, only approximately 10% demonstrated good to excellent knowledge of the disease. Relatives of patients with glaucoma were identified as the most aware and knowledgeable subgroup, suggesting that personal exposure to the disease influenced awareness levels. The study also found that participants with lower socioeconomic status and lower literacy levels had poorer awareness and knowledge regarding glaucoma and its risk factors. These findings indicated significant gaps in understanding glaucoma despite ongoing outreach and screening programs by government and non-government organizations.⁸

Sharma AK et al. (2024) evaluated and compared glaucoma awareness and knowledge among urban and rural populations in Bihar. A total of 809 participants aged >18 years attending the ophthalmology outpatient department between September 2023 and August 2024 were included, all without a prior diagnosis of glaucoma. Participants were categorized into urban and rural groups, and data were collected using a validated questionnaire assessing demographic characteristics, awareness, and knowledge. Urban respondents demonstrated higher awareness of glaucoma (25.9%) compared to rural respondents (19.9%), and education emerged as a significant determinant of awareness in both groups ($p < 0.05$). Despite this, knowledge regarding the irreversible nature of glaucoma, associated risk factors, and treatment goals remained low across both populations. Urban participants showed relatively better

understanding of disease progression and its association with intraocular pressure compared to rural participants.⁹

Debbarma S et al. (2025) assessed awareness, knowledge, and practices (AKP) regarding glaucoma among adults aged ≥ 30 years in rural North Tripura, India. Conducted between April and June 2025, the study used multistage cluster random sampling across four randomly selected villages. Of 420 eligible participants, 368 completed the survey (response rate 87.6%). Overall, 72 participants (19.6%) had heard of glaucoma. Among those aware, 25 participants (34.7%) demonstrated good awareness, while only 9 participants (12.5%) had good knowledge regarding the disease. In the entire sample, 39 participants (10.6%) reported undergoing an eye examination within the past year, whereas 17 of the aware participants (23.6%) had undergone recent eye evaluation. Health workers were the most common source of information (40.3%), followed by eye camps (27.8%), mass media (18.1%), and family or friends (13.8%). Logistic regression analysis identified higher education (AOR 3.05; 95% CI 1.87–4.98; $p < 0.001$) and prior ophthalmic consultation (AOR 4.92; 95% CI 2.68–9.02; $p < 0.001$) as independent predictors of awareness.¹⁰

Taywade M et al. (2025) assessed knowledge, attitudes, and practices related to glaucoma among adults in Mendhasala, a rural block of Odisha, India. Two of five sectors were selected using simple random sampling, and a 30×30 cluster sampling method was employed, enrolling 30 participants from each village. A total of 899 participants aged ≥ 18 years were included, with a mean age of 45.7 years (SD 14.43) and an almost equal distribution of males and females. Data were collected using a prestructured and validated questionnaire. Only 38 participants (4.23%; 95% CI: 3.01%–5.8%) reported awareness of glaucoma, and among those aware, three individuals lacked knowledge about the associated ocular changes. Educational status and employment were identified as significant predictors of knowledge regarding glaucoma. Overall, awareness and knowledge of glaucoma were found to be extremely low in this rural population, indicating limited understanding of the disease and its potential consequences.¹¹

III. RESEARCH QUESTION

What is the level of awareness and what are the prevailing attitudes towards glaucoma among adults living in rural areas?

3.1 Justification of the Study

Glaucoma is a significant public health concern because it causes irreversible blindness and is frequently detected late, especially in underserved populations. Rural communities often have reduced access to specialized eye care and lower exposure to health education messages related to chronic eye diseases. In such settings, inadequate awareness and negative or indifferent attitudes may contribute to delayed diagnosis, poor treatment compliance, and avoidable visual disability.

Understanding the community's level of knowledge and attitude toward glaucoma is necessary for several reasons. First, it helps identify misconceptions and gaps in knowledge related to symptoms, risk factors, prevention, and treatment. Second, it provides evidence for designing culturally appropriate awareness campaigns and screening strategies. Third, it supports health authorities and clinicians in developing rural eye health interventions that promote early detection and regular follow-up. The findings of this study may therefore contribute to prevention of blindness and improved eye health services in rural populations.

IV. AIM AND OBJECTIVES

A. Aim

To evaluate the awareness and attitudes towards glaucoma in rural areas.

B. Objectives

1. To assess the level of awareness regarding glaucoma among adults in rural areas.
2. To evaluate attitudes of rural residents toward glaucoma screening, treatment, and follow-up.

V. MATERIALS AND METHODS

- Study Design: Cross-sectional observational study.
- Study Setting: The study will be conducted university's field practice areas in and around Chittorgarh district, Rajasthan.

- Study Duration: The total duration of the study will be 6 months.
- Study Population: The study population will include adults residing in rural areas selected for the study.

Inclusion Criteria

- Adults aged 18 years and above
- Permanent residents of the selected rural area for at least 6 months
- Individuals willing to participate and provide informed consent

Exclusion Criteria

- Individuals who are severely ill at the time of data collection
- Individuals with cognitive impairment or communication difficulty preventing effective interview
- Individuals unwilling to participate

VI. SAMPLE SIZE

The sample size for the study will be 100 participants.

A. Sample Size Calculation

The sample size for the present study was calculated using the formula for estimation of a single population proportion in a cross-sectional study:

$$n = \frac{Z^2 \times p \times q}{d^2}$$

Where:

- n = Required sample size
- Z = Standard normal deviate at 95% confidence level (1.96)
- p = Prevalence of awareness from previous study
- q = 1 – p
- d = Absolute precision (5%)

A recent community-based cross-sectional study conducted in rural North Tripura reported that 19.6% of participants were aware of glaucoma.¹⁰ Therefore:

- p = 19.6% = 0.196
- q = 1 – 0.196 = 0.804
- Z = 1.96
- d = 5% = 0.05

Substituting the values in the formula:

$$n = \frac{(1.96)^2 \times (0.196) \times (0.804)}{(0.05)^2}$$

$$n = 242$$

Thus, the minimum required sample size was 242 participants.

Considering a 10% non-response rate, the final sample size was calculated as:

$$n = 242 + (10\% \text{ of } 242)$$

$$n = 242 + 24.2$$

$$n = 266.2$$

The final sample size was rounded to 267 participants.

B. Sampling Technique

A convenience sampling or systematic household-based sampling method may be used depending on field feasibility. If multiple villages are selected, the sample may be distributed proportionately across them. Households will be visited, and one eligible adult from each household will be interviewed. If more than one eligible participant is present, one participant may be selected using simple random selection.

C. Study Tool

Data will be collected using a pretested semi-structured questionnaire developed based on the study objectives and relevant literature. The questionnaire will be prepared in English and translated into the local language where necessary. Back-translation may be done to ensure consistency.

D. Data Collection Procedure

After obtaining approval from the Institutional Ethics Committee of Mewar University and necessary permission from local authorities, the selected rural areas will be visited for data collection. The investigator will approach households in the selected villages and identify eligible participants based on the inclusion and exclusion criteria. The purpose and objectives of the study will be explained to the participants in their local language, and written informed consent (or thumb impression for illiterate participants) will be obtained prior to participation.

Data will be collected through face-to-face interviews using a pretested semi-structured questionnaire. The questionnaire will include sections on sociodemographic details, awareness regarding glaucoma, and attitudes towards glaucoma. Participants will be interviewed individually in a comfortable and private setting to ensure confidentiality and to encourage honest responses. Each interview is expected to take approximately 10–15 minutes.

Participants will be given adequate time to respond to each question, and clarifications will be provided whenever necessary without influencing their answers. For illiterate participants, questions will be read aloud and responses will be recorded by the investigator. At the end of each interview, participants will be provided with brief health education regarding glaucoma, including its risk factors, importance of early detection, and need for regular eye examinations.

Completed questionnaires will be checked daily for completeness and accuracy. The collected data will then be coded and entered into Microsoft Excel for further analysis. All information collected during the study will be kept confidential and used strictly for research purposes only.

E. Statistical Analysis

Data will be entered into Microsoft Excel and analysed using SPSS version 22. Descriptive statistics such as frequency, percentage, mean, and standard deviation will be used to summarize sociodemographic variables, awareness scores, and attitude scores. Associations between awareness/attitude categories and sociodemographic variables will be assessed using the Chi-square test or Fisher's exact test wherever appropriate. A p-value < 0.05 will be considered statistically significant.

F. Ethical Consideration

Ethical approval will be obtained from the Institutional Ethics Committee prior to commencement of the study. Written informed consent will be obtained from all participants after explaining the purpose and nature of the study in understandable language. Participation will be voluntary, and participants will have the right to withdraw at any stage without any consequence. Confidentiality and anonymity of the collected data will be strictly maintained, and the information will be used solely for academic and research purposes.

VII. PARTICIPANT INFORMATION SHEET (PIS)

Study Title: Evaluation of the Awareness and Attitudes Towards Glaucoma in Rural Areas

Researcher: Semima Nasrin Ahmed

Department: Master of Science – Optometry and Ophthalmic Technology

Institution: Mewar University, Chittorgarh, Rajasthan

7.1 Participant Information

You are invited to participate in a research study conducted by Semima Nasrin Ahmed from the Department of Master of Science – Optometry and Ophthalmic Technology, Mewar University, Chittorgarh. The purpose of this study is to evaluate the awareness and attitudes towards glaucoma among people living in rural areas.

Your participation is completely voluntary. If you agree to participate, you will be asked a few questions related to your knowledge and attitudes about glaucoma. The interview will take approximately 10–15 minutes. There will be no physical examination or procedures involved.

There is no direct benefit or risk involved in participating in this study. However, the information obtained from this study may help improve awareness and prevention of glaucoma in rural communities.

All information collected will be kept confidential and used only for academic and research purposes. Your identity will not be disclosed in any reports or publications.

You are free to withdraw from the study at any time without giving any reason.

If you have any questions regarding the study, you may contact the investigator.

Researcher Name: Semima Nasrin Ahmed

Department: MSc Optometry and Ophthalmic Technology

Institution: Mewar University, Chittorgarh

VIII. INFORMED CONSENT FORM

Study Title: Evaluation of the Awareness and Attitudes Towards Glaucoma in Rural Areas

I have read/been explained the information about this study. I understand the purpose of the study and what is expected of me. I understand that my participation is voluntary and I am free to withdraw at any time without any consequences.

I agree to participate in this study.

Participant Name: _____

Age: _____

Gender: _____

Signature/Thumb Impression: _____

Date: _____

Investigator Name: Semima Nasrin Ahmed

Signature of Investigator: _____

IX. DATA COLLECTION PROFORMA

Section A: General Information

Participant ID: _____

Date of Interview: _____

Village Name: _____

Interviewer Name: Semima Nasrin Ahmed

Section B: Sociodemographic Details

1. Name (Optional): _____

2. Age:

☐ 18–30 years

☐ 31–40 years

☐ 41–50 years

☐ 51–60 years

☐ >60 years

3. Gender

☐ Male

☐ Female

☐ Other

4. Marital Status

☐ Single

☐ Married

☐ Widowed

☐ Divorced

5. Education Level

☐ Illiterate

☐ Primary school

☐ Secondary school

☐ Higher secondary

☐ Graduate and above

6. Occupation

☐ Farmer

☐ Laborer

☐ Housewife

☐ Business

☐ Government employee

☐ Private employee

☐ Unemployed

☐ Others: _____

7. Monthly Family Income

☐ <10,000

☐ 10,000–20,000

☐ 20,000–30,000

☐ >30,000

Section C: Awareness Regarding Glaucoma

1. Have you heard about glaucoma?
☐ Yes ☐ No
2. Glaucoma is an eye disease
☐ Yes
☐ No
☐ Don't know
3. Can glaucoma cause blindness?
☐ Yes
☐ No
☐ Don't know
4. Is blindness due to glaucoma reversible?
☐ Yes
☐ No
☐ Don't know
5. Does glaucoma show symptoms in early stages?
☐ Yes
☐ No
☐ Don't know
6. Is regular eye check-up important for glaucoma?
☐ Yes
☐ No
☐ Don't know
7. Is glaucoma treatable?
☐ Yes
☐ No
☐ Don't know
8. Risk factors of glaucoma (Tick all that apply)
☐ Old age
☐ Family history
☐ Diabetes
☐ Hypertension
☐ Steroid use
☐ Don't know
9. Source of information
☐ Doctor
☐ Health worker
☐ Media
☐ Friends/Family
☐ Others: _____

Section D: Attitude Towards Glaucoma

(Agree / Neutral / Disagree)

1. Glaucoma is a serious disease
☐ Agree ☐ Neutral ☐ Disagree
2. Eye check-up is necessary even without symptoms
☐ Agree ☐ Neutral ☐ Disagree
3. I would undergo glaucoma screening if advised
☐ Agree ☐ Neutral ☐ Disagree
4. I would follow treatment if diagnosed
☐ Agree ☐ Neutral ☐ Disagree
5. Regular follow-up is important for glaucoma
☐ Agree ☐ Neutral ☐ Disagree
6. Glaucoma can be prevented with early treatment
☐ Agree ☐ Neutral ☐ Disagree
7. Long-term treatment is acceptable
☐ Agree ☐ Neutral ☐ Disagree
8. Traditional treatment is sufficient for glaucoma
☐ Agree ☐ Neutral ☐ Disagree

Section E: Eye Health History

1. Have you had an eye check-up before?
☐ Yes
☐ No
2. Family history of glaucoma
☐ Yes
☐ No
☐ Don't know
3. History of eye disease
☐ Yes
☐ No
If yes, specify: _____

Investigator Remarks

Signature of Investigator: _____

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