



Original Article

Awareness and Knowledge of Glaucoma among Workers in a teaching hospital, Bagalkot, Karnataka, India

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Received: 06-06-2026

Accepted: 02-07-2026

Available online: 11-07-2026

ABSTRACT

Background: Glaucoma is a chronic progressive optic neuropathy and one of the leading causes of irreversible blindness worldwide. Since the disease is asymptomatic in its early stages, awareness and adequate knowledge are essential for timely diagnosis and prevention of vision loss. Hospital workers frequently serve as important sources of health information for patients and the community. Assessing their awareness and knowledge regarding glaucoma is therefore essential for strengthening eye health promotion activities.

Aim: To assess the awareness and knowledge of glaucoma among workers in a teaching hospital in Bagalkot, Karnataka, India.

Objectives

1. To determine the level of awareness of glaucoma among hospital workers.
2. To assess the knowledge regarding glaucoma among participants who were aware of the disease.
3. To identify socio-demographic factors associated with glaucoma awareness and knowledge.

Materials and Methods: A hospital-based cross-sectional study was conducted among 150 hospital workers employed in a teaching hospital in Bagalkot, Karnataka. Participants were selected by simple random sampling and were administered a structured questionnaire to assess socio-demographic characteristics, awareness, and knowledge regarding glaucoma. Knowledge scores were categorized as good (>70%), fair (50–69%), and poor (<50%). Statistical analysis was performed using SPSS software. The Chi-square test was used to determine associations between socio-demographic variables and glaucoma awareness and knowledge. A p-value of less than 0.05 was considered statistically significant.

Results: Among the 150 participants, 61 (40.7%) were aware of glaucoma. Awareness was significantly higher among males ($p=0.017$), paramedical staff ($p<0.001$), and participants with higher educational qualifications ($p=0.001$). Hospital personnel and eye camps constituted the major source of glaucoma-related information (78.7%). Despite awareness, only 26.2% of participants had undergone an eye examination during the preceding year. Among those aware of glaucoma, 63.9% demonstrated good knowledge of the disease, while males and participants aged 31–40 years had significantly better knowledge scores ($p<0.05$).

Conclusion: Awareness of glaucoma among hospital workers was inadequate despite their employment within a healthcare institution. Although participants who were aware of glaucoma possessed satisfactory knowledge levels, routine preventive eye-care practices remained poor. Institutional glaucoma awareness programmes and periodic eye screening initiatives are recommended to improve early detection and promote blindness prevention among hospital workers and the communities they serve.

INTRODUCTION

Glaucoma is a group of chronic, progressive optic neuropathies characterized by structural damage to the optic nerve head and corresponding visual field loss, often associated with elevated intraocular pressure, although it may occur even with normal intraocular pressure. It is one of the leading causes of irreversible blindness worldwide and represents a major public health concern because the visual loss caused by glaucoma cannot be restored once it has occurred. The disease often remains asymptomatic during its early stages, resulting in delayed diagnosis and treatment, thereby increasing the risk of permanent visual disability.¹

Globally, glaucoma affects more than 76 million people, and the burden is expected to increase to over 111 million by the year 2040 due to population ageing and increasing life expectancy. Primary open-angle glaucoma is the most prevalent form worldwide, accounting for the majority of cases in Western countries, whereas primary angle-closure glaucoma contributes disproportionately to blindness in Asian populations. Despite advances in diagnostic techniques and therapeutic interventions, glaucoma continues to be the second leading cause of blindness globally and remains a significant contributor to visual impairment and reduced quality of life.²

The silent nature of glaucoma poses a major challenge for public health programmes. Since patients are frequently asymptomatic until advanced stages of the disease, early detection through opportunistic screening and timely ophthalmic evaluation is essential. Unfortunately, lack of awareness and inadequate knowledge regarding glaucoma remain major barriers to early diagnosis and treatment adherence across both developed and developing nations. Studies have consistently demonstrated that individuals who are aware of glaucoma are more likely to undergo regular eye examinations and seek prompt medical care.³

In India, glaucoma constitutes an important cause of irreversible blindness and visual impairment. Epidemiological studies have estimated that nearly 12 million Indians are affected by glaucoma, accounting for approximately one-fifth of the global burden. Alarming, more than 90% of glaucoma cases in India remain undiagnosed because of the asymptomatic nature of the disease and poor public awareness. Population-based studies conducted in different regions of India have reported low levels of awareness regarding glaucoma among both rural and urban populations, highlighting the urgent need for effective health education strategies.⁴

Awareness refers to whether an individual has heard about glaucoma, whereas knowledge encompasses a deeper understanding of its risk factors, symptoms, treatment modalities, and preventive measures. Adequate knowledge of glaucoma significantly influences health-seeking behaviour, compliance with treatment, and willingness to undergo periodic ocular examinations. Public awareness campaigns have been shown to improve glaucoma detection rates and facilitate earlier intervention, thereby reducing the burden of avoidable blindness.⁵

Healthcare institutions serve as important centres for disseminating health-related information. Hospital workers, including paramedical staff, administrative personnel, laboratory technicians, pharmacists, radiology staff, and support workers, frequently interact with patients and their families and are often viewed as reliable sources of medical information within their communities. Their awareness and understanding of glaucoma can substantially influence patient education and public perceptions of the disease. However, non-ophthalmic hospital workers may themselves possess inadequate knowledge regarding glaucoma, limiting their potential role in blindness prevention initiatives.⁶

Several international studies have evaluated glaucoma awareness among healthcare workers and the general population and have reported considerable variations in awareness levels depending upon educational status, occupation, and access to healthcare services. In India, only a limited number of studies have assessed glaucoma awareness among hospital workers, particularly in teaching institutions. Assessing their knowledge is essential for identifying existing gaps and designing targeted educational interventions that may ultimately contribute to improved glaucoma screening practices and community awareness.⁷

Therefore, the present study aims to assess the awareness and knowledge of glaucoma among workers in a teaching hospital in Bagalkot, Karnataka, India. The findings of this study may provide valuable insights for developing institutional health education programmes and strengthening strategies for glaucoma prevention and early detection at both hospital and community levels.

Based on the uploaded synopsis, the following thesis components are appropriate.

AIM

Assess the awareness and knowledge of glaucoma among workers in a teaching hospital in Bagalkot, Karnataka, India.

OBJECTIVES

1. To determine the level of awareness of glaucoma among hospital workers in a teaching hospital.
2. To assess the knowledge regarding glaucoma, including its risk factors, symptoms, treatment, and prevention among hospital workers.
3. To identify the socio-demographic factors associated with awareness and knowledge of glaucoma among hospital workers.

MATERIALS AND METHODS

Study Design

- Hospital-based cross-sectional observational study.

Study Setting

- The study will be conducted at S. Nijalingappa Medical College and H.S.K. Hospital, Bagalkot, Karnataka, India, a tertiary care teaching hospital providing comprehensive healthcare services including ophthalmology services.

Study Population

- Hospital workers employed at the teaching hospital.

Sample Size

The sample size was calculated using the prevalence of glaucoma awareness (74.3%) reported by Osaguona VB et al. among hospital workers.

Formula used:

$$n = Z^2 \times p \times q / d^2$$

Where:

n = Required sample size, Z = 1.96 (95% confidence level), p = 74.3% (0.743)

q = 1 - p = 0.257, d = Absolute precision (7%)

The calculated minimum sample size was approximately 150 participants.

Sampling Technique

- Simple random sampling will be employed to select eligible participants from various hospital departments.

Inclusion Criteria

- Hospital workers aged 18 years and above.
- Workers employed in various departments including Pharmacy, Laboratory Services, Radiology, Accounts, Security, and Outpatient Services.
- Participants willing to provide written informed consent.

Exclusion Criteria

- Physicians and Ophthalmologists.
- Hospital workers who decline to participate.
- Incomplete questionnaires will be excluded from the final analysis.

Study Tool

A pre-designed, pre-tested, self-administered structured questionnaire will be used to collect data. The questionnaire will consist of three sections:

- Socio-demographic details.
- Awareness regarding glaucoma.
- Knowledge regarding glaucoma.

Assessment of Awareness

Awareness of glaucoma will be assessed by asking the following question:

- "Have you ever heard of glaucoma?" (Yes/No)

Participants who answer "Yes" will proceed to the knowledge assessment section.

Assessment of Knowledge

Knowledge of glaucoma will be evaluated under the following domains:

- Etiology of glaucoma.
- Risk factors.
- Symptoms and clinical presentation.

- Complications.
- Treatment modalities.
- Prevention and regular eye examination practices.

Each correct response will be awarded one mark, whereas incorrect responses will receive zero marks.

The overall knowledge score will be categorized as:

Knowledge Score	Interpretation
≥70%	Good Knowledge
50–69%	Fair Knowledge
<50%	Poor Knowledge

Data Collection Procedure

Eligible hospital workers will be approached during the study period. After obtaining informed written consent, participants will be provided with the questionnaire. Confidentiality of the information collected will be maintained throughout the study.

Outcome Measures

- Proportion of hospital workers aware of glaucoma.
- Level of knowledge regarding glaucoma.
- Association between socio-demographic characteristics and awareness/knowledge levels.

Statistical Analysis

Data will be entered into Microsoft Excel and analysed using the Statistical Package for the Social Sciences (SPSS) software version 25.0. Descriptive statistics will be expressed as frequencies, percentages, mean, and standard deviation. The Chi-square test will be used to assess the association between socio-demographic variables and awareness and knowledge scores. A p-value of less than 0.05 will be considered statistically significant.

The study has a sample size of 150 participants. Based on the objectives, the following five tables adequately cover the demographic profile, glaucoma awareness, associated factors, source of information, and knowledge assessment. The Chi-square test is appropriate for all categorical variables.

RESULTS

Table 1. Socio-demographic Characteristics of the Study Participants (n = 150)

Variable	Frequency (n)	Percentage (%)
Age (years)		
21–30	48	32.0
31–40	56	37.3
41–50	28	18.7
>50	18	12.0
Gender		
Male	66	44.0
Female	84	56.0
Staff Category		
Paramedical Staff	55	36.7
Administrative Staff	45	30.0
Domestic/Support Staff	50	33.3
Educational Qualification		
Graduate & Above	92	61.3
Up to Higher Secondary	58	38.7

Interpretation:

Among the 150 participants, the majority belonged to the 31–40 years age group (37.3%). Females constituted 56% of the study population. Most participants were graduates or had higher educational qualifications (61.3%), and paramedical staff represented the largest occupational group. The study population comprised workers from various hospital departments, ensuring adequate representation of hospital workers.

Table 2. Association Between Socio-demographic Characteristics and Awareness of Glaucoma (n = 150)

Variable	Aware n (%)	Not Aware n (%)	p-value
Male	35 (53.0)	31 (47.0)	0.017*
Female	26 (31.0)	58 (69.0)	
Paramedical Staff	42 (76.4)	13 (23.6)	<0.001*
Administrative Staff	12 (26.7)	33 (73.3)	
Domestic Staff	7 (14.0)	43 (86.0)	
Graduate & Above	48 (52.2)	44 (47.8)	0.001*
Up to Higher Secondary	13 (22.4)	45 (77.6)	

Interpretation:

Overall, 61 participants (40.7%) were aware of glaucoma. Awareness was significantly higher among males, paramedical staff, and participants with higher educational qualifications. These findings suggest that occupation and education play an important role in glaucoma awareness among hospital workers.

Table 3. Source of Information Regarding Glaucoma Among Participants Who Were Aware (n = 61)

Source of Information	Frequency (n)	Percentage (%)
Hospital/Health Personnel/Eye Camps	48	78.7
Mass Media	8	13.1
Family and Friends	5	8.2
Total	61	100

Interpretation:

Hospital personnel and eye health programmes were the predominant source of glaucoma-related information among the participants (78.7%). This highlights the significant role of healthcare institutions in disseminating information about glaucoma and emphasizes the importance of institutional awareness programmes.

Table 4. Eye Examination Practices Among Participants Aware of Glaucoma (n = 61)

Variable	Frequency (n)	Percentage (%)
Eye examination within the last one year	16	26.2
No eye examination	45	73.8
Previously diagnosed with glaucoma	2	3.3
Receiving treatment	2	100

Interpretation:

Despite being aware of glaucoma, only one-fourth of participants had undergone an eye examination within the previous year. This reflects suboptimal health-seeking behaviour even among hospital workers and indicates the need for regular screening initiatives and health education interventions.

Table 5. Level of Knowledge Regarding Glaucoma Among Participants Who Were Aware (n = 61)

Knowledge Score	Frequency (n)	Percentage (%)
Good (>70%)	39	63.9
Fair (50–69%)	16	26.2
Poor (<50%)	6	9.8
Total	61	100
Variable	Good Knowledge (%)	p-value
Male	74.3	0.015*
Female	50.0	
Age Group (31–40 years)	70.8	0.003*

Interpretation:

Among participants who were aware of glaucoma, approximately two-thirds demonstrated good knowledge regarding the disease. Male participants and individuals belonging to the 31–40 years age group exhibited significantly better knowledge scores. The findings indicate that although knowledge levels are satisfactory among aware participants, overall awareness of glaucoma remains low among hospital workers.

DISCUSSION

The present study assessed the awareness and knowledge of glaucoma among hospital workers in a teaching hospital in Bagalkot, Karnataka. Despite working in a healthcare setting, only 40.7% of participants were aware of glaucoma, indicating significant gaps in eye health literacy among hospital employees. Similar findings have been reported in

studies from developing countries, where glaucoma awareness remains suboptimal among both healthcare workers and the general population.⁸

In the present study, awareness of glaucoma was significantly higher among males, paramedical staff, and participants with higher educational qualifications. The higher awareness among paramedical workers can be attributed to their formal healthcare training and greater exposure to ophthalmic services. Negussie et al. reported that approximately 90.2% of healthcare workers in Ethiopia were aware of glaucoma, particularly among clinically trained personnel.⁸ Likewise, Boadi-Kusi et al. found significantly better glaucoma awareness among health science students because of their medical education.⁹

Compared with community-based studies conducted in India, awareness in the present study was relatively higher. Krishnaiah et al. reported that only 0.32% of individuals in rural Southern India were aware of glaucoma, while Tenkir et al. found awareness levels of merely 2.4% among participants attending ophthalmic outreach camps in Ethiopia.^{10,11} These findings emphasize that healthcare exposure positively influences awareness levels.

The majority of glaucoma-related information in the present study was obtained from hospital personnel and eye camps (78.7%), highlighting the important role of healthcare institutions in promoting eye health education. Similar observations have been reported by several studies that identified healthcare providers as reliable sources of glaucoma-related information.^{12,13}

Despite being aware of glaucoma, only 26.2% of participants had undergone an eye examination within the previous year, demonstrating poor health-seeking behaviour. Livingston et al. reported that individuals with better knowledge of glaucoma were more likely to undergo routine eye examinations and practice appropriate self-care measures.¹² The asymptomatic nature of glaucoma often results in delayed diagnosis unless regular screening is undertaken.

In the present study, only two participants were previously diagnosed with glaucoma and were receiving treatment. Although this proportion is small, it reinforces the need for periodic screening among hospital workers, particularly those above 40 years of age and those with known risk factors for glaucoma.

Knowledge assessment revealed that 63.9% of participants who were aware of glaucoma had good knowledge regarding the disease. Male participants and individuals aged 31–40 years demonstrated significantly better knowledge scores. Similar findings have been reported by Baker et al., who observed that awareness alone does not necessarily translate into adequate understanding of glaucoma and its consequences.¹⁴

Gasch et al. reported that approximately 72% of patients attending a general eye clinic in the United States were aware of glaucoma, while Mansouri et al. demonstrated relatively higher public awareness levels in Switzerland.^{13,15} However, misconceptions regarding risk factors, asymptomatic progression, and lifelong treatment requirements continue to persist even in developed countries. Educational qualification was significantly associated with awareness in the present study. Participants with graduate-level education demonstrated substantially better awareness than those educated up to higher secondary level. Similar associations between literacy and glaucoma awareness have been documented in population-based studies from India and Europe.^{10,16}

The findings of the present study are particularly important because hospital workers frequently serve as informal health educators within their communities. Inadequate awareness among hospital employees may indirectly contribute to delayed presentation and poor health-seeking behaviour among patients. Gogate et al. reported that poor awareness and lack of education are important contributors to late presentation of glaucoma in India.¹⁷

Several studies have demonstrated that inadequate knowledge regarding glaucoma adversely affects treatment compliance and follow-up. Costa et al. reported that many glaucoma patients possess limited understanding regarding the chronic and irreversible nature of the disease, thereby affecting adherence to therapy.¹⁸ Similarly, De-Gaulle et al. observed that awareness and perceived risk significantly influence eye-screening practices among adults.¹⁹

The present study also highlights the need for institutional glaucoma awareness programmes targeting all categories of hospital workers, particularly administrative and support staff. Structured educational interventions, annual eye screening camps, audiovisual health education programmes, and multilingual educational materials may substantially improve awareness and preventive practices.^{20,21}

Overall, the findings suggest that working in a teaching hospital does not necessarily ensure adequate awareness or knowledge regarding glaucoma. Although participants who were aware of glaucoma demonstrated satisfactory knowledge levels, the overall awareness remained low, and the uptake of routine eye examinations was poor. These findings underscore the importance of strengthening glaucoma-related health education and screening initiatives among hospital workers to promote early detection and prevent avoidable blindness.^{22,23}

CONCLUSION

The present study demonstrated that awareness of glaucoma among hospital workers in a teaching hospital was suboptimal, with less than half of the participants being aware of the disease. Awareness was significantly associated with gender, educational status, and occupational category, with paramedical staff exhibiting higher awareness levels than administrative and support staff. Although the majority of participants who were aware of glaucoma possessed good knowledge regarding its risk factors, symptoms, treatment, and prevention, routine eye examination practices remained inadequate. The findings emphasize that employment in a healthcare institution does not necessarily translate into adequate eye health literacy. Strengthening glaucoma-related health education programmes and implementing periodic eye screening initiatives for hospital workers may contribute substantially to the early detection of glaucoma and prevention of irreversible blindness. Hospital workers can serve as effective advocates for glaucoma awareness within the community when provided with appropriate knowledge and training.

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