



ORIGINAL ARTICLE

**Awareness and Knowledge About Glaucoma Among Health Care Professionals in a Tertiary Care Hospital, Coimbatore**

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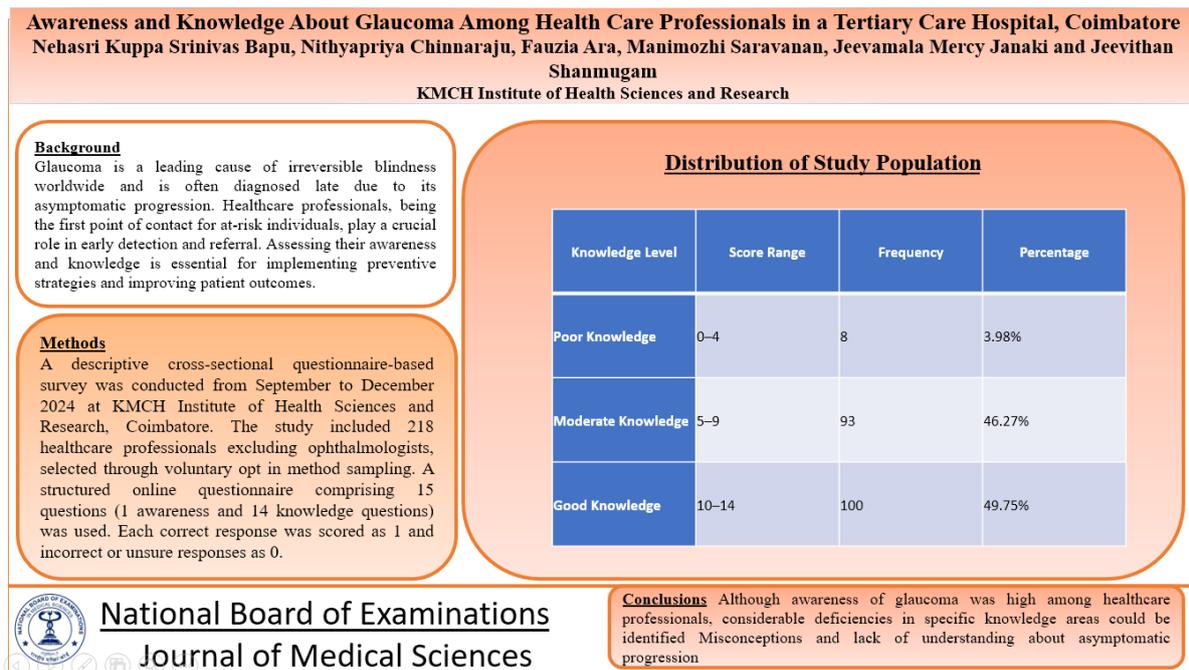
**Abstract**

**Introduction:** Glaucoma is a leading cause of irreversible blindness worldwide and is often diagnosed late due to its asymptomatic progression. Healthcare professionals, being the first point of contact for at-risk individuals, play a crucial role in early detection and referral. Assessing their awareness and knowledge is essential for implementing preventive strategies and improving patient outcomes. **Materials and Methods:** A descriptive cross-sectional questionnaire-based survey was conducted from September to December 2024 at KMCH Institute of Health Sciences and Research, Coimbatore. The study included 218 healthcare professionals excluding ophthalmologists, selected through voluntary opt in method sampling. A structured online questionnaire comprising 15 questions (1 awareness and 14 knowledge questions) was used. Each correct response was scored as 1 and incorrect or unsure responses as 0. Total scores were categorized as poor (0–4), moderate (5–9), and good (10–14) knowledge. **Results:** Out of 218 participants, 201 (92.2%) were aware of glaucoma. Knowledge assessment revealed that 4% had inadequate knowledge, 46.27% had moderate knowledge, and 49.75% had adequate knowledge. The highest correct responses were related to glaucoma's association with diabetes (88.6%) and blindness (92%), while misconceptions were common regarding mobile phone use (49.3%) and spectacle use (64.7%) as risk factors. **Conclusion:** Although awareness of glaucoma was high among healthcare professionals, considerable deficiencies in specific knowledge areas could be identified. Misconceptions and lack of understanding about asymptomatic progression and necessity for lifelong treatment underline the need for targeted educational initiatives.

**Keywords:** Glaucoma, Knowledge, Attitude, Practice

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## Graphical Abstract



### Introduction

Glaucoma is the second leading cause of blindness globally, after cataract, and the leading cause of irreversible blindness worldwide [1]. It comprises a group of optic neuropathies characterized by progressive degeneration of the optic nerve head and associated visual field loss, often linked to raised intraocular pressure (IOP). However, glaucoma can also occur with normal or low IOP, emphasizing its complex multifactorial etiology [2]. The pathophysiology primarily involves damage to the retinal ganglion cells due to mechanical compression and impaired axonal transport at the lamina cribrosa [1].

Globally, the number of individuals aged 40–80 years living with glaucoma was estimated at 64.3 million in 2013, projected to rise to 111.8 million by 2040 [3]. In India alone, over 11 million people are estimated to be affected [4]. Despite this high prevalence, glaucoma is often diagnosed late because of its initially asymptomatic

course [5,6]. A study from Nigeria found that more than half of patients were already blind in one or both eyes at the time of diagnosis, highlighting the consequence of poor early detection [5].

Numerous studies have shown that awareness does not always translate into accurate knowledge. Chakrabarty et al. [7] in Central India reported that even though healthcare professionals were largely aware of glaucoma, misconceptions were prevalent—such as beliefs that prolonged screen use or reading could cause glaucoma. In a South Indian study, although 76% of medical students had heard of glaucoma, only 52.2% knew about its familial predisposition and 70.7% were aware of its potential to cause blindness [4].

Healthcare professionals, particularly those outside ophthalmology, serve as vital links in early detection. Given that glaucoma shares risk factors such as diabetes, hypertension, and corticosteroid use, general physicians, nurses, and

paramedical staff play a crucial role in identifying high-risk individuals and referring them for ophthalmologic evaluation [2,6,8]. Moreover, they are important health educators who can reinforce knowledge, encourage screening, and enhance treatment adherence [9].

This study was conducted to assess the current levels of awareness and knowledge about glaucoma among healthcare professionals in a tertiary care hospital in Coimbatore. Understanding their knowledge profile will help identify educational gaps and improve referral pathways for early glaucoma detection and management.

### **Materials and Methods**

This study was designed as a descriptive, cross-sectional, questionnaire-based survey to assess the awareness and knowledge regarding glaucoma among healthcare professionals. It was conducted in the KMCH Institute of Health Sciences and Research, Coimbatore, over a period of four months from September to December 2024. The study population comprised healthcare professionals including clinicians (excluding ophthalmologists), non-clinical doctors, and paramedical staff such as nurses, physiotherapists, and paramedical technicians working within the institution. Participants were recruited through announcements and invitations, and participation was entirely voluntary. Those with specialized training in ophthalmology were excluded from the study to prevent bias in knowledge assessment.

After obtaining approval from the Institutional Human Ethics Committee (IHEC), data collection was carried out using a pre-designed structured questionnaire administered through Google

Forms. The index page of the online questionnaire included a brief description of the study purpose. Participants provided informed consent by selecting the “Agree and continue” option before accessing the questionnaire. The questionnaire consisted of two sections. Section A collected demographic details including age, gender, and profession. Section B evaluated awareness and knowledge of glaucoma, comprising 15 closed-ended questions. One question assessed awareness (whether the participant had heard of glaucoma), and the remaining 14 questions were used to assess knowledge of glaucoma, including items on its etiology, risk factors, course, and treatment. Each question required a response in one of three categories: Yes, No, or Not Sure.

A sample size of 200 was estimated based on prior prevalence rates reported in similar studies. For instance, Komolafe et al. reported that 31.7% of clinical participants recognized family history as a risk factor for glaucoma and 26.7% had no knowledge of any risk factors for the disease [10]. Using a relative precision of 20% and a 95% confidence level, the sample size was calculated using single proportion formula and determined to be approximately 200.

The responses were automatically recorded in Google Forms and exported to Microsoft Excel for data cleaning and preliminary arrangement. Statistical analysis was performed using SPSS software. Descriptive statistics such as frequencies and percentages were used to summarize categorical variables. The association between profession and knowledge levels was assessed using the chi-square test. A p-value less than 0.05 was considered statistically significant. Ethical considerations included the maintenance of

confidentiality and anonymity of all participants. No incentives were provided, and participants retained the right to withdraw at any time without penalty.

For the purpose of this study, the level of knowledge regarding glaucoma was assessed using 14 structured questions related to etiology, risk factors, clinical course, and treatment. Each correct response was scored as 1, and incorrect or “not sure” responses were scored as 0, resulting in a total possible score ranging from 0 to 14. Based on the total score obtained, participants were categorized into three levels of knowledge: scores between 0–4 were classified as poor knowledge, 5–9 as moderate knowledge, and 10–14 as good knowledge. This classification is adapted from commonly used cutoffs in similar KAP (Knowledge, Attitude, Practice) studies assessing disease awareness among healthcare professionals, which recommend interpreting scores as a percentage of the maximum possible score to standardize comparisons and simplify analysis [5].

## Results

Among the 218 participants included in the study, the majority were

female healthcare professionals (82.1%), while only 17.9% were male. This gender disparity may reflect the actual composition of healthcare staff in the study setting, especially in paramedical fields where female representation tends to be higher.

The responses to the 14 knowledge-based questions on glaucoma revealed variable levels of understanding among participants. High levels of knowledge were noted regarding glaucoma being non-infectious (74.6%), its association with diabetes (88.6%), and that it can cause blindness (92%). Additionally, most participants correctly identified that glaucoma has a familial disposition (69.7%) and requires lifelong use of eye drops (68.7%). However, misconceptions still existed—about 49.3% wrongly associated glaucoma with overuse of mobile phones, and 64.7% believed that spectacle use increases glaucoma risk. Only 56.2% knew about early visual field involvement, and just over half (50.7%) recognized that blindness due to glaucoma is not completely curable. These results highlight gaps in understanding of the disease’s course and risk factors among healthcare professionals. (Table 1)

Table 1. Distribution of Study Population According to Knowledge

PARAMETERS	No knowledge		Adequate knowledge	
	F	%	F	%
GLAUCOMA IS INFECTIOUS	51	25.4	150	74.6
GLAUCOMA HAS A FAMILIAL DISPOSITION	61	30.3	140	69.7
DIABETES IS A RISK FACTOR FOR	23	11.4	178	88.6

GLAUCOMA				
PEOPLE WEARING SPECTACLES HAVE A HIGHER RISK OF GLAUCOMA	130	64.7	71	35.3
GLAUCOMA IS PREVALENT AMONG PEOPLE WITH OVER USAGE OF MOBILE PHONES	102	50.7	99	49.3
GLAUCOMA AFFECTS ALL AGE GROUPS	52	25.9	149	74.1
GLAUCOMA IS A SPIRITUAL CURSE	34	16.9	167	83.1
GLAUCOMA HAS AN ASYMPTOMATIC COURSE	76	37.8	125	62.2
VISUAL FIELD IS AFFECTED EVEN IN THE EARLY STAGE OF GLAUCOMA	88	43.8	113	56.2
GLAUCOMA CAN CAUSE BLINDNESS	16	8.0	185	92.0
BLINDNESS DUE TO GLAUCOMA IS COMPLETELY CURABLE	99	49.3	102	50.7
EYE DROPS FOR GLAUCOMA SHOULD BE USED LIFELONG	63	31.3	138	68.7
GLAUCOMA CAN BE CONTROLLED	122	60.7	79	39.3
GLAUCOMA CAN ALSO BE TREATED WITH SURGERY	24	11.9	177	88.1

The distribution of total scores from the 14 knowledge questions shows that most participants had a moderate to high level of knowledge. A significant proportion scored between 8 and 11, with the highest frequencies observed for scores of 9 (18.4%) and 11 (18.4%). A smaller proportion scored the maximum (14) or

minimum (0–2), indicating that while few had very poor knowledge, very few had complete knowledge either. The data suggests that although general awareness is present, there remains scope for strengthening detailed and accurate understanding of glaucoma among healthcare professionals (Table 2).

Table 2: Distribution of Study Population According to Total Marks Obtained

Knowledge Level	Score Range	Frequency	Percentage
Poor Knowledge	0–4	8	3.98%
Moderate Knowledge	5–9	93	46.27%
Good Knowledge	10–14	100	49.75%

## Discussion

In the present study, out of 218 healthcare professionals surveyed, 92.2% were aware of the term “glaucoma.” This is consistent with the findings of Chakrabarty et al., where 93% of healthcare professionals had heard of glaucoma [6]. Similarly, a South Indian study by Nageeb and Kulkarni reported awareness levels of 92.5% among health professionals in a tertiary care setting [2]. These high awareness levels reflect the exposure of healthcare professionals to medical education and clinical environments. However, awareness alone does not ensure adequate knowledge of the disease, as evident from our knowledge-based question responses.

Knowledge regarding glaucoma etiology, risk factors, clinical course, and management showed considerable variation in this study. While 88.6% knew that diabetes is a risk factor for glaucoma and 83.1% rightly denied the notion of it being a spiritual curse, only 56.2% were aware that visual field loss can occur even in early stages, and 50.7% believed blindness due to glaucoma to be completely curable. This highlights a significant gap in understanding the disease’s asymptomatic progression and irreversible nature. Kizor-Akaraiwe et al. in Nigeria similarly reported that although 61.3% had heard of

glaucoma, only 36.8% had good knowledge about it, with misconceptions about reversibility and symptoms being widespread [5].

Interestingly, in our study, nearly half of the participants (49.3%) wrongly believed that glaucoma may be caused by overuse of mobile phones, and 64.7% thought spectacle wearers are at higher risk. This is similar to the findings by Chakrabarty et al., who found that many paramedical staff mistakenly believed that prolonged screen use, stress, or reading caused glaucoma [6]. These misconceptions may be attributed to the influence of anecdotal beliefs and limited targeted education about glaucoma in non-ophthalmic disciplines.

Knowledge about treatment was moderate among participants. While 88.1% correctly identified that glaucoma can be treated surgically, only 68.7% were aware that the use of eye drops is typically lifelong. In our study, 92% of participants recognized that glaucoma can lead to blindness, which is consistent with findings from other regions. For instance, Kizor-Akaraiwe et al. in Nigeria reported a similar awareness level at 83.6% [5], while Rajendra et al. in South India observed it to be 71% [4]. However, nearly half of our study participants incorrectly believed that blindness due to glaucoma is reversible,

indicating a significant misconception. This was notably lower than other studies where better knowledge was reported—Kizor-Akaraiwe et al. found that 63.5% of participants had adequate knowledge [5], Lipi Chakrabarty reported 68.3% had adequate knowledge [6], and Nageeb and Kulkarni noted 42.9% had satisfactory understanding [2]. Rajendra et al. also observed a similar trend, with 70.7% of medical students acknowledging that glaucoma could cause blindness, but only about half were aware of its familial risk and the need for chronic treatment [4].

The overall score distribution in our study showed that most participants had moderate knowledge, with the highest cluster scoring between 9 and 11 out of 14. Only 2.5% scored a perfect 14, and 3.5% scored below 3, indicating a skewed distribution favouring average understanding but highlighting a need for educational reinforcement.

Importantly, multiple studies emphasize the role of healthcare professionals in identifying and referring high-risk patients for glaucoma screening. Since glaucoma shares risk factors with common systemic diseases such as diabetes and hypertension, primary care doctors and nurses serve as crucial links for early detection and referral [2,8,10]. Inadequate knowledge among these professionals could delay patient education and referral, thereby contributing to late presentation and irreversible visual loss.

Our findings highlight the need to reinforce continuing medical education (CME) programs focusing on common but often misinterpreted conditions like glaucoma. Standardized training modules across departments, particularly in non-ophthalmic settings, can help bridge the knowledge gap. Promoting self-screening

behavior and improving access to accurate educational material are necessary steps forward.

## **Conclusion**

The findings of this study indicate that while the overall awareness of glaucoma among healthcare professionals was high, significant gaps remain in the depth of knowledge regarding its risk factors, asymptomatic progression, irreversibility, and long-term management. Misconceptions such as associating glaucoma with mobile phone use or spectacle wear highlight the need for targeted educational interventions. The majority of participants demonstrated moderate to good knowledge, but a notable proportion still exhibited poor understanding, which may hinder early identification and referral of at-risk individuals. Given that healthcare professionals serve as the first point of contact for many patients, enhancing their knowledge through continuous medical education and interdisciplinary training is essential for promoting timely glaucoma screening, diagnosis, and management. Strengthening awareness at the provider level could ultimately contribute to reducing the burden of avoidable blindness in the population.

## **Statements and Declarations**

### **Conflicts of interest**

The authors declare that they do not have conflict of interest.

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## References

1. Nkum G, Lartey S, Frimpong C, Micah F, Nkum B. Awareness and Knowledge of Glaucoma Among Adult Patients at the Eye Clinic of a Teaching Hospital. *Ghana Med J*. 2015;49(3):195–9.
2. Nageeb N, Kulkarni UD. Glaucoma Awareness and Self-Care Practices Among the Health Professionals in a Medical College Hospital. *J Clin Diagn Res*. 2015;9(12):NC01–NC04.
3. Tham YC, Li X, Wong TY, Quigley HA, Aung T, Cheng CY. Global prevalence of glaucoma and projections through 2040: a systematic review and meta-analysis. *Ophthalmology*. 2014;121(11):2081–90.
4. Rajendra GA, Mahadevan G, Satenahalli KV, Sushma R. Knowledge and Awareness of Glaucoma Among Medical Students in Medical College in South India. *Eur J Cardiovasc Med*. 2024;14(3):827–31.
5. Kizor-Akaraiwe NN, Monye HI, Okeke S. Awareness and Knowledge about Glaucoma and Proportion of People with Glaucoma in an Urban Outreach Programme in Southeast Nigeria. *BMJ Open Ophthalmol*. 2017;1:e000018.
6. Chakrabarty L. Glaucoma Awareness, Knowledge, and Self-care Practices Among Health-care Professionals in Central India. *J Med Sci Health*. 2021;7(2):13–16.
7. Padmajothi MS, Chaitra MC, Anneshi RC. Awareness and knowledge of glaucoma among hospital personnel in a tertiary care center in rural Karnataka. *Trop J Ophthalmol Otolaryngol*. 2019;4(2):126–30.
8. Weinreb RN, Aung T, Medeiros FA. The pathophysiology and treatment of glaucoma: a review. *JAMA*. 2014;311(18):1901–11.
9. Sirisha R, Ranjitha CS, Babu GS, et al. Assessment of Awareness, Attitude, Knowledge and Willingness for Eye Donation in Undergraduate Medical Students. *IP Int J Ocul Oncol Oculoplasty*. 2023;9(4):186–90.
10. Komolafe OO, Omolase CO, Bekibele CO, Ogunleye OA, Komolafe OA, Omotayo FO. Awareness and knowledge of glaucoma among workers in a Nigerian tertiary health care institution. *Middle East Afr J Ophthalmol*. 2013;20(2):163–7. doi:10.4103/0974-9233.110611