

Evaluation of Glaucoma Awareness and Understanding Among Patients Visiting Al-Shifa Trust Eye Hospital in Sukkur, Sindh, Pakistan

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Abstract

Glaucoma is a serious eye disease that can permanently damage the optic nerve, which connects the eye to the brain and helps us see. The most common cause of glaucoma is high pressure inside the eye, also called intraocular pressure. This pressure occurs because the fluid in the eye does not drain properly. Over time, this pressure can damage the optic nerve, leading to blurry vision or even blindness. There are different types of glaucoma, but the most common type is called open-angle glaucoma. It develops slowly and often doesn't show any signs in the early stages. Consequently, many people don't realize they have it until their vision is already affected. Another type, called angle-closure glaucoma, can happen suddenly and cause eye pain, headaches, and sudden vision problems. Glaucoma can't be cured, but it can be controlled. Doctors use eye drops, pills, laser treatment, or surgery to lower the pressure in the eye and protect vision. Early detection through regular eye exams is the best way to prevent vision loss. Learning about glaucoma helps people understand how to take care of their eyes and avoid serious vision problems in the future. The study was based on a survey completed by 65 people. The data were collected randomly and analyzed using SPSS software (version 23). Most of the participants (88.0%) had completed college, and 61.5% were women. Around 36.9% had completed secondary school, but 29.2% had no formal education. About 33.8% were students, and 10.7% had jobs. Around 70.7% of the participants had heard of glaucoma, but only 29.3% stated that vision loss could occur without any pain. This shows a lack of awareness. Only 60% knew the risk factors, while 47.6% had never had their eyes checked. About 78.4% believed glaucoma could be treated, and 64.6% supported early treatment. The results showed that most people did not know enough about glaucoma. Many could not name the symptoms or risk factors; some even thought it could be cured just with early treatment. Overall, knowledge about glaucoma was found to be poor.

Keywords: Glaucoma, knowledge, Visual field Defects, Eye care, intraocular pressure

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Introduction

Glaucoma is a group of progressive eye disorders characterized by damage to the optic nerve, which is essential for transmitting visual information from the retina to the brain. This damage is commonly associated with

elevated intraocular pressure inside the eye. If not treated, glaucoma can lead to permanent vision loss or even blindness. Glaucoma is a group of eye disorders that damages the optic nerve, usually due to high pressure inside the

eye (intraocular pressure). Over time, this damage can lead to permanent vision loss or even blindness if not treated promptly. Glaucoma is often called the “silent thief of sight” because it progresses slowly without noticeable symptoms until significant vision loss occurs (Fernández-Albarral et al., 2024; Dhawale & Tidake, 2024). Glaucoma progresses slowly without noticeable symptoms until significant vision is lost. The eye constantly produces a fluid called “aqueous humor,” which drains out of the eye to maintain normal pressure. When this fluid does not drain properly, pressure increases, which can harm the optic nerve. The optic nerve receives light-generated nerve impulses from the retina and transmits them to the brain. In some cases, glaucoma may occur even with normal eye pressure; this form of glaucoma is thought to be caused by poor regulation of blood flow to the optic nerve. New therapeutic eye drops continue to play an important role in glaucoma management. In some patients, glaucoma may be controlled by medication, while other patients may need laser treatment or surgery. There are different types of glaucoma, but the most common one is called open-angle glaucoma. It usually develops slowly and doesn’t cause pain, so many individuals remain unaware of the disease until their vision is affected. Another type is angle-closure glaucoma, which can happen suddenly and is a medical emergency. Glaucoma can affect anyone, but it is more common in older adults. Regular eye check-ups are important because early stages of glaucoma usually don’t have symptoms. Doctors can check the pressure inside the eye and look at the optic nerve to catch the disease early. Although there is no cure for glaucoma, treatments like eye drops, laser therapy, or surgery can help control the pressure in the eye and prevent further vision loss. Glaucoma is a group of eye diseases that damage the optic nerve, which is crucial for vision. This damage is often (but not always) caused by abnormally high pressure in the eye, known as intraocular pressure (IOP). Glaucoma is defined as a group of diseases that result in progressive optic neuropathy with loss of retinal ganglion cells and subsequent visual field defect (Fernández-Albarral et al., 2024). Glaucoma is one of the most important global health problems with about 80 million individuals affected and being one of the leading causes of irreversible eye diseases (Singh & Wang, 2024; Tham et al., 2014). These diseases present progressive optic neuropathy, with slow development of visual field loss. Persons of African ancestry are particularly at risk

since studies have shown them to have a greater prevalence of glaucoma morbidity and glaucoma-related morbidity (Heisel et al., 2021). Globally, glaucoma is the primary cause of blindness, according to the World Health Organization. High-risk groups based on age and family history of glaucoma should be specifically targeted to increase awareness and screening (Hassan et al., 2020). There are several predisposing factors to glaucoma: high intraocular pressure, increasing age, family history, and systemic diseases, including diabetes and hypertension. Primary open-angle glaucoma is the most prevalent form, and the disease could be divided into several categories. These findings underline the importance of screening and initial therapy when it comes to the preservation of vision since the treatment process introduces major changes in the course of the illness (Thakur et al., 2024; Umetsu et al., 2024). Management of glaucoma depends on the type as well as the stage of the disease at which it has been diagnosed. They include medicinal treatment, laser treatment, and surgical procedures. Eye drops are used, and they are supposed to minimize the production of the aqueous humor or to enhance its drainage to reduce IOP (King et al., 2024). There are laser therapies like selective laser trabeculoplasty that help to open the drainage pathway and boost the amount of fluid the eye is able to remove. In more severe conditions, various operations may sometimes be performed to develop new routes for drainage or to decrease fluid creation (Horwitz et al., 2023; Takusagawa et al., 2024). Despite its prevalence, many patients remain unaware of their condition until significant vision loss has occurred. Research indicates that approximately one-third of glaucoma patients may become blind before seeking medical care, often due to a lack of knowledge about the disease and its early symptoms (Soqia et al., 2023). This issue is particularly pronounced in certain regions, including Africa, where inadequate access to healthcare services compounds the problem. It was found that nearly half the glaucoma patients in Africa become at least partly blind before being diagnosed. Therefore, identification of patients, level of awareness, and knowledge deficit is paramount in the design of more effective educative strategies (Yenegeta et al., 2020). Treatment of glaucoma must be administered as early as possible for better prognosis to prevent blindness. Closely linked with raised levels of intraocular pressure, glaucoma may lead to irreversible damage to the optic nerve if its early signs are not treated. The inexplicable

aspect of the disease requires constant public sensitization on the need to go for a routine eye checkup in an effort to manage the disease (Srivastava & Nitesh, 2024). The research conducted at the ALSHIFA TRUST EYE HOSPITAL SUKKUR, SINDH shall fill in the gaps of the existing information regarding glaucoma among patients. It is such insights that can come in handy in designing relevant sensitization activities meant to enhance public awareness of the disease and its determinants and the need to undertake screening. By filling these knowledge gaps, healthcare providers will be able to call attention to proper early diagnosis and treatment to avoid glaucoma-caused blindness. (Yimam et al., 2024). However, untreatable glaucoma results in a considerable financial cost not only to patients but also to health care systems and societies. Lack of training among the practicing health care personnel, restricted access to professional treatment, and ignorance are responsible for high numbers of undiagnosed cases, especially in low- and middle-income countries (Anthony et al., 2024).

Aim of the Study

The study aims to assess the level of knowledge regarding glaucoma among patients at Al-Shifa Trust Eye Hospital, Sukkur, Sindh.

Significance of the Study Research

The assessment of glaucoma knowledge among the patients is a very important factor in health care. By assessing patients' knowledge, the study can enlighten patient outcomes by finding out how much of the information a patient should know to improve the early diagnosis of glaucoma and treatment, thus reducing vision loss and the associated costs. The study seeks to reach the specific objectives by creating awareness of proper eye care among the patients, so that informed decisions could be made, hence improving the efficiency in health care delivery.

Types of Glaucoma

1. **Primary Open-Angle Glaucoma (POAG):** Most common type. Develops slowly. Usually painless; peripheral vision is lost first.
2. **Angle-Closure Glaucoma (Closed-Angle):** Less common but more serious. Sudden rise in eye pressure. Symptoms include eye pain, nausea, blurred vision, and halos around lights. Medical emergency.
3. **Normal-Tension Glaucoma:** Damage occurs even with normal eye pressure. May be linked to poor blood flow to the optic nerve.

4. **Secondary Glaucoma:** Caused by another condition (e.g., diabetes, injury, inflammation).
5. **Congenital Glaucoma:** Rare. Present at birth due to developmental issues in the eye's drainage system.

Signs and Symptoms in Glaucoma

1. **Open-Angle Glaucoma (Most Common Type):** No pain or early symptoms, Slow loss of side (peripheral) vision, trouble seeing in dim light. Seeing blank spots in your vision as it gets worse.
2. **Angle-Closure Glaucoma (Emergency Condition):** Sudden eye pain, Severe headache, Blurry vision, seeing halos or rainbow colors around lights. Red eyes, nausea or vomiting (along with eye pain).
3. **General Signs to Watch for:** Gradual vision loss (usually from the sides); eye pressure (often only detected by an eye doctor). Needing more light to see clearly. Trouble adjusting to dark rooms. Because symptoms can be very mild or not noticeable at all in the beginning, regular eye checkups are the best way to catch glaucoma early, especially if you are over 40 or have a family history of eye problems.

Methodology

Study Design and Area

This study was a descriptive cross-sectional study that started on 1st May 2025. The study was done at ALSHIFA TRUST EYE HOSPITAL in Sukkur, Sindh.

Study Population

The people included in the study were male and female patients visiting the outpatient department (OPD) of Alshifa Trust Eye Hospital Sukkur during one week, especially on Monday, Tuesday, Wednesday, Thursday, and Friday.

Sample Size

A total of 65 patients who visited the hospital during the data collection were included in the study.

Inclusion Criteria

All male and female patients with glaucoma. Glaucoma patients who agreed to take part in the study. Glaucoma patients who were present at the time of data collection.

Exclusion Criteria

Patients with diseases other than glaucoma. Glaucoma patients who did not want to take part in the study. Patients who were not present during the data collection days.

Sampling

This study used a non-random method called convenience sampling, where participants were chosen based on ease of access.

Source of Data

The data for this research were collected using questionnaires made specifically for this study.

Research Tool

Questionnaires were used to collect information. These were made using important points found in previous studies.

Data Collection Process

Permission to do this study was obtained from Alshifa Trust Eye Hospital, Sukkur, Sindh. Before collecting the data, each participant was told about the purpose of the study and asked if they wanted to take part. Those who agreed gave both written and spoken permission. The selected glaucoma patients were then given the questionnaires.

Data Analysis

The data were analyzed using software called IBM SPSS version 23. Basic information and other important details were shown using numbers and percentages.

Ethical Considerations

Permission to conduct this study was given by the ORIC, SALU, Khairpur is striving continuously to provide training for capacity building of faculty and students. Various Trainings/workshops/Seminars has been organized from time to time within the main Campus and other campuses also. Participants were told they could choose not to take part, and there was no pressure. Everyone who joined gave their consent and was told about the study, its risks, and its benefits in their own languages.

Data Analysis&Results

Demographic Analysis

Table 1. Classification of Gender

Categories	Frequency	Percent
Male	25	38.4
Female	40	61.5
Total	65	100.0

The demographic table 1 shows that 38.4% 23 out of 60 participants are male and 61.5% 37 out of 65 are female thus the study sample has a higher number of females.

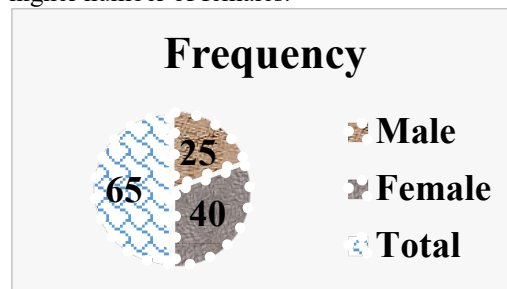


Figure 1. Demographic Distribution of Study Participants by Gender ($N = 65$). The figure displays a multimodal analysis: the 3D bar chart (left) compares absolute participant counts and

specific percentages, while the donut chart (right) provides a visual breakdown of the relative percentages ($N = 65$ total). Subgroups (e.g., Male count: 25, Female count: 40) are clearly marked, and flow lines indicate data mapping.

Table 2. Classification of Age

Categories Frequency Percent

20-25years	25	38.4
26-30years	10	15.3
31-35years	9	13.8
36-40year	8	12.3
Above 40	13	20.0
Total	65	100.0

Table 2 reveals a relatively large proportion of participants in the group of individuals aged between 20 and 25 years, 38.4% ($n = 25$). The second highest, 15.3% ($n = 10$), are between 26 and 30 years of age, and the third highest, 13.8% ($n = 9$), are between 31 and 35 years of age. The smallest group, 12.3 % ($n = 8$), belongs to the age group 36-40 years.

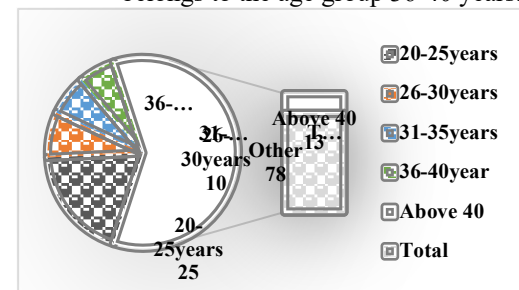


Figure 2. Illustrated the study population ($N = 65$) was categorized into five distinct age groups. The largest cohort was aged 20–25 years, representing 38.4% ($n = 25$) of the total sample. Participants aged Above 40 years formed the second largest group at 20.0% ($n = 13$), followed by 26–30 years (15.3%, $n = 10$), 31–35 years (13.8%, $n = 9$), and 36–40 years (12.3%, $n = 8$). Overall, the sample is predominantly composed of younger adults in the 20–25 age bracket.

Table 3. Classification of Education

Categories Frequency Percent

No	Formal	19	29.2
Education			
Primary		17	26.1
Secondary		24	36.9
Higher		5	7.6
Total		65	100.0

Education level of participants is shown in Table 3. The largest number, 36.9% ($n=24$), of

the respondents are those with secondary education, while 29.0% (n=19) of the respondents have no formal education. 26.1% (n = 17) of participants reported completing their primary education, and only 7.6% (n = 5) have attended higher education.

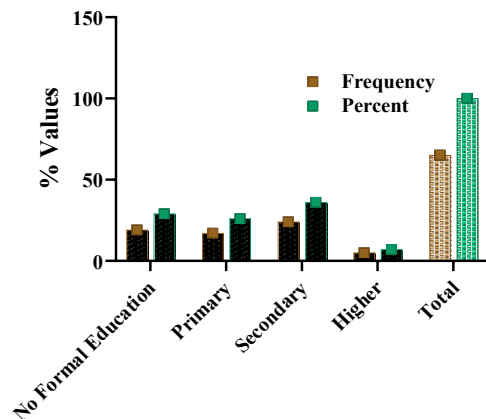


Figure 3. Illustrated the educational background of participants (N = 65) varied significantly. The largest category was Secondary Education, comprising 36.9% (n = 24) of the total sample. Participants with No Formal Education constituted 29.2% (n = 19), followed by Primary Education at 26.1% (n = 17). Higher Education represented the smallest group, accounting for only 7.6% (n = 5) of participants.

Table 4. Classification of Occupation

Categories	Frequency	Percent
Student	22	33.3
Employed	7	10.7
Unemployed	16	24.6
Other	20	33.7
Total	65	100.0

Table 4. Shows categories of occupation among the respondents. Of the participants 33.8% (n = 22) are students, 31.7 % (n =20) fell in to the 'Other' category, 24.6% (n = 16) were unemployed and the remaining 10.7% (n = 7) were employed.

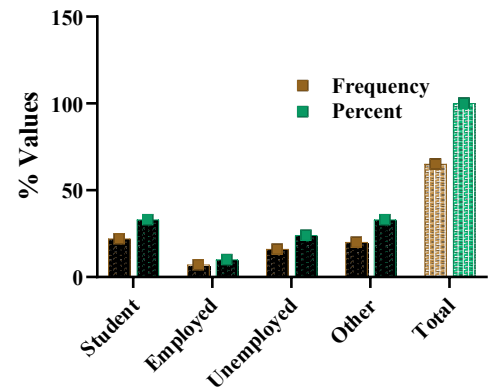


Figure 4. Presents the breakdown of study participants (N = 65) according to occupational status. The sample was predominantly composed of 'Other' occupations (33.7%, n = 20) and Students (33.3%, n = 22). Unemployed participants made up 24.6% (n = 16) of the total, while Employed individuals represented the smallest cohort at 10.7% (n = 7).

Table 4.1. Awareness regarding glaucoma and sources of information among participants (N = 65)

Variable	Frequency (n)	Percentage (%)	Test Statistic	p-value
Response				

Have you heard of glaucoma before?				
Yes	46	70.7	—	—
No	18	27.6	1.000	0.445
Total	65	98.3		

Table 4.2. Awareness regarding glaucoma and sources of information among participants (N = 65).

Variable	Frequency (n)	Percentage (%)	Test Statistic	p-value
Response				

If yes, what is your source of information?				
Self-Reading	25	38.4	—	—
Contact with Health Staff	13	20.0	—	—
Social Media	14	21.5	—	—
Family Members	—*	7.6 / 57.6*	—	—

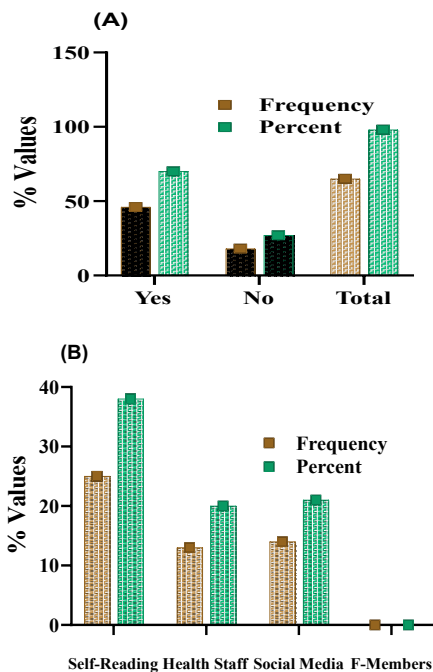


Figure 4.1&2. (A and B) Multimodal visualization showing glaucoma awareness (70.7% , non-significant at $p = 0.445$) and information sources ($N = 65$). Self-reading (38.4% , $n = 25$) was the primary source, followed by social media (21.5%), family members (20.0%), and health staff (20.0%)

Table 5 Classification of Residency
CategoriesFrequencyPercent

Urban	20	30.7
Rural	45	69.2
Total	65	100.0

Table 5. Below shows how the responses were grouped according to residence.

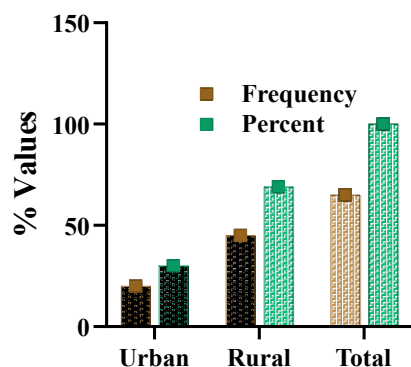


Figure 5. Shown participants ($N = 65$) were categorized based on their geographic residency. The majority of the study sample resided in Rural areas, accounting for 69.2% ($n = 45$) of the total population. In contrast,

Urban residents constituted 30.7% ($n = 20$) of the participants, demonstrating a higher rural demographic representation in the study sample.

Table 6 Knowledge regarding Glaucoma Participants include 45 (69.2%)who live in rural settings, and 20 (30.7%) in the urban settings.

Statement	Freq:	Percent	Median	St. Dev
Have you heard of glaucoma before?	46	70.7	1.000	.445
Yes	18	27.6		
No				
If yes, what is your source of information? self-reading	25	38.4		
Contract with health staff	13	20.0		
Ophthalmic Clinic	17	26.1	2.500	1.281
Social Media	14	21.5		
Family Member	5	7.6		
Sudden vision loss	37	61.5		
What are the increased Risk factors of high blood pressure in Developing Glaucoma? (Select All That Appl Contract)	5	7.6	12	18.4
Diabetes	16	24.6		
Family History	9	13.8		
Eye Infection	18	27.6	4.000	2.140
High Intraocular	5	7.6		
	3	4.6		

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Prolog use of Glasses				
Don't Know				
Certain drug like steroid can cause glaucoma	Yes	26	40.0	
	No	13	2.0	
	Yes	17	26.1	
	No	20	30.7	
Glaucoma is the same as contact?				
Glaucoma result in blindness?	Yes	51	85.0	
	No	8	12.3	
		6	9.2	
Don't Know				
It is possible to have glaucoma without know	Yes	18	27.6	
	No	23	38.4	
		25	38.4	
Don't Know				
Blindness from glaucoma is irreversible?	Yes	33	50.7	
	No	14	21.5	1.000
		19	29.2	.884

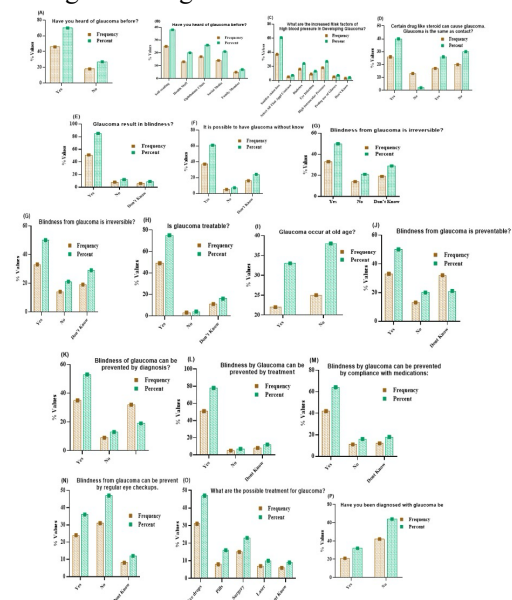
Don't Know				
Is glaucoma treatable?	Yes	49	75.3	
	No	3	4.6	1.00
		11	16.9	
Don't know				
Glaucoma occur at old age?	Yes	22	33.8	
	No	25	38.4	2.000
Blindness from glaucoma is preventable?	Yes	33	50.7	2.000
	No	13	20.0	
	21	32.3		
Don't Know				
Blindness of glaucoma can be prevented by diagnosis?	Yes	35	53.8	1.000
	No	9	13.8	
	19	32.3		
Don't Know				
Blindness by Glaucoma can be prevented by treatment	Yes	51	78.4	
	No	5	7.6	
		8	12.3	
Don't Know				
Blindness by glaucoma can be prevented by compliance with medications:	Yes	42	64.6	
	No	11	16.9	
	12	18.4		

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Don't Know				
Blindness from glaucoma can be prevent by regular eye checkups. Have you been ever had an eye check	Yes	24	36.9	1.000
	No	31	47.6	1.366
	88	8	12.3	
Don't Know				
What are the possible treatment for glaucoma?				
		31	47.6	
		8	16.9	
Eye drops		15	23.7	
Pills		7	10.7	
Surgery		6	9.2	
Laser				
Don't Know				
Have you been diagnosed with glaucoma be	Yes	21	32.3	
	No	42	64.6	
If yes, what treatment have you received so nothing yet?		42	64.6	1.000
		10	15.3	.993
		8	12.3	
		7	10.7	
Medications				

Surgery				
Medication&surgery				

The table 6 and Fig 6 (A-P) presents insights into the knowledge and awareness of glaucoma among 65 patients, revealing with 70.1% having heard of this condition. Most patients identified sudden vision loss (61.5%) as a symptom, while a significant number (29.3%) recognized painless vision loss. The mean for understanding symptoms was 2.00, with a standard deviation of 0.796, indicating a moderate level of agreement among patients regarding symptom recognition. Various sources of information were cited, with self reading (mean = 2.50, SD = 1.281) and ophthalmic clinics (mean = 2.00, SD = 0.812) being the most common. However, misconceptions remain, such as the belief that glaucoma is the same as cataracts (25.5%) and that certain drugs do not contribute to the disease (38.4%). Importantly, while 85.0% acknowledged that glaucoma can lead to blindness, only 32.3% had previously been diagnosed, and a substantial 66.7% reported not receiving any treatment. This indicates both a need for better education on risk factors and symptoms, as well as the importance of regular eye check-ups for early detection and management of glaucoma.



Analysis

This research helps us understand what people know and think about glaucoma. One important finding is that more than half of the people (61.5%) did not know much about common symptoms of glaucoma. This is mainly because they lacked knowledge, which can cause delays in finding out they

have the disease. Only 3% of people knew about glaucoma, while 26.1% had wrong ideas about it, often thinking it was the same as cataracts. This matches the findings of another study, which also showed that many people have wrong beliefs about glaucoma and other eye diseases. Because of this, it is important to focus on education and spreading awareness. The research also showed that most participants were young adults aged 20–25 years. This age group is very important because their eye health can be protected through early education and awareness, as well as with vision loss (Aziz et al., 2024). The majority of the respondents had acquired at least secondary education; nevertheless, participants' awareness regarding glaucoma risk factors remained relatively low (Fasoranti et al., 2023). The mean score of understanding symptoms was 2.00 (SD = 0.796), which proved that although some patients are knowledgeable of key symptoms, a portion of them is not well informed at all. Similar gaps in symptom recognition were reported in the study by (Muhsen et al., 2023), which found similar gaps in symptom recognition. Moreover, 85.0% understood that glaucoma causes blindness, while only 32.3% had ever been diagnosed, showing a lack of access or awareness to health care; 64.6% of respondents had never been treated, as was observed by other studies which showed that patients struggle to seek timely medical treatment (Acuff et al., 2023; Singh et al., 2024).

Conclusion

The findings of the study showed that the majority of people participating were female at the age from 20-25. Various had attained at least the secondary level of education, and the largest group was the student category. Most participants reported to have heard about glaucoma, but the knowledge level was relatively low especially on symptoms and risk factors. However, the belief that glaucoma is treatable suggests that education of patients about this disease should be enhanced.

Recommendations

Conduct specific informative activities to indicate symptoms, causative factors, and the management of glaucoma. Develop partnerships with local health care settings for the purpose of identifying and tending to underserved populations, for the programs on glaucoma awareness. Coordinate with other Eye care specialists to ensure at-risk patients receive the necessary screening and treatment as soon as possible.

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