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# Assessment of Awareness of Glaucoma Patients on Risk of Glaucoma in Close Relatives and to Determine its Prevalence

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## ABSTRACT

**Introduction:** Glaucoma is a multifactorial, chronic and progressive optic neuropathy that results in visual field defects and it is commonly associated with increased intraocular pressure. It is one of the most important causes of irreversible blindness left untreated.

**Objective:** This study aims to assess awareness of glaucoma patients on the risk of development of glaucoma in close relatives and to determine the prevalence of glaucoma in close relatives.

**Methods:** This is a self-designed questionnaire-based study with three sections consisting of demographic details and questions about knowledge and awareness of the patients. One hundred participants attending the ophthalmology outpatient department of a tertiary care hospital filled the questionnaire.

**Results:** According to the responses obtained, 44 (44%) patients were unaware of the term glaucoma until they were diagnosed with the disease. Only 24(24%) patients had actual knowledge about glaucoma. It is also seen that positive family history is seen as a risk factor in only 30(30%) patients. Only 19(19%) of the patients urged their relatives to get screening to post their diagnosis out of which 7(36.8%) patients had one or more relatives diagnosed with glaucoma.

**Conclusion:** Awareness can be increased by mass media announcements, health programs and Ophthalmologists at the time of diagnosis and follow up by educating diagnosed patients and also encouraging them to instruct their relatives to undergo screening. This creates positive health-seeking behaviour leading to early diagnosis and better prognosis of glaucoma.

**Key Words:** Knowledge, Awareness, Glaucoma, Family History, Relatives

## INTRODUCTION

Glaucoma is one of the leading causes of irreversible blindness worldwide. Based on the available data, there are approximately 11.2 million people aged 40 years and older with glaucoma in India.<sup>1</sup> Studies have shown that 50 - 90% of glaucoma cases remain undiagnosed<sup>2</sup> and a large number of cases are diagnosed at a later stage of the disease.<sup>3</sup> Lack of awareness about glaucoma is an important reason for its late presentation,<sup>4</sup> which increases the risk of blindness due to glaucoma.<sup>5</sup> It has been estimated that almost 90% of glaucoma-related blindness can be prevented with early and proper treatment.<sup>6</sup> For effective treatment to be possible, awareness about the disease is extremely crucial.

The spread knowledge regarding some well-recognized risk factors of glaucoma may enhance more awareness. These include positive family history. A positive family history of glaucoma encourages a search for the presence of the disease and its assessment among the family members and thus increases health-seeking behaviour. A study by Leske et al. reported a positive family history of 13% to 25% and has been proven to be an important risk factor for the disease.<sup>7</sup> Several studies have also indicated that most individuals do not have an accurate understanding and knowledge of this disease despite being aware of this disease<sup>8</sup>. Thus the assessment of awareness is the first step in the planning of disease management.

This study deals with the assessment of awareness and

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knowledge of glaucoma in diagnosed patients, awareness about positive family history and prevalence of the same.

## MATERIALS AND METHODS

This is a population-based study, using a questionnaire exploring the details of awareness and knowledge of glaucoma among known glaucoma patients with special interest in the inheritance and positive family history. It was conducted in the ophthalmology outpatient department of Saveetha Medical College, a tertiary care centre between January 2020 and March 2020. The study was approved by the Institutional Medical Ethics Committee. Written informed consent was obtained from all the participants after explaining the nature of the study. IEC no: SMC/IEC/2020/03/377

### Data collection

All the patients above 40 years, diagnosed with glaucoma were chosen randomly and a self-designed questionnaire (in English and Tamil) was distributed to the participants. Illiterate patients had questions read out to them by nurses and interns to prevent interviewer bias. Patients with any other eye disorder except glaucoma were excluded.

The questionnaire had three sections – The first section about information about the patient's demographic characteristics (age, gender, education level and socioeconomic data). Section two was designed to know the patient's awareness of the disease through six multiple-choice questions. Section three was based on knowledge about glaucoma, through eleven multiple-choice questions. Awareness was defined as 'having heard of glaucoma'. Knowledge was defined as when the subject had some understanding of glaucoma in terms of cause and/or symptoms.

### Data analysis

All responses were tabulated using Microsoft Excel software. Graphical representations were made in places necessary. Statistical analysis was done using SPSS software and p-value <0.05 was considered to be significant.

## RESULTS

Data of all the patients diagnosed with glaucoma attending the ophthalmology department was collected. In total, 100 patients were included in the study based on inclusion and exclusion criteria.

### Demographic details

Table 1 showed different demographic characteristics of the population participated in this study.

### Awareness

All 100 subjects were aware of glaucoma as they were diagnosed with the disease. In Chart 1 source of information about glaucoma is presented. 74(74%) people were not aware of the normal intraocular pressure. Out of 100 patients, 54(54%) patients got a check-up every six months or less and 42 (42%) patients got a check-up every year. The most common form of treatment seen in diagnosed patients was eye drop medication (74%) followed by laser(18%).

### Knowledge

Table 2 showed understanding of the term glaucoma. Only 24(24%) patients understood the term glaucoma. Table 3 represented knowledge about symptoms is seen. Only 32 (32%) patients are aware of the presence of an asymptomatic course of glaucoma. Table 4 depicted knowledge about risk factors is seen. Old age (74%), increased intraocular pressure (68%) were considered to be the most common risk factors.

Eye drop medication was believed to be the mode of treatment in 54(54%) people. The most common comorbid conditions associated with glaucoma was diabetes and hypertension. Table 5 is details about the knowledge about Family history. Only 30 people (30%) mentioned that positive family history of glaucoma could be a risk factor and it is important for first degree relatives to be concerned with getting the disease, out of these people only 19 (19%) people encouraged first-degree relatives to get a check-up. Prevalence of the disease was seen in one relative in 4 (21.1%) patients, two relatives in 2 (10.5%) patients, three relatives in 1 (5.2%) patients.

## DISCUSSION

This study focuses on awareness and knowledge about glaucoma exclusively in diagnosed patients. High levels of awareness and exact knowledge about the disease are important in diagnosed patients to create awareness and encourage family members and friends to get tested. Here in our study, we found out that, in the majority of the patients (44%) source of information of glaucoma was only after their diagnosis of the disease and this indicates a lack of awareness in patients. This was not found following other studies where mass media<sup>9</sup>, as well as information from friends and family, was the most common source of information.<sup>8,10-12</sup> Some studies found that accurate knowledge and awareness was found in patients whose source of information was family members.<sup>7,8</sup> Hence this validates the need for proper knowledge and awareness in diagnosed patients.

In this study, only 24% of the patients knew the actual definition of glaucoma. It is also seen that 32% of patients were aware that glaucoma can have an asymptomatic course. This was found to be more when compared to the previous study<sup>8</sup> where only 0.7% were aware of a possible asymptomatic

course of glaucoma. 10% of the patients thought blindness due to glaucoma was reversible and 42 % didn't have any knowledge of it. This percentage is more when compared to the study done by Ichhpujani et al<sup>13</sup> where 39.5% thought damage due to glaucoma was reversible. Increased intraocular pressure was considered to be an important risk factor in 68% of the patients. This is a significant increase when compared to the study done by Sathyamangalam et al<sup>10</sup> where only 8% of patients considered increased intraocular pressure to be a risk factor. 18% of the people were not aware of any risk factors. It is noted that patients in our study had a better knowledge of glaucoma compared to other studies. This could be attributed to the fact that all the subjects were known as glaucoma patients and had some knowledge of glaucoma. But for diagnosed patients this knowledge seems to be less and they need to be further educated.

Even though all were diagnosed glaucoma patients, only 30% of the patients considered presence of positive family history to be a risk factor for glaucoma. This was found in the previous study.<sup>14</sup> Though 30% of patients were aware that their relatives had to get tested, only 19% of the patients encouraged their relatives to get tested and this was of major concern. This highlights the lack of complete knowledge regarding the inheritance of the disease and potential danger to the vision if not diagnosed and treated properly. Hence providing information to patients diagnosed with glaucoma regarding the inheritance of the disease and the necessity of screening of their relatives is crucial. This would encourage patients to inform their family regarding the prognosis of the disease and their high chance of being affected by this disease compared to the general population. To achieve this, ophthalmologists and optometrist should educate the diagnosed patients on the serious nature of the disease and urge their patients to encourage their family members to undergo glaucoma screening. Out of the 19 people who encouraged their relatives to get a checkup, 7(36.8%) patients had a prevalence of glaucoma and ocular hypertension in 1 or more members of their family. This was seen following some studies.<sup>15-17</sup> In studies conducted by Wolfs et al<sup>18</sup> and Vegini et al<sup>19</sup> prevalence was found to be 10.4% in siblings of patients and 1.1% in offsprings and 3.9% in siblings and 12.9% in offsprings respectively. The current study cannot be compared with these studies as prevalence in siblings and springs was not found but our study adds to the fact that glaucoma is hereditary and screening of the relatives is mandatory for early detection of glaucoma. It is important to note that increased knowledge, awareness and screening aids in early diagnosis and thus leads to better prognosis and prevention of permanent damage.

## CONCLUSION

This study provides data on knowledge and awareness of glaucoma patients on the risk of development of glaucoma

in close relatives. The majority of the patients were unaware of the term glaucoma until they were diagnosed with it. Awareness and knowledge can be increased by mass media announcements, health programs and spreading awareness through diagnosed patients to family members. Thus precise knowledge about glaucoma in diagnosed patients is very important and this can be brought about by ophthalmologists educating them and also encouraging them to instruct their relatives to undergo screening. This creates positive health-seeking behaviour leading to early diagnosis and better prognosis of glaucoma.

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**Table 1: Demographic details**

	Total (n=100)	Knowledge present (n=24)	Knowledge absent (n=76)	P value (P≤0.05=Significant)
<b>Age</b>				
41-60	35	4	31	0.06 (Not Significant)
61-80	63	20	43	
81-90	2	0	2	
<b>Gender</b>				
Male	42	15	27	0.01(Significant)
Female	58	9	49	
<b>Literacy</b>				
Pre schooling	30	0	30	0.0002(Significant)
Schooling	22	4	18	
Graduate	34	13	21	
Professional	14	7	7	
<b>Socio economic Status</b>				
Extreme lower	26	0	26	0.0002(Significant)
Lower	28	4	24	
Middle	37	16	21	
Upper	9	4	5	

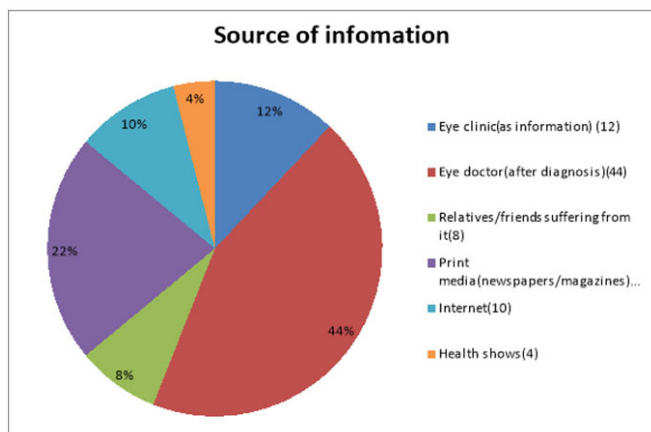


Figure 1: Source of Awareness.

Table 2: Knowledge about the disease

1. What do you understand by the word glaucoma?	
High pressure in the eye	46(46%)
Damage to nerve in the eye	18(18%)
Colored haloes and pain in the eye	10(10%)
All the above	24(24%)
Don't know	2(2%)
2. Do you think blindness is a long term effect of glaucoma?	
Yes	46(46%)
No	32(32%)
Don't know	22(22%)
3. Do you think blindness caused due to glaucoma is reversible?	
Yes	10(10%)
No	48(48%)
Don't know	42(42%)

Table 3: Knowledge of symptoms of glaucoma

No symptoms	32(32%)
Eye pain	64(64%)
Redness of eye	40(40%)
Decrease in vision	0(0%)
Color halos	24(24%)
Peripheral loss of vision	24(24%)
Headache	38(38%)
Vomiting	6(6%)
Dont know	0(0%)

Table 4: Knowledge of risk factors for glaucoma

Old age	74(74%)
Obesity	0(0%)
Increased intraocular pressure	68(68%)
Steroids	26(26%)
Family history of glaucoma	30(30%)
None of the above	0(0%)
Don't know	18(18%)

Table 5: Knowledge of positive family history as a risk factor

1. Do you think glaucoma is hereditary?	
Yes	30(30%)
No	45(45%)
Don't know	25(25%)
2. Do you think it is important for your family members to get checked for glaucoma?	
Yes	30(30%)
No	46(46%)
Don't know	24(24%)
3. If yes, Post diagnosis have you urged you relatives to get a eye check up?	
Yes	19(19%)
No	81(81%)
3. If yes, how many of your close relatives were diagnosed with glaucoma	
0	12(63.1%)
1 relative	4(21.1%)
2 relatives	2(10.5%)
3 relatives	1(5.2%)
>3 relatives	0(0%)