

# Glaucoma Awareness and Self-Care Practices among the Health Professionals in a Medical College Hospital

NIMITHA NAGEEB<sup>1</sup>, UMA D KULKARNI<sup>2</sup>

## ABSTRACT

**Background:** Awareness and self-care practices concerning glaucoma, the silent thief of sight, is poor. This study was conducted to assess the same among health professionals in a medical college.

**Materials and Methods:** Institutional Ethics Committee Clearance was obtained and a descriptive semi-structured-questionnaire-based study was conducted. Informed written consent was taken from 114 (convenience sampling) health professionals (doctors/paramedicals) and a questionnaire were administered. Participants were questioned about the awareness of glaucoma, what are the features of glaucoma etc. Non-medical hospital workers were excluded. Data was analysed using Microsoft excel, descriptive statistics and chi-square test.

**Results:** Respondents included clinicians, non-clinician-doctors and paramedicals (36:30:48) {mean age: 37 years,

males:females::58:56}. Glaucoma awareness was statistically similar in the three study groups: high IOP (82.4%,  $p=0.55$ ); optic nerve damage (32.4%,  $p=0.79$ ); normal/low IOP (38.6%,  $p=0.2$ ); irreversible blindness (47.1%,  $p=0.29$ ); risk factors like corticosteroids (57%,  $p=0.11$ ), family history of glaucoma (74.5%,  $p=0.17$ ) and diabetes (77.1%,  $p=0.84$ ). Over 13% thought that screening is done after 60 years. Few had undertaken screening for themselves (16.60%) and family members (21.05%). Few knew tests (41.2%,  $p=0.04$ ) and treatment modalities (41.2%,  $p=0.0516$ ).

**Conclusion:** The study revealed unsatisfactory awareness and self-care practices concerning glaucoma among health professionals including clinicians despite studying ophthalmology, although it is presumed and predicted to be the contrary. This alarming revelation warrants the need for enrichment of glaucoma awareness programs.

**Keywords:** IOP (intraocular pressure), Irreversible blindness, Optic nerve damage, Screening

## INTRODUCTION

Blindness is a serious concern and glaucoma is the second leading cause of blindness worldwide [1]. Glaucoma is estimated to affect 60.5 million people worldwide by the year 2010 [2]. The estimated prevalence of glaucoma for India is 11.9 million [3]. The prevalence of Primary open angle glaucoma (POAG) in rural South India among 40+ population was estimated as 1.7% in rural population and 3.5% in the urban population according to the ACES study [4,5]. Glaucoma assumes deserving priority under Vision 2020 Right to Sight India program [6].

POAG is considered as a "sneak thief of sight" owing to the nature of the disease: the slowly progressive painless diminution of vision, retention of central vision until very late in the disease and therefore a late presentation to the ophthalmologist [7] and about 90% remain undiagnosed [4]. Most of the patients have advanced visual field defects when they first present to the ophthalmologist [8]. Almost 90% of glaucoma-related blindness can be prevented with early diagnosis and proper treatment [2,9].

Awareness of glaucoma (2.3%) in general population was poor when compared to other diseases like cataract (69.8%), night blindness (60%) and diabetic retinopathy (27%) and it creates a negative impact on the health seeking behaviour [10].

Glaucoma is associated with several risk factors apart from raised IOP and age [6]. Since glaucoma is associated with co-morbidities like hypertension, diabetes and smoking, health care professionals form an important link for patients with risk factors to be referred to the ophthalmologist for screening and an important source of promoting awareness [7,11,12]. If persons with risk factors are adequately screened for glaucoma, the chances of early detection are presumably increased. Owing to the blinding natural course of the highly prevalent disease and the poor awareness of the disease in the population, there is a need for an efficient link between the population at risk and the ophthalmologist.

## AIM

Assuming health care professionals to be that important link, the present study was aimed to assess their knowledge, attitude and practice concerning glaucoma.

## MATERIALS AND METHODS

The study has been conducted in accordance with the ethical principles as laid down in the Helsinki Declaration of 1975, as revised in 2000 after approval from the Institutional Ethics Committee.

The descriptive study was conducted in a medical college hospital over a period of three months (july-september) during 2013. The study instrument used was a pre-tested and validated semi-structured questionnaire in English, comprising 13 questions with multiple responses. Nine questions were designed to assess 'knowledge' about glaucoma and four questions on 'self-care practices' concerning glaucoma. Five questions were open ended (appendix 1).

A convenience sample of 114 participants was included in the study by purposive sampling method after administering an informed written consent.

## Inclusion Criteria

Participants of either gender working in the hospital and fulfilling the following criteria were included and grouped as follows:

- Clinicians:** Defined as medical graduates who deal with the patients directly, during the discharge of duties in the hospital (include physicians, surgeons, anesthesiologists, etc.)
- Non-clinical doctors:** Defined as a medical graduate who did not come in direct contact with the patients during their discharge of duties in the hospital (anatomists, physiologists, microbiologists, etc.)
- Paramedical staff:** Defined as hospital staff with paramedical qualifications like nursing staff, physiotherapists, paramedical technicians, etc.

## Exclusion Criteria

- Medical and paramedical students.
- Ophthalmologists.
- Clerical and non-medical hospital workers.

## STATISTICAL ANALYSIS

The data was entered in Microsoft excel sheet and was analysed using Contingency table. Appropriate descriptive statistics and chi square test were used for analyses of the data. A  $p$ -value of  $<0.05$  was considered as significant.

## RESULTS

The results of the study are as follows:

### Demographic Details

Demographic distribution [Table/Fig-1]: A total of 114 participants were included in the study with a gender ratio was 1.035 males: 1 female and the mean age was 37 years  $\pm$  10.43 (age range: 25-67 years). The professions of the participants were classified as clinicians (31.5%), non-clinical doctors (26.32%) and paramedical staff (42.1%).

Category	Males		Females		Total
	<40 y	>40 y	<40 y	>40 y	
Clinicians	12	16	4	4	36
Non clinician	13	8	7	2	30
Paramedical	8	1	31	8	48
Total	33	25	42	14	114

[Table/Fig-1]: Demographic distribution

### Assessment of Knowledge about Glaucoma

- Awareness about glaucoma [Table/Fig-2]:** About 18.25% of the paramedical staff was not aware of the condition called glaucoma. Awareness that glaucoma is associated with raised

Awareness about glaucoma	Clinicians	Non-clinicians	Para-medicals	Total	Chi square	p-value
Aware of the Condition	36 (100%)	30 (100%)	39 (81.2%)	105 (92.1%)	1.2	0.54
Association with raised IOP	35 (97.2%)	26 (86.6%)	33 (68.7%)	94 (82.4%)	1.17	0.55
Association with optic nerve damage	13 (36.1%)	10 (33.3%)	14 (29.1%)	37 (32.4%)	0.24	0.88
Association with normal pressure in eyes	19 (52.7%)	13 (43.3%)	12 (25%)	44 (38.6%)	3.19	0.20

[Table/Fig-2]: Comparison of awareness of glaucoma among the different groups

	Clinicians	Non-clinicians	Para-medicals	Total	Chi Square	p-value
Aware of Tonometry	14 (38.8%)	16 (53.3%)	6 (1.25%)	36 (31.5%)	8.29	0.016
Aware of Perimetry	2 (5.5%)	2 (6.6%)	3 (6.25%)	7 (6.1%)	0.03	0.98
Aware of Funduscopy	3 (8.3%)	0	1 (2%)	4 (3.5%)	3.53	0.17

[Table/Fig-3]: Awareness of tests for glaucoma

	Clinicians	Non-clinicians	Para-medicals	Total	chi square	p-value
Believe that glaucoma is treatable	36 (100%)	29 (96.6%)	45 (93.7%)	110 (96.4%)	0.04	0.98
Believe that blindness due to glaucoma reversible	10 (27.7%)	13 (43.3%)	26 (54.1%)	49 (42.9%)	2.42	0.298

[Table/Fig-4]: Awareness about the course of glaucoma

	Clinicians	Non-clinicians	Para-medicals	Total	Chi square	p-value
Diabetes	28 (77.7%)	26 (86.6%)	34 (70.8%)	88 (77.1%)	0.33	0.84
Hypertension	28 (77.7%)	29 (96.6%)	32 (66.6%)	89 (78%)	0.29	0.86
Family History of glaucoma	34 (94.4%)	26 (86.6%)	25 (52%)	85 (74.5%)	4.26	0.118
Corticosteroids	30 (83.3%)	16 (53.3%)	19 (39.5%)	65 (57%)	3.44	0.17

[Table/Fig-5]: Awareness about the risk factors for glaucoma

IOP was low among paramedicals than in clinicians and non-clinicians but without statistically significant difference. Knowledge that glaucoma was caused due to an effect on the optic nerve was low among all groups with no statistically significant difference. The awareness that glaucoma can occur in eyes with normal IOP was also poor.

- Awareness about tests for glaucoma [Table/Fig-3]:** The overall awareness about the tests to detect glaucoma was poor. Awareness about Tonometry to detect glaucoma showed a statistically significant difference among the groups with paramedicals having the poorest awareness. The knowledge of perimetry as a test to detect glaucoma was comparatively similar among the three groups. Very few clinicians and paramedicals and none of the non-clinicians knew that funduscopy was done to detect glaucoma.
- Awareness about the course of glaucoma [Table/Fig-4]:** Most (96.4%) of the participants believed that glaucoma is a treatable disease. Few participants believed that blindness due to glaucoma is reversible.
- Awareness of the risk factors for glaucoma [Table/Fig-5]:** Many responded that they were aware of diabetes, hypertension and family history of glaucoma as risk factors for glaucoma. But few were aware that corticosteroid medication was a risk factor for glaucoma (57%). The knowledge of corticosteroids as a risk factor for glaucoma was higher among clinicians (83.3%) than in non-clinicians (53.3%) and paramedicals (39.5%).
- Awareness about screening for glaucoma [Table/Fig-6]:** Most of clinicians and non-clinical doctors knew the importance of screening for glaucoma after the age of 40. The distribution is shown in the [Table/Fig-6].
- Screening practices [Table/Fig-7]:** Only 15.7% participants have themselves undergone screening for glaucoma with no statistically significant difference among different groups (clinicians 22.2%, non-clinicians 16.6% and paramedicals

	Clinicians	Non-clinicians	Para-medicals	Total	Chi square	p-value
Screening should be done after the age of 40 years	27 (75%)	22 (73.3%)	28 (58.3%)	77 (67.5%)	0.64	0.726

[Table/Fig-6]: Awareness about the age for screening for glaucoma

Age	Clinicians	Non clinical doctors	Paramedicals	Total	chi	p-value
Undergone glaucoma screening themselves						
<40	3 (15.7%)	0	2 (5.12%)	5 (31.25%)	4.42	0.10
>40	5 (29.4%)	5 (62.5%)	3 (33.3%)	13 (65%)	1.17	0.5
Total	8 (22.2%)	5 (16.6%)	5 (10.4%)	18 (15.7%)	0.99	0.60
Aware whether family members have undergone screening						
<40	3 (15.7%)	3 (13.6%)	6 (15.3%)	12 (15%)	0.08	0.96
>40	6 (35.2%)	3 (37.5%)	1 (11.1%)	10 (29.4%)	0.92	0.63
Total	9 (25%)	6 (20%)	7 (14.5%)	22 (19.2%)	2.03	0.362
Have referred patients/contacts to ophthalmologists for glaucoma screening						
<40	6 (1.5%)	2 (9.09%)	4 (10.2%)	12 (15%)	4.5	0.10
>40	4 (23.5%)	3 (37.5%)	1 (14.2%)	8 (23.5%)	0.87	0.64
Total	10 (27.7%)	5 (16.6%)	5 (10.4%)	20 (17.5%)	2.95	0.228

[Table/Fig-7]: Table showing practices concerning glaucoma

10.4%). Among those participants over the age of 40 years 65% have undergone screening. Only 19.2% are aware whether any of their family members undergone screening for glaucoma. Only 17.5% have referred patients for glaucoma screening. None of these practices showed any statistically significant difference in different groups. The distribution is shown in [Table/Fig-7].

## DISCUSSION

The blinding natural course of glaucoma and its high prevalence compounded by the poor awareness of the disease in the population necessitates an efficient link between the population at risk and the ophthalmologist. The present study was conducted to assess the knowledge, attitude and practice concerning glaucoma among healthcare professionals who can be considered to form an important link between the population and the ophthalmologist for the early diagnosis of glaucoma.

Good awareness of glaucoma does not mean that the subject knows everything about glaucoma but should have an adequate understanding of the disease. In our study, about 18.8% of the paramedical staff was not even aware of condition called glaucoma. This was similar to a study among health personnel in Nigeria where 4.9% were not aware of the term 'Glaucoma' although other studies in Northern India and Africa, all the health personnel were aware of the condition [12-14] [Table/Fig-8]. This wide difference may be due to the selection criteria of the participants and their experience in the practice of ophthalmology.

In our study, the awareness about the tests performed to detect glaucoma was not great. The awareness about tonometry (31.5%) was better than fundus examination (3.5%). The knowledge about association of glaucoma with raised IOP (82.40%) was better than optic nerve damage (32.40%). These observations about awareness of high IOP was comparable with the study conducted by Ichhpujani Pin a tertiary hospital in Northern India [12] (67%), whereas in the study conducted by Adegbehingbe BO in Nigeria [13], it was only 39%. In the study conducted by Komolafe OO in Africa [14], 88.3% professionals knew that glaucoma was due to high pressure in the eye. This probably indicates that the general understanding about glaucoma even among health professionals is about its relation to the intra-ocular pressure and not to the optic nerve damage that results. This also points out that the awareness about the occurrence of glaucoma in the absence of raised IOP is not appreciated by them. In India, some of the glaucoma cases were missed by optometrists and rarely by ophthalmologists, possibly

because an intensive eye examination was not performed [15]. As a matter of fact, sources other than optometrists who have made diagnosis of glaucoma were 4.5 times likely to be late presenters [12]. Such findings were observed in Barbados eye studies, where many patients did not know about their glaucomatous condition even after their visit to optometrists [15,16]. Since glaucoma is the silent thief of sight and is the second most common eye disease, the hospital staff must be aware of the disease in order to improvise case finding and to start treatment at an early stage.

	Our study	Ichhpujani P et al., [12]	Adegbehingbe BO et al., [13]	Komolafe et al., [14]
Have not heard of the term "Glaucoma"	19%	All participants have heard	4.9%	All participants have heard
High IOP is a pre-requisite for glaucoma	61%	67%	39%	88.3%
Not aware that glaucoma affects the optic nerve	65% doctors 71% nurses	20% doctors 35% nurses	36%	11.7%
Blindness due to glaucoma is reversible	43%	40%	49%	23.3%
Have undergone testing for glaucoma	15.7%	42%	59%	
Family members screened or considered as a risk factor	19.2%	24%	20%	31.7%

[Table/Fig-8]: Comparison with other studies

Even the knowledge of diabetes, hypertension and family history of glaucoma as risk factors for glaucoma was high. But the knowledge of corticosteroid as a risk factor was low (57%). In the study conducted in Africa, 31.7% thought family history to be a strong risk factor but 26.7% had no knowledge of risk factors for glaucoma [14]. The high awareness about the risk factors may be a reflection of the limitations of close ended structured questionnaire, where the participant has the tendency to tick only because the questions are suggestive of the answers. However, the knowledge of corticosteroids as a risk factor for glaucoma was high in clinicians (83.3%) than in non-clinicians (53.3%) and paramedical staff (39.5%) and this may be because of the knowledge of the clinicians about steroids and their adverse effects.

Despite working in a hospital with easy access to health care, only 15.7% have undergone screening for glaucoma. This is low when compared to the study conducted by Ichhpujani P (42%) and the study conducted by Adegbehingbe (59%) [12,13]. There are barriers to seek medical health care which may be due to the low knowledge and lack of clear understanding about the disease. Amongst the participants only 19.2% of the family members were screened when compared to 24% in the study conducted by Ichhpujani P and 20% in the study conducted by Adegbehingbe [12,13]. Very few clinicians (27.7%), non-clinicians (16.6%) and paramedicals (10.4%) have referred patients for glaucoma screening (chi-square= 2.95, p-value=0.228).

In this study, a startling fact emerged that 65% doctors and 71% nurses had no knowledge that glaucoma affects the optic nerve. This was high when compared to the study conducted in Northern India [12] 20% doctors and 35% nurses were not aware that glaucoma affects the optic nerve. The understanding whether glaucoma affects the optic nerve is 43% in our study, 40% and 49% in other the studies [12,13]. This shows that there is no clear understanding of the disease glaucoma.

## CONCLUSION

“Are the BLIND leading the BLIND?”

The doctors and nurses in the department are often the first point of contact to seek medical advice. Therefore the health care professionals must be well informed about conditions which are painless and irreversibly blinding. If the general awareness among the medical and paramedical professionals about glaucoma increases, then the chances of themselves getting screened and also their family members getting screened for glaucoma will increase. This tendency will translate gradually into a culture of referring cases routinely for glaucoma screening, overall, increasing case detection of glaucoma.

Hence, it is important to emphasize on intensive eye health education and dissemination of information especially among health professionals, continuing medical education about glaucoma symptoms and subsequent visual impairment must be a priority when designing programs for community outreach.

## ACKNOWLEDGEMENTS

The authors thank the department faculty for the continued support for the study and the also the health professionals who participated in the study.

## REFERENCES

- [1] Thyrefors B, Négrel AD, Pararajasegaram R, et al. Global Data on Blindness [review]. *Bulletin World Health Org.* 1995;73(1):115-21.
- [2] Quigley HA, Broman AT. The number of people with glaucoma worldwide in 2010 and 2020. *Br J ophthalmol.* 2006;90(3):262-67.
- [3] Jacob A, Thomas R, Koshi SP, Braganza A, Muliylil J. Prevalence of primary glaucoma in an urban south indian population. *Indian J ophthalmol.* 1998;46(2):81-86.
- [4] Ramkrishnan R, Nirmalan PK, Krishnada R, Thulasiraj RD, Tielsch JM, Katz J, et al. Glaucoma in a rural population of Southern India: the Aravind Comprehensive Eye Survey. *Ophthalmology.* 2003;110:1484-90.
- [5] Vijaya L, George R, Baskaran M, Arvind H, Raju P, Ramesh SV, et al. Prevalence of primary open angle glaucoma in an urban south Indian population and comparison with a rural population. The Chennai Glaucoma Study. *Ophthalmology.* 2008;115:648-54.
- [6] Saxena R, Singh D, Vashist P. Glaucoma: An emerging peril. *Indian J Community Med.* 2013;38:135-37.
- [7] Prabhu M, Patil SH, Kango Kar PCR. Glaucoma Awareness and Knowledge in a Tertiary Care Hospital in a Tier-2 City in South India. *Journal of the Scientific Society.* 2013;40(1):3-8.
- [8] Kulkarni U. Early Detection of primary open angle glaucoma: Is it happening? *Journal of Clinical and Diagnostic Research.* 2012;6(4):667-70.
- [9] Quigley HA. Number of people with glaucoma worldwide. *Br J ophthalmol.* 1996;80:389-93.
- [10] Dandona L, Dandona R, Srinivas M, Mandal P, John RK, McCarty CA, et al. Open-angle glaucoma in an urban population in southern India: the Andhra Pradesh eye disease study. *Ophthalmology.* 2000;107(9):1702-09.
- [11] Fraser S, Bunce C, Wormald R. Risk factors for late presentation in Chronic Glaucoma. *Invest Ophthalmol Vis Sci.* 1999;40:2251-57.
- [12] Ichhpujani P, Bharatiya S, Kataria M, Topiwala P. Knowledge, attitude and self-care practices associated with glaucoma among health personnel in tertiary care centre in north India. *J Curr Glau Prac.* 2012;6(3):108-12.
- [13] Adegbehingbe BO, Bisriyu LA. Knowledge, Attitude and Self Care Practices associated with Glaucoma among Hospital Workers in Ile-Ife, Osun State, Nigeria. *Tanzania Journal of Health Research.* 2008;10(4):240-45.
- [14] Komolafe OO, Omolase CO, Bekibebe CO, Ogunleye OA, Komolafe OA, Omotayo FO. Awareness and Knowledge of Glaucoma among workers in a Nigerian Tertiary Health Care Institution. *Middle East African journal of ophthalmology.* 2013;20(2):163-67.
- [15] Gogate P, Deshpande R, Chelerkar V, Deshpande S, Deshpande M. Is glaucoma blindness a disease of deprivation and ignorance? A case-control study for late presentation of glaucoma in India. *Indian J Ophthalmol.* 2011;59(1):29-35.
- [16] Hennis A, Wu S, Nemesure B, Honkanen R, Leske MC. Barbados Eye Studies Group. Awareness of incident open-angle glaucoma in a population study: The Barbados Eye Studies. *Ophthalmology.* 2007;114:1816-21.

### PARTICULARS OF CONTRIBUTORS:

1. Post Graduate, Department of Ophthalmology, Yenepoya Medical College, Yenepoya University, Deralakatte, Mangalore, India.
2. Professor, Department of Ophthalmology, Yenepoya Medical College, Yenepoya University, Deralakatte, Mangalore, India.

### NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Nimitha Nageeb,  
Post Graduate, Department of Ophthalmology, Yenepoya Medical College,  
Yenepoya University, Deralakatte, Mangalore-575018, India.  
E-mail: nimithanageeb@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **May 09, 2015**

Date of Peer Review: **Jun 09, 2015**

Date of Acceptance: **Jul 08, 2015**

Date of Publishing: **Dec 01, 2015**