Clinical Characteristics of Patients with Glaucoma Presenting to Bharatpur Eye Hospital: An Observational Study

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ABSTRACT

Introduction: Glaucoma is the second leading cause of blindness worldwide. Glaucoma will affect 79.6 million individuals by 2020, according to projections. Improved glaucoma screening and treatment approaches are urgently needed. The purpose of this study is to determine the clinical characteristics of glaucoma patients who visit Bharatpur Eye Hospital and aims to calculate the number of new diagnoses of glaucoma from 01 February 2020 to 15 March 2020.

Materials and methods: This is a hospital-based, cross-section study. All patients with a diagnosis of glaucoma were invited to participate. The examination findings, diagnosis, and management were all documented. A standardized questionnaire was used to collect patient knowledge and understanding of glaucoma.

Results: Among 127 patients 52.8% were newly diagnosed with glaucoma. Many patients (59.8%) were symptomatic for more than 6 months. The mean presenting intraocular pressure was 20.86 mm Hg with an SD of 11.55 mm Hg. Only 44.9% of the participants had heard about glaucoma. Many participants (65.4%) did not have knowledge of glaucoma. Among 127 participants 9.4% had a family history of glaucoma.

Conclusion: Glaucoma is a significant burden that presents challenges to ophthalmic services in Chitwan. Many people have a poor understanding of their condition and have limited access to services. There is a need to build a treatment infrastructure and raise public awareness.

Key words: Angle-closure glaucoma, Cup-Disc ratio, Glaucoma, Intraocular pressure, Open-angle glaucoma.

Financial Interest : Nil
Conflict of Interest : Nil

Received : 31.12.2020
Accepted : 25.11.2021

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Access this article online
Website: www.nepjol.info/index.php/NEPJOPH
DOI: https://doi.org/10.3126/nepjoph.v14i1.32091

ISSN: 2072-6805, **E-ISSN:** 2091-0320

INTRODUCTION

Glaucoma is the second leading cause of blindness worldwide. There will be 79.6 million people with glaucoma in 2020 among which 11.2 million will be bilaterally blind due to the disease. Asians will represent 47% of all glaucoma cases of which 87% will have ACG (Quigley et al, 2006). In a population-based survey from Bangladesh, the prevalence of glaucoma was 2.1% among people ≥ 40 years (Rahman et al,2004). A population-based cross-sectional study conducted in South India shows the prevalence of glaucoma is 2.6%. Among POAG diagnosed cases 20.9% had blindness in either eye (Ramakrishnan et al, 2003). A population-based study conducted in LiwanDistrict; Guangzhou showed a crude prevalence of all glaucoma of 3.8%. He et al (2006) reported the prevalence of all glaucoma was significantly higher in older people and men. A population-based survey in Nepal showed the overall prevalence of glaucoma was 1.9%. Of all glaucoma cases, POAG accounted for 68%, PACG accounted for 22.67%, and secondary glaucoma accounted for 9.33%. Among the subjects with POAG, 96.08% had not been previously diagnosed (Thapa et al, 2011). In Nepal 5.9% of the population more than 50 years of age are blind due to glaucoma (Sapkota Y.D. et al, 2012).There are lots of challenges in the management of glaucoma in developing countries. Patients suffering from glaucoma experience poor quality of life owing to the diagnosis itself, functional visual loss, inconvenience and cost of treatment, and side effects of treatment. All these factors lead to poor compliance, adherence, persistence to treatment, and further progression of the disease (Butt et al, 2016). A population-based cross-sectional study was conducted between 2008 and 2016 in the midwestern and the eastern development regions of Nepal. In this study awareness and knowledge of glaucoma were seen at 17.4% and 50.9% respectively (Shrestha et al, 2018).

Nepal is a Himalayan country with an estimated population of 28 million. There are 19 eye hospitals and 121 eye care centers Fewer hospitals have glaucoma services in full phase.Bharatpur Eye Hospital is located in the Chitwan district of south-central Nepal. It provides high-quality comprehensive eye care services to patients of Chitwan as well as neighboring districts; Gorkha, Lamjung, Nawalparasi, Tanahu, Makawanpur, Parsaand Dhading. It provides eye care services to 2 million populations.

The primary aim of this study is to investigate the characteristics of glaucoma, its types, and presenting symptoms. The second aim is to estimate the number of new diagnoses.

MATERIALS AND METHODS

Data collection

This study got approval from the Bharatpur Eye Hospital research team. Written consent was taken from the patients. The enrolled patient

underwent a thorough clinical examination. A new case of glaucoma was diagnosed on the basis of no history of antiglaucoma medicine used, open or closed-angle on gonioscopy finding, glaucomatous disc and visual field defect. Intraocular pressure (corrected with central corneal thickness) was recorded. An old case of glaucoma diagnosis was made on the basis of true glaucomatous finding and history of antiglaucoma medicine use or history of glaucoma surgery done. Those who were not willing to participate were excluded. Data was collected for 6 weeks from 01 February 2020 to 15 March 2020. The diagnosis was made by history and clinical examination. Data collection included sociodemographic characteristics, family history, presenting complaints, duration of complaints, past medical history. A structured questionnaire for awareness and understanding of glaucoma was asked and recorded after diagnosis was made.

Data management and analysis

Data was entered in SPSS 16.0 and analysis was done. Data were explored using cross-tabulations and frequency distributions. Best-corrected visual acuity in the better eye was categorized as 6/6 to 6/9 (normal vision), worse than 6/12 to 6/18 (mild vision impairment), worse than 6/18 to 6/60 (moderate vision impairment), worse than 6/60 to 3/60 (severe vision impairment) and worse than 3/60 (blindness) as per the WHO guidelines.

RESULTS

A total of 127 patients participated in this study. The majority of the patients were male (52.8%). The mean age was 61.73 years (SD 16.04 years) with the majority of patients 60 years and above (70.1%). Among total participants, 62.2% had no formal education. Table 1 shows the demographic characteristics of the patients.

Table 1: Demographic characteristic of glaucoma participants.

Characteristics	Number of patients (%)
Sex	
Male	67 (52.8)
Female	60 (47.2)
Age	
0-19	4 (3.1)
20-29	4 (3.1)
30-39	6 (4.7)
40-49	8 (6.3)
50-59	16 (12.6)
60-69	43 (33.9)
70-79	38 (29.9)
>79	8 (6.3)
Education	
None	79 (62.2)
Primary	27 (21.3)
Secondary	17 (13.4)
Graduate/postgraduate	4 (3.1)

Table 2 summarizes the presenting symptoms and its history among glaucoma participants.

Table 2: Summary of presenting symptoms, duration and medical history among patients with glaucoma.

Characteristics	Number of patients (%)
Presenting symptom	
None	7 (5.5)
Poor vision	96 (75.6)
Inability to read	3 (2.4)
Bumping into objects	1 (0.8)
Other	20 (15.7)
Duration of Symptoms	
<6 months	49 (40.83)
>6 months	71 (59.16)
Medical history	
Hypertension	31 (24.4)
Diabetes	9 (7.1)
Eye injury	1 (0.8)
Previous eye surgery	12 (9.4)
Migraine	1 (0.8)
No PMH	73 (57.5)
Travel taken (h)	
Less than 0.5	23 (18.1)
Between 0.5 and 1	63 (49.6)
Greater than 1	41 (32.3)
Visits other hospitals	49 (38.6)
Number with family history	12 (9.4)
Visual acuity	
Normal vision	78 (61.4)
Mild vision impairment	22 (17.3)
Moderate vision impairment	16 (12.6)
Severe vision impairment	1 (0.8)
Blindness	10 (7.9)

The most common presenting symptom was blurring of vision (75.6%). Other symptoms were inability to read, bumping into objects. Despite symptoms, a significant portion of patients (59.8%) waited over 6 months to visit the hospital. A majority of patients (61.4%) didn't visit other eye hospitals. A minority of patients (9.4%) have a family history of glaucoma. Among the participants 61.4% had normal vision, 17.3% had mild vision impairment, 12.6% had moderate visual impairment,0.8% had severe vision impairment and 7.9% had blindness. Among the participants, 32.3% of patients had travel time greater than 1 hour to the hospital.

Table 3 summarizes the type of glaucoma and management of the participants. The vast majority of the cases were primary glaucoma (80.3). Secondary glaucoma types include phacomorphic glaucoma, pigmentary glaucoma, uveitic glaucoma, neovascular glaucoma, congenital glaucoma, and traumatic glaucoma. Most of the patients were using one antiglaucoma medicine (43.3%). Most patients didn't have surgery to treat. Presenting mean intraocular pressure was 20.86 mm of Hg (SD 11.55). A majority (63.38%) of the participants have a vertical cup/disc ratio (CDR) of more than 0.7.

Among 127 participants, only 44.9% have heard about glaucoma. 31.5% got information from an eye care professional. 65.4% do not know about glaucoma. 55.1% have no idea about the symptoms of glaucoma. And 82.7% do not know about the kind of vision loss in glaucoma.

Table 3: Summary of glaucoma type and management of glaucoma.

Characteristics	Number of patients (%)
Glaucoma type	
Primary	102 (80.3)
Secondary	20 (15.7)
Unknown	5 (3.9)
Anterior chamber angle	
Open-angle	86 (67.7)
Angle-closure	35 (27.6)
Unknown	6 (4.7)
Eye affected	
Right eye only	18 (14.2)
Left eye only	9 (7.1)
Both eye	100 (78.7)
Number of antiglaucoma medicines users	
No antiglaucoma medicine users	18 (14.2)
One antiglaucoma medicine users	55 (43.3)
Two antiglaucoma medicine users	35 (27.6)
Three antiglaucoma medicine users	19 (15.0)

DISCUSSION

This study aimed to explore the characteristics of patients with glaucoma visiting at Bharatpur Eye Hospital. The study revealed that the majority of the patients had primary glaucoma; diagnosed by ophthalmologists. Very few patients understood about glaucoma. The newly diagnosed glaucoma was 67 among 127 cases. The hospital-based incidence of glaucoma was 0.49 and the prevalence was 0.93.

The study has a number of limitations. A hospital-based study, as opposed to a population-based study, is prone to bias because attendance at such clinics is influenced by a variety of factors such as education, transportation, affluence, past experience, and family history. As a result, the sample is not typical of the entire population because it only includes patients who came to the hospital for a checkup.

Many patients had no idea they had glaucoma before being diagnosed, and those who did had a limited understanding of the condition, which is consistent with findings in other Asian countries (Katibeh, 2014; Thapa, 2012, 2013). Indeed, 75.6% of patients had poor vision as their presenting symptom and 59.8% of patients were symptomatic for over 6 months before seeking help, suggesting that many of these patients are presenting late and only after a significant visual loss has occurred. A large proportion of patients diagnosed did not understand the disease and the aims of medical therapy after diagnosis, which leads to incorrect administration of medication and poor compliance. An educational program was given to groups of patients with glaucoma and it was observed that the knowledge and understanding of glaucoma were increased by 96% and such programmes may also manage expectations of glaucoma therapy (Mohamed et al, 2011). Public awareness campaigns could be used to highlight glaucoma as a significant and silent cause of blindness. 'The effectiveness of

mass communication to change public behavior' study has identified a number of successful ways to deliver and communicate effective health education, mainly through media outlets such as radio and television (Abroms et al, 2008). One of the hospital-based studies done in the eastern region hospitals in Nepal shows that many of the family members of glaucoma did not have eye check-ups even decades after treatment was initiated in their family. The reasons for this include lack of awareness of the disease. Screening programs in first degree relatives may also play a major role in the early detection of glaucoma (Bhandari et al, 2021).In our study, most of the patients are under medical therapy and 43.3% of them are prostaglandin analogue users. The surgery rate is very low at 3.15%. The reason for the low surgery rate may be due to the newly established glaucoma service department. There are rumors among general people regarding the failure of glaucoma surgery in small communities. It was shown in one of the studies done in a developing country (Briesen et al, 2010). The majority of patients had a diagnosis of primary glaucoma, which has been shown to be the main type of glaucoma in Nepal, Bhaktapur Glaucoma Study and one of the hospital-based studies in Kathmandu shows the same result. Similarly, angle-closure glaucoma was 9.33% in BGS and 20.81% in the hospital-based study, whereas we have 15.7% (Rijal et al, 2005). There is a lack of reliable epidemiological data on the incidence and prevalence of glaucoma in Nepal. The overall prevalence of glaucoma was 1.9 %. Thapa et al (2011) reported that POAG was the most common form of glaucoma in a population-based cross-sectional study done in Bhaktapur.

CONCLUSION

Glaucoma is typically asymptomatic in the early stages, so individuals who did not attend the eye hospital may have been missed in this study. Many family relatives of glaucoma sufferers had not been tested, suggesting that the true glaucoma burden is substantially higher. Glaucoma is a challenge for the country's eye services since some patients have restricted access to services, limited awareness and understanding of the disease, and limited treatment options from the resources available. More research regarding the incidence and prevalence of glaucoma in Bharatpur is needed.

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