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Original Article

Awareness About Glaucoma and Associated Factors Among Glaucoma Patients Visiting Munawar Memorial Hospital Chakwal

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ABSTRACT

Glaucoma is a significant public health problem worldwide blindness after cataract is attributed to this ophthalmic disease. The resultant blindness is mostly irreversible. Its earlier detection is imperative to prevent blindness. **Objective:** To ascertain the awareness about glaucoma and associated factors among glaucoma patients in association with family history. **Methods:** A cross-sectional descriptive hospital base study was done among 21 glaucoma patients at Munawar Memorial Hospital Chakwal from October – December 2021. The patients were enrolled through consecutive sampling. Data were gathered from the patients through self-structured questionnaire pertaining to demographics, family history, association of glaucoma with blindness, reversibility of resultant blindness, treatment in addition to prevention and cure of blindness. Data were analysed by SPSS version 25.0. Apart from descriptive statistics, Fisher's exact test was also applied to measure the association of family history of glaucoma with other factors. $p < 0.05$ was taken as significant. **Results:** Of the 21 glaucoma patients, most (63%) were males and 11 patients had positive family history. Overall, 25% patients knew about the disease. Mean age of the respondents was 50.52 ± 22.5 years. Almost 72.2% of the patients with positive family history were aware about the prevention of blindness resulting from glaucoma ($p < 0.05$). on the other hand, 81.8% of the patients with negative family knew about cure. 81.8% of the patients knew the purpose of treatment ($p < 0.05$). **Conclusions:** There was scarcity of knowledge about glaucoma among patients. Despite the positive family history, knowledge of glaucoma patients about their disease was deficient.

INTRODUCTION

Glaucoma is a complex of optic neuropathies that is identified with degeneration of retinal nerve fibres and ganglion cells [1]. Due to raised intraocular pressure and resultant damage to optic nerve and ganglion cells; there is irreversible blindness that drastically affects the quality of life of the patients [2, 3]. However, its progression is arrested by 30-50% reduction of intraocular pressure. Its commonest form is primary open angle glaucoma that is greatly linked with old age, positive family history and high myopia [4]. Glaucoma is about 3-5% prevalent globally among people aged 40 years or above and is anticipated to prevail among 112 million people worldwide by 2040. Tham et al., in his systematic review and meta-analysis revealed

that primary angle closure glaucoma is predominant among Asian inhabitants while primary open angle glaucoma is more prevalent among African male urban dwellers [5]. Japanese on the other hand have been detected with higher incidence of normal tension glaucoma [6]. By 2010, blindness among one out of 15 persons was attributed to glaucoma while visual impairment among one out of 45 patients was linked with glaucoma [7]. Glaucoma is mostly diagnosed at progressive stage with considerable visual impairment knowing sufficiently about the risk factors of glaucoma and its clinical manifestations would enable the patients to pursue consultation for their problem quite earlier [8].

Various over-the-counter and prescribed drugs are known to cause rise of intraocular pressure and hence people taking such medications are prone to develop glaucoma [9]. A study by Dada et al., stressed on the significance of investigating the accompanying factors that prelude to disease severity among glaucoma patients [10]. Moreover, systemic hypertension and glaucoma have also been reported as co-incident attributes among cases [11]. A couple of studies have also linked glaucoma with certain endocrinological disorders like acromegaly and Addison's disease [12]. Another study by Fujita et al., brought the limelight the association of some life style habits with glaucoma like obesity, skipping breakfast, exercise and alcohol intake [13]. Glaucoma has substantially been reported among elders of Pakistan and the burden of ensuing visual problems are speculated to reach their zenith during 2025 [14]. Having adequate knowledge about glaucoma and its contributing factors is imperative in order to get rid of untoward results. Due to fear of debilitating healthcare outcomes, it is necessary to assess the awareness about glaucoma among general public.

The current study is therefore aimed to rule out the knowledge about glaucoma and its accompanying factors among adult glaucoma cases. This study would really aid our policy makers in planning appropriately for disseminating the essential information pertaining to risk factors and management of glaucoma among laypeople with an intention to diminish the imminent incidence of this disease in the country.

METHODS

A cross-sectional descriptive study was done among 21 adult glaucoma patients who visited Eye OPD of Munawar Memorial Hospital Chakwal from October – December 2021. Ethical approval for this study was sought from Institutional Ethical Review Board (IERB) of Munawar Memorial Hospital & College of Optometry (Ref# MMH/IRB/010/2021) on 10th October 2021. This study is based on thesis that was composed in partial fulfilment of BSc (Hons) Optometry & Orthoptics requirement. Prevalence of glaucoma in Asia was determined to be 58.3% [15]. In accordance with this prevalence, the sample size of 115 was calculated with WHO sample size calculator using 95% confidence level of 1.96 (z) and 9% margin of error (d). The formula used for calculation was $n = z^2 \times p(1-p) / d^2$. However, due to COVID-19 pandemic data could be gathered only from 21 patients. Only diagnosed glaucoma cases were enrolled in the study through non-probability consecutive sampling. The data were collected from the patients by using self-structured questionnaire regarding their demographics, family history, association of glaucoma with blindness, reversibility of resultant

blindness in addition to prevention and cure of blindness. Moreover, patients were also inquired about the treatment of glaucoma and its purpose. Data were analysed by means of SPSS version 25.0 and Microsoft Excel 2016. Descriptive statistics were applied. Fisher's exact test was applied to determine the association of family history of glaucoma with many associated attributes. $P < 0.05$ was considered significant.

RESULTS

Of the total 21 glaucoma patients enrolled in our study, 13 (63%) and 8 (37%) were females and males respectively. Mean age of our study subjects was 50.52 ± 22.5 years. 11 patients had positive family history of glaucoma and 7 of them were 51-70 years old as depicted below in figure 1.

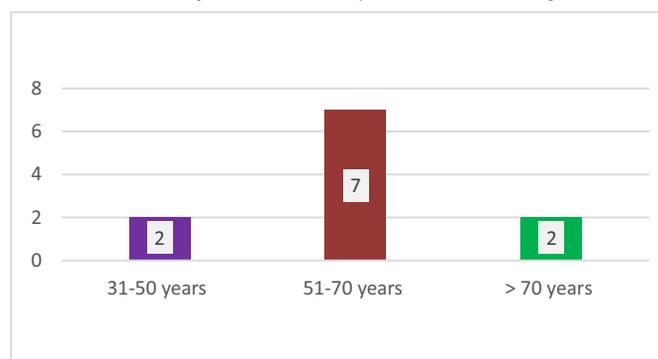


Figure 1: Family history of glaucoma patients
Awareness of the glaucoma patients about different attributes of glaucoma is revealed below in figure 2.

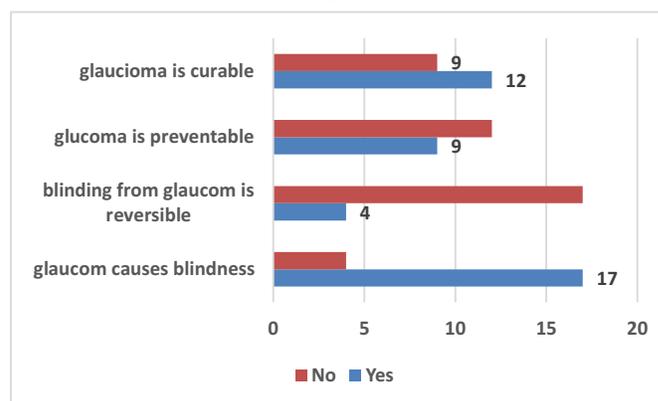


Figure 2: Awareness of glaucoma cases about various attributes
According to 57.2% and 42.7% patients, treatment of glaucoma was meant to restore / improve the vision of cases and to delay the disease progression respectively. Most (57.1%) knew about the use of eye drops for treating glaucoma, while only 23.8% were aware of the surgical management of glaucoma. However, 19.1% did not know about treatment of glaucoma. Association of knowledge about different attributes of glaucoma with family history is illustrated below in table 1.

Table 1: Association of knowledge about various factors of glaucoma with family history of glaucoma cases

Questions	Glaucoma patients	Glaucoma subjects with positive family history	p – value
Can glaucoma cause blindness?	Yes - 17 (81%)	Yes - 10 (90.9%)	>0.10
	No - 4 (19%)	No - 1 (9.1%)	
Is blindness due to glaucoma reversible?	Yes - 4 (19%)	Yes - 2 (18.2%)	>0.10
	No - 17 (81%)	No - 9 (81.8%)	
Is blindness from glaucoma preventable?	Yes - 9 (42.9%)	Yes - 8 (72.2%)	*<0.05 (statistically significant association of knowledge about prevention of glaucoma-linked blindness with positive family history)
	No - 12 (57.1%)	No - 3 (27.3%)	
Is glaucoma curable?	Yes - 12 (57.1%)	Yes - 2 (18.2%)	*<0.05 (statistically significant association of knowledge about cure of glaucoma with negative family history)
	No - 9 (42.9%)	No - 9 (81.8%)	
What treatment do you know?	Eye drops - 12 (57.1%)	Eye drops - 8 (72.7%)	>0.10
	Surgery - 5 (23.8%)	Surgery - 1 (9.1%)	
	Didn't know- 4 (19.1%)	Didn't know - 2 (18.2%)	
Do you know the purpose of treatment?	Restore or improve vision - 12 (57.2%)	Restore or improve vision - 9 (81.8%)	*<0.05 (significant association of knowledge about purpose of glaucoma treatment with positive family history)
	Delay progression - 9 (42.8%)	Delay progression - 2 (18.2%)	

*Statistically significant difference

DISCUSSION

Mean age of glaucoma patients in our study was 50.52 ± 22.5 years. Of the 21 cases, 11 (52.4%) had positive family history. A comprehensive epidemiological review of glaucoma by Allison K et al., revealed that persons above 60 years of age with positive family history and high myopia, diabetics, hypertensives and with any ocular injury were more prone to develop glaucoma [16]. Approximately 2.2 billion people globally are suffering from near or distant visual impairment and about 1 billion of them have preventable problem. Out of these 1 billion cases, almost 7.7 million patients have been recognized with glaucoma [17]. There is possibility of having juvenile cases of glaucoma that are reported among less than 40 years old people [18]. Mean age of newly diagnosed glaucoma cases in African region was determined to be 59.9 ± 17.1 years. Moreover, family history was positive among 26.1% patients [19]. Although positive family history of a patients is a valuable clue; yet many glaucoma patients due to negative family history were not thoroughly explored for their presenting complaints and other allied factors [20]. So, just paying attention to positive family history for reaching accurate diagnosis is mistaken, other aspects of history, detailed clinical examination and investigations should undoubtedly be given due consideration also before chalking out the management plan. The glaucoma patients with positive family history in current study were more aware about the prevention of this disease ($p < 0.05$). A similar study among patients attending eye clinic illustrated significant association of positive family history and any experience of working in medical field with

adequacy of knowledge about glaucoma [21]. Another study by Celebi et al., concluded that glaucoma patients with higher level of education were more well-versed about their disease [22]. Although family history is considered one of the key risk factors associated with glaucoma; yet, genetic testing was gained recognition as an essential diagnostic test for ascertaining high risk individuals [18]. According to a study carried out among Indian urban population, there was deficient knowledge about glaucoma that highlighted the need for health education among them for timely prevention instead of planning for rehabilitation on confrontation with grave consequences [23]. Health seeking behaviour of Pakistani population is quite dissatisfactory. Therefore, despite at increased risk elders of our country is unacquainted about glaucoma [24]. The current study showed significant association ($p < 0.05$) of negative family history of glaucoma cases with knowledge about cure for their disease (Table 1). Where first degree relatives of glaucoma cases have 22% risk of suffering from glaucoma during their life, there is 2.3% risk of glaucoma among those with negative family history [25]. Apart from family history and education, Body Mass Index (BMI) has also been noted as a renowned risk factor for developing glaucoma [26]. Further studies with consideration of other risk factors will enable us to have holistic analysis of the determinants of glaucoma in our nation. Of the 11 glaucoma patients with positive family history in present study, about 9 (81.8%) rightly confessed that glaucoma treatment is intended to restore the vision. There was statistically significant association ($p < 0.05$) of the positive family history of glaucoma with satisfactory knowledge among study subjects about purpose of the

treatment. A study by McNaught et al., among Tasmanian inhabitants unveiled the fact that 27% of the glaucoma patients were unaware about their positive family history [27]. Only 3 of the 11 glaucoma cases in our study with positive family history knew about eye surgery for glaucoma. The visitors of a public hospital of Syria interviewed during 2022 were also found to have deficient knowledge about glaucoma and this aspect was considered as one of the reasons for progression of this disease [28]. Knowledge about glaucoma among people of Nigeria was also inadequate [29]. Even healthcare workers of a Nigerian tertiary care facility also had minimal knowledge about glaucoma that should be updated for dissemination of information about this ailment among general population [30]. Knowing the risk factors for glaucoma would enable the primary healthcare workforce to detect at risk patients and refer them to ophthalmologists for timely diagnosis and prompt management [31]. Health related Quality of Life (QoL) of glaucoma patients can substantially be improved by discussing and pondering both patient and management related risk factors and resultant outcomes by the ophthalmologist [32]. Awareness about glaucoma would not only enable the public to pursue the relevant healthcare services in time but also reduce the burden of the associated ocular and visual disabilities [33]. Of the total 21 glaucoma patients in present study, most (81%) knew about irreversibility of blindness as a result of glaucoma. Although timely management of glaucoma is linked with better prognosis; yet it is a debilitating disorder that markedly deteriorates the well-being of the patients. An Ethiopian study elucidated that majority (46%) of the patients visiting ophthalmology department of a teaching hospital had advanced glaucoma [34]. This data is illustrative of either delay in seeking healthcare by the patients or lack of timely diagnosis by healthcare professionals. However, both of these aspects for avoidance of grave health outcomes should promptly be deliberated and addressed to provoke strategic planning for better healthcare of the masses. High risk screening for glaucoma was also found a beneficial step towards curbing this havoc [35]. Health sector should provide sufficient budget for efficacious implementation of screening program against glaucoma in the community. This initiative would not only reduce the burden on our healthcare facilities but would also considerably protect the public from this crippling disease.

CONCLUSIONS

The glaucoma patients had inadequate knowledge about their disease and very few were aware about surgical management. Despite the positive family history,

knowledge of glaucoma patients about their disease was deficient. Apart from social media, healthcare professionals should also play their role in dissemination of information pertaining to outcomes, prevention and management of glaucoma.

Authors Contribution

Conceptualization: IK

Methodology: HA, RS, IK

Formal analysis: HA, RS, SH

Writing-review and editing: HA, RS, IK, SH

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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