

## FACTORS FOR NON-COMPLIANCE WITH MEDICAL TREATMENT AMONG GLAUCOMA PATIENTS OF CHAKWAL

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### ABSTRACT

**Objectives:** To determine the factors for non-compliance with anti-glaucoma drugs among patients visiting Munawar Memorial Hospital Chakwal. **Subjects & Methods:** A cross-sectional descriptive study was done among 61 glaucoma patients at Munawar Memorial Hospital Chakwal from October – December 2021 who were enrolled in the study through consecutive non-probability sampling. In addition to demographics, data was gathered from glaucoma patients about their compliance with medication, presence of any chronic systemic disease or other eye disorder, medical insurance, duration of glaucoma medication and knowledge about glaucoma. Data was analysed by using SPSS version 25.0 software and Microsoft Excel 2016. Descriptive statistics were applied. Gender and literacy-wise difference in drug compliance was determined by applying Fisher's Exact test.  $P < 0.05$  was taken as significant. **Results:** Of the 61 glaucoma patients, most (77%) were females. Mean age of the cases was  $54.6 \pm 17.7$  years. About 45.9% of the patients were literate. Out of the 49 patients compliant with anti-glaucoma medication, 17 were diabetic while 14 were hypertensive. 21 and 7 patients were using eye drops for about 5 years and more than 5 years respectively. Only 6 cases had knowledge about glaucoma and 44 were medically insured. Only 6 out of 10 operated cases were using eye drops. Literacy and gender-based difference in compliance with anti-glaucoma medication was statistically insignificant ( $P > 0.01$ ). **Conclusion:** Compliance with anti-glaucoma medication had no association with gender and literacy.

**KEYWORDS:** non-compliance, medical treatment, glaucoma, literacy.

### INTRODUCTION

Glaucoma is a public health problem of great concern as it is the second contributor to blindness after cataract.<sup>[1]</sup> It is characterized by diverse optic neuropathies that are associated with degeneration of retinal ganglion cells and nerve fibres.<sup>[2]</sup> The resultant blindness is irreversible that drastically impacts the quality of life of the victims.<sup>[3]</sup> The prevalence of glaucoma by 2019 was reported to be around 3.8 million while Disability Adjusted Life Years (DALYs) were measured to be 1,044,667.<sup>[4]</sup>

Unremitting escalation in healthcare expenditures due to glaucoma has been reported worldwide during previous 25 years<sup>[5]</sup> that has significantly been

attributed to elder females and lower social class.<sup>[6]</sup> Approximately half of the glaucoma cases across the globe remained unnoticed specifically in Asian and African territories. Its earlier detection without complication is likely to result in good prognosis.<sup>[7]</sup> According to Soqia J et al about 60 million people globally are glaucoma patients and approximately one third of them become blind before consulting an ophthalmologist.<sup>[8]</sup> Healthcare seeking behaviour of the patients is considerably linked with awareness of the patients about their disease.<sup>[9]</sup> Dilemma is that irreversible blindness is not highlighted statistically as a healthcare indicator like mortality and other morbidities.<sup>[10]</sup> Around 118.8 million people worldwide are likely to be afflicted with this havoc by 2040.<sup>[11]</sup>

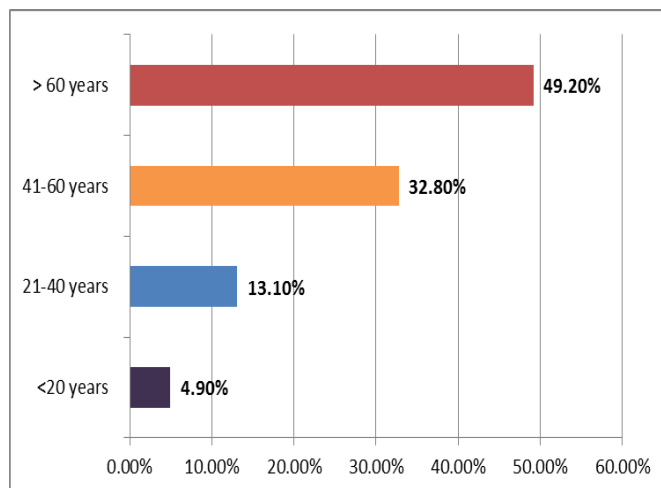
Although glaucoma is treated by medication, surgery and laser therapy; however, medical treatment is considered to be the safest curative measure. However, adherence to medication is imperative to prevent the progression of disease to irreparable complications.<sup>[12]</sup> According to Rajurkar K et al non-compliance with anti-glaucoma treatment is determined to be 16%-67.5%.<sup>[13]</sup> Numerous factors seem to influence the adherence to treatment among glaucoma cases.<sup>[14]</sup> Knowing these attributes will positively facilitate our strategic planners to take appropriate measures for enhancement of drug compliance and hence to mitigate the prevalence of adversities. The current study is therefore intended to dig out the causes of non-compliance with anti-glaucoma medication so that valid plan of action for diminishing the rate of resultant complications in our community can be chalked out and public could timely be protected from subsequent disability.

**SUBJECTS AND METHODS**

A cross-sectional descriptive study was carried out among 61 glaucoma patients at Munawar Memorial Hospital Chakwal for a period of 3 months (October – December 2021) who were enrolled in the study through consecutive non-probability sampling. This study is based on thesis that was composed in partial fulfilment of BSc (Hons) Optometry & Orthoptics requirement. It was ethically approved by Institutional Ethical Review Board of Munawar Memorial Hospital and College of Optometry Chakwal. Apart from demographics, data was collected from glaucoma patients pertaining to their compliance with medication, presence of any chronic systemic disease, occurrence of any other eye disease, medical insurance, duration of glaucoma treatment and knowledge about glaucoma. Data was analysed by using SPSS version 25.0 software and Microsoft Excel 2016. Descriptive statistics were applied. Gender and literacy-based difference in drug compliance was determined by means of Fisher’s Exact test. P < 0.05 was considered significant.

**RESULTS**

Of the total 61 glaucoma patients enrolled in our study, about 77% and 23% were females and males respectively. Mean age of the patients was 54.6 ± 17.7 years. Most (49.2%) of our patients were older than 60 years as illustrated below in Figure 1.



**Fig 1: Age groups of glaucoma patients.**

Around 45.9% of our patients were literate. Gender based variation in compliance with anti-glaucoma medication in our study was determined to be statistically insignificant (P>0.01) as shown below in Table 1.

**Table 1: Gender based comparison of compliance to medication among glaucoma patients (n = 61).**

Gender	Compliance with anti-glaucoma medication		P> 0.01
	Compliant	Non-compliant	
Males	11	03	
Females	38	09	

Likewise, literacy among glaucoma patients did not seem to be statistically significantly associated with compliance to treatment as shown below in Table 2.

**Table 2: Association of Literacy with drug compliance.**

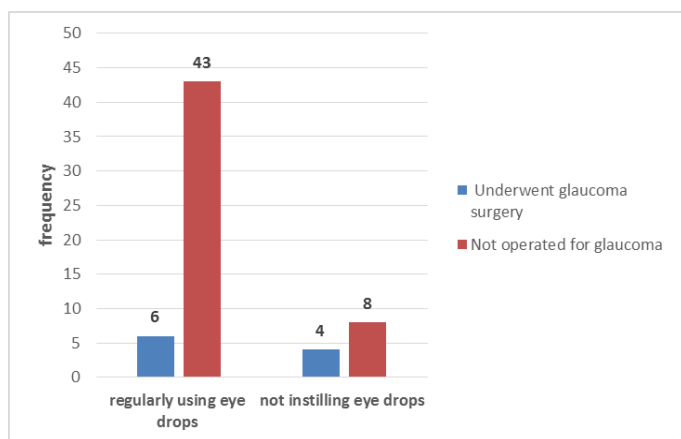
Literacy	Compliance with anti-glaucoma medication		P>0.01
	Compliant	Non-compliant	
Literate	24	05	
Illiterate	25	07	

Of the 15 patients identified with visual disability, 13 were using eye drops timely while out of remaining 46 cases with no visual disability, about 36 patients were regularly using eye drops. The regular usage of eye drops among glaucoma patients with respect to age, chronic systemic disease, other eye disorders, medical insurance, unilateral or bilateral glaucoma treatment and its duration and No. of eye drops instilled regularly is illustrated below in Table 3.

**Table 3: Usage of eye drops by glaucoma patients with various attributes.**

Attributes	Putting eye drops	
	Yes	No
<b>Age</b>		
21-40 years	06	05
41-60 years and above	43	07
<b>Chronic systemic disease</b>		
Diabetes mellitus	17	02
Hypertension	14	01
Heart disease	03	01
None	15	08
<b>Other eye diseases</b>		
Diabetic retinopathy	01	0
Cataract	04	01
Other	03	02
None	41	09
<b>Medically Insured</b>		
Yes	40	04
No	09	08
<b>Duration of treatment</b>		
3 months	07	0
4 months – 1 year	14	05
Up to 5 years	21	03
>5 years	07	04
<b>Knowledge about glaucoma</b>		
Yes	05	01
No	44	11

Of the 10 glaucoma patients operated in current study, only 6 were using eye drops as depicted below in **Figure 2. Usage of eye drops by operated and non-operated glaucoma patients.**



**DISCUSSION**

Of the 61 glaucoma patients attending optometry department in current study, only 11 patients were upto 40 years of age while rest of the 50 (82%) of the cases were 41-60 years old. Mean age of our study subjects was 54.6 ± 17.7 years. A similar study by Stein JD et al illustrated advancing age as one of

momentous risk factors for developing glaucoma.<sup>[15]</sup> Its incidence is likely to be escalated with rising life expectancy particularly in developing regions of the globe.<sup>[16]</sup> Likewise, a study among Iranian population revealed growing prevalence of glaucoma among 60-64 age people.<sup>[17]</sup> Screening of high-risk people for glaucoma can help a great deal to diminish its frequency and resultant complications.

In present study, literacy was not found to be significantly associated with drug compliance among glaucoma cases (P>0.01). illiterate patients were also using anti-glaucoma medication in almost same propensity as literate patients (Table 2). A similar study by Freedman RB et al revealed positive association of parental health knowledge with adherence to anti-glaucoma treatment among their children.<sup>[18]</sup> Another study revealed that patients with negligible health literacy had to bear the burden of comparatively increased healthcare cost.<sup>[19]</sup> Even the glaucoma cases with inadequate healthcare knowledge were reported to face difficulty in self-administering eye drops; hence found troubled in adherence to medication.<sup>[20]</sup> This issue is quite challenging as non-adherence to treatment for glaucoma may end up in irreversible blindness.<sup>[21]</sup> In current study, association of literacy in general was seen with drug compliance. However, health literacy should preferably be taken as predictor of adherence to medication as many recent studies<sup>[22]</sup> have taken this attribute into account for envisaging the exposure to outcome association in true spirit.

Out of 61 glaucoma patients in current study, only 10 were operated. However, 6 out of those 10 were instilling eye drops (Fig 2). Despite the fact that only 5 out of 49 patients administering eye drops knew about glaucoma, it is quite optimistic that 43 out of 51 operated glaucoma cases were using eye drops (Table 3). Surgery of glaucoma is done to reduce intraocular pressure but it is not meant to reverse the visual loss. Although postoperative eye drops are to be administered by glaucoma cases before surgery as well, but using eye drops is mandatory for at least 3 months following surgical procedure.<sup>[23]</sup> A prospective study by Naito T et al reflected poor instillation of eye drops among diagnosed glaucoma cases that resulted in minimal recovery of visual field defect.<sup>[24]</sup> Desired effect of eye drops can best be achieved through their accurate administration. Although glaucoma patients with visual impairment are more compliant with anti-glaucoma eye drops; however, they face difficulty in optimal self-administration.<sup>[25]</sup> Of the 49 cases using eye drops in our study, most (21) were instilling eye drops for more than 5 years. adherence to anti-glaucoma topical treatment might considerably be enhanced among the respective patients by health education and monitoring by the concerned healthcare

professionals. Eye drops are recommended as the treatment of first choice for primary open angle glaucoma.<sup>[26]</sup>

Of the 49 glaucoma cases administering eye drops, about 17, 14 and 3 were suffering from diabetes mellitus, hypertension and heart disease respectively. However, 15 patients using eye drops did not have any comorbidity (Table 3). Both diabetes and glaucoma are attributed to some common risk factors and even share same pathophysiologic changes; even some studies have verified the association of raised fasting blood glucose level with higher intraocular pressure.<sup>[27]</sup> Further studies on adequate sample would enable us to get the association of comorbidities with drug compliance among glaucoma patients and with frequency of glaucoma occurrence.

### CONCLUSION

Almost 80% of the glaucoma patients were compliant with anti-glaucoma medication. However, this drug compliance was neither had statistically significant association with gender nor with literacy.

### RECOMMENDATION

Study on large sample size would better provide a true picture of the anti-glaucoma medication compliance.

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