

## A study of the effect of Glaucoma and its management on the quality of life of patients.

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### Abstract:

**Aim:** To study the effect of glaucoma and its management on the quality of life of patients having glaucoma. **Background:** Glaucoma has a serious impact on the quality of life of a large number of patients. The visual acuity and field loss due to glaucoma influence daily activities. Visual impairment has a significant impact on patient wellbeing which varies according to the stage of disease. Topical therapy is associated with a variety of adverse effects, caused either by the molecule or the preservative, subsequently influencing compliance, especially following chronic use. **Methods and Materials:** The study population comprised of 200 patients, having glaucoma and using at least one anti glaucoma medication, including men and women above 15 years. A structured validated questionnaire was used to collect data which was then analyzed into numbers and percentages. **Results:** Out of 200 patients, 39% patients had average eyesight, 31.5% had good eyesight, 19.5% had poor eyesight whereas 7.5% of patients were completely blind due to glaucoma. Sixty three percent patients had limitations in performing their daily activities. Ten percent patients had stopped driving a vehicle due to poor eyesight. Fifty eight percent patients experienced ocular side effects to topical drugs, 24% were tired of using their eye drops and 33% were dependent on others for drop instillation. **Conclusion:** Glaucoma can have a serious impact on a person's life across multiple domains. Information about this may help to tailor treatments and educate patients about the disease, its management and their resultant consequences.

**Keywords:-** Compliance, Glaucoma, Quality of life, Visual impairment.

### Introduction:

Glaucoma is the most common cause of irreversible blindness globally. It is estimated that more than 3 million people are blind due to glaucoma.<sup>[1]</sup> In India, the estimated number of cases of glaucoma is 12 million, around one fifth of the global burden of glaucoma.<sup>[2,3]</sup> Glaucoma is a slowly progressive disease and more than half of the affected individuals are unaware that they have the disease. In Indian population, open-angle and closed-angle glaucoma form an equal proportion.<sup>[4]</sup>

Primary open angle glaucoma (POAG) has a serious impact on the quality of life (QoL) of the people affected.<sup>[5]</sup> Glaucoma influences all daily activities and this is frequently associated with serious

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consequences such as falls and road accidents. Primary angle closure glaucoma (PACG), the second most common type of glaucoma presents with sudden rise in intraocular pressure and if not managed immediately can cause significant vision loss. This loss has a significant impact on patient wellbeing and functioning.

It is also recognized that glaucoma medications, especially those containing detergent preservatives when used chronically affect the ocular surface. They contribute to local side effects and lower the therapy compliance. Systemic therapy for glaucoma can lead to adverse effects like diuresis, headache, electrolyte imbalance, anaphylactic reaction, cardiovascular overload resulting from transient rise in blood volume, intracranial hemorrhage, pulmonary edema and renal failure.<sup>[6,7]</sup> Glaucoma medications in addition to being expensive have to be used on a daily and regular basis for extended durations, often life long and so cannot be afforded by poor patients. This, along with the complexity of regimen and difficulty in use of treatment also affect the compliance.

Thus there are several ways in which glaucoma can affect the overall QoL of a patient. Though there has been quite some literature available on this aspect, much of recent glaucoma research targets newer medications and innovations. There is a need to re- shift the focus to the patient perspective. Our study is an attempt to study the same. By re-emphasizing on how glaucoma and its management affects the lives of patients, we can educate patients to seek treatment early in the course of the disease so as to prevent significant visual disability and preserve their QoL and also individualize our treatment prescriptions in the best suited way to the patients.

### **Material and Methodology**

Ethical measures were adhered to throughout all phases of the research. The study was conducted among glaucoma patients attending our tertiary healthcare referral center for a duration of one year. The population comprised of men and women above the age of 15 years having glaucoma, using at least one antiglaucoma medication and willing to participate. Simple random sampling was used and the sample size consisted of 200 patients.

A structured validated questionnaire was administered to collect the data. The National Eye Institute Visual Function Questionnaire (NEI-VFQ-version 2000) was used as a reference to compile the instrument.<sup>[8]</sup> The questionnaire was also translated into Hindi and Gujarati and administered in the language which the patients could understand after an informed consent. The questionnaire tested the following 6 scales:

- (1) General health and vision
- (2) Difficulty with activities
- (3) Response of patients to vision problems
- (4) Disease management related questions
- (5) Situational factors
- (6) Medication related factors

### **Results:**

Maximum number of patients, 110 (55%) were between the age group of 41-60 years. The detailed age distribution is shown in Table 1.

**Table 1: - Age wise Distribution**

Age group (years)	Frequency	Percentage (%)
15-25	3	1.5
26-40	16	8
41-60	110	55
>60	71	35.5

Out of 200 patients, 67 (33.5%) patients were females while majority, 133 (66.5%) were males. Forty three (21.5%) patients were living in semi urban area, 108(54%) in urban and 49 (24.5%) in rural area.

Seventy eight (39%) patients had fair eyesight, 63 (31.5%) patients had good eyesight. Thirty nine (19.5%) patients had poor eyesight whereas 15 (7.5%) patients were blind because of glaucoma.[Table 2]

**Table 2: Binocular corrected visual acuity (BCVA), as on Snellen's chart.**

Eyesight (with glasses)	Frequency	Percentage(%)
Excellent (BCVA >6/12)	5	2.5
Good (<6/12 to 6/18)	63	31.5
Fair (<6/18 to >6/60)	78	39
Poor (<6/60 to >3/60)	39	19.5
Blind (<3/60)	15	7.5

Majority of patients, 117 (58.5%) kept worrying about their eyesight some of the time, 38 (19%) patients most of the time, 6 (3%) patients all the time and 39 (19.5%) patients did not worry about their eyesight.

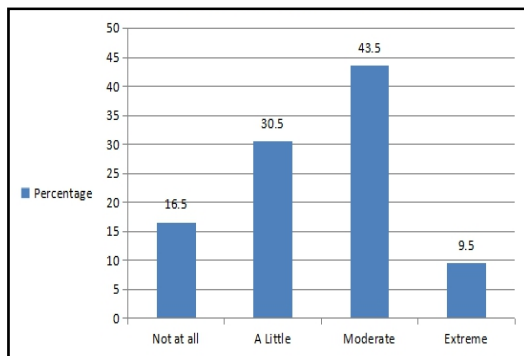
Out of the 200 patients, majority patients i.e. 127 (63.5%) experienced some form of limitations in performing their daily activities because of vision related problems while 73 (36.5%) patients did not face any restrictions. Majority patients, 79 (39.5%) faced moderate difficulty in reading ordinary print in news paper, 64 (32%) patients had little difficulty, 28 (14%) patients had extreme difficulty and 12 (6%) patients had altogether stopped reading newspapers because of their eyesight. In going up or down stairs in dim light, 61 (30.5%) patients faced little difficulty, 87 (43.5%) patients faced moderate difficulty while 19 (9.5%) patients had extreme difficulty. (Image 1)

Eighty five (42.5%) patients experienced little difficulty in cooking, sewing or using hand tools, 52 (26%) patients moderate difficulty, 21 (10.5%) patients extreme difficulty and 9 (4.5%) patients had totally stopped doing these activities because of their poor eyesight.

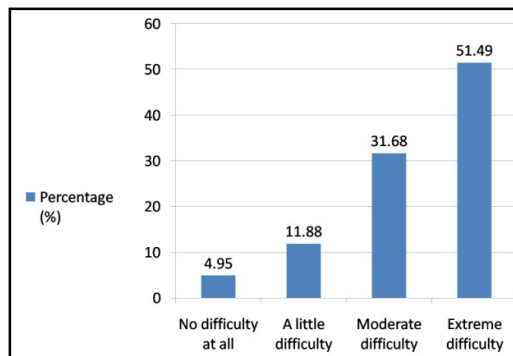
One hundred and twenty three (61.5%) patients had no difficulty in doing shaving, combing or doing similar tasks; whereas 56 (28%) patients had little difficulty, 15 (7.5%) patients had moderate difficulty and 6 (3%) patients had extreme difficulty in performing these activities. Ninety eight (49%) patients did not have any difficulty in reading names of stores; whereas 74 (37%) patients had little difficulty, 22 (11%) patients had moderate difficulty, while 6 (3%) patients had extreme difficulty. One hundred and twenty eight (64%) patients had difficulty in reaching the medical store themselves for buying the drugs while 72

(36%) patients faced no difficulty.

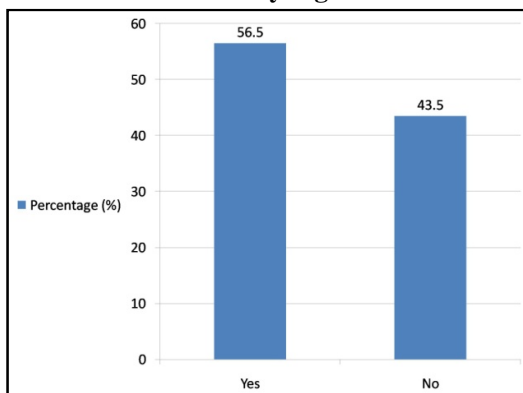
**Image 1: Difficulty in going up or down stairs in dim light or at night**



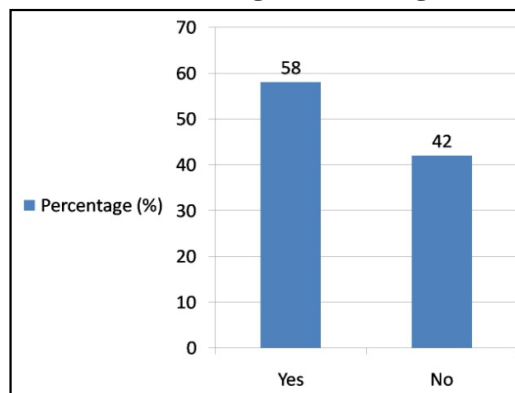
**Image 2: Difficulty in driving a vehicle during night**



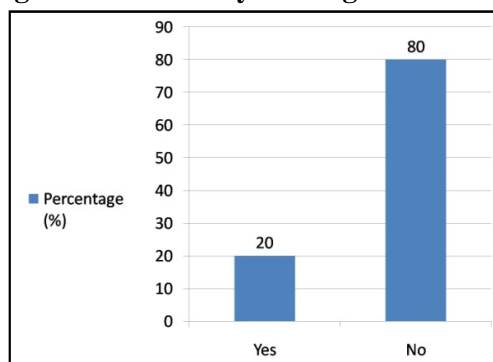
**Image 3: Irritability in behaviour due to eyesight**



**Image 4: Experience of ocular side effects of antiglaucoma drugs**



**Image 5: Affordability of antiglaucoma drugs**



One hundred and one (50.5%) patients were still able to drive a vehicle, 20(10%) patients stopped driving due to their poor eyesight. Seventy nine (39.5%) patients had never driven a vehicle. Thirty (29.70%) patients had little difficulty in driving during a day time, 19 (18.81%) patients had moderate difficulty and 4 (3.96%) patients had extreme difficulty. During night, majority patients, 52 (51.49%) had extreme difficulty in driving, 32 (31.68%) patients had moderate difficulty, 12(11.88%) patients had little difficulty, whereas 5 (4.95%) had no difficulty at all. (Image 2)

One hundred and thirteen (56.5%) patients remained irritable because of their eye problems whereas 87 (43.5%) patients did not face such an issue. (Image 3)

Out of 200 patients, 153 (76.5%) patients could not go out of home alone because of poor eyesight, while 47 (23.5%) patients faced no problems. Fifty two (26%) patients had to rely too much on what other people said, while 148 (74%) patients did not face such dependence on others.

One hundred and eighty eight (94%) patients visited an ophthalmologist regularly while 12 (6%) patients did not. One hundred and ninety seven (98.5%) patients were explained the importance of regular treatment by their ophthalmologist while 3 (1.5%) patients were not.

Out of 200 patients, 183 (91.5%) patients were using antiglaucoma drugs regularly while 17 (8.5%) patients were not.

Fifteen (7.5%) patients had difficulty in putting drops in eye while 185 (92.5%) patients had no such difficulty. Forty eight (24%) patients were tired of using drops while 152 (76%) patients were not. Sixty six patients (33%) were dependent on someone else for drop instillation while 134 (67%) patients could manage to instill on their own.

Out of 200 patients, 168 (84%) patients were comfortable with the drug schedule while 32 (16%) patients were not comfortable.

One hundred and sixteen patients (58%) experienced burning, itching, watering, foggy vision, bitter taste or some other form of discomfort on instilling drops while 84 (42%) patients had no complaints. (Image 4)

Forty (20%) patients out of 200 could afford antiglaucoma drugs while the majority i.e. 160 (80%) patients could not afford. (Image 5)

Daily routine schedule was not affected in 172 (86%) patients but was affected in 28 (14%) patients because of the antiglaucoma treatment.

### **Discussion:**

Population-based studies suggest that more than 90% of glaucoma cases in the country remain undiagnosed. This is in contrast to 40-60% of undiagnosed disease in more developed countries.<sup>[10]</sup> These high rates of undiagnosed glaucoma lead to significant blindness which in turn adversely affects the QoL of patients.

Through this study, we assessed the patients' own experiences and feelings living with glaucoma and the difficulties they experienced in day to day activities. Our study showed that patients with glaucoma had visual function impairment according to severity of glaucoma. Loss of vision is the main determinant of health-related QoL for glaucoma patients. This can impact driving, walking, travelling from home, reading, seeing at night, adjusting to different levels of illumination, judging distances, and seeing objects coming from the side.<sup>[11]</sup> Treatment-related issues such as side effects and expense, associated with regular and time consuming clinic visits contribute to the burden of disease. With disease progression, the psychological burden increases, with a growing fear of blindness, depression

and social withdrawal. Other debilitating medical conditions, psychological and social constraints may further influence the patients' visual morbidity. All of these factors interact in a complex manner and can be reflected in the QoL assessment.

Clinicians often only focus on intra ocular pressure readings and the glaucomatous optic neuropathy with serial visual field testing and nerve fiber layer analysis as measures of success or failure of therapy. These are just one aspect of glaucoma management of a patient. From the patient's perspective, their main concerns are visual acuity and quality, ocular surface discomfort and the fear of going blind. Addressing issues relating to QoL allow both the clinician and patient to re-orientate towards common, realistic goals leading to a more harmonious relationship, better concordance with treatment programs and patient satisfaction. Preserving vision by preventing glaucomatous visual loss, treating other causes of visual morbidity and minimizing the impact of treatment-related discomfort are some of the means to achieve this end.

The Los Angeles Latino Eye Study (LALES), a population based cross sectional study on 213 patients with open angle glaucoma, reported that bilateral moderate to severe VF loss had a great impact on driving tasks, while moderate to severe unilateral VF defects had less influence on driving capabilities.<sup>[12]</sup>

In our study, 20 (10%) of patients had absolutely stopped driving vehicles due to visual problems. Twenty three (22.77%) patients had moderate to extreme difficulty in driving during day time, while 84 (83.17%) patients had moderate to extreme difficulty in driving during night time. Moreover, 63.5 % (127) patients had limitation in doing routine activities because of their eyesight.

Jampel et al. investigated depression and mood indicators in newly diagnosed POAG patients, as a part of CIGTS (Collaborative Initial Glaucoma Treatment Study). QoL was more affected by the way the patients perceived their vision than the objective measurement of it.<sup>[13]</sup>

In our study, we found that 113 (56.5%) patients were irritable because of their eyesight.

Claxton et al. performed a systematic review of the medical literature, highlighting that fewer doses per day significantly correlated with better compliance and difficulties with medication use in older patients maybe associated with co morbidities like arthritis, which impairs their ability to depress the applicators of eye drops.<sup>[14]</sup> In our study, 66 (33%) patients were dependent on someone else for drop instillation.

The association between topical medication use and health-related QoL was evaluated by Balkrishnan et al. in a cross-sectional study on 358 glaucoma patients.<sup>[15]</sup> The daily use of more than five medications and difficulty in using the eye drops were negatively associated with health-related QoL scores. Other studies indicated that problems with eye drop use and complex regimens may play a role in poor compliance.<sup>[16]</sup>

In our study, we found that 116 (58%) patients complained of ocular discomfort in form of burning, itching, watering, foggy vision and even bitter taste on instilling the drops.

The impact of glaucoma on the QoL of patients in Norway showed that nine-tenths of the individuals were satisfied with the information and care given to them by their treating ophthalmologist.<sup>[17]</sup> Our study also showed that, the treating ophthalmologist discussed the importance of taking antiglaucoma drugs regularly with 197 (98.5%) patients. This reflects on the positive interaction in a patient doctor relationship which is likely to influence the compliance and success of treatment.

Assessment of QoL with a questionnaire is not without limitations. It is subjective as patients with similar disability may rate their QoL differently. Perhaps study on a larger population may be necessary to yield further results.

### Conclusion:

Our study concludes the importance of timely glaucoma diagnosis to preserve vision-related quality of life. It also highlights the fact that understanding how the disease, at different stages, along with its treatment, can affect a patient's routine activities and overall quality of life, needs to be an essential component of patient care. This inclusion may further help to individualize the treatment approach, educate patients about the evolution of disease and compliance with treatment and attempt to improve or at least maintain their quality of life.

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