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Original Research Article

Impact of Patient Knowledge and Adherence in Vision-Related Quality of Life in Glaucoma: A Comparative Study of Preservative-Free Versus Conventional Eye Drops

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Abstract: The estimated prevalence of glaucoma is 2.65% in people above 40 years of age. It is estimated that there are more than 60 million cases of glaucoma worldwide, the glaucoma medications are often associated with ocular adverse reactions such as dry eye, and burning or stinging sensations, and foreign body sensation. This Prospective Interventional study was conducted at eye hospitals for a period of Oct 2023 to Feb 2025.This study to find the prevalence of glaucoma and other diseases in glaucoma with comparing the cost utilization of glaucoma management. the more prominent age group affected by glaucoma was between 60-69 years, the distribution of co-morbidity in glaucoma patients were DM among the patients was 23% patients and HTN was 26% patients, the pre-existing ocular surface diseases. Dry eyes were the mostly occurred ocular surface disease in 46% patients, followed by allergic conjunctivitis 22% patients, In group 1 patients. Here g.Latanoprost was most commonly prescribed in about 40% of patients followed by g.Bimatoprost 0.03% in 28% of patients, In group 2 patients. g.Brimonidine + Timolol was most commonly prescribed in 22% of patients followed by g.Bimatoprost 0.03% in 18% of patients and 15 compares the drug cost of both groups. The mean cost of group-1 was Rs.1037± 378.9 and group 2 was Rs.521.8 ±255.7. Compared to preserved eye drops, preservative free eye drops are significantly less associated with ocular symptoms and signs of irritation and also preservative free eye drops are slightly costlier than preserved eye drops.

Keywords: IOP, OSD, COAG, MIGS.

INTRODUCTION

Glaucoma is defined as a group of diseases, which have in common an abnormal elevation of intraocular pressure [IOP] together with the anatomic and functional changes resulting from the abnormal pressure. From elevated intraocular pressure it was shifted to a characteristic optic neuropathy as the unifying feature and ultimate mechanism of visual impairment in glaucomas. [1]. There are several types of glaucoma treatment, including medicated eye drops, micro-surgery, laser treatments and other eye surgery. It's important to realize that glaucoma treatments may prevent additional vision loss, but they will not restore vision already lost to the disease. The main aim of therapy in glaucoma management is reduction of IOP. Untreated pressure in the eye can damage and eventually destroy the optic nerve leading to blindness. [2], Depending upon the type, severity and responsiveness of glaucom eye doctor may prescribe medical treatment, surgery or a combination of both. [3]. delaying diagnosis. Peripheral vision is lost first and central vision later, and is irreversible. [4]. Mental and Emotional health is important to lower the risk of glaucoma, the patient must: Maintain a healthy weight, Keep the blood pressure at a normal level and control other medications., Don't smoke,

Limit caffeine levels moderate levels, because high amounts caffeine may increase eye pressure, get regular, comprehensive eye exams and consult doctor if there are any changes in vision. [5].

Aim: The aim is to find the prevalence of glaucoma and its management with a comparison on conventional eye drops and preservative free eye drops.

Objectives

- To find out prevalence of OSD in patients and utilization of conventional and preservative free eye drops in glaucoma.
- To assess and compare the cost effectiveness of conventional and preservative free eye drops.

METHODOLOGY

- This Prospective Interventional study was conducted on 400 patients were at eye hospitals for a period of Oct 2023 to Feb 2025.
- Collection of patient demographics and recording in data collection form.
- Assess the advantages and disadvantages of preservative free technology adds its value to the treatment in each individual.
- Cost effectiveness evaluation of conventional and preservative free eye drops.

RESULTS AND DISCUSSION

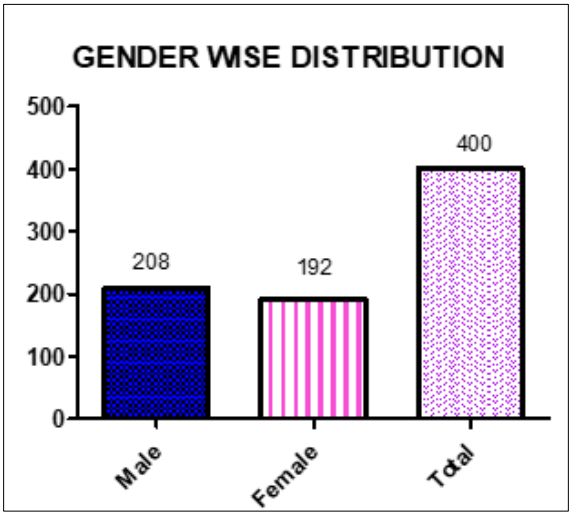

Fig. 1: Gender Wise Distribution

Fig; 1 shows that males were greatly affected due to glaucoma. Out of 400 patients about 52% of males and 48% of females were affected.

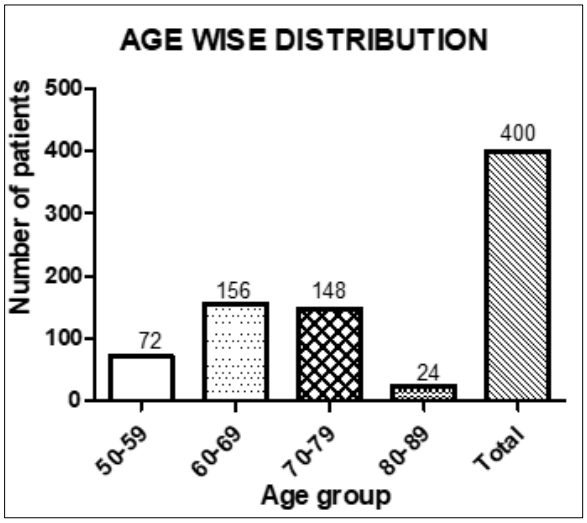

Fig. 2: Age Wise Distribution

Fig; 2 depicts that out of total patients [N=400], the more prominent age group affected by glaucoma was between 60-69 years which constitutes 39%, followed by age group between 70-79 years constituting about 37% and then age group of 50-59 years which constitutes 18% and the leastly affected age group was between 80-89 years constituting about 6%. The study conducted by Vinay Nangia et.al. reports that glaucoma was associated with higher age, especially within the age group of 50-60 years.

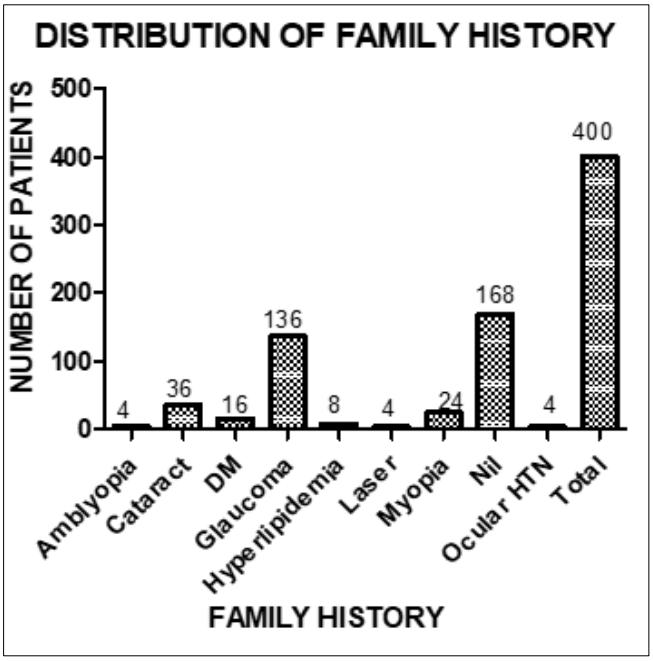

Fig. 3: Distribution of Family History

Fig; 3 compares the family history of patients. The prevalence of glaucoma seems to be 34% while other family history was found to be less than 10%.

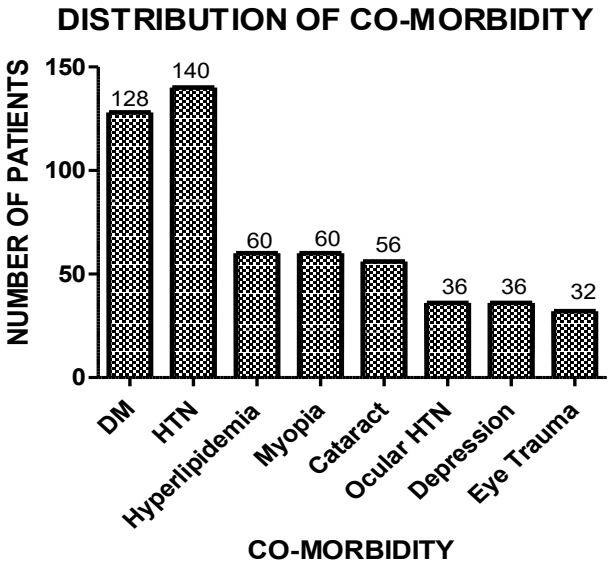

Fig. 4: Distribution of Co-Morbidity

Fig; 4 shows the distribution of co-morbidity in glaucoma patients. The prevalence of DM among the patients was 23% and HTN was 26%, The other disease was Hyperlipidemia and Myopia was 11%, Ocular HTN and Depression seems to be 7%.

Table-1: Prevalence Of Ocular Surface Disease in Glaucoma Patients

	Prevalence of OSD in glaucoma patients	
OSD	**Number of patients**	**%**
Allergic conjunctivitis	88	22
Blepharitis	56	14
Dry eyes	184	46
Thickened Eyelid	12	3
Nil	60	15
Total	400	100

Table 1 states the pre-existing ocular surface diseases. Dry eyes were the mostly occurred ocular surface disease in 46%, followed by allergic conjunctivitis in 22 % and least occurrence was of thickened eyelid in 3% patients. Our study was similar to the study conducted by Portela RC et.al.2018 stating that keratitis and conjunctival hyperaemia were worse in glaucoma group and the overall prevalence of OSD was 71%, compared to 29% in the cataract group.

Table-2: Distribution of Drugs Prescribed in Group 1

Durg prescribed	**GROUP 1**	
	Frequency	**%**
Bimatoprost 0.03%	56	28
Timolol 0.5%	20	10
Latanoprost	80	40
Latanoprost, Timolol 0.1%	24	12
Bimatoprost, Timolol	8	4
Bimatoprost+timolol 0.1%	12	6

Table-2 shows the drugs prescribed for the subjects in group 1 was tabulated in the above table. Only six drugs were used in group 1 patients. Here g. Latanoprost was most commonly prescribed in about 40% of patients followed by g. Bimatoprost 0.03% in 28% of patients. Among 200 subjects, 6 % only used combination of Bimatoprost and Timolol, respectively.

Table-3: Distribution of Drugs Prescribed in Group 2

Drug prescribed	**GROUP 2**	
	Frequency	**%**
Bimatoprost 0.03%	36	18
Timolol 0.5%	24	12
Latanoprost 0.005%	32	16
Bimatoprost+timolol	44	22
Bimatoprost 0.01%	40	20
Bimatoprost, Timolol	24	12

Table-3 describes the drugs prescribed for group 2 subjects. This group was given 4 types of single drug and six combination drugs. g.Brimonidine + Timolol was most commonly prescribed in 22% of patients followed by g.Bimatoprost 0.03% in 18% of patients.

Table-4: Comparison of Dose Frequency Between the Two Groups

Sl No	Dose frequency	Duration	Group-1		Group-2	
			Frequency	%	Frequency	%
1	1drop/d	1 month	200	100	64	32
2	2 drop/d	1 month	0	0	136	68
Total			50	100	200	100

Table 4 shows the dose frequencies of group -1 was cent percent in 1 drop/d which is more convenient while it was 0% in 2 drop/d. In respective group-2, the 2 drop/d was 68% while 1 drop/d was 32%.

Table-5: Comparison of Drug Cost between Two Groups

Drug	Group-1		Group-2		Difference	"t"	df	Significance
	Mean	SD	Mean	SD	b/w means			
	1,037	378.9	521.88	255.7	515.12	7.97	85	P<0.0001

Table 5 compares the drug cost of both groups. The mean cost of group-1 was Rs.1037± 378.9 and group 2 was Rs.521.8 ±255.7. The differences of both groups were statistically significant [P<0.0001].

CONCLUSION

This study reports that there is a high prevalence of OSD in patients treated for glaucoma. In our study dry eyes [n=184] was the most commonly occurred Ocular Surface Disease among the study population. Dry eyes were the most commonly reported ADR. This study shows that preservative free eye drops are more expensive than conventional eye drops. As it outweighs the detrimental effects of preservatives, which cause serious ocular surface disease, preservative free eye drops are said to be cost-effective than conventional eye drops. Conventional and preservative free eye drops have its own pros and cons in ophthalmology. Compared to preserved eye drops, preservative free eye drops are significantly less associated with ocular symptoms and signs of irritation. Symptoms and signs are less prevalent when PF drops are used. Moreover, most of the adverse reactions induced by preserved glaucoma medication are reversible after removing preservatives.

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