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PREVALENCE OF GLAUCOMA & ITS DRUG UTILIZATION PATTERN IN EYE CARE HOSPITALS, PALAKKAD- A PROSPECTIVE STUDY

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ABSTRACT

Aim: The study is to find the prevalence of glaucoma & the drug utilization pattern of glaucoma medications in eye care hospitals at Palakkad.

Methodology: A prospective study was conducted at two eye care centers Palakkad, for a period of 6 months duration (November 2016- April 2017). Glaucoma patients with age > 40 were selected. Questionnaire survey & data entry form were used to assess the disease, symptoms, diagnosis and treatment plan.

Result: Out of 222 glaucoma patients, 80% (n=178) were male & 20% (n=44) were female. From the study, it was evident that the male populations were more prone to glaucoma as compared to female. Open angle glaucoma was prevalent in 91% (n=202) patients than Angle closure glaucoma 7 % (n=16) & Normal tension glaucoma (n= 4) 2% respectively.

Conclusion: The prescription analysis of glaucoma patients concluded that monotherapy with travoprost was the first line choice for glaucoma therapy and timolol was found to be the second line choice. Timolol+ brimonidine was the mostly prescribed fixed drug combination. It also showed that all drugs were prescribed in their brand name instead of generic name.

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INTRODUCTION

Glaucoma is a condition that involves distinctive changes in the optic nerve and visual field. It is marked by raised intraocular pressure (IOP) that compresses and damages the optic nerve. Once the optic nerve is damaged, it fails to carry visual information to the brain and these results in a clinically progressive loss of peripheral visual field and ultimately vision⁽⁴⁾. There are two major types of glaucoma: open-angle glaucoma, which accounts for most cases and closed-angle glaucoma. In open-angle glaucoma, the specific cause of optic neuropathy is unknown. Increased intraocular pressure (IOP) was historically considered to be the sole cause. Additional contributing factors include increased susceptibility of the optic nerve to ischemia, reduced or dysregulated blood flow, excitotoxicity, autoimmune reactions, and other abnormal physiologic processes. Although IOP is a poor predictor of which patients will have visual field loss, the risk of visual field loss increases with increasing IOP & is determined by the balance between the inflow and outflow of aqueous humour. Closed-angle glaucoma occurs when the iris mechanically blocks the trabecular meshwork, resulting in increased IOP⁽³⁾. Drug utilization research has been defined by the World Health Organization (WHO) as the marketing distribution prescription & use of drug in the society with special emphasis on the resulting medical, social & economic consequences⁽⁵⁾.

Glaucoma is estimated to affect 60.5 million persons worldwide by the year 2010. The estimated prevalence of glaucoma for India is 11.9 million. Drug utilization pattern of glaucoma medication is to facilitate the rational use of drug in the population & thereby the use of drugs by analyzing its pattern, generating early signs of irrational drug use and suggests intervention to improve drug usage.

MATERIALS AND METHODS

A prospective study was conducted at two eye care centers Palakkad, for a period of 6 months duration (November 2016- April 2017). After getting approval from the ethics committee of the hospital, subjects were selected based on inclusion & exclusion criteria.

Inclusion criteria

- Glaucoma subjects with age >40 years
- Subjects with & without co morbid conditions

Exclusion criteria

- Subjects with other eye problems
- Patients who are not willing to participate in the study

Signed informed consent was obtained from all participants prior to the study. Questionnaire survey was conducted to assess the prevalence of glaucoma and the drug utilization pattern of glaucoma medication. Other relevant information on the

disease, prevalence, associated symptoms, diagnosis, and treatment plan were collected on a data entry form. The statistical analysis was carried out using SPSS.

RESULTS

Out of 222 glaucoma patients, 80% (n=178) were male & 20% (n=44) were female.

Table 1 Gender distribution of glaucoma patients

Gender	No: of patients	Percentage
Male	178	80
Female	44	20

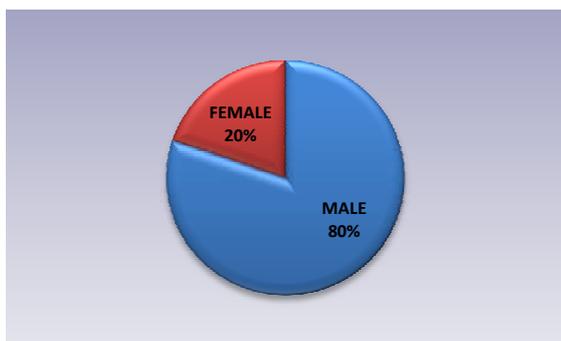


Figure 1

Table 2 Age distribution in glaucoma Out of 222 patients, 47 % of patients belongs to age group between 55-70

Age group	No: of patients =222	Percentage
40-55	53	24%
55-70	103	47%
70-85	65	29%

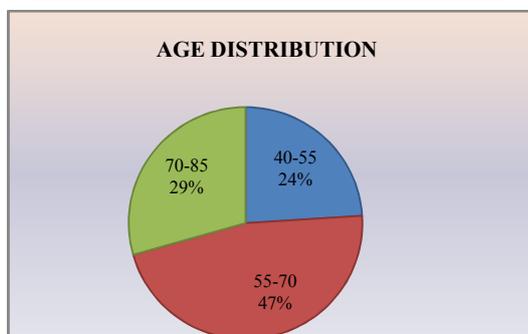


Figure 2

Table 3 Prevalence of glaucoma

TYPE	No: of patients(n=222)	Percentage
Open angle glaucoma	202	91
Angle closure glaucoma	16	7
Normal tension glaucoma	4	2

Among 222 patients, open angle glaucoma accounted by 91% (n=202) than Angle closure glaucoma 7 % (n=16) & Normal tension glaucoma (n= 4) 2% respectively.

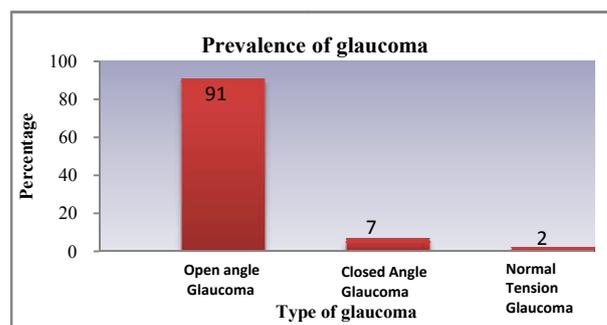


Figure 3

By analyzing the prescription pattern of glaucoma patients, the most commonly prescribed class of drugs were prostaglandin derivatives 43% (n= 125) followed by combination drugs(Prostaglandin derivatives + Beta Blocker, + Carbonic anhydrase inhibitors +Beta Blocker) 33% (n =94)

Table 4 Drug utilization pattern of glaucoma medication

Drug	No: of patients	Percentage
Prostaglandin derivatives Travoprost,latanoprost bimatoprost, auroprost	125	43
Combination drugs Prostaglandins+ beta blocker, Carbonic anhydrase inhibitors +beta blocker	94	33
Beta blocker Timolol	33	12
Carbonic anhydrase inhibitors Dorzolamide	24	8
Alpha agonist Brimonidine	12	12

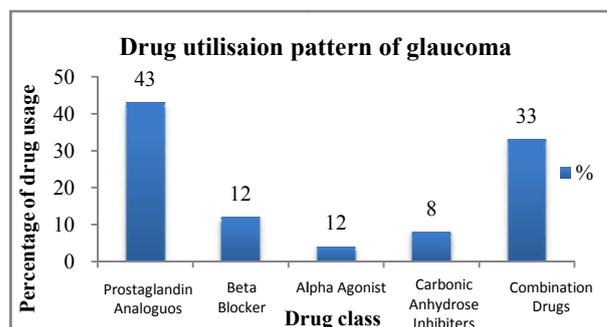


Figure 4

Table 5 Prescription pattern of anti glaucoma drugs

Therapy	No : of patients (n=222)	Percentage (%)
Mono therapy	113	46
Fixed drug	73	29
Dual therapy	63	25

Present study revealed that the majority of patients underwent Monotherapy with Travoprost (50%) followed by dual therapy with Travoprost (30%)

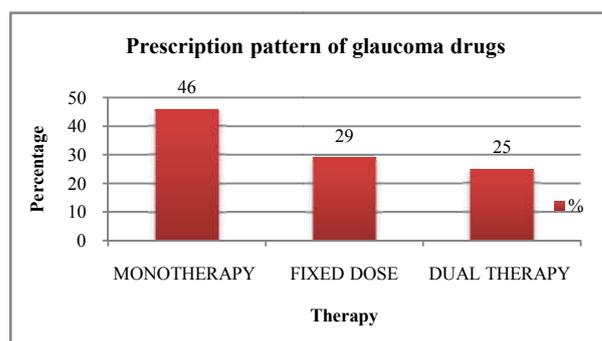


Figure 5

DISCUSSION

Different anti glaucoma drugs are prescribed in the clinical practice, pharmacologically these drugs are categorized in two classes: reduction of aqueous humor secretion and enhancement of aqueous outflow. The drug classes include, parasympathomimetics, carbonic anhydrase inhibitors (CAI's), α -agonists, β - blockers and Prostaglandin analogues. Drug utilization studies are routinely carried out to promote rational use of drug. It also prevents unnecessary drug use, expense & potential hazards.

In the given prospective study on prevalence & drug utilization pattern of glaucoma medication, Out of 222 glaucoma patients, Open angle glaucoma is prevalent in 91% patients followed by 7% in closed angle glaucoma and 2% in Normal tension glaucoma respectively. In the present study 80% were male & 20% female. Maximum patients were in the age group of 55-70. Yadav *et al.* and Patel *et al* conducted drug utilization studies in Rajasthan, among primary open angle glaucoma patients⁽¹⁾. They had collected total 180 prescriptions out of which 55.56% were male and 44.44% were female. Maximum patients were in the age group 40-60.

Travoprost, timolol, bimatoprost, dorzolamide, brimonidine, latanoprost and the fixed drug combination of (Timolol+ brimonidine, bimatoprost+ timolol, dorzolamide+ timolol, pilocarpine+ timolol) were the drugs commonly encountered in the present study. Prostaglandin analogues were the most frequently prescribed drug class (43% of total drug prescribed). Similar study conducted by Sharma *et al* found that, timolol was prescribed in 55% of the total prescriptions⁽²⁾. After prostaglandin analogues, fixed drug combination of (Timolol+ brimonidine, bimatoprost+ timolol, dorzolamide+ timolol, pilocarpine+ timolol) were 33% of the total drug prescribed. Fixed dose combination has the advantages of better compliance and tolerability. Fixed dose combination (Timolol+brimonidine) was encountered in 11 % of the total drug prescribed. The study conducted by Yadav *et al* showed fixed dose combination (FDC) was prescribed in 26.66% of total prescriptions. Timolol + Dorzolamide were the most commonly prescribed FDCs⁽¹⁾, but in present study timolol +brimonidine was found to be the most commonly prescribed FDCs.

The present study shows that monotherapy was prescribed in 46% of patients, and fixed drug combination was prescribed in 29% cases. 100% of drugs were prescribed by brand names. The study conducted by Sharma *et al* had demonstrated that, ten percent of the prescriptions were written in generic name and 90 % of drugs were prescribed in brand name⁽²⁾. According to WHO prescribing guidelines, all drugs should be prescribed by their generic names. In the present study 100% prescription by brand names, is indeed a matter of major concern. Therefore continuous medical education of the Physicians about the prescribing practices as indicated by WHO is essential.

CONCLUSION

From the study conducted at the two eye care centers, monotherapy with travoprost was the first line choice for glaucoma and timolol was found to be the second line choice. Most of the fixed drug combinations found were timolol+ brimonidine. The prescription analysis showed that all drugs are prescribed in their generic name. From the study, it is evident that the male populations are more prone to glaucoma as compared to female. Open angle glaucoma is prevalent in 91% (n=202) patients than Angle closure glaucoma & normal tension glaucoma.

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