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Drug Utilization Pattern in Opthalmology Department in a Tertiary Care Teaching Hospital of Karnataka, India

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ABSTRACT

Drug utilization is defined as marketing, distribution, prescription and the use of drugs with special emphasis on the 1 resultant medical, social and economic consequence. The aim of the present study was to study drug utilization pattern in ophthalmology department in tertiary care teaching hospital of Karnataka, India.A prospective observational study was conducted for 3 months in Navodaya medical college and hospital Raichur, with a sample size of 100. The data obtained were analysed using univariate descriptive analysis.The result reveal thatthe most commonly encountered diseases were cataract (63%), followed by corneal ulcer (8%), pterygium (7%), conjunctivitis (6%) Dacrocystitis (6%), and refractive error (4%). and others out of 100 patients. The average number of drugs per prescription was 3.35. The most prescribed classes of drugs wereOcular lubricant (36.96%), followed by antimicrobial (26.25%), mydriatic (14.82%), analgesic (5.71%). Fluroquinolones were the most prescribed antimicrobial class. Drugs prescribed by generic names is 4%, and percentage of drug prescribed by brand name were 96%. In this study drug prescribed by generic name was very low. Polypharmacy was common in the department as compare to other studies. In the hospital setting drug utilization pattern must be monitored time to analyze their rational use, drug utilization pattern also provides feedback to the prescribers and helps to decrease the occurrence of untoward adverse effects due to the use of medicines.

Keywords: Drug utilization, Ophthalmology, Polypharmacy,

INTRODUCTION

Drug utilization is defined as marketing, distribution, prescription and the use of drugs with special emphasis on the 1 resultant medical, social and economic consequences.[1] In the hospital setting drug utilization pattern must be monitored time to analyze their rational use, provide feedback and 2 suggestion to the prescriber.[2]. WHO drug use indicator is used to evaluate the prescription pattern to promote rational use of drug [3]. A periodic auditing of drug utilization pattern has become necessary for promoting rational use of drugs by increasing the therapeutic efficacy and the cost-effectiveness while decreasing occurrence of untoward adverse effects. To promote rational use of drugs in developing countries, international agencies like the World Health Organization (WHO) and the International Network for The Rational Use of Drugs have applied themselves to evolve standard drug use indicators [4].

Evaluation of drug utilization pattern is considered powerful means to find out the role of drugs in society as well as to increase the therapeutic efficacy and the cost-effectiveness of therapy in medical practices. In addition, periodic auditing of drug utilization pattern also provides feedback to the prescribers and helps to decrease the occurrence of untoward adverse effects due to the use of medicines [6,7].

Irrational and inappropriate use of drugs in health-care system observed globally is a major concern.[8] Therefore, utilization pattern needs to be studied carefully to increase therapeutic efficacy, decrease side effects and also to assess the rationality of drug prescription. Previously, only a few studies were conducted to study drug use pattern in ophthalmology in India. Therefore, the present study was conducted to study the drug use in ophthalmology. The aim of the present study were to study drug utilization pattern in ophthalmology department in tertiary care teaching hospital of Karnataka, India.

MATERIALSANDMETHODS

This prospective observational study was conducted for a period of three months from February 2023 to April 2023 in Navodaya Medical College Hospital & Research Centre (NMCH & RC) Raichur. Permission was obtained from Institutional Ethics Committee of Navodaya Medical College Hospital and Research Centre. The study was approved by the committee by issuing ethical clearance certificate.

Data Collection: Data was collected using data entry form, case sheet to access drug utilization pattern in ocular patients.

Inclusion Criteria:

- All the cases attending in ophthalmology department.

Exclusion Criteria:

- Participantswhowerenotadmitted in ophthalmology department.

A specially designed structured data entry format was used to enter all patient details. Provision is given in the format to enter investigations like diagnosis, medication chart , patients history ,average number of drugs per prescription and any interventions.

The information obtained from case files about study participants were kept confidential and only the collected data was processed. Based on the responses obtained, data were analysed.

The collected data were analyzed and monitored for the following variables

- Socio-demographic data
- Past medical and medication history of the patient
- Medication chart of the patients
- Diagnosis of ocular disorders
- Average number of drugs per prescription

The data from the study were analyzed using descriptive statistics namely total numbers, percentage and mean. Microsoft excel and word were used to generate graphs, tables and results etc.

RESULTS AND DISCUSSION

The present study **“DRUG UTILIZATION PATTERN IN OPTHALMOLOGY DEPARTMENT IN A TERTIARY CARE TEACHING HOSPITAL OF KARNATAKA, INDIA”** was the first attempt to assess the drugs utilization pattern inocular patients of Navodaya Medical College Hospital & Research Centre (NMCH & RC) Raichur. It provides information on socio demographic details, diagnosis,

medication pattern, average number of drugs per prescription. In this study, total 100 participants were selected, sample size was calculated based on recorded prevalence of ocular disorders in Raichur.Taking 95% confidence interval, the required sample size for the study was minimum of 100 study subjects. The result of this study clearly indicate thatthe drug prescribed by generic name was very low. Polypharmacy was common in the department as compare to other studies.

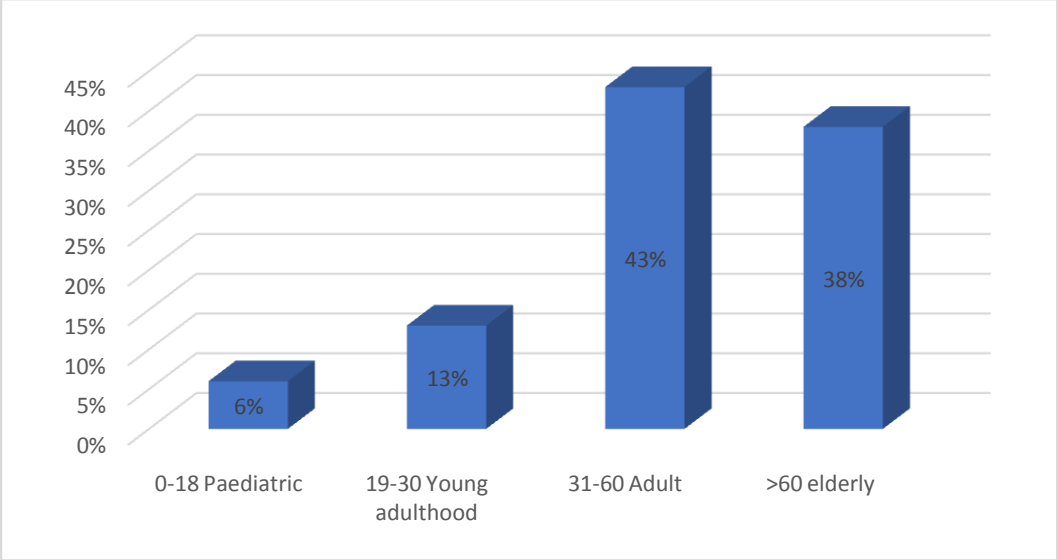

Figure 1: Age distribution of study subjects

Out of 100 patients diagnose with ocular disorders, 43% of them have been within the age institution of 31-60 years, and 38% of them were in the age group of >60 years.This is depicted in **Figure 1.** Age is associated with increase the risk factor of ocular disorders. The rate for developing ocular disorders in age group of 31-60 years is seven times greater when compared to age group of 0-18 years.

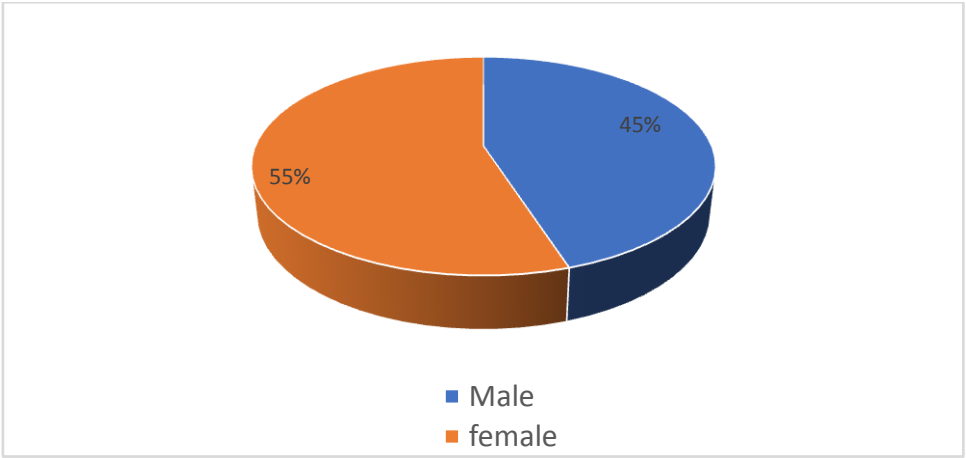

Figure 2: Gender distribution of study subjects

Data analysis of gender distribution in present study showed that there was female (55%) predominance in this study compared to man (45%). The results are shown in **Figure 2.** Previous studies we found 56% prescription were of male and 44% were of female. This may be assigned due to different in lifestyle, dietary habits and stress.

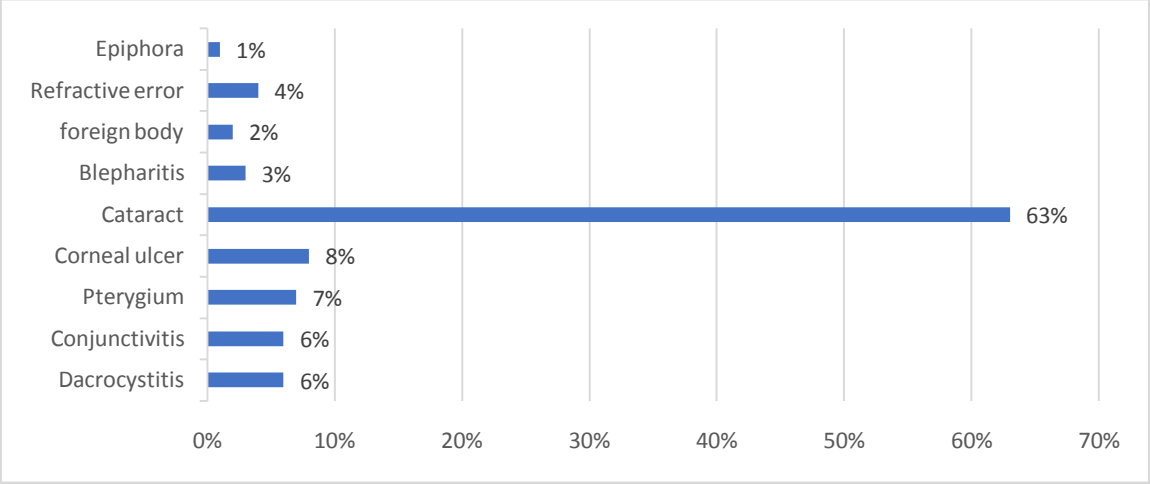

Figure 3: Distribution of ocular disease among the patients.

Outs of 100 patients analysed , majority (63%) were cataract patients either due to old age , trauma or other aetiology indicating most common eye disease prevalent in the set up. Followed by corneal ulcer (8%) and pterygium (7%) ,Others include eye diseases due to others reason and etiology. Dacrocystitis and conjunctivitis constitute around 6% each. This is depicted in **figure 3.** This is similar to the previous study conducted by Pritpal singh et al , 60% were cataract patients and pterygium and corneal disease constitute around 7% each.

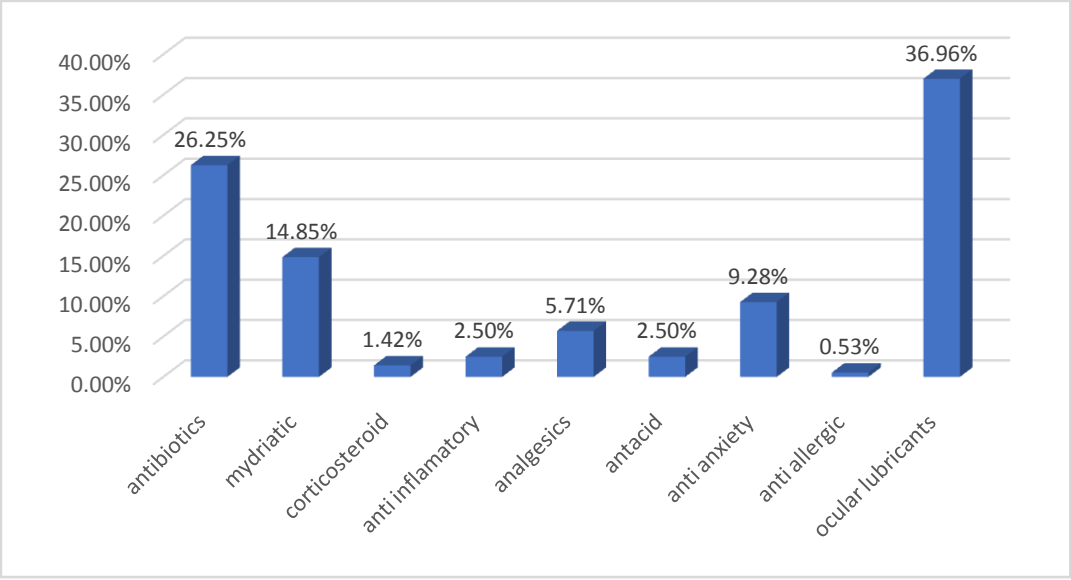

Figure 4: Different types of drug products prescribed

Figure 4 depicted thatOcular lubricants were most frequently prescribed in the study 36.96% patients. This could be due to availability of emergency new efficacious drugs in the management of allergic conjunctivitis and dry eye syndrome. Antibiotics were prescribed in 26.25% patients. Other hospital-based studies in ophthalmology in India, have reported 31.28% encounters with antibiotics in their study. The use of antibiotic reflects the prevalence of infection in this region. Other prescribed drugs were mydriatics (14.85%), antianxiety (9.28%). This indicates the prevalence of anxiety condition and inflammation in the study.

No. of drugs per prescription	No . of prescriptions	Percentage
one	4	4
Two	14	14
three	42	42
Four	23	23
Five	17	17

Table 1: Number of drugs prescribed per prescription(n=100)

Table 1 show that the average number of drugs per prescription was 3.35. Average number of drugs per prescription is an important index as it tends to measure the degree of polypharmacy. It provides scope for review and educational intervention in prescribing practices. The number of drugs per prescription should be low as possible since higher figures culminate increase risk of drug interaction, increase hospitalcost and errors of prescribing. Other hospital-based studies in ophthalmology have reported low value (1.49). Thus, polypharmacy is common in our study.

Types of antibiotics drugs	Frequency	Percentage
Brand name	141	96
Generic name	6	4

TABLE 2: Antibiotics prescription (n=147)

Table 2 depicts that among 100 ocular patients, drugs prescribed by generic names is 4%, and percentage of drug prescribed by brand name were 96%, In contrast the study conducted by Dhami BD et al showed that the drugs prescribed by generic names was very low 3 % and brand name was 97%. Which suggest popularity of brand names among the ophthalmologist and influence of pharmaceutical companies over prescriber. However, prescribing by brand name could result prescribing error because of similarity of many drugs with their spelling.

lass of drug therapy	Frequency (out of 147)	Percentage (%)
Monotherapy	14	9.5
Combination	79	53.7
fixed drug ombination	63	42.85

Table 3: Descriptive analysis of class antibiotic of drug therapy among the patients (n=147)

Table 3 shows that**,** out of 147 antibiotics, 14 patients (9.5%) were prescribed monotherapy, and 79 patients (53.7%) were given antibiotics in combination with 63 patients (42.85%) prescribed fixed dose combination therapy. The study conducted by Pritpal singh *et al* showed that out of 99 antibiotics ,45.5% patients were prescribed monotherapy, and 46.46% were given antibiotic in combination with 8.08% prescribed with fixed dose combination.

Antibiotics	Drugs name	Frequency and %
Monotherapy (14)	Ciprofloxacin	4 (2.7)
	moxifloxacin	8 (5.4)
	Netamycin	1 (0.6)
	Ofloxacin	1 (0.6)
Combination (79)	Ciprofloxacin ,moxifloxacin	9 (6.12)
	Ciprofloxacin, galitofloxacin	35 (23.8)
	Ciprofloxacin, ofloxacin, galitofloxacin	21 (14.2)
	Ciprofloxacin, ofloxacin	7 (4.76)
	Netamycin, tobramycin	7 (4.76)
Fixed dose combination (63)	Flubigat (flurbiprofen+ gatifloxacin)	63 (42.85)

Table4: List of antibiotics and their % wise distribution as in monotherapy, combination and FDC. (n=147)

As it is depicted in **Table 4**, Fluroquinolones is the most common prescribed antimicrobial agent which were similar to report of previous studies done in ophthalmology. Gatifloxacin was preferred in this study compared to other studies which documented ciprofloxacin and ofloxacin as gatifloxacin was a new generation fluroquinolone with a wider spectrum of activity against gram negative as well as gram positive organism, less side effect and due to report of emergence of resistance to other ocular antibiotics.

Eye drops	Frequency	Percentage
flurbiprofen + Gatifloxacin (Flubigat)	63	30.43
Moxifloxacin (moxigram)	16	7.72
Chloramphenicol +polymyxin B (ocupol)	24	11.59

floxacin+dexamethasone (Oflox DX)	22	10.62
Olapatadine (winolap)	6	2.89
Carboxymethylcellulose (Lubrex /CMC)	14	6.76
Homatropine (homide)	8	3.86
Netamycin	8	3.86
Tobramycin	8	3.86
Hydroxypropyl methylcellulose (lacrigel)	10	4.83
OINTMENT		
Chloramphenicol+polymyxin B (Ocupol)	8	3.86

Table5: Different types of ocular lubricants (n =207).

Table5depict that among 100 study subjects, out of 207 ocular lubricants agent were prescribed, gatifloxacin (30.43%%) and chloramphenicol+ polymyxin B (11.59%) is the most common eyed drops were prescribed in topical dosage from, followed by monofloxacin (7.72%), carboxymethylcellulose (6.67%). Only 3.86 % ointment were prescribed. The study conducted by Pritpal sing *el at* (57.42%) whereas ciprofloxacin was the most common prescribed antibiotic.

CONCLUSION

The present study revealed certain lacunae in the prescribing practices of the ophthalmologists of the institute as evidenced by low generic name prescribing. Lubricating eye drops were prescribed most frequently. Fluroquinolones is the most common antimicrobial class were prescribed. Polypharmacy was common in the department. In the hospital setting drug utilization pattern must be monitored to analyze their rational use, provide feedback and suggestion to the prescriber. Concept of generic prescribing and continuous supervision and imparting education to the ophthalmologists about prescribing pattern should be initiated. There is a need to conduct similar studies in other departments and need to audit a large number of prescriptions on rational drug therapy for the benefits and safety of the patients.

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CONFLICT OF INTEREST

The author have no funding sources or conflict of interests to report.

REFERENCE

1. WHO. The selection of essential drugs: Report of a WHO expert committee. World health Organ Tech Resp Ser.1977; 615:1-36.
2. Sarkar C, Das B, Sripathi H. Drug prescribing pattern in dermatology in a teaching hospital in western Nepal. journal of Nepal medical association (JNMA), 2001:41:241-246.

3. Chapagain K, Pokharel R. Paranjape BD. Evaluation of prescribing pattern and Rational Prescribing in Eastern Nepal journal of Nobel Medical college. Volume5, Number 1, Issue 8, January -July 2016, 32-36.
4. World HealthOrganization: How to investigate drug use in health facilities: Selected drug use indicators. Geneva: World Health Organization; 1993.WHO/DAP 1993; 1:1-87.
5. 5.Biswas NR, Jindal S, Siddiquei MM, Maini R. Patterns of prescription and drug use in ophthalmology in a tertiary Hospital in Delhi.Br J Clin Pharmocol 2001;51:267-9.
6. Shalini S, Ravichandran V, Mohanty BK, Dhanraj SK, Saraswathi R. Drug utilization studies -an overview. Int J Pharm Sci Nanotehnol2010; 3:803-10.
7. Baksaas I, Lunde PK. National drug policies: The need for drug utilization studies. Trends Pharmocol Sci 1986; 7:331-4.
8. HogerzeilHV. Promoting rationale prescribing: An international perspective. Br J Clin Pharmocol 1995; 39:1-6.