

## **Drug utilization study in ophthalmology in OPD patients at a tertiary care teaching hospital**

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### **ABSTRACT**

**Background:** Drug therapy is a major component of patient care management in health care settings. Irrational and inappropriate use of drugs in health care system observed globally is being a major concern. In the field of ophthalmology, there have been many drug developments and different classes of drugs with combinational products are available in ophthalmology for the treatment of ophthalmic diseases. Periodic prescription analysis in the form of drug utilization study can improve the quality of prescription and curb the menace of irrational prescribing. Aim and objectives were to study the prescribing pattern and drug utilization trends in Ophthalmology outpatient department at a tertiary care hospital in Navi Mumbai.

**Methods:** A cross-sectional, observational study was conducted over a period of six months in Ophthalmology department of a tertiary care teaching hospital, Navi-Mumbai. A total of 103 adult patients visiting Ophthalmology OPD for curative symptoms were included and their prescriptions were analyzed with WHO prescribing indicators and additional indices.

**Results:** Analysis showed that the average number of drugs per prescription was 1.9. Percentage of drugs prescribed by brand was 100 % versus generic 0 %. Percentage of drugs prescribed from National Essential drug list (NEDL) was 53%. The percentage of encounters with antibiotics was 30.6%. The commonest prescribed drugs were ocular lubricants followed by antibiotics. Eye drops were the commonest prescribed dosage form.

**Conclusions:** Ocular lubricants and antibiotics dominated the prescribing pattern in this study with restraint on polypharmacy, but showed ample scope for improvement in encouraging the ophthalmologist to prescribe generic and selection of essential drugs.

**Keywords:** Drug utilization, Ophthalmology, Prescribing pattern, WHO indicators

### **INTRODUCTION**

Drug utilization research was defined by the World Health Organization (WHO) in 1977 as “The marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences”.<sup>1</sup> The therapeutic practice is expected to be primarily based on evidence provided by pre-marketing clinical trials, but complementary data from

post-marketing period are needed to provide an adequate basis for improving drug therapy.<sup>1-5</sup>

Drug utilization study is important to realize that inappropriate use of drugs represent a potential hazard and an unnecessary expense to the patients. This necessitates a periodic review of pattern of drug utilization to ensure safe and effective treatment.<sup>1-5</sup>

Various heterogenic classes of drugs are used in the treatment of ophthalmologic diseases. In the recent past, influx of newer therapeutic agents and tendency to prescribe the newer drugs more often is a concern. Antibiotics are widely prescribed for various ophthalmic diseases.<sup>6-9</sup> Evidences have shown trends of resistance to a different class of antibiotics often used in ocular therapeutics. Indiscriminate use of topical antibiotics and NSAIDs leads to histological and structural changes in conjunctiva.<sup>10,11</sup>

Studies in ophthalmology in India literature have also raised issues of poor selection and prescribing of essential drugs and generic medicines.<sup>6-9,12,13</sup> Keeping these facts in consideration, the present study was conducted to obtain data on the current prescribing pattern and drug utilisation trend of ophthalmologist at a tertiary care hospital with ultimate goal to promote rational use of drugs among prescribers.

## METHODS

This was a prospective, cross-sectional, observational study conducted at department of Ophthalmology, at a tertiary care teaching Hospital, Navi Mumbai, Maharashtra, India. The study protocol was approved by Institutional Ethics Committee.

The study duration was 6 months from October 2016 to March 2017. Adult patients of either sex having ophthalmic disease attending Ophthalmology OPD was explained the purpose and details of the study. Those fulfilling inclusion and exclusion criteria were enrolled and written informed consent taken. Participant's prescription and demographic details were recorded on case record form (CRF).

### Inclusion criteria

- Adult patient of either sex with ophthalmic disease
- Aged  $\geq 18$  years of age
- Patients who agree to participate and sign the consent form

### Exclusion criteria

- Age  $< 18$  years and  $> 70$  years
- Patient not willing to participate and give informed consent.
- Patients with refractory error only
- Post-operative /follow-up patients
- Hospitalized /IPD patients
- Patient with repeat attendance

### Data analysed

WHO Prescribing indicators and additional parameters analysed:

#### A. WHO Core drug use indicators:

- Average number of drugs per encounter,
- Percentage of drugs prescribed by generic name,
- Percentage of encounters with antibiotics prescribed,
- Percentage of encounters with an injection prescribed,
- Percentage of drugs prescribed from National Essential Drug List (NEDL)<sup>14</sup>

#### B. Commonest class/type of drugs prescribed

#### C. Commonest dosage form prescribed

### Statistical analysis

Data was entered in Microsoft Excel 2010. Descriptive statistics were used. Data was expressed in actual number, percentage and mean with standard deviation.

## RESULTS

A total of 103 prescriptions were analysed and a total of 199 drug products were prescribed to the patients. Thus the average number of drug products prescribed in this study was 1.93.

The mean age of the study participants was 35.9 years, male was 66.64% (65) and females were 33.45% (38). The summary of WHO core prescribing indicators is summarized in Table 1.

**Table 1: WHO Core prescribing indicator.**

WHO Core Prescribing Indicator	Value
Average number of drugs per encounter	1.93
Percentage of drugs prescribed by generic name	0%
Percentage of encounters with antibiotics prescribed	32.66%
Percentage of encounters with an injection prescribed	0%
Percentage of drugs prescribed from National Essential Drug List (NEDL)	53.26

In this study the most commonly prescribed drugs were ocular lubricants (31.6%) followed by antimicrobial agents (30.65%), analgesic (8.54%), corticosteroids (8.04%) and anti-histaminic (6.03%) as depicted in Figure 1. Amongst antimicrobial agents, broad spectrum and fluoroquinolones were preferred (Figure 2).

In this study, all the drugs were prescribed by brand/ trade name (100%), while none of the drugs were prescribed by generic name (Figure 3). Thus the preference for branded drugs /trade names dominated instead of generic prescribing. In this study, 53.26% drugs were prescribed from National Essential Drug list (NEDL-2015). The

commonest dosage form prescribed was eye drops followed tablets by as shown in Figure 4.

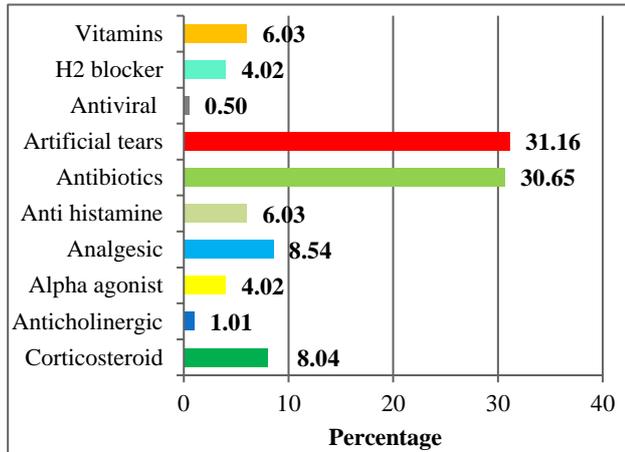


Figure 1: Different class of drugs prescribed.

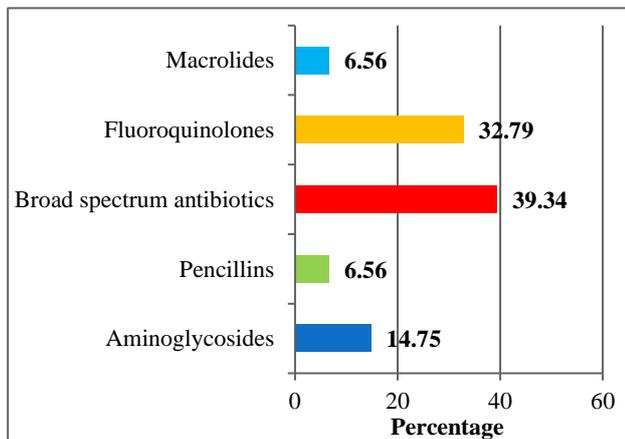


Figure 2: Type of antibiotics prescribed in ophthalmology.

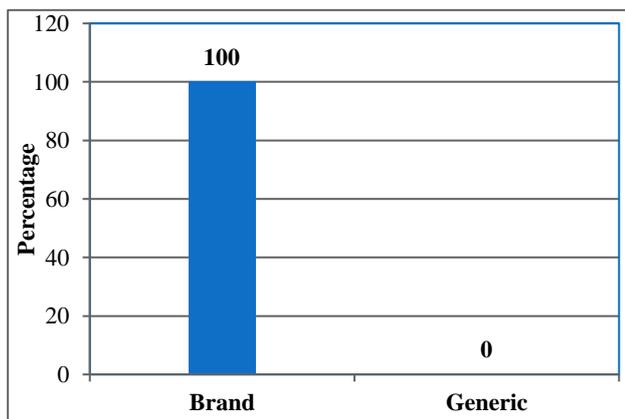


Figure 3: Brand name versus generic name.

**DISCUSSION**

Drugs play a key role in human health and in promoting well-being. The availability and affordability of drugs

along with their rational use is crucial for rendering effective health-care. There has been a rigorous effort to ensure rational use of drugs for which WHO has identified specific drug use indicators, adoption of generic drugs and adherence to Essential drug list (EDL).<sup>1-3</sup>

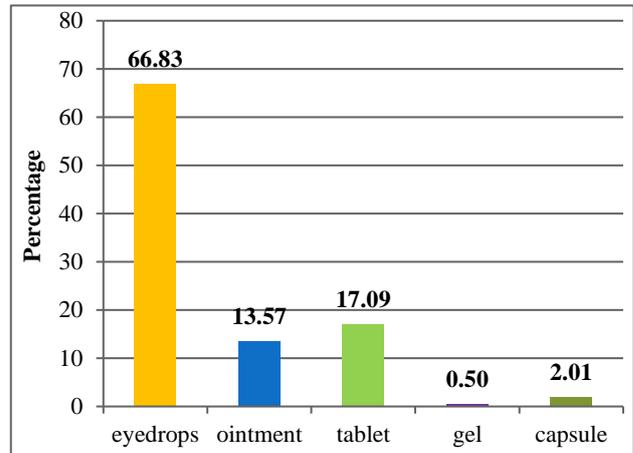


Figure 4: Types of dosage form prescribed.

The present study was undertaken to study the current prescribing pattern and drug utilization trend in ophthalmology OPD at a tertiary care hospital with ultimate goal to promote rational use of drugs among prescribers.

In the present study, we found that the average number of drug products prescribed by ophthalmologist were 1.9. Previous studies in ophthalmology have documented that the average number of drugs prescribed in ophthalmology outpatient department ranges from 1.4 to 3 Our study documented lower average number of drugs per prescription in comparison to previous studies. Thus, we found there was restrain on polypharmacy. It is preferred to keep average number of drugs lower as polypharmacy increases the risk of drug-drug interactions, prescribing errors and increases the cost of treatment.

In the present study, 53.26% of drugs were prescribed from National Essential Drug list, this was comparable with study conducted where drug prescribed from essential drug list was higher.<sup>13</sup> Our study documented moderate preference and selection of Essential drugs. The proper selection of essential drug useful for dealing with the majority of health problem lowers down the number of unnecessary product to be manufactured promoted and marketed. Thus selection of essential drugs promotes rational use of drugs and is recommended by National and International guidelines.<sup>1-3,14</sup>

In the present study, 100% of the drugs prescribed by ophthalmologist were by brand/ trade names rather than generic. This may reflect the ophthalmologist “p-drug concept” based on their clinical experience/outcomes achieved with the use of a particular brand in practice. The issues of low selection of generic drugs have also being

raised in previous.<sup>6,9,13</sup> It is preferable to prescribe drugs by generic name as it avoids duplication of drug products and provides low cost for cost-effective drug therapy. Even Medical council of India (MCI) has also emphasized on prescribing by generic names. However, the issues of substandard manufacturing of generic drugs need to be addressed.

In the present study, we found that the most commonly prescribed drugs were ocular lubricants (31.6%) followed by antimicrobial agents (30.65%) which were similar to reports of previous studies done in ophthalmology. We found that broad spectrum and fluoroquinolones were preferred in this study. Several studies have found preference for fluoroquinolones, as they have with wide spectrum of activity against Gram negative as well Gram-positive organisms and comparatively safe with less side effects.<sup>6,8,9</sup> Majority of the drugs in the present study were prescribed in the form of eye-drops which was in similar trend to previous studies.<sup>8,9,12</sup>

Ocular lubricants and antibiotics dominated the prescribing pattern, however there is a need to sensitize the ophthalmologist and make them aware to adopt generic drugs and essential drugs, to ensure cost effective utilization and rational use of drugs.

The present study had few limitations. It was a quantitative type of drug utilization study conducted with minimum sample size as per the WHO guidelines. The qualitative assessment of the prescription was not done. Since the study duration was for 6 months, the seasonal variations in prescribing can influence the trend.

## CONCLUSION

Ocular lubricants and antibiotics dominated the prescribing pattern in this study with restraint on polypharmacy, but the need for educational intervention/policy is required to implement the utilization of generic and essential drugs.

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*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. World Health Organization (WHO) and International Network for Rational Use of Drugs. How to Investigate Drug Use in Health Facilities: Selected Drug Use indicators. Geneva, Switzerland: WHO; 1993.

2. Dukes MNG. Drug utilization studies: methods and uses. World Health Organization Regional Publications. European series; 45. Copenhagen, Denmark. Available at: <http://apps.who.int/medicinedocs/documents/s21868en/s21868en.pdf>.
3. World Health Organization. Introduction to Drug Utilization Research. Oslo, Norway: WHO; 2003. Available at: <http://apps.who.int/medicinedocs/en/d/Js4876e/>
4. Lee D, Bergman U. Studies of drug utilization. In: Storm LB, editor. Pharmacoepidemiology. Chichester, UK: John Wiley and Sons; 2005:401-417.
5. Rubin RJ, Altman WM, Mendelson DN. Health care expenditures for people with diabetes mellitus, 1992. J Clin Endocrinol Metab. 1994;78(4):809A-809F.
6. Jadhav PR, Moghe VV, Deshmukh YA. Drug Utilization Study in Ophthalmology Outpatients at a Tertiary Care Teaching Hospital. ISRN Pharmacology. 2013:768-792.
7. 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 Pharmacol. 2001;51:267-9.
8. Maniyar Y, Bhixavatimath P, Akkone V. A drug utilization study in the ophthalmology department of a Medical College, Karnataka, India. J Clin Diagn Res. 2011;5:82-4.
9. Nehru M, Kohli K, Kapoor B, Sadhotra P, Chopra V, Sharma R. Drug utilization study in outpatient ophthalmology department of Government Medical College. JK Science. 2005;7:149-51.
10. Sood AK, Gupta A, Dabral T. Indiscriminate use of topical antibiotics: a menace. Indian Journal of Ophthalmology. 1999;47(2):121-24.
11. Gaynes BI, Fiscella R. Topical nonsteroidal anti-inflammatory drugs for ophthalmic use: a safety review. Drug Safety. 2002;25(4):233-50.
12. Banerjee I, Bhadury T, Sengupta T, Roy D. Drug Utilization Study in Ophthalmology Out-patient Department of a Medical College in India. Annals of Medical and Health Sciences Research. 2014;4(4):667-70.
13. Biswas NR, Biswas RS, Pal PS, Jain SK, Malhotra SP, Gupta AS, et al. Patterns of prescriptions and drug use in two tertiary hospitals in Delhi. Indian Journal of Physiology and Pharmacology. 2000 Jan 5;44(1):109-12.
14. National List of Essential Medicines of India. Ministry of Health and Family Welfare, Government of India; 2015. Available at: <http://www.pharmaceuticals.gov.in/NLEM.pdf>

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