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## Original Research Article

## An observational and cross-sectional study on drug utilization pattern in the ophthalmology out-patient department of a tertiary care center of Bihar

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## ABSTRACT

**Introduction:** Making affordable drugs accessible to all strata of society is an inevitable part of health care. This situation makes Drug Utilization Study inevitable. With this background, the current study was planned to obtain knowledge on the prescribing pattern and drug utilization trend in ophthalmology department at a tertiary care teaching hospital with ultimate goal to promote rational use of drugs among prescribers.

**Materials and Methods:** An observational cross-sectional study was conducted in the Department of Pharmacology, Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar. Prior to the initiation of the study, clearance was obtained from the Institutional Ethics Committee. Study period was between March 2021 and August 2021. Prescriptions of 550 patients who were treated during the course of the study were surveyed prospectively by using a specially designed form. The WHO drug use indicators like prescribing indicators and patient care indicators were determined.

**Result:** The average number of drugs per prescription was 2.6, ranging from 0-7 drugs. The dosage forms, the frequency of administration and duration of treatment of the drugs were recorded for 99.9% of the prescriptions given. This analysis of the prescriptions showed that 93.8% of the prescriptions were written in the form of various trade names. Antibiotics were prescribed in 52.5% of the prescriptions.

**Conclusion:** The present study revealed certain lacunae in the prescribing practices of the Ophthalmologists at the selected institute and this is evident by the low generic prescribing in many prescriptions.

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## 1. Introduction

The World Health Organization (WHO) has defined drug utilization research as the marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social, and economic consequences.<sup>1-3</sup> It is an integral component of pharmacoepidemiology that deals with the extent, nature, and determinants of drug exposure with the ultimate goal to facilitate rational use of drugs in the population.<sup>1-4</sup> Drug therapy is a major component of patient care

management. Doctors as well as the patients have a basket of pharmaceutical products with innumerable market names to choose from according to need and affordability.<sup>5</sup>

In light of this context many a times, irrational and inappropriate use of drugs have been observed globally.<sup>6,7</sup> Inappropriate uses of medications include over- or under-usage of drugs, high medication prices, indiscriminate and repeated use of injections and antibiotics, use of multiple medicines, use of brand name instead of generic name in prescribing and non-prescribing medicines that may not agree nor comply with standard guidelines or from EDL are major medical practice concerns. The consequences of these include ineffective treatment, development of antimicrobial

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resistance (AMR), adverse effects and economic burden on patients and society.<sup>8,9</sup>

This situation makes Drug Utilization Study inevitable to realize that, inappropriate use of drugs represents a potential hazard and an unnecessary expense to the patients.<sup>4,10</sup> Keeping these facts in background, this study was planned to obtain knowledge on the prescribing pattern and drug utilization trend in ophthalmology department at a tertiary care teaching hospital with ultimate goal to promote rational use of drugs among prescribers.

## 2. Materials and Methods

An observational cross-sectional study was planned and conducted in the Department of Pharmacology, Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar. Prior to the initiation of the study, clearance was obtained from the Institutional Ethics Committee. The data were collected from the prescriptions of the out patients visiting the OPD during the period from March 2021 to August 2021. Prescriptions of 550 patients who were treated during the course of the study were surveyed prospectively by using a specially designed form. The following WHO drug use indicators were determined.<sup>1</sup>

### Core indicators

#### Prescribing indicators

1. The average number of drugs per encounter was calculated by dividing the total number of different drug products which were prescribed, by the number of encounters surveyed.
2. The percentage of encounters with an antibiotic and anti-inflammatory drug which was prescribed.
3. The percentage of encounters with a topical drug which was prescribed, were calculated by dividing the number of patient encounters during which an antibiotic or a topical drug was prescribed, by the total number of encounters surveyed, multiplied by 100.

#### Patient care indicators

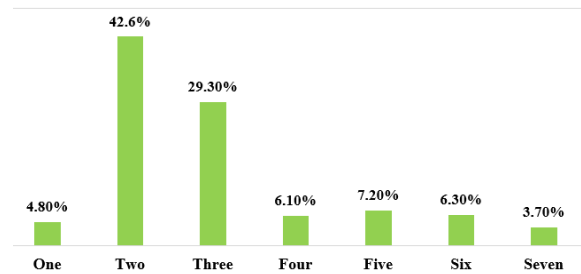
1. The average consultation time was determined by dividing the total time for a series of consultations, by the actual number of consultations.
2. The average dispensing time was calculated by dividing the total time for dispensing drugs to a series of patients, by the number of encounters.
3. The percentage of the drugs which were actually dispensed was worked out by dividing the number of drugs which were actually dispensed at the health facility, by the total number of drugs prescribed, multiplied by 100.

### 2.1. Statistical analysis

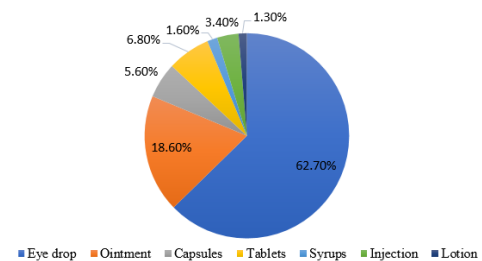
The recorded data was compiled and analyzed using Statistical Package for Social Sciences version 19 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages.

## 3. Results

A total number of 550 prescriptions were analyzed and these had 1154 drugs prescribed in them. The number of drugs per prescription varied from one to seven. The average drug per prescription was 2.6 [Figure 1]. Different dosage forms were used [Figure 2]. The dosage forms, the frequency of administration and duration of treatment of the drugs were recorded for 99.9% of the prescriptions given. This analysis of the prescriptions showed that 93.8% of the prescriptions were written in the form of various trade names and only rest 6.2% of them were prescribed in the generic names. Antibiotics were prescribed in 52.5% of the prescriptions. Category of prescribed drugs and their dosage forms has been shown in Table 1.



**Fig. 1:** Bar diagram showing distribution of prescriptions based on number of drugs



**Fig. 2:** Pie diagram showing percentages of various forms of drugs prescribed

## 4. Discussion

Drugs hold a major role in maintaining human health and in promoting well-being. Hence, to deliver effective and relevant health care, make affordable drugs available and their rational use is inevitable. In spite of strict protocol and drug control, irrational drug use is still prevalent in the developing countries. The reason attributing to this practice may be irrational prescribing, dispensing and administration of medications. In this context, drug utilization study becomes an important tool in assessing rationality of prescriptions. Many core indicators have been given by WHO to assess this practice, among which, average number

**Table 1:** Major therapeutic agent and their dosage forms

Dosage forms	Major therapeutic agents	% of prescriptions
Drop	Ofloxacin	62.1%
	Ciprofloxacin	21.8%
	Chloramphenicol	8.7%
	Tobramycin	4.4%
	Sparfloxacin	2.7%
	Sulfacetamide	0.3%
Ointments	Neomycin	59.5%
	Ciprofloxacin	9.5%
	Acyclovir	4.5%
	Combination with steroid	26.7%
Oral	Ofloxacin	48.7%
	Ciprofloxacin	41.8%
	Acyclovir	9.5%

of drugs per prescription is an important indicator. The number of drugs per prescriptions should be as low as possible since higher figures culminate in increased risk of drug interactions, increased hospital cost and errors of prescribing.<sup>11</sup>

In the present study, number of drugs per prescription varied from zero to seven with an average of 2.6 drugs per prescriptions. This fall within the range reported in previous studies.<sup>11–13</sup>

In India, generic prescribing has been made mandatory to reduce the drug cost and increasing accessibility of drugs for individuals from all the socio-economic status. Recently, regulatory authorities across the globe have advocated generic prescribing to bring down the health-care cost. In this backdrop, the percentage of drugs prescribed by generic names in our study was 6.2%, which is varies from the report by some of the previous researchers.<sup>11,12</sup>

Inappropriate sensitization of the clinicians to generic prescribing and the frequent visit of the medical representatives in health facilities may be the probable cause of the under prescribing of the drugs by generic name. The percentage of prescription with antibiotics in any dosage form was 52.5% and this is higher than the findings of Maniyar et al.<sup>12</sup> and Nehru et al.<sup>13</sup> This is also higher than the suggested measure by WHO, where they have stated that in countries with high prevalence of infectious disease, 15% to 25% prescription with antibiotics can be expectable.<sup>1</sup>

## 5. Conclusion

The present study revealed certain lacunae in the prescribing practices of the Ophthalmologists at the selected institute and this is evident by the low generic prescribing in many prescriptions.

## 6. Conflict of Interest

None declared by any of the authors.

## 7. Source of Funding

None.

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