DRUG UTILIZATION STUDY IN OPHTHALMOLOGY OUTPATIENT DEPARTMENT IN A TERTIARY CARE TEACHING HOSPITAL OF WESTERN UTTAR PRADESH, INDIA

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ABSTRACT

Objectives: Assessment of drug use pattern especially in developing countries is becoming increasingly necessary to promote the rational use of drugs. The present study was done to investigate the drug utilization pattern in Ophthalmology Outpatient Department (OPD) at Saraswathi Institute of Medical Sciences, Hapur, India, using the World Health Organization (WHO) drug use indicators.

Methods: The prescriptions of 1000 outpatients were included and analyzed using a predesigned form to record information from the OPD prescription cards of each patient. Following WHO drug use indicators and additional indices were analyzed: Average number of drugs per prescription, number of encounters with antibiotics, percentage of encounters with injections, percentage of drugs prescribed by their generic names, percentage of drugs prescribed from the National Essential Drug List (NEDL), etc.

Results: Prescription analysis showed that the average number of drugs per prescription was 2.92. The drugs were prescribed in the form of eye drops (53.08%), followed by ointments (22.43%), tablets (18.49%), and capsules (5.99%). The dosage form was indicated for all of the drugs prescribed, the frequency of drug administration for 97.5% of the drugs, and the duration of treatment for 82.5% of the drugs prescribed. Antimicrobial agents were the most commonly prescribed drugs followed by lubricants, anti-inflammatory, antiallergic, antiglaucoma drugs, etc. Percentage of drugs prescribed by generic name and from NEDL was 1.19% and 24.45%, respectively. Patient's knowledge of correct dosage was 95%.

Conclusion: The prescription writing errors were less, however, there was very low generic prescribing and inadequate information about the duration of therapy in many prescriptions.

Keywords: Drug utilization, Ophthalmology, World Health Organization, Generic name.

INTRODUCTION

In health care system, use of medicines is considered one of the most cost-effective medical interventions for treatment and prevention of disease and it is important to realize that inefficient use of medicines might affect the safety and quality of therapeutic care and wastes resources [1-3]. According to World Health Organization (WHO), more than half of all the medicines are prepared, dispensed or sold inappropriately and that half of all the patients fail to take them correctly. In recent years, the importance of drug utilization studies has increased due to increase prevalence of inappropriate drug use due to irrational prescribing, dispensing, and administration of medications. Hence, a periodic auditing of drug utilization pattern has become necessary to promote rational prescribing [2,4].

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 [2,5-7].

Drug utilization is defined as marketing, distribution, prescription and the use of drugs in society, with special emphasis on the resultant medical, social, and economic consequences [8]. These types of studies make possible for researchers to evaluate the developmental trends of drug usage at various levels as well as estimate of drug expenditures [7,9].

To prevent irrational and inappropriate use of drugs in health care system, especially in developing countries, WHO and International network for Rational Use of drugs [INRUD] have applied themselves to evolve standard drug use indicators [3,10,11]. These indicators help prescribers to know the shortcomings in their prescription writing and allow them to improve their performance from time to time [6,12]. With this background, the present study was undertaken to investigate the patterns of prescriptions and drug utilization by measuring WHO drug use indicators in the Department of Ophthalmology.

METHODS

This prospective, cross-sectional, observational study was conducted in Outpatient Department (OPD) of the Ophthalmology Department of Saraswathi Institute of Medical Sciences, Hapur, India. Data were collected from the outpatients visiting OPD from 9 AM to 12 noon, thrice a week for a period of 6 months. Before initiation of study approval was taken from the Institutional Ethics Committee and written informed consent was obtained from all patients. To record data from the OPD cards of patient well-designed case record form was used. All the newly registered patients with either sex of any age group who visited OPD for the first time for treatment of various ocular disorders were enrolled in the study. Patients of refractive errors, cataract, and who were not willing to give informed consent were not included in the study.

Total 1000 prescriptions were randomly collected from the patient treated during the course of study and were analyzed prospectively for various parameters using WHO drug use indicators. Patient characteristics, such as age, sex, and diagnosis, were noted. The details of all the prescribed drugs were recorded in case record form, including their name, dose, dosage form, route of administration, frequency of administration, indications and duration of therapy. Data recorded in the forms were analyzed to assess the demographic profile of patients.

The recorded data were also analyzed for following WHO drug use prescribing indicators and additional indices: [10]

1. Average number of drugs per prescription: Calculated by dividing the total number of different drug prescribed, by the number of prescriptions analyzed
2. Number (percentage) of encounters with antibiotics
3. Percentage of drugs prescribed by generic name or brand name
4. Percentage of encounters with an injection prescribed
5. Percentage of drugs prescribed from the National Essential Drug List (NEDL)
6. The number of fixed-dose combination (FDC) versus single agents
7. Whether the dosage form, frequency of administration and duration of therapy was recorded or not
8. Patient's knowledge about the correct dosage was also assessed.

Statistical analysis

The filled in case record forms were analyzed for various indicators. Data analysis was carried out by descriptive statistics: Frequency, percentage, mean, and standard deviation using Graph pad prism software.

RESULTS

During the study period, a total of 1000 patients were included, and their prescriptions were collected and scrutinized. Out of 1000 patients, 632 (63.2%) were male and 368 (36.8%) were female. The age group of the patients varies from 4 to 75 years. The mean age of patients was 36.73±13.9 years.

Patients with various ocular diseases visited the OPD during study period. The most common disease diagnosed was conjunctivitis in 290 (29%) patients followed by Blepharitis 140 (14%), ocular surface disorders 120 (12%), dry eye 110 (11%), glaucoma 60 (6.0%), corneal ulcer 50 (5.0%), meibomitis 40 (4.0%), iridocyclitis 35 (3.5%), diabetic retinopathy 30 (3.0%), foreign body 30 (3.0%), stye 25 (2.5%), dacryocystitis 20 (2.0%), subconjunctival hemorrhage 15 (1.5%), pseudophakic bullous keratopathy 15 (1.5%), and others 20 (2.0%). (Table 1).

The total numbers of drugs prescribed in 1000 prescriptions were 2920. In the present study, the number of drugs per prescription varied from one to five and the average number of drugs per prescription was 2.92. One drug was prescribed in 110 (11%) encounters, 2 drugs in 195 (19.5%), 3 drugs in 385 (38.5%), 4 drugs in 285 (28.5%), and 5 drugs in 25(2.5%) prescriptions, respectively (Table 2). Out of total prescribed drugs, only 35/2920 (1.19%) drugs were prescribed by generic name and 2885/2920 (98.81%) by trade name.

The dosage forms were mentioned in all the prescriptions. The drugs were given in four different dosage forms. Most commonly prescribed dosage form was eye drops 1550 (53.08%), followed by ointment 655 (22.43%), tablets 540 (18.49%), and capsules 175 (5.99%).

The frequency of drug administration was recorded for 97.5% (2847/2920) drugs, and the duration of treatment was mentioned in 82.5% (2409/2920) of the drugs prescribed. Antimicrobials were the most commonly prescribed drugs (42.29% [1235/2920]) followed by lubricants (26.8% [780/2920]), anti-inflammatory (13.7% [400/2920]), anti-allergic (5.65% [165/2920]), multivitamins (5.47% [160/2920]), anti-glaucoma medications (4.62% [135/2920]), mydriatic and cycloplegics (1.19% [35/2920]), and other (0.34% [10/2920]). 480 (38.86%) antibiotics were prescribed in the form of eye drops, 540 (43.72%) as ointments and 215 (17.40%) were prescribed as an oral formulation. Antibiotics were prescribed in 54% of prescriptions in the form of both as single antibiotic (878/1235) and FDC of antibiotics (357/1235). Most commonly prescribed antibiotics were fluoroquinolones, and moxifloxacin was the most frequently prescribed fluoroquinolone. The percentage of drugs prescribed from NEDL was 24.45% (764/2920), and patient's knowledge of correct dosage for prescribed drugs was 95%. Total number of prescriptions

with FDCs was 41.8%. A total of 742 (25.4%) FDCs were prescribed (Table 3).

DISCUSSION

Drugs play a key role in the health care system as they improve human health and promote well-being. However, to obtain a required effect drug must be used rationally and must be available, affordable, safe, and efficacious for users. In recent years, inappropriate, ineffective, and irrational use of drugs has been commonly observed in health care facilities, especially in developing countries. Hence, it becomes essential to promote appropriate use of drugs in the health care system. To promote rational use of drugs in developing countries, INRUD have developed various indicators in collaboration with WHO. These indices help prescribers and health planners to provide a better quality of care to their patients [7,13-15].

Various factors such as the introduction of many drugs in the market, a variable pattern of drug prescribing, lack of updated and reliable drug information, increase concerns regarding the cost of drugs, and appearance of delayed adverse effects due to the use of drugs have increased the importance of drug utilization studies in medical practices [2,5,7,14-16]. Drug utilization or prescribing pattern studies are important components of pharmacoepidemiology [17,18]. Evaluation and monitoring of drug use pattern from time to time help in giving feedback to prescribers regarding prescribing and rational use of drugs [19].

Table 1: Distribution of ocular diseases among patients

Ocular disease	Number of prescriptions n(%)
Conjunctivitis	290 (29)
Blepharitis	140 (14)
Ocular surface disorders	120 (12)
Dry eye	110 (11)
Glaucoma	60 (6.0)
Corneal ulcer	50 (5.0)
Meibomitis	40 (4.0)
Iridocyclitis	35 (3.5)
Diabetic retinopathy	30 (3.0)
Foreign body	30 (3.0)
Stye	25 (2.5)
Dacryocystitis	20 (2.0)
Subconjunctival hemorrhage	15 (1.5)
Pseudophakic bullous keratopathy	15 (1.5)
Others	20 (2.0)

Table 2: Number of drugs prescribed per prescription

Number of drugs per prescription	Number of prescriptions n(%)
One	110 (11)
Two	195 (19.5)
Three	385 (38.5)
Four	285 (28.5)
Five	25 (2.5)

Table 3: WHO drug use indicators

WHO indicators	Data (%)
Average number of drugs prescribed	2.92
Prescriptions with antibiotics	540 (54.0)
Drugs prescribed as generic name	35 (1.19)
Drugs prescribed as trade names	2885 (98.8)
Drugs prescribed from NEDL	764 (24.45)
Dosage form recorded	1000 (100)
Duration of therapy recorded	2409 (82.5)
Frequency of therapy recorded	2847 (97.5)
Drugs as fixed-dose combination	742 (25.4)
Patient's knowledge of the correct dosage	95

NEDL: National essential drug list

The average number of drugs per encounter is an important WHO prescribing indicator to measure the degree of polypharmacy. Polypharmacy is often associated with increased risk of drug interactions and adverse effects, higher cost and decreased compliance to patients [20,21]. Hence, it is essential to keep the number of drugs per prescription as low as possible [6,11,14,22]. In the present study, the average number of drugs per prescription was 2.92, indicating appropriate prescribing practice. Similar results had been reported in other studies where the average number of drugs per prescriptions were 2.54, 2.69, and 3.03, respectively [7,11,23]. However, some other hospital-based studies conducted in India had reported higher [3] and lower value [6,14,18] as compared to our study. In our study, most of the drugs were prescribed by their brand names, indicating the popularity of brand names among practitioners. Only 1.19% drugs were prescribed by their generic name which was very low as compared to other similar studies [3,11,15].

It is important to prescribe drugs by generic names as chances of error in writing as well as the reading of the prescription are less with generic prescribing. Prescribing by brand names may result in prescription writing, and reading errors as brand names of different drugs sound similar and spell alike. In addition, generic drugs are less expensive than branded drugs, thus generic prescribing makes the treatment low cost and promotes the rational use of drugs [6,18].

It is essential to mention the duration of therapy and frequency of drug administration in the prescriptions to avoid the indiscriminate and irrational use of drugs by the patients. In this study, the dosage form was recorded for all drugs; however, the frequency of drug administration and duration of therapy were recorded for 97.5% and 82.5% prescribed drugs, respectively. Other similar studies have also reported a lack of information related to dosage forms, the frequency of administration and duration of therapy in prescriptions [6,11,14]. The percentage of drugs prescribed from the NEDL was only 24.45%, which could be either due to lack of awareness of essential drug concept or unavailability of the NEDL among prescribers. Antibiotics are commonly prescribed for various ocular diseases in ophthalmology and inappropriate and inadequate use of antibiotic is associated with the emergence of resistance. In present study, total 1235 (42.29%) antibiotics were prescribed in the form of oral, eye drops, and ointments which were almost similar to one study (43.11 %) as well as contrast (58.43%) to other study [3,18]. Some other studies have also reported to only 17.52% and 32.26% drugs prescribed in the form of antibiotics [6,7].

This study was an attempt to describe the drug prescribing patterns in ophthalmology practice by WHO core drug use indicators. Although prescribing writing errors were less, prescribing by generic name were very low. In addition, duration of treatment was missing in many prescriptions. It is thus necessary to make prescribers aware of the use of drugs by generic name so that the cost-effectiveness of treatment will improve. Furthermore, there is a need to increase awareness among physicians about essential drug concept and use of standard treatment guidelines to encourage rational drug utilization.

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