

Original Article

A Descriptive study of drug Utilization in Outpatients of Ophthalmology Department of a University Teaching Hospital in Southern India.

Rathnakar U P¹, Ashwin Kamath¹, Kashvi Gupta², Akash G¹, Sarah G Naushad², Mohamed Faheem Koteekar², Vignesh Shenoy³

1. Department of Pharmacology, Kasturba Medical College, Manipal University, Mangalore, Karnataka, India

2. Kasturba Medical College, Manipal University, Mangalore, Karnataka, India

3. Department of Ophthalmology, Kasturba Medical College, Manipal University, Mangalore, Karnataka, India

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Abstract

Background: Regular audit of prescriptions and providing the feedback to physicians can improve their performance and increase the effectiveness and safety of treatment provided. Improper prescribing of ophthalmic drug formulations can result in adverse effects, noncompliance and decrease in quality of life of the patient. The aim of the study is to describe the drug utilization pattern in an ophthalmology out-patient department of a university teaching hospital in Southern India primarily by using the drug prescribing indicators. **Method:** A retrospective, descriptive study of case records of ophthalmology outpatients was carried out over a one month period. Besides the demographic data and the diagnosis, the drugs prescribed, dose, route and frequency of administration, duration of treatment was recorded. **Results:** Of the 84 out-patient prescriptions studied, the number of drugs per prescription ranged from one to four. Fluoroquinolones were the commonest drugs prescribed while their combination with dexamethasone was the commonest fixed dose combination prescribed. All the prescriptions contained the dose, frequency of administration and the duration of treatment. However generic names were not used in the prescriptions. 79.07% of the drugs prescribed were not listed in the national essential drugs list. **Conclusion:** Polypharmacy was low in our study sample. Although the prescriptions were complete in terms of dose, duration and formulation, lack of use of generic names in the prescriptions needs to be addressed. High incidence of infective conditions necessitates consideration of the local drug sensitivity pattern and patient adherence to prescribed drug regimen.

Key words: Drug utilization, ophthalmology, prescription, polypharmacy.

Introduction

Drug utilization research was defined by 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.¹ The ultimate goal of drug utilization research must be to assess whether drug therapy is rational or not. To reach this goal, methods for auditing drug therapy towards rationality are necessary.¹ Regular audit of prescriptions and providing the feedback to physicians can improve their performance and increase the effectiveness and safety of treatment provided.² Audit in drug use is defined as an examination of the way in which drugs are

used in clinical practice carried out at intervals frequent enough to maintain a generally accepted standard of prescribing.³ Prescription audits are important since evidence suggest a gap between the health care that patients receive and the practice that is recommended.⁴ The efficacy and safety of drugs used in ophthalmology is often confounded by the accuracy of dose administration of the ophthalmic preparation by the patients which in turn is dependent on proper education by the physician, a rational prescription and proper comprehension of the information provided to the patient, besides many other factors.⁵ Indiscriminate use of topical ophthalmic non-steroidal anti-inflammatory drugs can result in adverse effects ranging from local irritant effects, indolent corneal ulcers to systemic effects such as exacerbation of bronchial asthma.⁶ Long term use of ocular anti-

*Corresponding Author

Dr. Ashwin Kamath, Dept. of Pharmacology, Kasturba Medical College – 575001, Mangalore, Karnataka . India.
E mail : ashwin.kamath@manipal.edu



cause scarring of conjunctiva and dry eyes.⁷ Microbial resistance to antibiotic agents is becoming increasingly prevalent in ocular infections. The past two decades have witnessed changes in antibiotic susceptibility patterns on a worldwide basis. Guidelines that have been developed to help slow the escalation of systemic antibiotic resistance and encourage prudent use of antibiotic agents also apply to the management of ocular infections.⁸ The aim of the present study is to describe the drug utilization pattern in an ophthalmology out-patient department of a university teaching hospital in Southern India primarily by using the WHO drug prescribing indicators.

Materials and Methods

The present study was conducted in the Department of ophthalmology of a university teaching hospital in southern India. It was a retrospective, descriptive study of case records of patients of either gender attending the ophthalmology out-patient department excluding those presenting with refractive errors, those managed non-pharmacologically and patients who declined to provide consent. Approval from Institutional Ethics Committee was taken before the initiation of the study. The sampling method was convenience sampling and the drug utilization data was collected for cases seen over a period of one month during July 2013. A proforma was used to record the necessary data from the hospital records. Besides the demographic data and the diagnosis, the drugs prescribed, dose, route and frequency of administration, duration of treatment was recorded. Data was tabulated and statistical analysis carried out using SPSS Version 11.5. Descriptive statistics was used to analyze the data.

Results

A total of 84 outpatient prescriptions were studied during the one month period and analyzed. The total number of drugs prescribed was 168 with number of drugs per prescription ranging from one to four. Of these, the number of drugs per prescription in terms of percentage was as follows – one drug (29.8%), two drugs (46.4%), three drugs (17.9%) and four drugs (6%). The mean age of the study sample was 42.93 ± 21.48 years. 53.6% (45) of the patients were females. Table-1 shows the measures of indicators of prescribing practices based on the study data.

| WHO Prescribing Indicators | Study data |
|--|--------------|
| Average number of drugs per encounter | 2 ± 0.85 |
| Percentage of drugs prescribed by generic name | Nil |
| Percentage of encounters with an antibiotic prescribed | 66.7% |
| Percentage of encounters with an injection prescribed | Nil |
| Percentage of drugs prescribed from essential drugs list | 20.93% |

Table 1: Drug use based on World Health Organization Prescribing Indicators.

The most common diagnoses among the study sample was corneal ulcer/foreign body/trauma (21.4%), diseases of the conjunctiva (16.7%) and eyelid (14.3%) followed by glaucoma (10.7%). Percentage of individual drug formulation use was as follows – eyedrops (72.61%), ointment (17.26%), tablet (9.52%), gel (0.6%). 16.07% of the drugs prescribed were fixed dose combinations (FDCs). The most frequently prescribed drugs are listed in Table-2. As a drug class, antimicrobials (particularly fluoroquinolones) and tear substitutes accounted for a large percentage of the drugs prescribed. Among the fixed dose Combinations used, ofloxacin and dexamethasone constituted 14.81% of the total number of FDCs prescribed followed by combinations of ciprofloxacin and dexamethasone, ketorolac and ofloxacin, constituting 11.11% each. Of the 43 different drugs / FDCs prescribed, 34 (79.07%) were not present in the National list of essential medicines of India.⁹ All the drugs were prescribed by their brand names. All the prescriptions contained the dose, frequency of administration and the duration of treatment.

*N=141excluding fixed dose combination

| Drug name | Prescribing frequency in percentage* (number) |
|------------------------------|--|
| Ciprofloxacin | 27.66 (39) |
| Hydroxypropylmethylcellulose | 15.6 (22) |
| Ofloxacin | 12.06 (17) |
| Carboxymethylcellulose | 9.22 (13) |
| Olopatadine | 4.26 (6) |
| Bimatoprost | 2.13 (3) |

Table2: Ophthalmic drugs prescribed in the study sample based on prescribing frequency.

Discussion

Our study was an attempt to describe the ophthalmic drug prescribing pattern in a university teaching hospital in Southern India. The WHO core drug use indicators were used to primarily describe the drug use, particularly the prescribing indicators. The indicators of prescribing practices measure the performance of health care providers in several key dimensions related to the appropriate use of drugs.¹⁰ Of the 84 prescriptions containing 168 drugs studied, number of drugs per prescription ranged from one to four. This serves as a measure of degree of polypharmacy.

Most of the prescriptions contained two drugs (46.4%) while 6% of the prescriptions contained four drugs. Since we did not look into the rationality of the prescription the need for polypharmacy in the studied prescriptions cannot be commented upon. While use of multiple drugs might be rational, ocular drug polypharmacy is associated with increased risks of adverse effects and potential drug interactions including interactions with co-administered systemic drugs.^{11, 12} There is also an increased risk of dry eye disease from many ocular therapeutic agents and the preservatives used in these formulations.¹¹ Besides, there is increased risk of noncompliance and a potential effect on the patients quality of life.¹² The lack of use of generic names in prescriptions is discouraging but expected. The likely reason could have been the predictable response based on earlier clinical experience with a particular brand product and lack of the same confidence in generic drugs.

Lack of confidence in generic drugs is not unfounded considering the evidence that in the absence of a strong regulatory control some of the marketed drug formulations might not be adhering to the standards prescribed.^{13, 14, 15} All the prescriptions documented the type of drug formulation, dose and duration. While we did not assess the understanding of the patient regarding the use of these drugs, proper prescription writing is a prerequisite to ensuring adequate regimen compliance.

Eyedrops were the commonest drug formulation to be used followed by eye ointment and tablets. Use of topical drug formulations, wherever possible, ensures decreased systemic adverse effects and, in many cases, less treatment costs. A significant percentage of the formulations used comprised of antibiotics and tear substitutes. Among the antibiotics, fluoroquinolones constituted the largest group with ciprofloxacin and ofloxacin being the commonly

prescribed drugs. Combination of fluoroquinolones with corticosteroids formed the most commonly prescribed fixed dose combination. Ophthalmic FDCs ensure adequate doses of the drugs are taken with improved patient compliance. 16.07% of the formulations prescribed were FDCs. While improving the patient compliance, it is to be ensured that all the drug components are required for managing the particular disease and the pharmacokinetics of the various component drugs are taken into consideration since many of the FDCs available in the market might not be rational or suitable for all patients with a particular disease.¹⁶

Our study has limitations. The sample size is small and restricted to patients attending a single tertiary care teaching hospital over a period of one month. The study being descriptive, no attempt was made to check the rationality of the prescriptions. We concentrated mainly on the prescription indicators for drug use but did not assess the patient indicators. Hence, although the prescriptions were well written whether this translated into proper drug use by the patients is not known.

Conclusion

Drug utilization study is the initial step in determining proper use of drugs. We found that polypharmacy was low in our study sample. Although the prescriptions were complete in terms of dose, duration and formulation, lack of use of generic names in the prescriptions is something that needs to be addressed. This includes not only increasing the awareness of the prescribers but also addressing their concerns regarding generic drugs. Eyedrops were the most commonly prescribed formulations with ciprofloxacin being the most commonly prescribed drug and its combination with dexamethasone being the commonest FDC prescribed. Since a large percentage of the patients were those with corneal ulcers/ foreign body/ trauma it is important to take into consideration the local drug sensitivity pattern and patient adherence to prescribed drug regimen. A study with larger sample size that assesses the rationality of prescription and patient compliance will provide more comprehensive and actionable information which can be used to review the drug prescribing policies.

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