A Drug Utilization Study In The Ophthalmology Department Of a Medical College, Karnataka, India

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ABSTRACT

Aim: There is concern regarding the irrational production, prescription and the use of drugs in India. The present study was conducted to evaluate the pattern of prescription and the use of drugs in the outpatients Ophthalmology Department at S. Nijalingappa Medical College and HSK Hospital and Research Center, Bagalkot. **Methods:** The prescriptions of 660 out patients were audited through a specially designed form, in which 1322 prescriptions were analyzed for the following: average number of drugs per prescription, the duration of treatment, the dosage form, the frequency of administration, the number of encounters with antibiotics and the percentage of drugs prescribed by their generic names. **Results:** Prescription analysis showed that the average number of drugs per prescription was 2.00%. The maximum number of drugs which were prescribed, were in the form of eye drops (65.81%), followed by ointments (17.63%), capsules (8.02%), tablets (6.59%), syrups (0.76%), injections (0.76%) and lotions (0.31%). The dosage form was indicated for 99.88% of the drugs, the frequency of drug administration for 94% of the drugs and the duration of treatment for only 75% of the drugs prescribed. The number of antibiotics which were prescribed were 399(30.18%), out of which 257(64.3%) were antibiotics which were prescribed in the form of drops, 129(32.26%) were prescribed as ointments and 13 (3.25%) were prescribed orally. The number of encounters with anti inflammatory and anti allergic drugs were138 (10.43%), those with mydriatics and cycloplegics were 96(7.26%), those with miotics were 30 (2.26%) and those with multivitamins were 87 (6.58%). The common prescription writing errors were minimum and there was no evidence of polypharmacy. However, the duration of treatment and prescribing by the generic names was low.

Key Words: Prescribing pattern, Polypharmacy, Generic name.

INTRODUCTION

Drug utilization studies are powerful exploratory tools to ascertain the role of drugs in the society. They create a sound sociomedical and health economic basis for making healthcare decisions. [1] Drug utilization is the defined marketing, distribution, prescription and the use of drugs in society, with special emphasis on the resultant medical, social and economic consequences. [2] The research in this field aims to analyze the developmental trends of drug usage at various levels in the health care system. The data which is obtained may give a crude estimate of the disease prevalence and the estimate of drug expenditures.[3] The marketing of new drugs, the variations in the pattern of drug prescribing, concerns about the delayed adverse effects of drugs and the increase in the cost of drugs has increased the importance of drug utilization studies. [4] To improve the overall drug use, especially in developing countries, international agencies like the

World Health organization(WHO) and the International Network for the rational use of drugs (INRUD) have applied themselves to evolve standard drug use indicators.[5]These indicators help us to improve our performance from time to time. The WHO specifies drug use indicators for adoption in drug utilization studies. To achieve this, it is necessary to determine the drug use pattern and to monitor the drug use profiles by using the Anatomic Therapeutic Chemical (ATC) classification/Defined Daily Dosage (DDD) system in order to enhance the efficacy of drug use. Hence, the present study was designed:

- To obtain information on the number of drugs prescribed, their prescribing patterns and the duration of treatment.

- To calculate the percentage of the drugs which are prescribed by their generic names and the percentage of encounters with antibiotics and the anti-inflammatory drugs which are prescribed.

MATERIAL AND METHODS

The present study was conducted at the Post graduate Department of Pharmacology and Therapeutics in collaboration with the Department of Ophthalmology at Nijalingappa Medical College and HSK Hospital S. and Research Center, Bagalkot. The data were collected prospectively from the out patients visiting the OPD from 9AM to 1PM, once a week, that is, every Thursday during the period from July 2009 to December 2009. Prescriptions of 660 patients who were treated during the course of the study were audited prospectively by using a specially designed form. The following WHO drug use indicators were determined. [6]

Core indicators

1. Prescribing indicators:

a. 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.

b. The percentage of encounters with an antibiotic and anti inflammatory drug which was prescribed.

c. 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.

2. Patient care indicators:

a. The average consultation time was determined by dividing the total time for a series of consultations, by the actual number of consultations.

b. The average dispensing time was calculated by dividing the total time for dispensing drugs to a series of patients, by the number of encounters.

c. 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.

RESULTS

The total number of prescriptions which were analyzed was 660 and the total number of drugs in these prescriptions was 1322. The number of drugs per prescription varied from one to six, with an average of 2.00 [Table/Fig 1]. The drugs were prescribed in seven different dosage forms .Eye drops were the most commonly prescribed antibiotics [870(65.81%)], followed by ointments [233(17.63%)], capsules [106(8.02%)], tablets [87(6.59%)], syrups [10(0.76%)], injections [10(0.76%)] and lotions [04(0.31%)].

Number of drugs per prescription	No.of prescription in n(%)
One	320(48.48)
Two	180(27.27)
Three	64(9.69)
Four	45(6.81)
Five	36(5.45)
Six	15(2.27)
Total	660(100)

[Table/Fig 1]: Number of drugs prescribed per prescription

The dosage forms of the drugs were recorded for 99.88% of the drugs and the frequency of administration was recorded for 94% of the prescriptions. The duration of treatment was mentioned for 75% of the drugs which were prescribed. The analysis of the prescriptions showed that 99% of the prescriptions were written in the form of various trade names and that the generic names of the drugs were mentioned in 1% of the cases only. 399(30.18%) antimicrobials were prescribed in various dosage forms [Table/Fig 2]. Anti inflammatory and anti allergic drugs comprised of 138(10.43%), mydriatics and cycloplegics of 96(7.26%), miotics of 30 (2.26%) and multivitamins of 87 (6.58%) of the total drugs which were prescribed. The maximum numbers of these drugs were given for topical use in the form of eye drops and ointments. Fluoroquinolones like ofloxacin were widely used. Ketorolac, tromethamine, sodium cromoglycate and fluromethalone are the commonly used anti inflammatory drugs [Table/Fig 3].

DISCUSSION

Drugs play an important role in improving human health and in promoting well being .To produce the desired effect, they have to be safe and efficacious and have to be used rationally. The irrational use of drugs is a common occurrence throughout the world. Drug prescriptions form a very important point of contact between the doctors and the patients. The average number of drugs per prescription is an important criterion of the prescription audit. In this study, the average number of drugs per prescription was 2.00%. Other hospital based studies in India reported 3-5 drugs per prescription, which was higher than that in our study. [5], [7], [8] It is preferable to keep the number of drugs per

Dosage forms	Major therapeutic agent	Number of prescriptions n(%)
Drop	Ofloxacin	170(66.14)
	Ciproxacin	32(12.46)
	Chloramphenicol	26(10.12)
	Tobramycin	11(4.28)
	Sparfloxacin	9(3.50)
	Sulfacetamide	9(3.50)
Ointment	Neomycin	78(60.46)
	Ciprofloxacin	20(15.50)
	Acydovir	11(8.52)
	Combination of antibiotic with steroid	20(15.50)
Oral	Ofloxacin	5(38.46)
	Ciprofloxacin	5(38.46)
	Acydovir	3(23.07)

[Table/Fig 2]: Major therapeutic agents and dosage forms of antimicrobials

Core indicators	Data
Average number of drugs prescribed	2.00
Dosage forms recorded	99.88%
Drugs prescribed tropically	96.56%
Antibiotics prescribed	30.18%
Duration of therapy recorded	75%
Frequency of therapy recorded	94%

[Table/Fig 3]: Drug use indicators

prescription as low as possible, so as to reduce the risk of drug interactions, adverse effects, the development of bacterial resistance and increased cost to the patient. [9] Antimicrobials had been prescribed in 30.18% of the prescriptions in the form of eye drops and eye ointments, as well as orally. 96.56% of the antimicrobials were given topically in the form of eye drops and ointments, thus minimizing the adverse effects. The dosage form and the frequency of drug administration have been recorded in 99.88% and 94% of the cases respectively. In 75% of the prescriptions, the duration of therapy was noted. This study showed a need for the improvement in prescription writing, as the duration of therapy was missing in 25% of the prescriptions. This, coupled with low generic prescribing, could result in a less safe and a more expensive prescribing. It is always preferred to have a complete prescription which should include name, age, sex, diagnosis and rational drug treatment with less number of drugs, the proper dosage form, the frequency of administration and the duration of therapy. Our hospital based prescriptions were almost complete in 75% of the cases. There is a need to conduct similar studies in other departments, as well to audit a large number of prescriptions and to impart education to the prescriber on rational drug therapy for the benefits and for the safety of the patients.

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