Patterns of prescription and drug use in ophthalmology in a tertiary hospital in Delhi

Nihar R. Biswas, Sanjay Jindal,[1] M. Mairaj Siddiquei & Rajiv Maini[1]

Dr Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi-110029 and [1]College of Pharmacy, Pushp Vihar, Sec-III, New Delhi-110017, India

Aims The present study was carried out to describe the patterns of prescription and drug use in Ophthalmology in out-patients at Dr Rajendra Prasad (R.P.) Centre for Ophthalmic Sciences of All India Institute of Medical Sciences (A.I.I.M.S.), New Delhi.

Methods Prescriptions of 1017 out-patients were audited through a specially designed form and analysed for the following: average number of drugs per prescription, duration of treatment (recorded or not), dosage forms prescribed, frequency of administration (recorded or not), number of encounters with antibiotics and percentage of drugs prescribed by generic name.

Results Prescription analysis showed that the average number of drugs per prescription was 3.03. Duration of treatment was recorded for only 26.4% of the drugs prescribed. The maximum number of drugs prescribed were in the form of eye drops (76%), followed by tablets (10.9%), ointments (6.4%), syrups (1%), capsules (0.7%), lotions (0.3%) and injections (0.1%). No dosage form was recorded for 4.6% of the drugs prescribed. The frequency of administration was recorded for only 77.9% of the drugs prescribed. The number of antibiotics prescribed was 1059 which constitutes 34.2% of the total number of drugs prescribed. The percentage of drugs prescribed by generic name was only 35%.

Conclusions The results obtained in this study indicated an awareness of polypharmacy but a high incidence of common prescription writing errors such as not recording the duration of therapy, frequency of administration and dosage form. Moreover prescribing by generic name was also low.

Keywords: development of drugs, medical audit, patient safety, prescribing patterns

Introduction

Drug utilization has been defined as the marketing, distribution, prescription and use of drugs in a society with special emphasis on the resultant medical and social consequences [1]. Third world countries spend 30–40% of their total health budget on drugs some of which are useless and expensive and doubles their expenditure on drugs every 4 years while GNP (Gross National Product) doubles every 16 years [2].

Correspondence: Dr Nihar Ranjan Biswas M.D. D.M. D.N.B., Associate Professor, Department of Ocular Pharmacology, Dr R.P. Centre for Ophthalmic Sciences, A.I.I.M.S., Ansari Nagar, New Delhi-110029, India. Tel.: 091–11–6864851 ext. 3162; Fax: 91 11 6852917;
E-mail: nrbiswas@medinst.ernet.in

Received 17 May 2000, accepted 8 December 2000.

Drug utilization pattern needs to be evaluated from time to time so as to increase therapeutic efficacy and decrease adverse effects [3]. Historically the pharmaceutical and medical profession have devoted considerable time and efforts to the development and rational utilization of safe and effective drugs for the treatment and prevention of illness.

There has been development of many new therapeutic agents which have made it possible to cure or provide the symptomatic control of many clinical disorders. However in many circumstances drugs are not used rationally for optimal benefits and safety [4].

Realizing the enormous potential of drug utilization studies in the promotion of rational drug therapy, international agencies like WHO and International Network of Rational Utilization of Drugs (INRUD) have applied themselves to evolve standard drug use indicators

and data collection methods. Auditing prescription also forms part of drug utilization studies [5].

The present study was undertaken to investigate the drug utilization pattern and current prescribing practices of the ophthalmologists of Dr R.P. Centre for Ophthalmic Sciences at A.I.I.M.S.

Methods

Dr R.P. Centre for Ophthalmic Sciences houses the ophthalmology Department of AIIMS, a major teaching Hospital in Delhi. It caters to the people from all over India. Prescriptions of 1017 consecutive patients treated during the course of the study were audited prospectively from October 1998 to March 1999 using a specially designed form to record the required information from the OPD drug prescription cards of each patient. This was done by one of the author (S.J.) at Dr R.P. Centre for Ophthalmic Sciences OPD. All the drugs prescribed were recorded including each drug dose, route, dosage form, frequency of administration, indications for which prescribed and duration of therapy. These recorded forms were used to analyse average number of drugs per prescription, number of encounters with antibiotics, percentage of drugs prescribed by generic name and whether the dosage form, frequency of administration and duration of therapy were recorded or not.

Results

During the study the average number of drugs per prescription was 3.03 and the range of drugs per prescription varied from 1 to 10 (Table 1). The duration of therapy was recorded for only 26.4% of the drugs prescribed. Drugs prescribed were present in eight different dosage forms. Eye drops were the most commonly prescribed (76%), followed by tablets (10.9%), ointment (6.4%), syrup (1%), capsules (0.7%), lotion (0.3%); injections contributed 0.1% of all the dosage forms prescribed. In the remaining 4.6% cases no dosage form was recorded for the drugs prescribed. The frequency of drug administration was recorded for 77.9% of the drugs prescribed but for the remaining 22.1% of the drugs the frequency of administration was not recorded in the prescription (Table 2). The number of encounters with antibiotics was 1059 which constituted 34.2% of the total number of drugs prescribed. Study also revealed that the drugs were prescribed both by generic name and brand name with brand prescribing clearly dominating generic prescribing (65% *vs* 35%).

Table 1 Number of drugs prescribed per prescription.

Prescription containing number of drugs	*Number of prescriptions (%)*
One	20 (1.97)
Two	279 (27.43)
Three	248 (24.38)
Four	139 (13.67)
Five	115 (11.31)
Six	98 (9.64)
Seven	54 (5.31)
Eight	34 (3.34)
Nine	20 (1.97)
Ten	10 (0.98)
Total	1017 (100)

Discussion

The irrational use of drugs is a common occurrence throughout the world [6]. Average number of drugs per prescription is an important index of the scope for review and educational intervention in prescribing practices. Other hospital based studies in India reported figures of 3–5 drugs per prescription [7–8] similar to ours. It is preferable to keep the number of drugs per prescription as low as possible since higher figures lead to increased risk of drug interactions [9], increased hospital cost [10] and errors of prescribing [11]. In our study, prescriptions with generic name were just 35%, which suggests popularity of brand names amongst the medical practitioners of Dr R.P. Centre for Ophthalmic Sciences and the influence of pharmaceutical companies. Prescriptions of generic drugs could facilitate cheaper treatment for the patient. The frequency of drug administration and drug therapy are the two most important parameters which, if not clearly recorded, can result in indiscriminate and injudicious use of drugs. The present study showed that the information about the frequency of drug administration was missing in 22.1% of the total number of drugs prescribed and the duration of therapy was not recorded for 73.6% of the drugs prescribed. In a similar study on topical corticosteroids Sharma *et al.* [12] reported that the frequency of application was recorded in 93% and the duration of treatment was mentioned in 75% of all the prescriptions audited.

The study showed a need for improvement in prescription writing as evidenced by the large number of cases

Table 2 Percentage of drugs for which duration of therapy, dosage form and frequency of administration were recorded.

Parameters	*Recorded*	*Not-recorded*
Duration of therapy	26.4	73.6
Dosage form	95.4	4.6
Frequency of drug administration	77.9	22.1

in which information about frequency of administration and duration of therapy were missing. This coupled with low generic prescribing could result in less safe and more expensive prescribing. This study needs to be followed up by prescriber education on rational drug use by means of short-term training sessions including a briefing on proper prescription writing. The prescriptions can then be re-audited to measure the impact of intervention.

The authors are thankful to Professor S. S. Agrawal, Principal and Head, Department of Pharmacology, College of Pharmacy, New Delhi, and to Mr Ashok Gupta for making this study possible as well as to Mr S. P. Malhotra, Mr P. S. Pal and Mr Sanjay, Pharmacists, Dr R.P. Centre for Ophthalmic Sciences, A.I.I.M.S., New Delhi for helping in data collection.

References

1 WHO. The selection of essential drugs. WHO technical report, 1977; serial no. **615**: 36.
2 Melrose D. Double deprivation public and private drug distribution from the perspective of the third world's poor. *World Dev* 1983; **11**: 181–186.
3 Krishnaswamy K, Dinesh KB, Radhaiah G. A drug survey-precepts and practices. *Eur J Clin Pharmacol* 1985; **29**: 363–370.
4 Hussar DA. Patient compliance. In *Remington: the Science and Practice of Pharmacy*, 19th edn, eds. Gennaro AR, Chase GD, Marderosian AD, et al. Easton, Pennsylvania, Mack Publishing Company, 1995: 1796–1806.
5 WHO Regional Publications. Studies in drug utilisation. European Series no. 8; Copenhagen 1979.
6 Soumerai SB. Factors influencing prescribing. *Aust J Hosp Pharm* 1988; **18**: 9–16.
7 Biswas NR, Uppal R, Sharma PL. Perinatal prescribing to indoor patients in Nehru Hospital, PGIMER. *Chandigarh J Obset Gynaec India* 1993; **43**: 907–910.
8 Gupta N, Sharma D, Garg SK. Auditing of prescriptions to study utilization of antimicrobials in a tertiary hospital. *Ind J Pharmacol* 1997; **29**: 411–415.
9 Nies AS. Principles of therapeutics. In *The Pharmacological Basis of Therapeutics Eighth Edition*, eds. Gilman AG, Rall TW, Nies AS. New York, Pergamon Press, 1990: 62–83.
10 Atanasova I, Terziivanov D. Investigations on antibiotics in a hospital for a one year period. *Int J Clin Pharm Ther* 1995; **33**: 32–33.
11 Pradhan SC, Shewade DG, Tekur U, *et al*. Changing pattern of antimicrobial utilization in an Indian teaching hospital. *Int J Clin Pharmacol Ther Toxicol* 1990; **28**: 339–343.
12 Sharma SC, Uppal R, Sharma PL, *et al*. Rational use of topical corticosteroids in dermatology. *Ind J Pharmacol* 1990; **22**: 141–144.