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Original Research Article

Drug utilization study in outpatient ophthalmology department of government medical college, Nellore, India

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ABSTRACT

Background: Drug utilization studies are an important part of rational use of drugs. This study was planned to assess drug utilization pattern in Ophthalmology outpatient department.
Methods: After approval from Ethics Committee, 620 prescriptions were analyzed according to WHO drug indicators.
Results: 2. 4 drugs were prescribed on an average per prescription. Antibiotics (49%) were the most commonly used drugs. Fluoroquinolones (54%) were frequently used. Topical route was preferred route of drug administration. Prescription of generic drugs was not optimal (13%). Duration of therapy was missing in many prescriptions.
Conclusions: Generic prescribing can be improved. Duration of therapy should be mentioned in all prescriptions.

Keywords: Drug utilization, Generics, Ophthalmology, Outpatients, Prescriptions

INTRODUCTION

Definition of drug utilization work adopted by World Health Organization (WHO): studies of "the marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social, and economic consequences".[1]

Marketing of new drugs, 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.[2] Drug utilization studies are powerful exploratory tools to ascertain the role of drugs in the society.[3] The discipline of drug utilization research is closely related and linked mainly to the broader field of pharmacoepidemiology, but also to health outcomes research, pharmacovigilance and health economics.[4]

Drug utilization research will often point to and profile the discrepancy that persists between true need and therapeutic practice, and perhaps serve as a tool in correcting it.[5]

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 Ophthalmologist, a rational prescription and proper comprehension of the information provided to the patient**,** besides many other factors.[6]

Topical ophthalmic Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) can not only produce local irritant effects of conjunctival hyperaemia, burning, stinging and corneal anaesthesia but also have association with serious complication like indolent corneal ulceration and full-thickness corneal melts.[7]

Antibiotics are widely prescribed for various ophthalmic diseases. The repeated use of ophthalmic antibiotics selects for resistant strains.[8] Drugs themselves are not as bad as the way in which we use them; a therapeutic audit is required at all levels of the therapeutic chain to ensure safe and effective medical care.[9]

Therefore, the present study was undertaken with the aim to investigate drug utilization and prescribing practices of ophthalmologists with emphasis on antimicrobial utilization in a tertiary care teaching hospital in Nellore.

METHODS

This study was carried out in Outpatient Ophthalmology Department of ACSR Government Medical College, Nellore between July 2017 and October 2017. Permission was obtained from the Institutional Ethics Committee. This was an open label, cross sectional, prospective, non-interventional, observational study conducted by Department of Pharmacology in association with Department of Ophthalmology, ACSR Government Medical College, Nellore.

Inclusion criteria

Newly registered adult patients of either sex who visited the Ophthalmology Outpatient Department with complaints like cases of red eye, discharge from eyes, itching, redness, foreign body sensation, swelling, raised intraocular pressure, and eye trauma were included.

Exclusion criteria

Cases of cataract, postoperative follow ups, any diagnostic test/procedure, and repeated follow-up cases were excluded from the study.

Data was collected prospectively from the out-patients unit of the ophthalmology Department between 9 AM and 12 PM, twice a week (Monday and Tuesday) for a period of 4 months.

Prescriptions from each patient are taken into consideration for this study and only those medications used for treating ocular disorders were considered. All drugs prescribed were noted including dose, route, dosage form, frequency of administration, indications for prescription and duration of therapy, numbers of drugs prescribed from Essential Drug list were also noted as per WHO/International Network of Rational Use of Drugs (INRUD) drug use indicators.[10]

Essential medicines as defined by the WHO are those drugs that satisfy the health-care needs of the majority of the population; they should therefore be available at all times in adequate amounts and in appropriate dosage forms, at a price the community can afford.[11] Central Drugs Standard Control Organization, the regulatory body in India, has recently formulated the National list of essential medicines in 2015.

A total of 620 prescriptions were analyzed following WHO recommendation.[10] that the study of a single health facility should measure facility specific prescribing indicators with a 95% confidence limit plus minus 10%. Accordingly, it has been recommended that at least 600 encounters or more should be included in a cross-sectional survey**.** Data was coded and entered with the help of a statistician to minimize the data entry errors. Data analyzed on EPI INFO version 3.5.4 and MS EXCEL**.** The different variables were expressed as frequencies and percentages. Chi square test was used as a test of significance (P<0.05)

RESULTS

A total of 620 prescriptions were analyzed. The total number of drugs in these prescriptions was 1488. The number of drugs per prescription varied from one to five, with an average of 2.4 per prescription. Majority prescriptions had 2 drugs as seen in Figure 1.

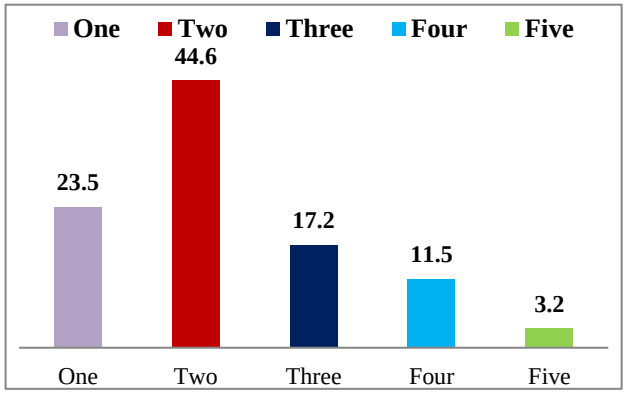

Figure 1: The number of drugs per prescription.

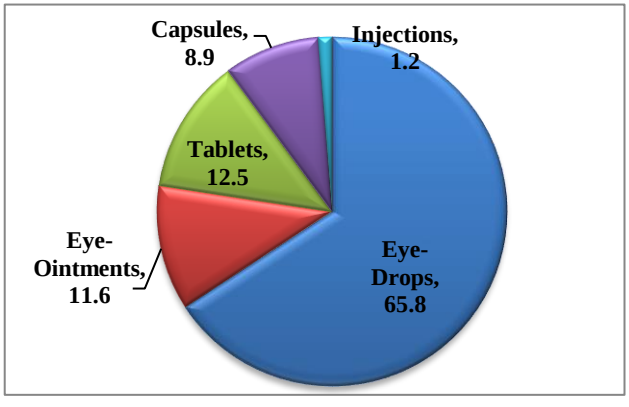

Figure 2: The various dosage forms used.

Drugs were prescribed in five different dosage forms. Eye drops were the most commonly used dosage form 65.8% followed by tablets (12.5%), ointments (11.6%), and capsules (8.9%) as seen in Figure 2. Injections contributed to1.2% of all the dosage forms prescribed as seen in Figure 2.

Study also revealed that 187(12.6%) drugs were prescribed by generic name and 1301 (87.4%) drugs were prescribed by brand name as seen from Figure 3.

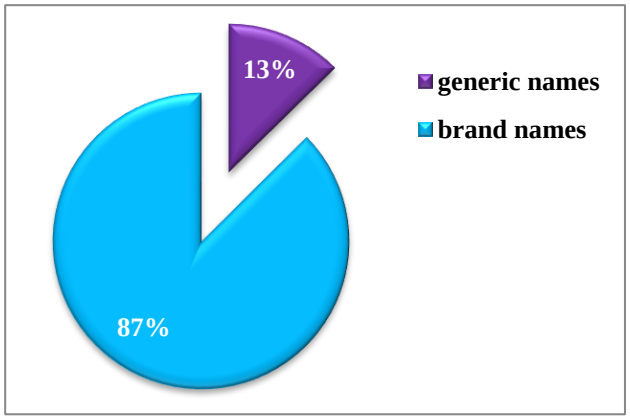

Figure 3: Prescription by generic and brand names.

The percentage of drugs prescribed from essential drug list was 45% (670/1488) from National List of Essential Medicines, 2015 as seen from Table 1.

Table 1: Drug utilization based indicators.

Indicators assessed	Data value
Average number of drugs per prescription	2.4
Percentage of drugs prescribed by generic name	12.6%
Percentage of prescriptions with antibiotics prescribed	46.8%
Percentage of prescriptions with injections prescribed	1.2%
Percentage of drugs prescribed from National essential medicines list	45%
Dosage forms recorded	98.6%
Frequency of therapy recorded	95.6%
Duration of therapy recorded	78%

Dosage forms of the drugs were mentioned for 98.6% of the drugs. Frequency of drug administration was mentioned for 95.6% of the prescriptions. Duration of treatment was specified for 78% of the prescribed drugs.

The number of encounters with antibiotics was 290/620 (62.2%) which accounted for 48.6% of the total number of drugs prescribed as seen in Table2. Fluoroquinolones were the most common group of antibiotics prescribed as seen in Table 3.

Table 2: Various classes of drugs used.

Class of drugs	N=1488	Percentage
Antibiotics	723	48.6
Anti-inflammatory and anti allergic	274	18.4
Anti glaucoma	265	17.8
Mydriatics and cycloplegics	118	7.9
Miotics	68	4.6
Multivitamins	40	2.7

Table 3: Prescribing frequency of antibacterial classes.

Antibacterial class	Number (723)	Percentage %
Fluoroquinolones	389	53.8
Penicillins	124	17.2
Chloramphenicol	93	12.8
Tetracyclines	52	7.2
Polypeptides and others	44	6.1
Aminoglycosides	21	2.9

DISCUSSION

The indicators of prescribing practices measure the performance of health care providers in several key dimensions related to the appropriate use of drugs.[10] WHO drug use indicators were used in drug utilization studies.

Of the 620 prescriptions containing 1488 drugs studied, number of drugs per prescription ranged from one to five. In this study, most commonly two drugs were noted per prescription. Average number of drugs per prescription is an important index as it tends to measure the degree of polypharmacy.[12] Other hospital based studies in India reported a value of 1.49 to 3.2 drugs per prescription.[12-17] It is preferable to keep the number of drugs per prescription as low as possible since higher Figureures lead to increased risk of drug interactions, adverse effects, development of bacterial resistance and increased cost to the patient.[18]

In this study, most of the drugs were prescribed topically, 66% in form of drops and 12% in the form of ointment. Administering the drugs topically for eye diseases minimized their adverse effects. Generic drug use in India is yet to gain widespread popularity; the economic benefits of generic drug use are however well-known and undisputed.[19] Recently, regulatory authorities of different countries are advocating generic prescribing to cut total health-care cost. Similar endeavor has also been taken up by the State Government of Andhra Pradesh in promoting Anna Sanjeevani outlets that specifically sell generic drugs. In this backdrop, the percentage of drugs prescribed by generic names in this study was 12.6%, which is lower than what was reported by some studies but higher than reported by others.[12,15-17] Inadequate 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. Banerjee.[13]

The percentage of drugs prescribed from the National List of Essential Medicines 2015 was 45% which is higher compared to studies conducted in India.[12,15,20] The dosage form and the frequency of drug administration have been recorded in 98.6% and 95.6% of the cases respectively. In 78% of the prescriptions, the duration of therapy was noted. This study showed a need for improvement in prescription writing, as the duration of therapy was missing in 22% of the prescriptions. In this study, number of encounters with antibiotics was around 47%. At 49% of the total drugs prescribed, antimicrobial agents constituted the most commonly prescribed drugs. Other similar studies in ophthalmology in India have reported 30%–45% encounters with antibiotics lower than our study.[14,17] Fluoroquinolones were the most common group of antibiotics prescribed which were similar to reports of previous studies done in ophthalmology.[13,14,17] Ciprofloxacin 0.3% as drops and ointment is included in National List of Essential Medicines 2015, deemed to be available at Primary, Seconday and Tertiary levels of health care and hence preferred in many prescriptions as patients could use them free of cost.[20] Newer fluoroquinolones like Moxifloxacin were prescribed in severe cases.

The prescribing pattern observed in the current study was in accordance with the accepted norms of treatment of ocular diseases, The present study revealed certain lacunae in the prescribing practices of the Ophthalmologists in this institute evident by the low generic prescribing, inadequate information about duration of therapy in many prescriptions. There is margin for betterment. Ophthalmologists should be encouraged to prescribe by generic name and opt for essential drugs from National List of Essential Medicines. The study suggests educational initiative, development of drug policy, and National Essential drug list based hospital formulary to reduce the drug cost and ensure rational use of medicines.

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