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A PHARMACO-EPIDEMIOLOGICAL DRUG UTILIZATION STUDY IN THE OPHTHALMOLOGY DEPARTMENT OF A GROWING TERTIARY CARE TEACHING INSTITUTION LOCATED IN RURAL WESTERN UTTAR PRADESH

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ABSTRACT

To evaluate the drug utilization pattern and practices among patients seeking care at Ophthalmology department of a tertiary care teaching institution located in western Uttar Pradesh. Interviewed 1237patients attending outpatient department of Ophthalmology of MSDS Medical College during Feb 2013- Jan 2014. Data was captured on predesigned WHO proforma. Collected data was analyzed for various predefined parameters related to drug use. 2721 individual drugs were prescribed on 1237 prescriptions during the study period. Average number of drugs per encounter was 2.2 ± 0.64. Prescriptions in trade names (75.2%) dominated prescriptions in generic names (24.8%). Eye drops were the most commonly prescribed antibiotics, followed by ointments, capsules, tablets, syrups, injections and lotions. Most common eye drop was Ofloxacin (68.2%) followed by Ciproxacin (14.9%). Most frequent oral drug was Ofloxacin (46.1%). Most drugs (67.99%) were not adequately labeled. Majority (72.9%) of the patients could tell us the correct dosage schedule for all the drugs prescribed.Average consultation time and average dispensing time was 4.3 minutes and 2.8 minutes respectively.

KEYWORDS : Medical audit, Ophthalmology, Prescription, Drug utilization, Pattern, Epidemiology

Prescription order is an important document between the physician and the patient. Prescribing of drugs is an important skill, which needs to be continuously assessed and refined suitably and it reflects the physician's skill in diagnosis and attitude towards selecting the most appropriate cost effective treatment(Kanakambal, 2001). There is growing concern regarding the irrational production, prescription and the use of drugs in India.

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 (WHO, 1997).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 (Biswas, 2001). These indicators help us to improve our performance from time to time.

To assess the scope for improvement in rational drug use in outpatient practice, the World Health Organization (WHO) has formulated a set of "core drug use indicators"(WHO, 1997)(Table 1). The core prescribing indicators measure the performance of prescribers, the patient care indicators measure what patients experience at health facilities, and the facility indicators measure whether the health personnel can function effectively. Therefore the present study was planned to identify scope of improvement in rational drug use in outpatient practice in the Ophthalmology in a growing medical college.

MATERIALS AND METHODS

The current prospective study was planned and executed by the Department of Pharmacology & Microbiology in collaboration with Department of Ophthalmology, MSDS Medical College, Fatehgarh during February 2013 to January 2014. The study population consisted of the patients seeking care at outpatient department of Ophthalmology of MSDS Medical College.

MSDS Medical College is a state of the art tertiary care teaching institution established in rural outskirt of Fatehgarh to provide super specialty care to underserved population. The first batch of students commenced its academic session in July 2011. Department of Ophthalmology is serving primarily patients mainly from

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Table 1: Core Drug Use Indicators To Investigate Drug Use In Health Facilities

Prescribing indicators
1. Average number of drugs per encounter
2. Percentage of drugs prescribed by generic name
3. Percentage of encounters with an antibiotic prescribed
4. Percentage of encounters with an injection prescribed
5. Percentage of drugs prescribed from essential drugs list or formulary
Patient care indicators
6. Average consultation time
7. Average dispensing time
8. Percentage of drugs actually dispensed
9. Percentage of drugs adequately labeled
10. Patient's knowledge of correct dosage
Facility indicators
11. Availability of copy of essential drugs list or formulary
12. Availability of key drugs
**World Health Organization*

lower socio-economic strata of community not only from western Uttar Pradesh but also from neighboring states. On an average 50-60 patients seek care at Department of Ophthalmology, MSDS Medical College on outpatient (OPD) basis per day. So this growing institution provided us a perfect base to plan and execute this study.

Study subjects were interviewed in local language, after taking their well-informed written consent. The patients' statements were also confirmed from the written record, if available with them. Data was collected one a week for a period of one year. The day of data collection was chosen randomly. A trained person conducted the interviews just after the parents came out of the out-patient department. Data was captured on predesigned WHO proforma. A total of 1237 questionnaires were collected and analyzed for various study parameters.

The data for the prescribing indicators was recorded by scrutinizing the prescription immediately after the patient-doctor interaction. Investigator would then instruct the parent to collect the prescribed drugs from the hospital pharmacy, and to meet her again to record data for the "patient care indicators". Which drugs were dispensed was determined by examining the drug packages/bottles the parent had actually received. It was noted whether they had been adequately labeled, viz. whether the name of the patient, the generic name of the drug and when the drug should be taken was written on them. Lastly, the parent's knowledge of when and in what quantity each drug that was actually dispensed should be taken was evaluated. Failure to know either of these two points would result in parent's knowledge being scored as inadequate.

Permission of Institutional ethics committee (IEC) was sought before the commencement of the study. Informed consent was obtained from the study participants. All the questionnaires were manually checked and edited for completeness and consistency and were then coded for computer entry. After compilation of collected data, analysis was done using Statistical Package for Social Sciences (SPSS), version 20 (IBM, Chicago, USA). The results were expressed using appropriate statistical methods.

RESULTS

A total of 1237 questionnaires were collected and analyzed for various study parameters. The mean age of the patients was 45.4 ± 9.5 years (range 21-65 years). Males 765 (61.8%) outnumbered female patients 472 (38.2%). 2721 individual drugs were prescribed on 1237 prescriptions during the study period. Average number of drugs per encounter was 2.2 ± 0.64.

Number of drugs prescribed per prescription among study subjects varied from one to six. Almost 71% of

Table 2: Number of Drugs Prescribed Per Prescription

Number of drugs per prescription	No. of prescriptions	
	N	Percentage
One	582	47.05
Two	305	24.66
Three	143	11.56
Four	89	7.19
Five	80	6.45
Six	38	3.09
Total	1237	100

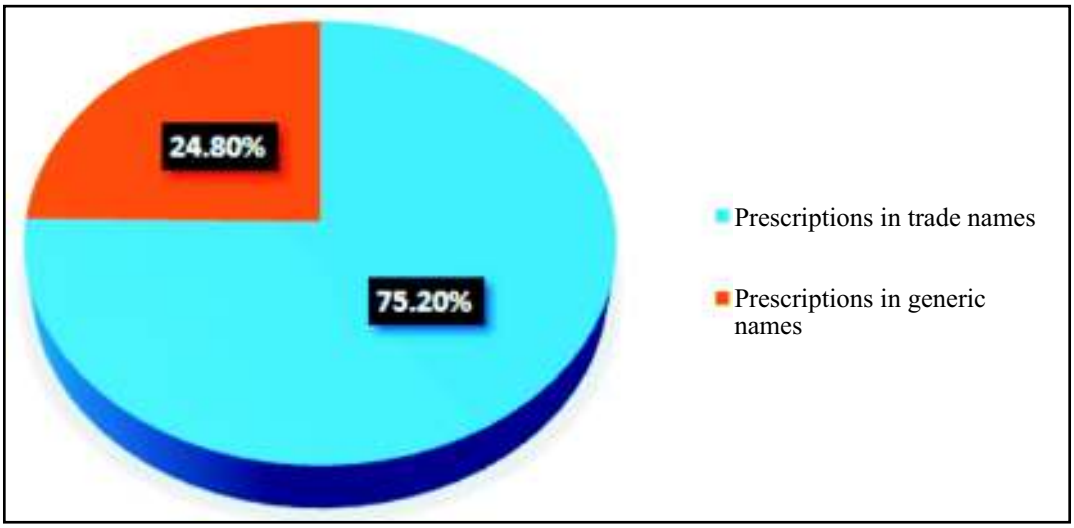

Figure 1: Bar Chart Showing Prescription of Drugs in Trade/Genaric Names

Table 3 : Pattern Ofantimicrobial Agents and Their Dosage Forms Prescribed to Study Subjects

Most common drugs utilized	Dosage forms	No. of prescriptions (Percentage)
Ofloxacin	Eye drops	844 (68.2%)
Sparfloxacin		62 (5.01%)
Ciproxacin		185 (14.9%)
Sulfacetamide		56 (4.5%)
Tobramycin		88 (7.1%)
Chloramphenicol		175 (14.1%)
Ofloxacin	Oral	570 (46.1%)
Acyclovir		124 (10.02%)
Neomycin	Ointments	875 (70.7%)
Combination of antibiotic with steroid		218 (17.6%)
Ciprofloxacin		207 (16.7%)
Acyclovir		73 (5.9%)

Table 4 : Core Drug Use Indicators 9f Current Study

Core drug use indicators	Current study
Average number of drugs prescribed	2.2
% of drugs prescribed by generic names	24.8% (n=677)
% of drugs prescribed from essential drug list	81.96% (n=972)
Average consultation time (Min)	4.3
Average dispensing time (Min)	2.8
% of drugs actually dispensed	61.9% (n=1687)
% of drugs adequately labeled	32.01% (n=871)
% patients with correct knowledge of dosage	72.9% (n=1986)
Essential Drugs List / formulary available	No
% availability of key drugs	84.9% (n=2312)

the prescriptions contained one or two drugs per prescription. Maximum number of drugs (5 and 6) were prescribed to only 118 (9.53%) patients. (Table 2) Regarding prescribing drugs by generic names or trade names, prescriptions in trade names (560, 75.2%) dominated prescriptions in generic names (677, 24.8%). (Figure 1).

The drugs were prescribed in seven different dosage forms. Eye drops were the most commonly prescribed antibiotics, followed by ointments, capsules, tablets, syrups, injections and lotions. Most common eye drop was Ofloxacin (68.2%) followed by Ciproxacin (14.9%). Most frequent oral drug was Ofloxacin (46.1%). Neomycin was the most common (70.7%) ointment prescribed to the study subjects. (Table 3).

Most drugs (67.99%) were not adequately labeled as the name of the patient and the generic name of the drug were not written. Majority (72.9%) of the patients could tell us the correct dosage schedule for all the drugs prescribed. Regarding patient care indicators, average consultation time and average dispensing time calculated was 4.3 minutes and 2.8 minutes respectively. (Table 4).

DISCUSSION

The current study assessed to evaluate the format, prescribing pattern and rationality of prescriptions of the patients attending Ophthalmology Out Patient Department of a tertiary care hospital of western Uttar Pradesh. Valid conclusions were drawn on the basis of data collected by scrutinizing 1237 prescriptions written by Ophthalmology OPD doctors.

To assess the scope for improvement in rational drug use in outpatient practice, the World Health Organization (WHO) has formulated a set of "core drug use indicators"(WHO, 1997). The core prescribing indicators measure the performance of prescribers, the patient care indicators measure what patients experience at health facilities, and the facility indicators measure whether the health personnel can function effectively.

Average number of drugs per encounter is an important index of the scope for intervention in prescribing practices. Our figure of 2.2 drugs per encounter is higher than the recommended limit of 2(WHO, 1997).Other hospital based studies from Madurai and Delhi reported 3-5 drugs per prescription, which was higher than that in our study(Kutty, 2002; Maini, 2002). More number of medications increases the risk of drug interactions, of dispensing errors and of the parent not knowing the dosage schedules. It can be minimized by rational prescribing.

In the current study, eye drops were the most commonly prescribed antibiotics, followed by ointments, capsules, tablets, syrups, injections and lotions. Most common eye drop was Ofloxacin (68.2%) followed by Ciproxacin (14.9%). Most frequent oral drug was Ofloxacin (46.1%). Similar observations are made by another study from South India(Maniyar, 2011).They observed 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.

Regarding prescribing drugs by generic names or trade names, we observed that prescriptions in trade names dominated prescriptions in generic names. Another study by Shankar et al (32.6% generic & 67.4% brand drugs) is also in concordance with our observations(Shankar, 2002). Prescribing under a generic name is considered economical but poor prescribing of generic drugs could be due to concern about their quality.

In the current study almost 82% drugs were prescribed from the National Essential Drug List. This comes in agreement with another study from Delhi where it was reported as 95.78% respectively(Biswas, 2000). Higher figures (75% to 99.8%) of generic prescribing have also been reported from Cambodia and Tanzania(Chareonkul, 2002; Hong, 1996).

This study has several strengths. First, we have identified scope of improvement in rational drug use in outpatient practice in Ophthalmology in a growing medical college. In-depth analysis of this aspect has not been closely investigated by many experts in the field. This study becomes very important as long lasting impact can be achieved if rectifications of deficiencies are identified well in time and corrected at the earliest. Second, the current study has covered certain time management indicators (average consultation and dispensing time) which is a less explored entity but very important aspect which is neglected by researchers in medical field. Third, all the investigations were conducted by authors of the study only, which creates a sense of uniformity.

The study has some limitations as well. Some may argue that the results obtained may not be applicable to all the medical colleges. I agree because these findings are based on a single centre study. Results may vary with different geographical terrain. More multicentric studies need to be carried out. Second, we have not taken certain indicators related to quality of treatment such as quality of patient examination, quality of diagnosis and quality of treatment. Improvement after rectifications of deficiencies identified should have been measured.

CONCLUSION

The findings of this study can be utilized in strategic planning to ensure better patient care services in Ophthalmology department. Targeted efforts are needed to improve rational drug use in our facility.Baseline data generated from the current study can be utilized for comparison when in future any Ophthalmology drug utilization study is carried out.

REFERENCES

Biswas N. R., Biswas R. S. and Pal P. S. et al. Patterns of prescriptions and drug use in two tertiary hospitals in Delhi. Indian J, PhysiolPharmacol 2000; 44: 109-12.

Biswas N.R., Jindal S. and Siddiquei M.M. et al. Patterns of prescription and drug use in ophthalmology in a tertiary hospital in Delhi. Br. J. ClinPharmacol 2001; 51: 267-69.

Chareonkul C., Khun V.L. and Boonshuyar C. Rational drug use in Cambodia: study of three pilot health centers in Kampong Thorn Province. Southeast Asian J. Trop. Med. Public Health 2002; 33: 418-424.

Hong S.H. and Shepherd M.D. Outpatient prescription drug use by children enrolled in five drug benefit plans. ClinTher 1996; 18: 528-545.

Kanakambal S., Murugesh N. and Shanthi M. Drug prescribing pattern in a tertiary care teaching hospital in Madurai (Tamil Nadu). Indian J. Pharmacol 2001; 33: 223.

Kutty K.V.G., Sambasivam N. and Nagarajan M. A study on drug prescribing pattern in Madurai city. Ind. J. Pharmacol 2002; 334: 361-62.

Maini Rajiv, Verma K.K. and Biswas N.R. et al. Drug utilization study in Dermatology in tertiary hospital in Delhi. Ind. J. PhysioPharmacol 2002; 46: 107-10.

Maniyar Y., Bhixavatimath P. and Akkone V. A drug utilization study in the ophthalmology department of a medical college, Karnataka, India. Journal of Clinical and Diagnostic Research 2011; 5(1):82-84.

Shankar R.P., Partha P. and Nagesh S. Prescribing patterns in medical outpatients. Int. J. ClinPract 2002; 56: 549-51.

WHO, The selection of essential drugs. WHO technical report 1977; 615: 36.