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Original Research Article

A study of the current prescribing and drug utilization pattern in Ophthalmology Department of a tertiary care teaching hospital

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ABSTRACT

Background: The aim was to study the current prescribing and drug utilization pattern in Ophthalmology Department of a tertiary care teaching hospital. Drug utilization study is a part of pharmaco-epidemiological exercise quantifying the extent, nature and determinants of drug use in a population. Periodic audit of drug usage pattern forms an essential tool to ascertain the role of drug in a society, increase therapeutic efficacy and improve cost effectiveness of the therapy. It is an introspective and critical instrument providing positive impact on health care delivery to the patient. With this background, the present study was carried out to analyze the prescription pattern and drug utilization by measuring the WHO drug use indicators in ophthalmology department of a tertiary care teaching hospital.

Methods: The prescriptions of 961 outpatients were included and analyzed using a predesigned case record form OPD prescription of each patient. Patient and prescription related parameters were analyzed.

Results: Prescription analysis showed that the average number of drugs per prescription was 1.85. The drugs were prescribed in the form of eye drops (67.42%), followed by ointments (14.37%), capsules (15.45%), and tablets (2.71%). The dosage form and frequency of drug administration was indicated for all of the drugs prescribed, the duration of treatment for 60.97% of the drugs prescribed. Antimicrobial agents and tear substitute together constituted above 50% of all the drugs. Percentage of drugs prescribed by generic name and from NEDL was 31.62% and 37.22%, respectively. Patient's knowledge of correct dosage was 70.44%.

Conclusions: This study showed that there is scope for improvement in prescribing patterns in areas of writing generic names of drugs, essential drugs, writing legible and complete prescriptions.

Keywords: Drug utilization, Generic name, Ophthalmology, World Health Organization

INTRODUCTION

Prescription is a written document given by the prescriber to the recipient in order to cure his ailments. It has got impact on the life of the patient, as an individual, socially as well as economically. It involves faith, knowledge, experience, strong conviction, and perseverance to attain the goal of rational drug use, keeping in mind "*primum non nocere*" or First Do no harm.

Drug utilization study is an activity related to marketing, distribution, prescription and use of drugs in a society, with special emphasis on resulting medical social and economic consequences.[1-3] It is a part of pharmaco-epidemiological exercise quantifying the extent, nature and determinants of drug use in a population.[1-4]

Using medicine for a particular disease is considered as a most cost effective and efficient method of curing or

preventing that disease but it is compromised by inefficient, irrational and market driven use of drugs.[5-8] This not only becomes a burden on patient's pocket but also creates safety and quality issue and wastage of resources. Thus periodic audit of drug utilization pattern forms an essential tool to ascertain the role of drug in a society, increase therapeutic efficacy and improve cost effectiveness of the therapy. These studies help to evaluate the developmental trends of medicines and their cost components.[9-10]

Taking the account of rising health care expenses and increasing incidence of inappropriate and irrational drug prescribing, WHO and International network for Rational Use of drugs [INRUD] have devised the standard drug use indicators which help the prescriber to improve their prescription quality and know the deficiencies of their prescriptions. Thus drug utilization study and WHO/INURD guidelines are the introspective and critical instruments providing positive impact on health care delivery to the patient.[11-12]

With this background, the present study was carried out to analyze the prescription pattern and drug utilization by measuring the WHO drug use indicators in ophthalmology department of a tertiary care teaching hospital.

METHODS

This was an observational, prospective study conducted among the patients attending ophthalmology outpatient department (OPD) in Rajendra Institute Of Medical Sciences, Ranchi, a tertiary care teaching hospital in Jharkhand during March 2016 to September 2016. Prescription records from patients were collected three days in a week to keep the study simple. Smart phone camera was used to take the photo of the prescription and later this was documented in a case record form (CRF), prepared with the help of faculty members of the Ophthalmology department. The study was conducted under the aegis of declaration of Helsinki and approval of Institutional Ethics Committee was taken before initiating the study. Newly registered adult patients from either sex who attended the Ophthalmology Outpatient Department were included. Postoperative cases, follow-up cases, patient in need of further admission in ophthalmology indoor and patients not willing to participate in the study were excluded.

Total 961 prescriptions from patients were included in the study, satisfying the inclusion and exclusion criteria. This was more than minimum number of prescriptions needed for this type of study as per World Health Organization (WHO) guidelines. Patient particulars and details of prescription were recorded. Prescription parameters included Chief complaints, diagnosis, name of drug, dosage form, route and frequency of administration, duration of therapy etc. The recorded data was analyzed by the WHO drug prescribing indicators. These include: average no. of drug prescribed per prescription, percentage of generic drugs prescribed, and percentage of antibiotics prescribed etc. Other than this various parameters like polypharmacy, classification of prescribed drugs, details of antibiotic class prescribed, details of ophthalmic conditions for which consultation was needed were also noted. Statistical Analysis was done after entering the data in Microsoft excel and expressed with the help of descriptive statistics. Values were expressed in numbers and percentage.

RESULTS

In this study nine hundred sixty one prescriptions (n=961) from patients were analyzed. Total number of drug prescribed in these prescription were one thousand seven hundred and seventy nine, thus average number of drugs per prescription was 1.85. However, number of drugs per prescription in this study varied from 1 to 7.

Table 1: Number of drugs per prescription.

No. of drugs	No. of prescription
1	542
2	238
3	77
>3	104

Male to female ratio was 1.39, i.e. inclined towards male. Drug dosage, frequency, Doctor's initial and hospital's name with patient's particular were mentioned in all (100%) prescriptions. Duration of treatment were mentioned in 60.97% (586/961) prescriptions, diagnosis were written in 56.39% (542/961) and next follow up were advised in 43.60% (419/961) patients. Over 80% drugs were prescribed for topical application in form of Eye drops and eye ointment. Eye drops were the most commonly prescribed (67.42%) dosage form, followed by ointment (14.37%) capsules (15.45%) and tablets (2.71%).

Out of total prescribed drugs, 68.37% (1216/1779) drugs were prescribed by brand name. Most of the generics were prescribed by hospital's pharmacy. Antimicrobials were used in 27% of cases. Tear substitutes and antimicrobial together constituted over 50% of prescriptions. 37.22% drugs were part of the National essential drug list. 70.44% (677/961 cases) patients had correct knowledge of for prescribed drugs dosage. Fluoroquinolones were most commonly prescribed antimicrobials and among them Moxifloxacin was prescribed in over 90% of cases either alone or in combination with steroids or nonsteroidal anti inflammatory drugs. Others commonly prescribed antimicrobial were Ciprofloxacin, Ofloxacin, Gatifloxacin, Besifloxacin among Fluoroquinolones Tobramycin, Azithromycin, Chloramphenicol.

Antifungals such as Itraconazole, Natamycin and Antiviral Acyclovir and Gencyclovir were also used in small number of cases. Commonly prescribed classes of drugs during the study are given in table. Steroids and antiallergic drugs were also used commonly. Ocular lubricants were given for dry eye disease, conjunctivitis and corneal ulcer. Antibiotics prescriptions in most of the cases were properly justified with diagnosis while ocular lubricants use in most of the cases were not justified, so was the cases with oral multivitamins and antioxidants.

Table 2: WHO utilization indicators and their numbers.

WHO utilization indicators	Numbers
Total no. of participants (n)	961
Male: Female	559:402 (1.39)
Total no of drugs prescribed	1779
Average no. of drugs per prescription	1.85
Topical: Oral (%)	82: 18
Dosage form	(%)
Eye drops	67.42
Eye ointment	14.37
Capsule	15.45
Tablets	2.71
Prescription completeness indicators	(%)
Dose	100
Frequency	100
Duration	61
Doctors initial	97
Diagnosis	52
Name of Hospital/clinic	100
Patients particulars	100
Follow up advice	43.60
Brand name : Generic name	2.16:1
Drug classes used (Topical)	
Tear substitutes/ lubricants	31
Antimicrobials	27
Anti allergics	9
Antiglaucoma	7
Steroids	14
NSAIDs	7
Immunomodulators	2
Miscellaneous	3
Drug classes used (Oral)	
NSAIDs	14
Steroids	27
Antibiotics	11
Antihistaminics	7
Antivirals	2
Antioxidants and Multivitamins	39

Conjunctivitis, corneal ulcer, dacryocystitis, stye, blepharitis, cellulitis etc. were the common diagnosis for which antimicrobial agents were prescribed in this study.

Table 3: Common diseases and their prevalence.

Disease conditions	%
Refractive error	24
Blepharitis	3
Stye	3
Dacryocystitis	4
Meibomian gland Dysfunction	1
Conjunctivitis	9
Episcleritis/Scleritis	1
Uveitis	6
Corneal ulcer(Keratitis)	9
Dry eye disease	10
Cataract	13
Glaucoma	6
Retinal pathology	10
Cellulitis	1

DISCUSSION

Drug utilization study serves as an important tool to assess the healthcare facility and quality indicator. It also serves to determine the pattern of drug use, its implication and outcome. It provides information on availability and use of medicine thus encourages rational use of medicines. Present study is an attempt to analyze the prescription pattern and drug utilization study in the ophthalmology department this will further expected to improve the quality of prescription written by doctors.[8]

In this study, total 961 prescriptions from 961 patients were studied. This was higher than the minimum number of prescriptions needed to validate a drug utilization study, as per WHO guidelines.[1] Male patients (58.16%) outnumbered the females (41.84%), which was very similar to previous studies. Total number of drugs per prescription was 1.85 in this study, lower than the study by Dutta et al, where 1.9 drugs per prescription were prescribed.[13] Study by Biswas et al, reported 3-5 drugs/prescription and Gangwar et al, reported 2.69 drugs/prescription, much higher values than WHO recommendation of two drugs per prescription.[12,14] Higher number of drugs increases the chances of drug interaction and reduces the compliance to treatment. Monotherapy was given in 56.39%. This was higher than the study by Jadhav et al (48.17%).[15] Similar to other studies, here also topical drugs dominated the study with 67.42% Eye drops and Eye ointment 14.37% this was higher than the study by Jain et al.[16] In this study the prescription completeness score was better than the study by Jain et al with frequency of administration written in 97.5% of cases.[16] Diagnosis and follow up advice were given in 52% and 43.10% of prescriptions respectively which is much lower than other similar studies. This was of major concern as these are needed to prevent the indiscriminate use of drugs and irrational prescriptions. Other studies have also shown the similar lacunae in writing the prescription.

In this study, 31.63% by drugs were prescribed by their generic name also this was lower as compared to brand name but still this value is much higher than other studies.[15,16] This was mainly because generic drugs supplied from hospitals pharmacy. Credit must be given to the electronic and print media also for increasing awareness regarding generic drugs among the doctors and patients. Among the topical drugs used ocular lubricants and antibiotics alone as well as in fixed dose combination with other drugs were the group used 31.55% and 27.2% respectively. This was much lower than the study by Jadhav et al.[15] Inadequate and indiscriminate use of antibiotics leads to the emergence of resistance. However in this study it was found that antibiotics were prescribed empirically in some cases of allergic conjunctivitis, viral keratitis and for non specific symptoms. This should be discouraged also tapering of antibiotics should be condemned as this leads to subnormal dosing. Similar trends were also seen in other studies conducted by Nehru et al and Jain et al.[9,10] Moxifloxacin (63.8%) was most commonly used antibiotic eye drops and dexamethasone (51.15%) was the most common among steroids eye drops. This was in contrast to other studies where Ofloxacin and Tobramycin antibiotic eye drop was used most commonly.[13,17] Antibiotics were used for various infective conditions as conjunctivitis, keratitis, blepharitis, stye, cellulitis and dacryocystitis etc. steroids were used in cases where inflammation and immune mediated ocular reaction were suspected.[15] Antihistaminics were also used for allergic conditions in 9.27% cases, similar to study by Krisna et al.[18] Total 23.83% drugs were prescribed from national essential drug list this was lower as compared to study by Mirza et al and Biswas et al which was attributed to lack of knowledge and resources among the ophthalmologists.[12,19]

CONCLUSION

This was a hospital based study with the final aim of critical assessment of prescription pattern of ophthalmologists so that steps can be taken to improve the quality of prescription and promote the rational use of medicines. Ophthalmologists were conveyed regarding the area where improvement was needed and appropriate plan this was suggested. Literatures suggest that drug utilization studies have long term implications in improving the treatment outcome and cost effectiveness of the therapy.

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