

Drug Utilization Study in Outpatient Department of Ophthalmology in Tertiary Care Hospital

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ABSTRACT

Background

The advancement in drug development and availability of newer drugs has improved overall health services including decrease in mortality and hospital stay. Along, it has brought negative impacts such as polypharmacy and associated adverse drug reactions and antimicrobial resistance. Drug utilization research is an essential approach to understand the drug use pattern, identify the early signs of such irrational drug use and to improve quality of drug use.

Objective

To study the drug utilization pattern in the Ophthalmology Outpatient department (OPD) of Dhulikhel Hospital, Kathmandu University Hospital (DH-KUH).

Method

A descriptive, cross sectional study was conducted from March 2019 to August 2019 in patients attending OPD of Ophthalmology in Dhulikhel Hospital, Kathmandu University Hospital. Prescriptions of 311 patients were analyzed using World Health Organization (WHO) International Network of Rational Use of Drug (INRUD) and additional other indices. The descriptive data was presented in mean and standard deviation.

Result

The average number of drugs per prescription was 2.10 ± 1.35 . Out of total 311 prescriptions, drugs prescribed in generic name were 152 (23.30%). Total antibiotics encountered were 247 (37.90%) and total drugs prescribed from National Essential Medicine List (NEML) were 371 (56.90%). Antibiotics 247 (37.90%) were the most commonly prescribed drugs followed by lubricants 146 (22.40%).

Conclusion

Practice of polypharmacy was very high. Most of the drugs were prescribed in brand names and antibiotics were the most frequently used drugs.

KEY WORDS

Drug utilization, Ophthalmology OPD, Rational drug use, WHO-INRUD

INTRODUCTION

Drug therapy is a major component of patient care management in health care settings.¹ Prescribers and consumers are flooded with a vast array of pharmaceutical products with innumerable brand names, available often at an unaffordable cost.¹ There has been tremendous improvement in health services but it also has led to irrational drug use leading to polypharmacy, associated adverse drug reactions (ADR), antimicrobial resistance (AMR) and unnecessary expense. Thus drug utilization pattern needs to be evaluated periodically.² Besides, it also help describe current treatment practices and compare the performances of individual facilities or prescribers.³

Drug Utilization as defined by WHO is 'The marketing, distribution, prescription and use of drug in society, with special emphasis on resulting medical, social and economic consequences'.^{3,4} It describes the extent, nature, and determinants of drug exposure with the ultimate goal to facilitate rational use of drugs in the population.^{3,4} It is estimated that ADR ranked fourth to sixth in factor that causes death in United States and the treatment of disease caused by such ADR requires huge amount of financial resources. Thus, such study can help reduce the irrationality in drug use and its adverse consequences.^{5,6}

The rapid development of newer drugs for ophthalmic cases has similarly summoned the need for drug utilization study in this discipline.⁷ Hence the objective of this study was to assess drug utilization pattern in Ophthalmology OPD in Dhulikhel Hospital, Kathmandu University Hospital (DH-KUH).

METHODS

A descriptive, cross-sectional study was conducted from March 2019 to August 2019 in ophthalmology OPD of DH-KUH. An ethical approval was taken from Institutional Review committee, Kathmandu University School of Medical Sciences. Prescriptions with diagnosis with either of these conditions - Dry Eyes, Cataract, Chalazion, Conjunctivitis, Glaucoma, Corneal Ulcer, Cataract, Pterygium, Ectropion, Pseudophakia, Foreign body in Eye and other were included in the study while patients with Refractive errors and patient on follow-ups were excluded from this study. The information regarding patient's demographics, diagnosis, therapeutic agents, nature of drug prescription, Fixed Dose Combination (FDC) drugs if prescribed, dosage form and therapeutic category of medications used were collected using a structured proforma. The obtained data was evaluated using WHO-INRUD. All the obtained data was entered and analysed using Statistical Package for Social Sciences (SPSS) version 22. Descriptive data was presented in mean \pm SD.

RESULTS

In this study, a total of 311 participants were enrolled. Out of 311, 165 (53.10%) were male and 146 (46.90) were female. The average age of patients was 40.96 ± 16.25 years. The most common condition diagnosed was dry eye with 67 (21.50%) followed by cataract 26 (8.40%) as shown in table 1.

Table 1. Distribution of patients according to various ocular diseases

Ocular disease	Number of patients (%)	Ocular disease	Number of patients (%)
Dry eye	68 (21.86)	Mass Excisional Biopsy	7 (2.25)
Cataract	26(8.36)	Conjunctivitis	6 (1.93)
Redness of eye	23 (7.39)	Foreign body sensation	6 (1.93)
Itchy Eye	21 (6.75)	Optic neuritis	6 (1.93)
Hypertensive Retinopathy	18 (5.79)	Stye	6 (1.93)
Pterygium Excision	18 (5.79)	Watery eye	6 (1.93)
Burning Eye	13 (4.18)	Chronic Keratitis	5 (1.61)
Chalazion	11 (3.54)	Conjunctival laceration repair	5 (1.61)
Blurred vision	8 (2.57)	Diabetic Retinopathy	5 (1.61)
Corneal Ulcer	8 (2.57)	Others*	45 (14.47)

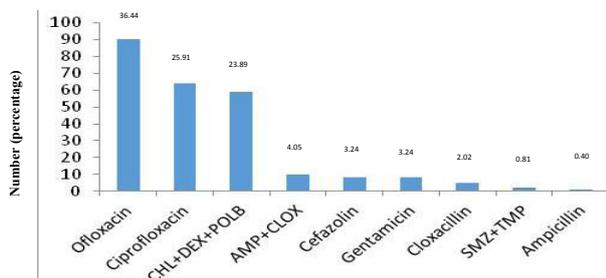
*Other: Grade-3 Hypertensive retinopathy, Posterior Blepharitis, Pseudophakia, Increased intraocular pressure, Upper lid excision, Exposure keratopathy, Meibomian gland dysfunction, Commotio retinae, Dermoid upper lid, Conjunctival autologous graft, Tube implantation, Temporal pallor.

A total of 652 medicines were prescribed with average number of medicines 2.10 ± 1.35 per prescription. Out of 311 prescriptions, 247 (37.90%) patients received antibiotics. Of the total medicines prescribed only 152 (23.30%) medicines were prescribed in generic name and only 371 (56.90%) medicines were from the NEML provided by Government of Nepal, Ministry of Health and Population (Table 2).

Table 2. Analysis of Prescription Parameter with Respect to WHO-INRUD Drug Prescription Indicator among 311 patients.⁸⁻¹⁰

Prescribing indicator assessed	Average /Number (%)	WHO standard
Average number of drugs per encounter	2.10 \pm 1.35	1.6-1.8
Percentage encountered with antibiotic prescribed	247 (37.90%)	20.0-26.8%
Percentage medicine prescribed by generic name	152 (23.30)	100%
Percentage medicine prescribed from the essential drug list	371(56.90)	100%

Among the antibiotics, Ofloxacin 90 (36.44%) were the most commonly prescribed followed by Ciprofloxacin 64 (25.91%) as shown in figure 1.



Note: CHL- Chloramphenicol, DEX- Dexamethasone, POLB-Polymyxin B, AMP-Ampicillin, CLOX-Cloxacillin, SMZ-Sulfamethoxazole, TMP- Trimethoprim

Figure 1. Showing different antibiotics used in ophthalmology OPD among 311 patients.

Out of all the prescribed drugs, 114 (17.5%) prescriptions included FDCs. Combination of Chloramphenicol, Dexamethasone and Polymyxin B 59 (51.75%) was the most common FDC prescribed followed by the combination of Ibuprofen and Paracetamol 41 (35.96%) as shown in table 3.

Table 3. Showing different Fixed Dose Combination drugs in ophthalmology department.

Fixed dose combination drugs	Number of drugs (%)
Chloramphenicol + Dexamethasone+ Polymyxin B	59(51.75)
Ibuprofen + Paracetamol	41(35.96)
Ampicillin + Cloxacillin	10(8.77)
Sulfamethoxazole + Trimthoprim	2(1.75)
Trypsin + Chymotrypsin	2(1.75)
Total	114 (100)

Out of 313 prescription, the most frequently used dosage form was eye drops i.e. 461 (70.70%) followed by tablet 93 (14.30%) as shown in figure 2.

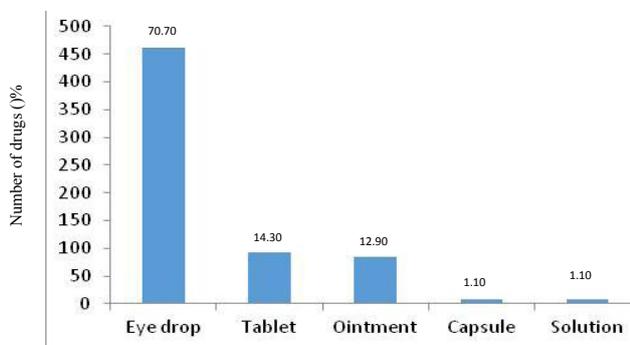


Figure 2. Showing different dosage forms used in ophthalmology OPD among 311 patients.

DISCUSSION

Proper utilization of drug is a critical component of pharmaceutical plan.¹⁰ It also help reduce possible drug resistance and economic burden to the individual and nation. However, prescribers’ attitude to produce quick cure and influence of increasing pharmaceutical companies over prescribers has led to irrational use of drug.^{8,9} Present study in ophthalmology department of DH-KUH reveals similar result.

In this study, the most common ocular disease was dry eye. The increasing air pollution could be associated with the causation.¹¹ Similarly, use of advanced technologies, like computers, mobile phones and other visual display terminals for various purpose might increase the risk as well.¹²

The observed average number of drugs per prescription was 2.10 ± 1.35 which seems to be quite deviated from the standard range (1.6-1.8) as provided by WHO-INRUD, indicating higher degree of polypharmacy. Our finding is in consistent with the other previous studies, 2.10, 2.0 and 2.23 and slightly more in others, 2.5, 2.6 and 2.7.¹³⁻¹⁸ The attitude to provide prompt relief at all cost might be one of the reason. However, it is preferable to keep the number of drugs per prescription as low as possible to reduce possible drug-drug interaction, increased adverse effects and poor patient’s compliance.¹⁴ Reducing number of drugs also reduce patients’ medication cost.¹⁹ It also indirectly indicates more chances of correct diagnosis.¹⁸

While the recommended antibiotic prescription is 20.0-26.8%, present study showed it to be higher than this. This again shows higher use of antibiotics, which can increase the chance of emergence of drug resistance. Most of the antibiotics used were topical, despite of this, they may still cause adverse effects as serious as those observed with systemic therapies.²⁰ Because of their relatively poor penetration into eye, ophthalmic drugs usually contain high concentrations of their active ingredient.²⁰ The result was very close to the other previous studies 36%.¹⁸ And 30.18% but lower than the value obtained in other, 59.50%.^{14,15}

Similarly, the drugs prescribed by generic name are very low. The result was in parallel to a previous study, 16.94,²¹ while other studies have lesser drugs prescribed in generic name, 1.00% and 1.04%.^{14,15} WHO recommends prescription with generic names, which helps in reducing the cost of treatment for the patients.²² Furthermore, it helps in avoiding prescription writing errors and confusion in dispensing of different brand names which sound alike and/or spell similar.²² However with increasing number of pharmacies, most of which may not stick to good pharmacy practices, prescribers usually rely on particular manufacturer based on their past experiences with the product and thus use brand names.²¹

Similarly, nearly only a percentile of drugs was prescribed from NLEM. Our finding is in consistent to a previous study. This indicates poor use of available resources. Percentage of drugs prescribed from NLEM depicts the degree to which drug prescribing adheres to the national drug policy.²² Adherence to NLEM for drug prescription not only promotes the rational use of drugs but also optimizes the available health resources of a country.²²

Out of all the prescribed drugs, 17.5% were FDCs. This figure is less as compared to those used in previous study, 43.27% while in another only 6.67% FDCs were used.^{15,22} FDCs are marketed with the promise of optimum patient adherence, improvement in the disease management and lower cost.²³ However inappropriate use of the FDCs can lead to increased adverse drug reactions and rather a financial burden on the patients. Lesser use of FDCs may be suggestive of more rational prescribing.²²

Thus, present study, as evidenced by more drugs per prescription, low generic prescribing, higher use of

antibiotics and FDCs, indicates poor prescribing practice in ophthalmology OPD in DH-KUH.

The present study was conducted in a single institute within short period of time. Multicentric studies in similar context and over a longer time frame would shade more light on the subject. Hence, results cannot be extrapolated to general population. Further similar study is required to be conducted to assess rationality of drug prescriptions.

CONCLUSION

Present study thus reveals common practice of polypharmacy and excessive use of antimicrobials in ophthalmology OPD of DH-KUH. Use of generic names and prescribing drugs from NLEM-Nepal was very much discouraging. This shows a need for prompt improvement in prescribing practice for the safety as well as benefit of the patients.

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