Abstract

Background: Irrational prescription of drugs is a common occurrence in clinical practice. Eye disorder can be vision-threatening and must be treated effectively by appropriate and safe use of ophthalmic drugs. The objective of this study was to assess the rationality of prescribing ophthalmic drugs at Jimma University Specialized Hospitals, Southwest Ethiopia.

Methods: A cross-sectional study design involving patient interview was carried out on ophthalmic patients from May to June 2016 using convenient sampling technique. Data were abstracted from the patients and the prescription paper using structured data collection format and interview. Data abstracted included socio-demographics characteristics of patients, prescription information and the type of ophthalmic medications. Descriptive statistics were used to summarize the results.

Results: A total of 196 prescription papers with ophthalmic medications were assessed. The ophthalmic disease was more prevalent in the patients older than 50 years of age accounting for more than 44%, but no difference among male and female patients. The average number of drugs per prescription was 2.26, ranged between 1 and 5. Only 69.3% of drugs were prescribed by generic name. Among a total of 443 drugs prescribed, antibiotics were the most prescribed drug class accounting for about 60%. More than 79% and 82% of the prescriptions assessed contained strength of the drug and frequency of administration, respectively. Prescriptions contained dose and duration of therapy were only 17.8% and 12.8%, respectively.

Conclusion: Antibiotics were the most frequently prescribed ophthalmic drugs. Drug dosages, duration of therapy, strength and frequency of administration were incompletely and inadequately written on the prescription. Number of drugs per prescription and generic prescribing were not in line with the WHO recommendation. Prescribers should strictly adhere to the WHO recommendations when to prescribe any of ophthalmic medications especially antibiotics and should prescribe by their generic names in order to avoid irrational drug use in the study area.

Key words
Prescribing, ophthalmic drugs, Jimma University Specialized Hospital, Ethiopia

INTRODUCTION

Irrational prescription of drugs is a common occurrence in clinical practice (1). Inappropriate, irrational and cost-ineffective uses of pharmaceuticals are worldwide phenomena especially in the developing countries (2). More than 50% of all medicines worldwide are prescribed, dispensed, or sold inappropriately. If medicines are not prescribed and used properly, billions of dollars of public and personal funds are wasted (3). Hence, a periodic auditing of drug utilization pattern has become necessary to promote rational prescribing (4).

Good prescribing practice is prescribing the right drug at the right time, in the right dosage of the right formulation and for the right length of time. It is not always possible to assume that the first drug of choice will be suitable for every patient. Therefore, one has to verify the convenience of the selected drug for that particular patient, including suitability...
of the drug, dosage form, dosage schedule and duration of treatment in view of effectiveness and safety\textsuperscript{(5,6)}. Prescriptions orders should always incorporate all necessary information & the prescribing practice of medicines needs to be regularly monitored in order to assess its rationality.

Eye care is one of the most sensitive practices of the health care system. Irrational care of the eye could lead to patient harm ranging from temporary vision loss to blindness\textsuperscript{(7)}, hence eye is a complex organ in which minimal impairment can produce a substantial functional effect.

Recently, there have been many developments and introduction of new ocular therapeutic agents \textsuperscript{(8,9)}. Antibiotics are widely prescribed for various ophthalmic diseases. Evidences have shown trends of resistance to different class of antibiotics often used in ocular therapeutics \textsuperscript{(10)}. Eye infections can be vision-threatening and must be treated effectively by appropriate and safe use of topical ophthalmic anti-infective agents\textsuperscript{(11-12)}. Topical drugs have clear topical administration advantages and constitute a more convenient way of administration as well as avoiding hepatic first-pass metabolism \textsuperscript{(9)}. But, indiscriminate use of topical antibiotics and non-steroidal anti-inflammatory drugs cause histological and structural change in conjunctiva.

In the current study area, studies on the assessment of ophthalmic prescribing are scarce. Thus, the aim of this study was to assess the rationality of ophthalmic drugs prescribing at Jimma University Specialized Hospital (JUSH), South-west Ethiopia.

\textbf{METHODS}

The study was carried out at ophthalmic clinic of Jimma University Specialized Hospital (JUSH). JUSH, one of few university referral hospitals of Ethiopia, is located in south-west part of the country. A cross-sectional study design involving patient interview was carried out. One hundred ninety six ophthalmic patients who visited the ophthalmology clinic and pharmacy unit from May to June 2016 were included in the study using convenient sampling technique. All prescriptions presented to the dispensary unit with ophthalmic drugs were included. Data were abstracted from the patients and the prescription paper using structured data collection format and this was complemented by interview. Data abstracted included socio-demographics characteristics of patients, prescription information and the type of ophthalmic medications. Descriptive statistics were used to summarize the result.

Prescribing patterns of ophthalmic drugs were measured using WHO prescribing indicators. Accordingly, average number of drugs prescribed per prescription was calculated by dividing the total number of drug products prescribed by the number of prescriptions surveyed. Percentage of drugs prescribed by generic name was calculated by dividing the number of drugs prescribed by generic name by total number of drugs prescribed, multiplied by 100. Percentage of prescriptions in which an antibiotic was prescribed was calculated by dividing the number of prescription in which an antibiotic was prescribed by the total number of prescriptions surveyed, multiplied by 100.

Data collection was conducted after ethical approval of the study was obtained from Ethics Review Committee of School of Pharmacy. Permission was obtained from department of Ophthalmology to undertake the study. Prior to data collection, informed consent was obtained from all patients. Record card number was used as patient identifier and name of the patients was excluded to keep and respect confidentiality of all information obtained.

\textbf{RESULTS}

\textbf{Sociodemographic characteristic of the patient}

A total of 196 ophthalmic patients fulfilling the inclusion criteria were involved in the study. The ophthalmic disease was more prevalent inpatients older than 50 years of age accounting for more than 44%. The prevalence among male and female was almost similar. More than 46% of study participants had no formal education. About 71% were from rural area and 63.3% were living with their family and (Table 1).

\begin{table}[h!]
\centering
\begin{tabular}{|c|c|c|}
\hline
Characteristics & n & (%) \\
\hline
\textbf{Sex} &  &  \\
Male & 101 & (51.5) \\
Female & 95 & (48.5) \\
\hline
\textbf{Age (years)} &  &  \\
≤10 & 26 & (13.3) \\
11-20 & 19 & (9.7) \\
21-50 & 64 & (32.7) \\
>50 & 87 & (44.4) \\
\hline
\textbf{Educational status} &  &  \\
No formal education & 91 & (46.4) \\
Primary school & 60 & (30.6) \\
High school & 28 & (14.3) \\
College and above & 17 & (8.7) \\
\hline
\textbf{Living status} &  &  \\
Live with family & 124 & (63.3) \\
Live alone & 72 & (36.7) \\
\hline
\textbf{Residence} &  &  \\
Rural & 139 & (70.9) \\
Urban & 57 & (29.1) \\
\hline
\end{tabular}
\caption{Socio-demographic characteristics of patients (n=196)}
\end{table}

\textbf{Prescribing patterns of ophthalmic drugs}

This study shows that, 69.3% of drugs were prescribed by their generic name. Patients with antibiotic prescription were 59.7%. Prescription papers were assessed to check for adequacy of all the necessary information of dosage schedule written by prescribers. Accordingly, doses of the prescribed drugs and duration of therapy were written on 17.8% and 12.8% of prescriptions, respectively [Table 2]. The average number of drugs per prescription was 2.26, ranged between 1 and 5 (Table 3).
Analysis of prescription papers showed that the overall information of dosage schedule written by prescribers was inadequate. The dosage, frequency and duration of drug therapy are the most important parameters and if not clearly recorded can result in irrational use of drugs. In the current study, only 17.3% of prescriptions have recorded dose of the medications. This was comparable with the result from Saudi Arabia which reported only 19.4% of prescriptions have records of dose (15). In contrary, this result was found to be much less compared to the report from a study of India and Dubai which reported more than 89% and 50% of prescriptions were composed of written doses, respectively (14, 16). Duration of therapy was written on only 12.2% of all prescriptions. Compared to reports from other studies, this finding was found to be very low. Most reports showed that, duration of therapy with ophthalmic medications were absent in very few prescriptions and most of them reported that more than 75% of prescriptions had recorded duration of therapy (14-18). Compared to dosage and duration records, record of frequency of administration is promising. That is, it was written on more than 82% of prescriptions. In spite of this, this figure is low compared to reports from other studies that, frequency was recorded on more than 89% of prescriptions (14, 17, 18). Prescribers should always remember that the dosage, frequency and duration of drug therapy are the most important parameters and if any of these are not clearly recorded can result in irrational use of drugs that will adversely affect the patient.

Drug prescription forms have a very important point of contact between the health care provider and the user. Prescriber’s name and address are important components of prescription paper especially for patient safety. This is indicated where the patient or the dispenser wants to contact the prescriber for any clarification or potential problem with the prescription, and to prevent irrational prescribing by non-prescriber (15,16). The issue of accountability can also be addressed and this information will be important for cross check evaluations in cases of prescription errors and help easily identify the actual prescriber (16). In this study, prescriber’s name, qualification and date of prescribing were absent in 91.4%, 91% and 10.8%, respectively. This figure is too large when compared to Saudi Arabia (15), where name was absent in 16.7% of prescriptions. In Dubai and Gondar university hospitals, qualification and date were missing in 9.7% and 10.8% of the prescription, respectively (16, 19). The lack of prescribers’ information may be due to lack of awareness of the prescribers on the importance of this information. Ideally, all information on the prescription should be completely written (20). Therefore, a lot has to be done to improve such inadequacy of the practice.

Average number of drugs per prescription is an important index as it tends to measure the degree of polypharmacy (20). In this study, the average number of drugs prescribed per
Prescriptions should be in the range of 20 to 26.8% (20). WHO recommendations of 100% generic prescription (14, 18). According to WHO, the average percentage of antibiotics was 59.7%, which was lower compared to studies from Ghana, Lebanon and different areas of India which reported 26% - 73% prescriptions by generic name (14, 25, 27, 29). There are also reports in which the prescribers frequently prescribe medications exclusively by their brand names in contrast to WHO recommendation of 100% generic prescription (14, 18, 21, 22). Prescribing drugs by generic name makes the treatment low cost and rational as it avoids errors in prescription writing and confusion of dispensing of different brand names (31).

In this study, out of a total of 443 drugs prescribed, antibiotics were the most common. Accordingly, the average percentage of prescriptions with antibiotics was 59.7%, which is much more than that recommended by WHO. According to WHO, the average percentage of antibiotics per prescriptions should be in the range of 20 to 26.8% (20). Most literature findings, though better than our study, were not in accordance with the WHO recommendation (17, 18, 22, 27, 32). There are studies findings whose antibiotics prescriptions reports are in the range of recommendations (21, 26). The high use of antibiotics may reflect the prevalence of eye infections. At the same time, frequent use of antibiotics is prone to increased risk of emergence of resistant organisms and this in turn can result in ineffectiveness of the available ophthalmic antibiotics. Therefore, health care providers should use antibiotics carefully to patients who will exactly benefit from them.

**CONCLUSION**

According to this study, the most frequently prescribed ophthalmic drugs were antibiotics and most prescribing parameters including dosage, frequency and duration of therapy are inadequately and incompletely recorded in the prescriptions. The number of drugs per prescription and prescribing by generic names were also not in line with the WHO recommendation. We recommend that prescribers should strictly adhere to the WHO recommendations when to prescribe any of ophthalmic medications in order to promote rational use of drugs in such patients. In addition, well-designed observational studies addressing the gaps observed are important to improve rational prescribing.

**COMPETING INTERESTS**
The authors declare that they have no competing interests.

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**Sažetak**

**Uvod:** neracionalno propisivanje lekova je uobičajena pojava u kliničkoj praksi. Poremećaji oka mogu biti opasni po vid i moraju se efikasno lečiti odgovarajućim i bezbednim oftalmološkim lekovima. Cilj ovog rada je bio da se proceni racionalnost propisivanja oftalmoloških lekova na JIMMA Univerzitetskoj specijalnoj bolnici, Jugozapadna Etiopija.

**Metode:** Sprovedena je studija preseka koja uključuje razgovor sa oftalmološkim pacijentima od maja do juna 2016. godine koristeći pogodne tehnike uzorkovanja. Podaci su prikupljeni od pacijenata i propisanih recepta koristeći strukturiran upitnik za prikupljanje podataka i intervju. Podaci su uključili socijalno-demografske karakteristike pacijenata, informacije o propisivanju i tip oftalmoloških lekova. Korišćena je deskriptivna statistika da se prikažu rezultati.

**Rezultati:** Ocenjeni su 196 recepta oftalmoloških lekova. Očne bolesti su češće kod pacijenata starijih od 50 godina, koji čine više od 44%, bez razlike po polu. Prosečan broj lekova po receptu je 2.26, a kretao se između 1 i 5. Samo 69,3% lekova bili su propisani generičkim nazivom. Među ukupno 443 lekova koji su propisani, antibiotici su propisivani najviše, oko 60%. Više od 79% i 82% recepta imali su navedenu jačinu leka i učestalost davanja. Recepta koji su imali navedenu dozu i trajanje terapije bilo je samo 17,8% i 12,8%.

**Zaključak:** Antibiotici su najčešće propisivani oftalmološki lekovi. Doze leka, trajanje terapije, jačina i učestalost davanja su nepotpuno i neadekvatno napisani na receptima. Broj lekova po receptu i generičko propisivanje nisu bili u skladu sa preporukom SZO. Lekari koji propisivaju treba da se strogo pridržavaju preporuka SZO za oftalmološke lekove, a naročito antibiotike i treba da ih propisu generičkim imenima kako bi se izbeglo neracionalno korišćenje.

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**Originalni članci/ Original articles**
REFERENCES

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