



ORIGINAL RESEARCH

Prescription Pattern in the Eye Clinic of a Tertiary Health Facility in South-East Nigeria

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ABSTRACT

Introduction: Eye care is imperative and requires that ophthalmic prescriptions be generated properly. Evaluation of prescription pattern is an aspect of investigation of drug utilization which is an essential part of pharmacoepidemiology and pharmacovigilance.

Objectives: To determine the prescription pattern in the eye clinic of a health facility using the WHO core prescribing indicators and document the disease pattern according to the prescriptions.

Methods: The study was conducted at the Eye Clinic of the University of Calabar Teaching Hospital (UCTH), Nigeria. Data were collected retrospectively from prescriptions (from January to December 2018) in the Pharmacy using the WHO core indicator form. Microsoft Excel[®] was used to organize and analyse collected data using descriptive analysis. Ethical approval was obtained from the health research ethics committee of UCTH, Calabar.

Result: A total of 1098 prescriptions were accessed over the 12-month study period, 48% (531) of which were for females and 83% (915) for adults. Average number of drugs per prescription was 1.8. The percentage of drugs by generic name was 38.8%, drugs prescribed from essential drug list was 28.7% and antibiotics prescribed was 31.3%. Glaucoma (23%), conjunctivitis (19%) and refractive error (17%) were the most prevalent eye diseases found.

Conclusion: Prescription pattern in this study site conformed to only one of the five WHO drug use indicators. High antibiotics prescriptions were observed, and eye diseases associated with bacterial infections were most prevalent in this study. Drugs should be prescribed with generic names and the essential drugs lists should be expanded to accommodate more drugs for glaucoma.

Keywords: Prescription pattern, Ophthalmic drugs, WHO indicators, Essential Drugs List

INTRODUCTION

The use of drug therapy in the treatment of ophthalmic diseases has produced positive outcomes including prevention of loss of vision in patients affected¹. There is a high national prevalence rate of eye illnesses. It is

estimated that 4.25 million adults in Nigeria have moderate to severe visual impairment or blindness². Rational use of ophthalmic drugs must be ensured to prevent unwanted drug therapy problems³. The five important criteria for rational drug use are accurate diagnosis, proper prescribing, correct

dispensing, suitable packaging and patient adherence⁴.

The World Health Organization (WHO) has defined drug utilization as the marketing, distribution, prescription and use of drugs in a society with special emphasis on the resulting medical, social and economic consequences⁵. Evaluation of prescription pattern is an aspect of drug utilization. It is an essential part of pharmacoepidemiology and pharmacovigilance which describes the extent, nature and determinants of drug exposure with the ultimate goal to facilitate rational use of drugs in the population^{6,7}.

Using many medicines concomitantly is known as polypharmacy, which is defined as using two to five medicines simultaneously. However, patients with comorbidities have a compelling need to use many medicines to treat their multiple illnesses. Nevertheless, polypharmacy is associated with increased risk of medication-related problems⁸ and increased risks of medication interactions.

Prescription indicators allow the therapeutic actions taken in similar institutions to be ascertained, enabling subsequent comparison of parameters between them, and to evaluate the population's medication needs and determine the most frequently used medications for different therapeutic classes in different facilities⁵. In addition, these indicators enable the investigator to identify the prescription profile and quality of services offered to the population. The prescription indicators include average number of drugs per prescription which helps in investigating polypharmacy, a major factor contributing to Adverse Drug Reactions (ADRs) and Drug-Drug Interactions (DDIs)⁵. Percentage of drugs prescribed by generic name is useful in controlling drug costs in the health service. The percentage of drugs prescribed from the Essential Drugs List or formulary helps in measuring the degree to which practices conform to the current National Drug Policy (NDP)⁹. The essential drugs list covers the treatment of the principal diseases of the population and controls overall cost of medications by encouraging prescribing

with generic names. WHO proposes that optimally, all medications (100%) should be prescribed by generic name, the optimal value for percentage of encounters with an antibiotic prescribed should be <30% and percentage of prescribed injectable drugs should be less than 20%^{10,11}. The assessment of the encounters may be carried out retrospectively or prospectively as patients arrive during the period of data collection¹². The study was conceived to determine if the trends in the target facility is in consonance with recommendations by WHO. The objectives of the study were to determine the prescription pattern in the Eye Clinic of the University of Calabar Teaching Hospital, Calabar using the WHO core prescribing indicators, as well as determine the disease pattern in the hospital from the prescriptions.

METHODS

Study design

This was a retrospective, cross-sectional survey to determine the prescription pattern for out-patients in the study site. Data on WHO core drug use indicators⁵ from all the prescription records available between January and December 2018 were collected.

Study site

The study was conducted at the Pharmacy department of the Eye Clinic of the University of Calabar Teaching Hospital (UCTH), Calabar located in the South-East geo-political zone of Nigeria.

Instrument for data collection

A proforma was designed to obtain the required information from each prescription record surveyed: demographic data documented on the prescriptions, name of drugs prescribed as written (either as brand or generic nomenclature), dose, dosage form and strength, number of doses prescribed and number of doses administered.

Data collection

Data was collected retrospectively from the Eye Clinic Pharmacy Prescription and

Diagnoses documentation record book for patients that visited the eye clinic pharmacy in 2018. The indicators considered were number of drugs per encounter, percentage of drugs prescribed by generic name, percentage of encounters with antibiotics prescribed, percentage of encounters with injection prescribed and percentage of drugs prescribed from the essential drugs list.

Data analysis

The prescription records collected were assigned codes and data obtained entered into a prepared Microsoft Excel worksheet proforma. WHO/INRUD drug use indicators were used to analyse the data⁵ These indicators included the average number of drugs per encounter, percentage of drugs prescribed by generic name, percentage of encounters with antibiotics prescribed, percentage of drugs prescribed from the national Essential Drug List and the percentage of injections prescribed. Calculation the various indicators were done using the formulae provided below:

Average number of medicines per encounter was calculated by dividing the total number of medicines prescribed by the number of encounters.

Percentage of medicine prescribed by generic was calculated by dividing the total number of medicines prescribed in the INN format by the total number of medicines prescribed multiplied by 100.

Percentage of encounters with an antibiotic prescribed was calculated by dividing the number of clinical encounters in which one or more antibiotics was prescribed by the total number of encounters multiplied by 100.

Percentage of medicines prescribed from the EDL was calculated by dividing the number of medicines prescribed from the EDL by the total number of medicines prescribed multiplied by 100.

Percentage of encounters with an injection prescribed was calculated by dividing the

number of clinical encounters in which an injectable form of medicine was prescribed by the total number of encounters multiplied by 100.

The disease pattern in the eye clinic was also assessed.

Ethical considerations

Ethical approval for the study was obtained for this research work from the Health Research Ethics Committee of the University of Calabar Teaching Hospital, Calabar (NHREC/07/10/2012). Confidentiality and anonymity of the patients' information were maintained during and after the study.

RESULTS

All the prescriptions dispensed in the study site for the duration under study were included in the analysis. A total of 1098 prescription records were documented in the 12-month period of the study.

The result showed that 48.4% (531) were females and 83.3% (915) were adults. Age group and gender were the only demographic characteristics recorded for patients in the records.

Results from the prescriptions showed that dosage, dosage frequencies and duration of therapy were indicated for 98.4%, 97.9% and 89.6% of the prescription records.

Table 1 illustrates the commonly prescribed group of drugs in the study. A total of 2,009 drugs were prescribed. Thus, the average number of drugs per prescription was 1.8 (range 1-5 drugs). Antibiotics were the most commonly prescribed drugs (31.3%). Quinolones were the most commonly prescribed antibiotics (19.9%), of which ciprofloxacin was the most commonly prescribed (42.5%) followed by moxifloxacin (35.6%) and then ofloxacin (21.8%). Artificial tears were also commonly prescribed.

Table 1: Class of drugs, frequency and percentage

Name/class of drug	Frequency	Percentage (%)
Antibiotics	628	31
(Quinolones)	(400)	
(Chloramphenicol)	(146)	
(Penicillin ointment)	(22)	
(Aminoglycosides)	(21)	
Emollients (Artificial tears)	401	20
Antihistamines	245	12
Beta blockers (Timolol)	147	7
Steroids	137	7
Prostaglandin analog (Latanoprost)	133	7
NSAIDS	116	6
Antioxidants	47	2
Other antiglaucoma agents	73	4
Other eye drops	82	4
Total	2009	100

The pattern of dosage forms prescribed shows that the most commonly prescribed

dosage form are eyedrops 89.6% (1800). Only 25 injections (1.2%) overall.

Table 2: Dosage forms and number of encounters (frequencies)

Dosage form	Frequency	Percentage (%)
Eye drops	1800	89.6
Ointments	98	4.9
Tablets	86	4.3
Injections	25	1.2
Total	2009	100

The disease pattern observed is described in Table 3. Glaucoma (23%), conjunctivitis

(18.8%) and refractive error (17.2%) were the commonest conditions encountered.

Table 3: Diseases diagnosed within the study period

Diagnosis	Frequency	Percentage (%)
Glaucoma	215	23.0
Conjunctivitis	176	18.8
Refractive error	161	17.2
Dry eye disease	72	7.7
Cataract	58	6.2
Pseudophakia	51	5.5
Ocular surface disease	35	3.7
Pterygium	31	3.3
Eyelid problems	31	3.3
Allergy of the eye	23	2.5
Corneal ulcer	13	1.4
Foreign body in the eye	9	1.0
Tumours	9	1.0
Surgeries	3	0.3
Others	47	5.0
Total	934	100

Table 4 illustrates the results of the prescriptions surveyed using the WHO prescribing indicators. The total number of

drugs prescribed with generic names was 779, while 577 drugs were prescribed from Essential Drug List.

Table 4: WHO core prescribing indicators

Prescribing indicator	Number of encounters	Average/percentage values	WHO Reference values ⁵
Average number of drugs per prescription	2009	1.8	1.6 – 1.8
Drugs prescribed by generic nomenclature	779	38.8%	100%
Drugs found on the EDL	577	28.7%	100%
Antibiotic encounters	628	31.3%	20.0 – 26.8%
Injection encounters	25	1.2%	<20%

DISCUSSION

This study showed that the prescribing pattern in the clinic complied with two out of the five WHO drug prescribing indicators. The average number of drugs per prescription is within the reference proposed by WHO showing that polypharmacy is not a problem in the study period in this clinic. Number of drugs per prescription should be maintained at this low level to avoid increase in adverse drug reactions, drug interactions, prescribing errors, treatment cost and patient non-adherence¹³.

Percentage of drugs prescribed by generic nomenclature (38.8%) was below the standard proposed by WHO. This could have led to patients not being able to afford some prescribed brands and hence poor or non-adherence to medications, therapeutic failure or drug resistance⁵. The value obtained was very low when compared with the results obtained in a study done in Tanzania (99.8%)¹⁴. On the contrary, the finding (38.8%) was higher than studies from Ghana, Lebanon and different areas of India which reported about 26% prescriptions by generic name^{9,11}.

The number of drugs prescribed from the EDL was also lower than the prescribed standard by WHO. As defined by the World Health Organization, essential medicines are the medicines that satisfy the priority healthcare needs of the population⁹.

The encounters with injections in this tertiary health facility was within the limit recommended by the WHO. This is similar to results obtained in previous studies^{15,16}. The average number of drugs per prescription in this study (1.8) was within WHO recommended range. Thus, there should be reduced opportunity for prescribing errors and drug-drug interactions¹⁰. Comparatively, from a study done in Ethiopia¹⁷, the average number of drugs per prescription was 2.3. This result was higher than average number of drugs recommended by WHO¹¹. Other studies reported a lower number of drugs per prescription^{16,18,19}. Some previous studies in India reported an average of 2.4 to 5 drugs per prescription^{14,15}.

In this study, the number of complete prescriptions which included the dosage form, frequency and duration of therapy was high. A previous study done in Saudi Arabia reported only 19.4% of prescriptions had records of dose²⁰. Other studies done in India and Dubai reported values for written doses of 80% and 50% respectively^{14,21}. Other previous studies showed that duration of therapy with ophthalmic medications were absent in very few prescriptions with most reporting greater than 75%^{18,22}.

The disease pattern observed in this facility was different from that recorded in a previous 5-year retrospective analysis which had a very low value for glaucoma

(0.9%) unlike the value of 23.0% recorded for this study. The value for conjunctivitis in that study (25.3%) was closer in range to the value obtained in this study (18.8%)²³.

Limitations to the study: The prescriptions for the year under review were only available for 10 months because of strike action of workers in the hospital. All the prescriptions available within the study period were assessed.

CONCLUSION

Prescription pattern in this study site conformed to only one of the five WHO drug use indicators which is 'Average number of drugs per prescription'. This is an important measure in ensuring patient's adherence to drug therapy by preventing polypharmacy, pill burden and cost of medication. The prescribing practices for injections, generic prescribing and use of drugs from the Essential Drug List showed marked deviation from the standard recommended by WHO. On the other hand, prescribing of antibiotics in this study reported a slight increase from the standard. Infective conditions such as ocular surface disease, eyelid problems could have contributed to the high prescription pattern of antibiotics that was observed.

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