

Review of drug prescription using world health organization standard prescribing indicators among pediatrics outpatient in Ilorin: A pilot study

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ABSTRACT

Background: The use of drug is the most commonly used option in treatment of disease conditions in clinical practice. Irrational prescription and use of medicine has become a major problem in Africa. The patterns of medication prescription in this environment have been under-studied. The need to evaluate these patterns is important in order to improve prescription standards and mitigate the problems associated with irrational prescription and use of medicine. **Objective:** The aim of the study was to assess drug prescription pattern among pediatrics outpatients accessing medical care in our healthcare facility using the WHO prescribing indicators. **Methods:** A total of 157 prescriptions were collected retrospectively from prescriptions written over a period of one month from pediatrics pharmacy section of the pharmacy department of the hospital. The WHO prescribing indicator manual was used to produce a data record form (DRF) for the study. These indicators were assessed in the prescriptions, analyzed and compared to the standard recommended by WHO. Data were analyzed using SPSS version 20 (Chicago, IL, USA). **Results:** This study showed that most drug prescriptions (99.4%) bore the patient's name. All other prescribing indicators reviewed were below the recommendation by World Health Organization (WHO). The average number of drugs per prescription was 0.8. The encounter rates with generic names, antibiotics, and injections were 62.4%, 6.4%, and 28.0%, respectively. The percentage of drugs prescribed from an essential drug list was 52.2%. **Conclusion:** This study deduced that most outpatient drug prescriptions for pediatrics patient were incomplete. Indicators of drug use were below the WHO recommendation. Therefore, efficient intervention programs such as training of prescribing doctors and promotion of rational use of drugs have been proposed.

Keywords: Prescriptions, generic name, rational drug, patients

1. INTRODUCTION

Drugs in general are substances or compound used to prevent, diagnose, alleviate or treat a disease condition (Gebremariam and Ahmed, 2019). The leading cause of death and disability in developing countries can be prevented, treated or at least alleviated with inexpensive medicines. Despite this reality, many millions of people do not have access to these drugs and many people who do have access use them irrationally. Substance abuse occurs with polypharmacy, the use of an incorrect or ineffective drug, or the absence or incorrect use of an effective drug. These measures affect the quality of medicines and hospital care, increase health care costs and can cause adverse drug reactions and are the main reason for the spread of antimicrobial resistance (Bigdeli et al., 2014).

Drug use is a complicated venture involving the association of different bodies such as fitness professionals, the sufferer (the patient) and healthcare facilities. Everyone involved in the therapy method contributes to the ruthless use of different approaches (WHO, 2002). Improper prescription is one of the expressions of irrational drug use that occurs when drugs are not prescribed according to the norm. All vital statistics in the registry should be completed by registrants as incomplete records can lead to poor patient outcomes and be dangerous for the patient. In order to report that a specific prescription has been completed, all parameters that can be provided in the prescription must be completed by registrants (Bigdeli et al., 2014; Embrey, 2012).

In order to design distinctive intervention strategies that attempt to change drug use, the aspects of the problem must be assessed and quantified. Drug use research with WHO Drug Use Indicators is getting progressively important to promote rational drug use and understand drug use-related issues, especially in developing countries like Nigeria to ensure scarce resources are used in the best possible way. Obtaining a regular study of the pattern of drug use across multiple medical institutions or patient populations is essential to identify specific medical drug use problems, sensitize physicians to rational drug prescribing and critically analyze centers' current drug regulations health and mainly for making recommendations. It is based on several recommendations to improve the innovative drug use model (Assefa et al., 2018; Chandra et al., 2017).

Studies conducted, for example, in Alexandria (Egypt) (Akl et al., 2014), India (Parveen et al., 2016), Jordan (Alkhatib et al., 2019) and hand-picked public hospitals in eastern Ethiopia (Sisay et al., 2017) showed that most of the WHO key indicators of drug use were lower than the most appropriate cost. This demonstrates that regular assessments and interventions are essential in any healthcare setting to accept and maintain judicious use of medicines.

Therefore, the present study aims to identify the main problems in prescription integrity and rational use of drugs in a tertiary health care facility in Kwara State, Nigeria using WHO indicators. This research plays a central role in prioritizing the main areas of intervention related to the rational use of medicines. This may provide important information to researchers interested in conducting further studies to determine factors modulating the pattern of drug use in this facility.

2. METHODS

Study design

This is a retrospective, cross-sectional study developed to illustrate the current outpatient prescription patterns in pediatrics outpatient department of the hospital. The Pharmacy department of the hospital stored the prescriptions made by the pediatrics clinic. The study looked at prescriptions pattern over a period of one month.

Study setting

This study was conducted at the Pediatric Outpatient Clinic of the University of Ilorin Teaching Hospital (UITH), Ilorin. UITH is a 600-bed facility in Ilorin, the capital of Kwara State in the North-Central Geopolitical Zone of Nigeria. Ilorin Metropolis is a multi-ethnic settlement and the inhabitants are mainly farmers, traders, artisans, and civil servants. UITH is a federal tertiary care facility and acts as a referral center for patients from within and outside Kwara state.

Examination/Sampling

Using a suitable sampling technique, 157 prescription orders were retrospectively selected from prescriptions issued in January 2021. The sample size was calculated using a single proportion sample size calculation (Assefa et al., 2018).

The WHO indicator manual was used to create a data collection form (DCF) for this study. Prescription metrics include average number of medications per session, percentage of medications prescribed by generic name, percentage of antibiotic encounters prescribed, percentage of injection encounters prescribed and percentage of medications prescribed from the essential medication list.

Data Analysis

The data generated from the data collection forms were analyzed using SPSS statistical software version 20.0 (Chicago, IL, USA) after manual validation and cleansing. The results were presented as frequencies, percentages and means where appropriate.

3. RESULTS AND DISCUSSION

Prescription Completeness

To verify the absoluteness of the prescription, patient, treatment and prescriber records were reviewed. In principle, each entry in the registration must be filled out. In this study, it was observed that the patient's full name was written on approximately 99.4% of the prescription sheet. Records of patient weight, patient phone number, patient address, patient age, and diagnosis were less than 10%. In inclusion to refill time, history of use and other identification/tagging information, various parameters related to therapeutic information were more than 50%. From the prescribing information, with the exception of the name of the prescription and the phone number of the prescribing physician, good physical activity was noted among the prescribing physicians (Table 1).

Table 1 Prescription completeness assessment in Pediatrics outpatient clinic of UITH, Ilorin, Kwara State, for January 2021 ($n = 157$)

Patient information			Treatment information		Prescriber Details	
S/N	Parameter	%	Parameter	%	Parameter	%
1	Patient Name	99.4	Strength of Drug	57.3	Name of Prescriber	42.0
2	Hospital Number	52.9	Dosage	64.97	Institution of Prescriber	93.6
3	Date of Prescription	91.7	Frequency	57.3	Phone Number of Prescriber	0.63
4	Age (Months/Years)	2.5	Duration	50.96	Signature of Prescriber	91.7
5	Weight (kg)	3.2	Generic Name of Drug	71.97		
6	Address of Patient	1.3	Directions for Use	38.9		
7	Phone Number of the Patient	0.64	Refill Period	3.2		
8	Diagnosis	1.3	Other Identification/Labeling Information	24.2		
9			Availability of a copy of Essential Drug List	52.2		

It is recommended that each prescribing physician and pharmacist complete/record the required information (i.e., patient, treatment and physician information) on the prescription paper. But in this study, including patient name, all evaluated parameters were incomplete and contained at least one or more missing parameters. Looking at patient information, only 3.2%, 1.3%, 0.6%, 1.3%, 2.5%, and 52.9% of prescriptions included weight, address, patient phone number, diagnosis, patient age. Other patient information was over 91% of therapeutic information, the fewest records were found for the period of filling (3.2%), direction of use (38.9%) and other identifying information/detection (24.2%). The rest of the treatment information is in percent. Although there were poor practices that needed to be corrected, compared to other studies conducted elsewhere (Assefa et al., 2018; Admassie et al., 2013), our study showed that good practices exist in the hospital in almost all parameters of the prescribing information.

Prescribing Indicators

One hundred and fifty-seven prescriptions were analyzed and a total of 125 prescription drugs were procured. The average number of drugs per prescription was 0.796. The total number of drugs prescribed by generics was 98 (62.42%). Antibiotics were prescribed in 10 (6.37%) sessions and injections in 44 (28.03%) prescriptions. 65 (41.40%) drugs prescribed were from the essential drugs list (Table 2).

Table 2 Drug prescribing indicators in Pediatrics outpatient clinic of UITH Ilorin, Kwara State in January 2021 ($n = 157$)

Prescribing indicators	Number	Average/percentage	Ideal WHO value [7]
Average Number of Drugs per Encounter/Prescription	125	0.796	1.6-1.8

Percentage Number of Encounter with Antibiotics	10	6.369	20.0-26.8%
Percentage of Number of Encounter with Injections	44	28.025	13.4-24.1%
Number of Drugs Prescribed by Generic Name	98	62.420	100%
Number of Drugs from Essential Drug List	65	41.401	100%

Looking at the 157 antibiotic prescriptions, the top three antibiotics prescribed were cefuroxime 67 (42.68%), metronidazole 21 (13.38%) and augmentin in 11 (7.01%) (Figure 1a) of the 157 prescribed antimalarials, 38 (24.2%) were artemether lumefantrine (AL) and 13 (8.29%) were DHPs (Figure 1b). Less common drugs are antipyretics, antiulcers, eye drops, and Artin (Figure 1a, b and c).

Drug abuse happens worldwide and harms people (Akl et al., 2014). In our study, the WHO/INRUD Drug Use Indicators were used to describe present treatment practices, effective for identifying the problem and determining whether a facility is above or below a defined standard of practice (WHO, 2002) and as baseline information for continuous monitoring serve in the hospital.

In the present study, the mean number of medications per session was 0.796, which is not within the limit recommended by WHO/INRUD (WHO, 1993). Contrast to other studies conducted in Ethiopia such as Eder Referral Hospital (2.61) (Demeke et al., 2015), Debmarcus Hospital (2.4) (TCETA, 2014), Five National Regional States (Tigray, Amhara, Oromia, SNNPR, Benishangul Gummuz) and Addis Ababa (1.99) (FMOH, 2003) and other countries like Kenya 2.7 (Nicholas et al., 2015), Nigeria 3.04 (Tamuno and Fadare, 2012), India 3.11 (Singh et al., 2014), Ghana 4.8 (Bosu and Ofori-Adjei, 2000), Bahrain 3.3 (Otoom et al., 2010) and the United Arab Emirates (UAE) 2.49 (Mahmood et al., 2016). Present study does not show methods better prescriptions in terms of number of drugs per prescription.

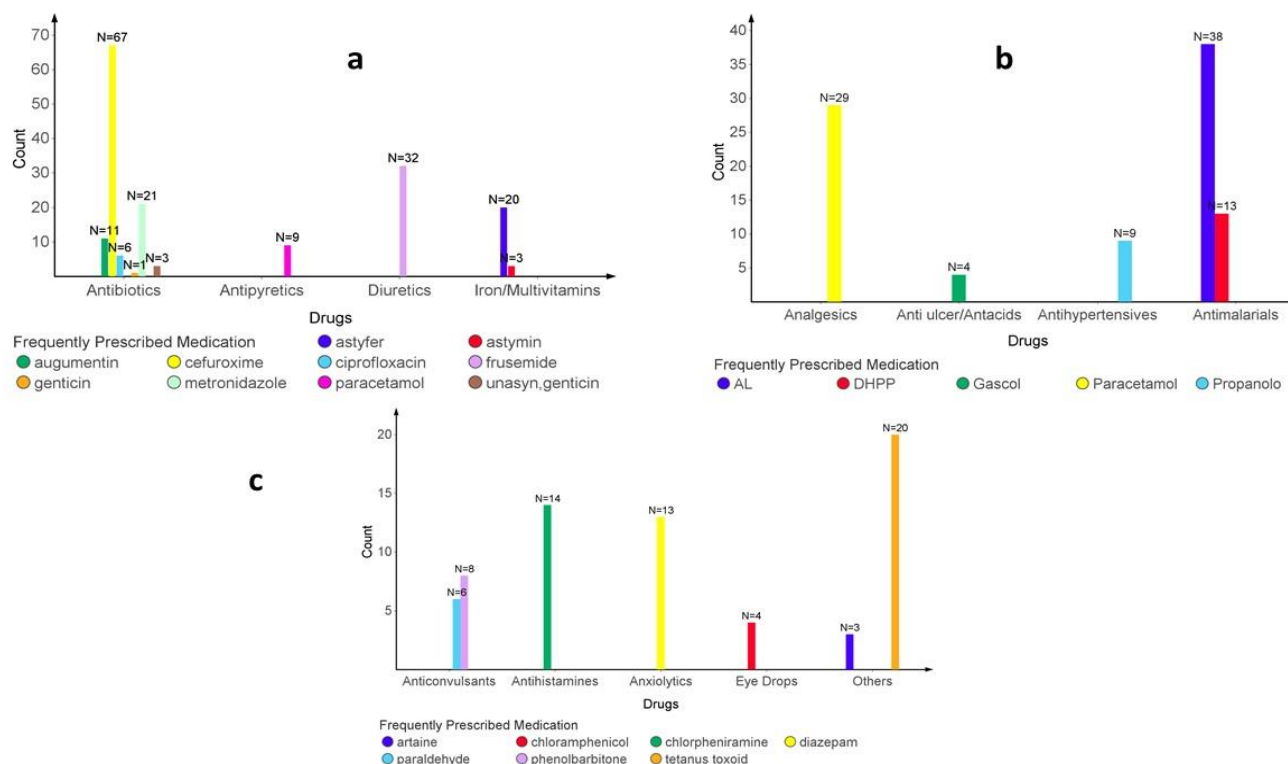


Figure 1 Drugs prescribed in pediatrics outpatient clinic of UITH, for January 2021.

Low prescribing practice for generic drugs was noticed in our study. Of the 125 drugs, only 98 (62.42%) drugs were recorded with their generic names. This value is below the WHO recommendation (100%) (Assefa et al., 2018) higher values were procured from studies carried out in Ethiopia, Hawassa University Teaching and Referral Hospital 98.7% (Desalegn, 2013), Felege Hiwot Referral Hospital 97.4% (Laychiluh, 2014) and Ayder Referral Hospital 93.3% (Demeke et al., 2015). Some studies carried out in some other countries portrayed much less universal prescribing practices than the present study, for example Kenya 45.5%

(Nicholas et al., 2015), Nigeria 42.7% (Tamuno and Fadare, 2012), Nepal 59.02% (Dahal et al., 2013), Jordan 57.6% (Ahmad et al., 2017) and Uzbekistan 38% (Pavin et al., 2003). But overall usage was higher in India at 96.88% (Singh et al., 2014) and UAE at 100% (Mahmood et al., 2016).

Overuse of antibiotics is not recommended in any healthcare facility or community as it generates resistance called antimicrobial resistance (EFMHACA, 2013). In the present study, antibiotics were prescribed in 10 (6.37%) of all prescriptions, a rate below the WHO recommendation (20–26.8%) (Assefa et al., 2018) higher values were also found in studies conducted at Debarmarcos Referral Hospital (71.36%) (Desse, 2014), Hawassa University Hospital and Referral Hospital (58.1%) (Mahmood et al., 2016) in five national regional states (Tigray, Amhara, Oromia, SNNPR and Nisangol) were performed. Gomoz Addis Ababa (58%) (FMOH, 2003) and four public hospitals in western Ethiopia (Ambo, Gedo, Nkemet, Gimbi) (54.7%) (Dahal et al., 2013).

4. CONCLUSION

From this study we established that most recipes were partially written. With the exception of the patient's name (approximately 99.4%), which was registered in almost all prescriptions examined in this study, information about the other patient, treatment/medication and occupation was poor. Additionally, the hospital did not meet all the key World Health Organization indicators for drug use. Specifically, there was no properly labeled drug. Therefore, a well-organized intervention plan to promote the rational use of drugs is proposed. The hospital should take this knowledge into account and organize an educational program through which all medical staff and the pharmacist are informed about the rational use of medicines and act accordingly. In addition, the rational use of drugs in the hospital should be continuously evaluated.

Limitation of the study

This study was a pilot study and done for only one month. It was also conducted in a single healthcare facility in North-central geopolitical zone of the country and therefore data generated cannot be extrapolated to other facilities and zones in the country.

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Author's contribution

This study was conceived and designed by Olalekan Ayodele Agede (OAA) and Louis Okeibunor Odeigah (LOO). OAA and Joseph Oladele Ole (JOO) led the data collection. Data processing and analysis were conducted by OAA, LOO and JOO. Manuscript was prepared by AOA and OLO. All authors contributed to the editing and approval of the final manuscript for submission.

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Informed consent

Not applicable.

Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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