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EVALUATION OF PRESCRIPTION PATTERN AMONG PAEDIATRIC OUT-PATIENTS IN A TERTIARY HOSPITAL OF YENAGOA METROPOLIS

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ABSTRACT: ***Background:*** *There is an urgent global need to ensure the safe and appropriate delivery of drugs to children.* ***Objectives:*** *This study aimed to assess the drug prescription patterns among pediatric outpatients in a tertiary hospital in Bayelsa State using WHO prescribing indicators.* ***Methods:*** *Data was retrospectively collected from 954 pediatric outpatient prescriptions from January to December 2023. Data was analyzed using SPSS version 26.* ***Results:*** *A total of 365 patients were studied, with 53.7% males. Patients' respective ages ranged from 1 month to 18 years. The major classes of drugs prescribed were: anti-infectives (43.19%), anti-inflammatory drugs ((21.49%) and drugs acting on GIT (21.28%). On average, 2.61 drugs were prescribed per encounter, with 66.46% using generic names. Antibiotics were prescribed in 46.03% of encounters, and 92.56% of drugs were from the essential medicines list.* ***Conclusion:*** *The study found discrepancies in WHO core prescription indicators with common polypharmacy practices.*

KEYWORDS: Prescribing Indicators; Outpatient Pediatrics; Tertiary Hospital; Bayelsa State; Nigeria.

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INTRODUCTION

Worldwide, irrational drug usage is frequently seen in medical settings, with poor nations having the highest prevalence (Wahed et al., 2020; Ghimire et al., 2009).

According to WHO, rational drug use entails patients receiving medications appropriate for their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community (WHO, 1987).

Drugs are expensive and account for 25% of all healthcare expenditures (Wirtz et al., 2017); therefore, their rational and efficient use is essential. The World Bank estimates that 20–50% of healthcare costs in low/middle-income countries are spent on medicines and medical equipment (Desalegn, 2013).

It is widely reported that children are also more vulnerable to adverse drug reactions and drug damage due to changes in pharmacokinetic and pharmacodynamic properties brought about by their underdeveloped elimination organs and immune system (Ferrajolo et al., 2019).

Consequently, it is imperative to engage in evidence-based prescribing so as to ensure both patient safety and the right use of medications.

WHO estimates that over half of all medications are improperly prescribed, administered, or sold (Hafeez et al., 2020; Ofori-Asenso et al., 2016; Ofori-Asenso et al., 2016b; Dong et al., 2011).

The primary causes adduced are overuse of parenterals, polypharmacy, patient self-medication, inappropriate antibiotic usage, and prescription.

The most common practices are polypharmacy, use of wrong or ineffective medicines, under-use or incorrect use of effective medicines, use of combination products, which are often more expensive and offer no advantage over single-compound products, and overuse of antimicrobials and injections (Bilal et al., 2016).

Some of the consequences of irrational prescribing include delay in early diagnosis and treatment, increased risk of side effects, drug resistance, reduction in quality of pharmacotherapy, wastage of resources, high treatment cost, reduced patient confidence in the healthcare system, prolonged disease state and even mortality in chronic conditions (Dong et al., 2011; El Mahalli, 2012; Atif et al., 2016; Yousefi et al., 2012).

Not only can inappropriate prescriptions raise therapeutic costs, they also raise morbidity and mortality rates (Ahwinahwi et al., 2021).

Furthermore, antibiotic abuse or overuse might result in the development of drug resistance.

With primary focus on ensuring Safe, Effective and Cost-Conscious drug therapy, the WHO and the International Network for Rational Use of Drugs (INRUD) developed some core indicators to guide the use of drugs. This involved three key components—prescription indicators, patient care indicators, and healthcare facility-specific indicators. The overall aim is to enhance the sensible use of medications globally (Pratik & Amita, 2023).

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Increasing evidence supports the claims that these prescribing indicators are an essential assessment tool to evaluate the rational use of medications worldwide, especially in low/middle-income countries (Mahmood et al., 2016).

It has been established that up to 90% of the cost of medication can be saved by switching from name brands to less expensive generic versions (Wahed et al., 2020).

Consequently, the use of generic products as opposed to branded products has been proposed in hospital practices because they are more cost-effective for patients and they reduce the possibility of medication errors (Dentali et al., 2011).

Further, in order to curtail polypharmacy, WHO recommends that prescriptions contain no more than 2.0 medications (Wahed et al., 2020). and this is crucial in terms of therapy's cost, safety, and efficacy.

Studies on rational drug use in Nigeria include evaluations at hospitals, primary health centers, and a review of prescribing practices. These studies found that while some practices were close to WHO standards, others indicated a need for improvement.

However, although children represent a large proportion of the population in Nigeria and many low/middle-income countries, data on drug use in paediatrics are scarce and under-represented. Studies in Nigeria have shown irrational use of medicines in paediatrics (under 5 years) (Ahwinahwi et al., 2021; Fadare et al., 2015; Nwolisa et al., 2006).

There are limited studies in children in this environment, leading to a gap in terms of published studies on irrational use of medicines among paediatrics out-patients in Bayelsa State. Thus, studies are required to assess physicians' prescribing pattern of drugs among children and infants in health facilities in Bayelsa State.

PURPOSE OF THE STUDY

The main purpose of the study was to examine drug use patterns among the paediatrics population in a tertiary hospital in Nigeria, using the WHO prescribing indicators.

SPECIFIC OBJECTIVES

To determine

1. the mean number of drugs and cost per encountered prescription.
2. the percentage of drugs prescribed with generic names.
3. the percentage of encounters with antibiotics prescribed.
4. the percentage of encounters with prescribed injections.
5. the number of drugs prescribed from the Essential Medicines List (EML).

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METHODOLOGY

Study Site

The study was carried out in the Niger Delta University Teaching Hospital, Okolobiri, in the Paediatric Outpatient Clinic. It has a 200-bed capacity and a good number of specialist physicians in various fields. The paediatric outpatient clinic receives new paediatric patients directly or upon referral from another health facility.

Study Design

A descriptive retrospective cross-sectional study design was used.

Target Population of the Study

Paediatric outpatients prescription at NDUTH Okolobiri. Target population size of 5129 OR 4165?

Sample Size

Sample size was determined for the study area using Taro Yemen's formula:

To calculate the sample size required given a population size of 4165:

n = N / (1 + (N * (e^2)))

n = 4165 / (1 + (4165 * (0.05^2)))

n ≈ 364.74

A sample size of 365 was used for the study.

Data Collection

Systematic stratified random sampling technique was used to collect prescription samples. The allocation of samples was calculated on the basis of patient workload statistics obtained from the health facility. The average number of patients seen at out-patient pharmacies per month was calculated, using statistics from preceding 12 months, i.e., 1st January 2023 to 31st December 2024. The average number of patients seen at out-patient pharmacy was 347 per month.

It should also be noted that indicator studies should be restricted to a sample of general illness encounters, representing a mix of health problems and ages as per WHO guidelines (WHO, 1993). Therefore, general out-patient prescriptions were selected and not the ones from specialized clinics.

The WHO recommends that a minimum of 100 prescription records per each selected health facility should be selected in order to get reliable results for a medicine use indicator study (WHO, 1993). Prescriptions of all patients who received care at the out-patient departments during the study period were used. Prescriptions were included based on a simple random sampling technique based on prescriptions of every eleventh patient who received care at the out-patient department during each day of the study period. Prescriptions with incomplete

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information, such as missing details of the patient and those originating from other health facilities, were excluded from the study.

The total prescriptions at the NDUTH paediatric outpatients clinic between the period was 4165.

Inclusion and Exclusion Criteria

Prescriptions written for paediatrics out-patients aged 0–18 years by prescribers employed at the out-patient departments of the facility were included in the study.

Prescriptions from consultation in the emergency room were excluded from the study.

Monitoring of drug treatment outcome is excluded from the study as a criterion, because most of the patient records did not have that type of information.

Instrument for Data Collection

The WHO prescribing indicators were assessed using the WHO guidelines on investigation of drug use in healthcare facilities.

The information retrieved from the case notes included socio-demographic data, working diagnosis, list of prescribed drugs, and the dosage regimen (frequency, route of administration and duration of therapy).

Method of Data Analysis

All data was entered into the Microsoft Excel 2019 version database and analyzed using the statistical package for social sciences (SPSS) version 26.

Ethical Approval

Ethical approval was obtained from the Institutional Review Board Committee at NDUTH.

RESULTS

Demographic Data

A total of 365 patients were assessed out of which 169 (46.3%) were females and 196 (53.7%) were males. The age distribution is 1–5 years (49.32%), 6–10 years (24.66%), 11–15 years (10.41%) and 16–18 years (3.56%).

Classes of Drugs Prescribed

Table 1 provides details of classes and types of drugs prescribed for the pediatric patients.

A total of 954 prescriptions were involved. The major vlasses of drugs prescribed were: anti-infectives (412, 43.19%), anti-inflammatory drugs (205, 21.49%),

Drugs acting on GIT (203, 21.28%), and drugs acting on the respiratory system (122, 12.79%).

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Out of the 365 patients, 199 (54.52%) and 138 (37.81%) received antiprotozoal/anthelminthic and β-lactams respectively, 186 (50.96%) received NSAIDS, 169 (46.30%) received nutritional supplements, and 115 (31.51%) received antihistamines.

See Table 1 for details.

Table 1: Classes of Drugs Prescribed

Major class	Class	Number Prescribed (%)*	
		F	%
Anti-infectives		412	43.19
	β-lactams	138	37.81
	Macrolides	27	7.40
	Quinolones	31	8.49
	Aminoglycosides	3	0.82
	Tetracyclines	8	2.19
	Sulfonamides	1	0.27
	Nitrofurans	3	0.82
	Antiprotozoal and Anthelminthic	199	54.52
	Antifungals	0	0.00
	Others	2	0.55
Anti-inflammatory		205	21.49
	NSAIDS	186	50.96
	Corticosteroids	3	0.82
	Others	16	4.38
Drugs acting on GIT		203	21.28
	Proton pump inhibitors	8	2.19
	Nutritional supplements	169	46.30
	Laxatives	4	1.10
	Antispasmodics	0	0.00
	Others	22	6.03
Cardiovascular drugs		10	1.05
	Diuretics	10	2.74
Drugs acting on Central Nervous System		2	0.21
	Opioids analgesics	0	0.00
	Anxiolytics	0	0.00
	Anticonvulsants	2	0.55
Drugs acting on the respiratory system		122	12.79
	Bronchodilators	2	0.55

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	Antihistamines	115	31.51
	Others	5	1.37
Total Number of Prescription		954	

Generic/Trade Name Drug Prescription Pattern

As revealed in Figure 1, out of the 412 prescriptions for anti-infectives, 208 (50.49%) were written in Generics. All (100%) anti-inflammatory drugs, 78.82% of drugs acting on GIT and 40.16% of drugs acting on the respiratory system were prescribed as Generics. See Figure 1 for details.

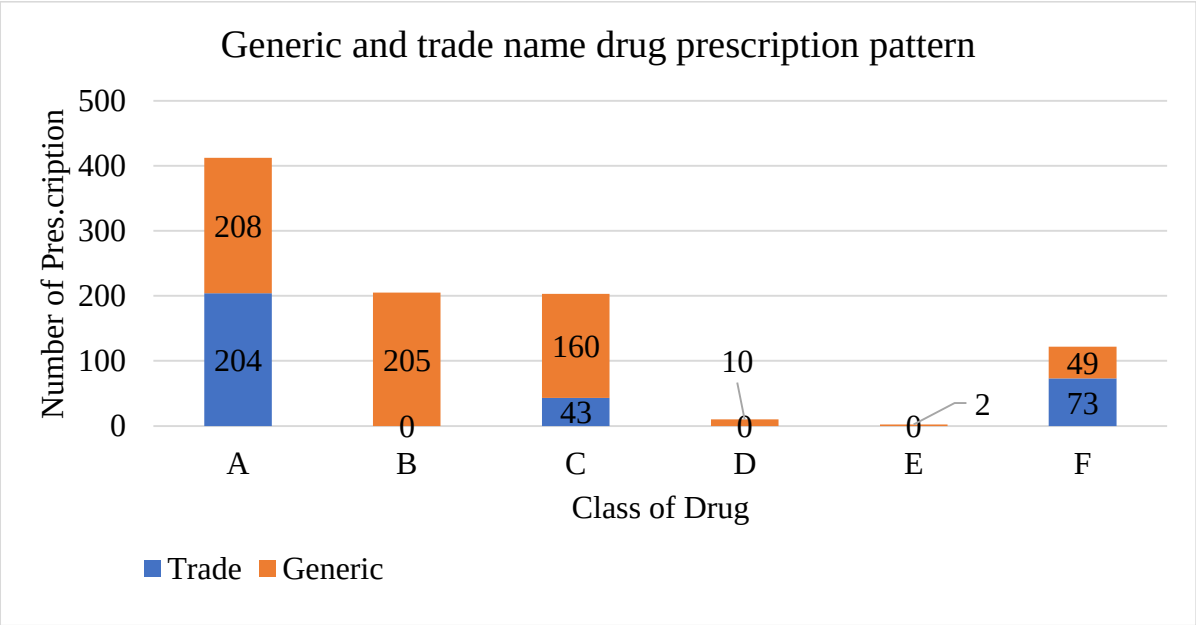

Fig. 1: Generic and trade name drug prescription pattern (n=954).

A: Anti-infectives, **B:** Anti-inflammatory, **C:** Drugs acting on GIT, **D:** Cardiovascular drugs,

E: Drugs acting on CNS, **F:** Drugs acting on the respiratory system.

The mean ± SD of out-of-stock (OS) drugs observed in prescriptions was 0.52 ± 0.79.

Dosage Forms Prescribed

Figure 2 reveals that syrups (37.8%), tablets (26.9%) and injectables (8.4%) were the major pharmaceutical dosage forms encountered in the study.

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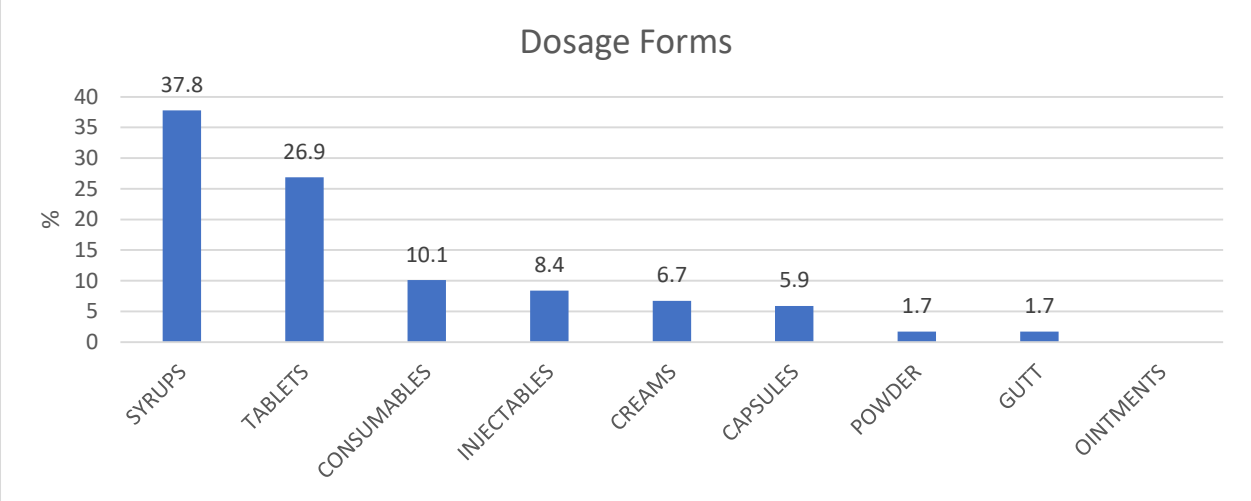

Fig. 2: Showing the distribution of various pharmaceutical dosage forms prescribed to the paediatrics patients of NDUTH.

Number of Drugs Prescribed Per Age Group

The number of drugs per prescription among the different age groups is presented in Table 2. Data revealed that:

Prescriptions with 1 drug were encountered in 6.1%, 5.6%, 2.3% and 0.3% among 1–5, 6–10, 11–15 and 16–18 years respectively.

Prescriptions with 2 drugs were encountered in 10.7%, 4.3% and 3.3% among 1–5, 6–10 and 11–15 years respectively.

Prescriptions with 3 drugs were observed in 14.7%, 7.1%, 2.0% and 0.5% among 1–5, 6–10, 11–15 and 16–18 years respectively.

Prescriptions with 4 drugs were recorded in 6.6%, 1.3%, 0.5% and 1.3% among 1–5, 6–10, 11–15 and 16–18 years respectively.

Prescriptions with 5 or more drugs were seen in 4.8%, 2.0%, 10% and 0.3% among 1–5, 6–10, 11–15 and 16–18 years respectively.

Table 2: Age Group Distribution of Number of Drugs per Prescription

Age Group	Number of Drugs Prescribed (%)				
	1	2	3	4	>5
1–5	6.1	10.7	14.7	6.6	4.8
6–10	5.6	4.3	7.1	1.3	2.0
11–15	2.3	3.3	2.0	0.5	10
16–18	0.3	-	0.5	1.3	0.3

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Gender Distribution of Drugs Prescribed

As revealed in Table 3, prescriptions with only 1 drug were seen in 10.4% and 9.2% respectively among male and female patients. Prescriptions with 2 drugs were encountered in 11.9% and 10.9% respectively among male and female patients. Prescriptions with 3 drugs were encountered in 17.6% and 9.9% respectively among male and female patients. Prescriptions with 4 drugs were encountered in 6.9% and 6.5% respectively among male and female patients. Prescriptions with 5 or more drugs were encountered in 2.9% and 12.3% respectively among male and female patients.

Table 3: Gender Distribution of Number of Drugs per Prescription

No. of Drugs Prescribed	GENDER (%)	
	Males	Females
1	10.4	9.2
2	11.9	10.9
3	17.6	9.9
4	6.9	6.5
>5	2.9	12.3

Core Prescription Indicators

Prescriptions encounter with injectables and antibiotics were 44 (12.06%) and 168 (42.03%) respectively.

Prescription with drugs from the EML was 883 (92.56%). The average number of drugs per prescription was 2.64; the percentage of prescriptions with generic drugs was 634 (66.46%). See Table 4.

Table 4: WHO Core Indicators Assessing Drug Prescription For NDUTH

WHO core indicators	N	(%)	Reference values (Ofori-Asenso, 2017)
Encounter with injectables	44	12.06	<20%
Encounter with antibiotics	168	42.03	<20%
No. of prescriptions with drugs from EML	883/954	92.56	100%
Average number of drugs per prescription	2.64		<2
Percentage of prescriptions with generic drugs	634/954	66.46	100%

*Number (percent) of patients having encounters with injectables and antibiotics. (EML: Essential medicine list). The Nigeria Essential Medicines List 2020 7th Edition assessed the number of drugs prescribed from the essential list.

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Cost of Drugs Prescribed

As shown in Table 5, the median (IQR) cost per prescription values were 2137.76 and 2193.45 respectively for male and female patients. The median cost of all prescriptions was 2165.61.

Table 5: Median (IQR) Cost per Prescription (NDUTH)

Gender	Median (IQR) Cost (in NGN)* NDUTH
Male	2137.76
Female	2193.45
The median cost of all prescriptions	2165.61

*NGN: Nigerian National Naira.

DISCUSSION

Gender

Data from this study revealed that males were slightly more than female patients, similar to other studies (Bhatt et al., 2022; Badri et al. 2020; Zhang et al., 2005; Nduka et al., 2017).

Age

From the results obtained, the peak age for paediatric patients who visited the NDUTH outpatient's clinic was between ages 1–5 years with 49.32%; similar findings were reported by Bhatt et al. in 2022. About a quarter (24.66%) of the patients were from age group 6–10 years, one-tenth (10.41%) from age group 11–15 years, and the mean age was 5.3. Similar results were obtained by Prasad, Johar and Deshpande (2021). In a similar study conducted by Jose and Devassykutty in 2016, the mean age was 6.1.

Classes of Drugs Prescribed

In this study, the mostly commonly prescribed class of drug is antiprotozoal/antihelmintics (199, 54.5%). This is a reflection of the wide prevalence of protozoa infections in this community. This corresponds with the findings obtained in Nigeria by Ofori-Asenso in 2016. This is closely followed by NSAIDS (186, 50.96%) and mutritional supplements (169, 46.3%). The finding of this study is somewhat similar to what was observed by Chandika et al. in 2019 where the most prescribed drugs were antimicrobials. This is discordant with the findings reported by Bhatt in 2022; here, the highest prescribed class was antipyretics followed by nutritional supplements. Yet, another discordant study report revealed that the highest prescribed class was nutritional supplements, followed by corticosteroids (Badri et al., 2020); a study also revealed that antipyretics was the most frequently prescribed class of drugs (Gedam et al., 2012).

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A rather high use of antimalarial agents was found in our study; this is most likely due to the fact that children living in malaria endemic areas like Nigeria are vulnerable to frequent bouts of malaria attacks.

WHO Core Prescribing Indicators

Encounter with Injectables

Results from this study revealed that 12.06% of the drugs prescribed were injectables, and this falls within WHO standards that suggest that the use of injectables should be under 20%. This lower rate may reflect a more conservative prescribing practice in NDUTH or a greater availability of oral alternatives. However, slightly lower levels were reported in recent studies conducted in Sudan (3.5%), India (1.6%), Senegal (1.3%), and India (8.14%) (Bassoum et al., 2021; Ahmed & Awad, 2010; Pandey et al., 2010; Shanmugapriya et al., 2018), while higher injectables prescribing levels have been reported in Oman (15%), and Pakistan (27%) (Atif et al., 2016; Al Balushi et al., 2013). The possible reason behind less prescribing of injections is that the injectable dose forms of drugs are generally costlier than oral drugs and children are often unable to tolerate the injection site pain; these variations may also be attributable to the prevailing disease conditions in different settings of different study areas (Bhatt et al., 2022).

Encounter with Antibiotics

In NDUTH, 42.03% of prescriptions included antibiotics, which is higher than the recommended WHO standard of <20. Although still above the WHO standard, this rate is lower than the reports from other studies: Ethiopia 82.5% (Bilal, Osman & Mulugeta, 2016), 46% for the African Region (Ofori-Asenso et al., 2016) and 58.1% (Desalegn, 2013). The pattern reflects a similar global trend in the overuse of antibiotics, particularly in developing countries, where infections are prevalent and antibiotic resistance is an ongoing issue.

This high level of antibiotics prescription may be due to various reasons. First, as opined above, increased prevalence of infectious diseases in the developing countries results in increased amounts of antibiotics being prescribed; second is the high level of routine empirical treatments seen in resource-poor countries. A third reason could be patient pressure on prescribers.

Number of Prescriptions from EDL

Data from this study revealed that 92.56% of prescribed drugs in NDUTH conformed to the WHO essential drugs list. The recommended value is 100%. Some other similar studies achieved higher rates: 100% in a study in North-West Ethiopia (Sema et al., 2021), 97.6% from a study in Tanzania (Kilipamwambu et al., 2021) and 96.6% from a study in South Ethiopia (Yimer et al., 2022). Our finding is however higher than a study report from Nepal that reported 88%. The inability to achieve the recommended goal of 100% could be attributable to the lack of sensitization of the prescribers and lack of enforcement of rules that mandate prescribing from the essential drugs list. Nevertheless, the fundamental human rights of choice of medications in the private sector should be observed. The WHO target is for the public sector to foster ready availability of essential medicines at affordable prices.

Akin to generic prescribing, this indicator also has been demonstrated to vary between the private and public sectors (Mohlala et al., 2010) indicating the need for the practice of

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prescribing from essential drug lists to be more widely adopted, especially in private sector hospitals.

All the same, this study shows that there is vast practice of writing the drugs from the National List of Essential Medicines assuring that the three important aspects of rational drug use (i.e., cost, safety and efficacy) are conscientiously pursued (Bhatt et al., 2022).

Average Number of Drugs per Prescription

In this study, the average number of medicines per encounter was found to be 2.64, which is at variance (higher than) with the WHO-recommended value of 1.6–1.8 (<2) (Ofori-Asenso, 2016). Polypharmacy was observed in a significant number of encounters, with 18.9% and 9% of prescriptions containing 3 and 4 drugs respectively. This pattern of polypharmacy predisposes to drug-drug interactions and adverse reactions, particularly in pediatric patients.

However, when compared with other studies, it was a little lower than 2.8 reported from India (Atif et al., 2016) and a little higher than 2.34 from Ethiopia (Sisay et al., 2017), 2.4 from Saudi Arabia (El Mahalli, 2012) and 1.8 from a study carried out by Aldabagh et al. (2022). This variation in the number of medicines prescribed per patient could be due to differences in the study settings and prescribing practices among various medical specialties. Interventions to correct such prescribing patterns can potentially lower the risk for drug-drug interactions, fewer adverse drug effects, and better tolerability. This may also be associated with lower healthcare costs and better patient compliance, which in turn may lead to a successful treatment (Halli-Tierney et al., 2019; Horace & Ahmed, 2015).

Percentage of Drugs Prescribed by Generic Names

In NDUTH, on the overall, only about two-third of medicines (66.46%) were prescribed using generic names; the corresponding rates for individual classes of medicines vary. While a little above half (54.3%) of anti-infectives were prescribed generically, as high as 98.2% of anti-inflammatory drugs were prescribed generically, and 77.6% of GIT drugs were prescribed by generic name. What is being portrayed is a fairly strong tendency toward generic prescribing, particularly for anti-inflammatory and cardiovascular drugs. A study by Aldabagh et al. in 2022 actually revealed 100% generic prescribing.

The rather low overall generic prescribing habit could be due to the strong influence of local pharmaceutical companies (Alabbadi, Abbott & Jaber, 2014). Various rates of generic prescribing have been reported in literature owing to differences in the level of experience of physicians, the influence of pharmaceutical companies, compliance to international guidelines, and availability of drugs. (Ambetsa et al., 2017; Sharma et al., 2016). Finally, the role played by industries in hindering generic prescribing by offering financial perks to prescribers cannot be underestimated (Qian et al., 2017). Literature evidence reveals that generic prescribing is better in public centers in comparison to that in private sector hospitals (Ofori-Asenso et al., 2016). A variety of strategies have been recommended to overcome the barriers to generic prescribing and the most vital of these include enforcing statutory obligations, setting clear guidelines for generic prescribing, and legally de-incentivizing prescribing by proprietary name (Drozdowska & Hermanowski, 2015).

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Cost per Prescription

In NDUTH, the overall median prescription cost was N2,148.52, while for males it was N2,137.76, and then the median cost for females was N2193.45. Looking at the current financial constraints, these costs may be too high and will not support rational drug therapy. Government should evolve means of reducing these costs.

IMPLICATION TO RESEARCH AND PRACTICE

The research being conducted is a valuable contribution to the field of pediatric healthcare. By evaluating prescription patterns using WHO prescribing indicators in a tertiary hospital of this magnitude, it can be of immense impact on research and practice in several areas:

1. It can identify areas of improvement in prescribing practices, leading to better health outcomes for pediatric patients.
2. Understanding prescription patterns can help hospitals allocate resources more efficiently, ensuring that medications are prescribed appropriately and cost-effectively.
3. The findings from this study could contribute to the development or refinement of prescribing guidelines specifically tailored for pediatric outpatients.
4. This work can serve as a basis for educational initiatives targeting healthcare providers to enhance their prescribing practices, thereby improving overall healthcare quality.
5. By conducting this evaluation in a large tertiary hospital of this magnitude, variations in prescription patterns can be uncovered, contributing to a broader understanding of regional or institutional prescribing trends.

CONCLUSION

Our study revealed that the prescribing indicators in NDUTH showed deviations from the WHO standard in some aspects.

The percentage of prescriptions which contained an antibiotic was rather on the high side (46.03%) which is almost double of the optimal values set by WHO (20–26.8%); gladly, the percentage of encounters with an injection in NDUTH was found to be 12.06%, which is slightly lower than the WHO value of 13.4–24.0%. The average number of medicines prescribed per encounter was not in compliance with WHO's recommendation. However, adherence to EML and percentage of encounters with injection were in compliance with the WHO recommended values.

Generic drug prescription was also not in consonance with WHO's specifications.

Antiprotozoal/antihelmintics were the most commonly prescribed class of drugs, representing over half of all prescriptions. This is perhaps a reflection of the wide prevalence of protozoa infections in this community. This is closely followed by NSAIDS and nutritional supplements.

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This study also reported a rather high use of antimalarial agents expectedly from a high malaria endemic environment.

The study revealed a rather high median cost of all prescriptions which may negatively impact on purchasing power and appropriate drug acquisition.

Syrups, tablets and injectables were the major pharmaceutical dosage forms encountered in the study.

Encounters with male patients were slightly more than with female patients; the peak age for paediatric patients who visited the NDUTH outpatient's clinic was between ages 1–5 years.

Prescribers in this facility require training to better adhere to recommended prescribing standards.

FUTURE RESEARCH

1) It is important to ensure comprehensive data collection from electronic health records, prescription logs, and patient charts to be able to capture a complete picture of prescribing practices in future research efforts in this area.

2) Future research in this area should incorporate interviews or surveys with healthcare providers, pharmacists, and caregivers to gather insights into prescribing decisions and patient adherence.

3) Future research in this area should involve assessment of the impact of prescription patterns on patient outcomes, medication adherence, healthcare costs, and the occurrence of adverse events.

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AUTHORS' CONTRIBUTIONS

AOM: Performed the study and analysis.

JFE: Supervised the study.

All authors contributed to the conception and design of the study, analysis, and interpretation of data, revised the article critically for important intellectual content, and provided final approval of the version to be submitted.

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CONFLICT OF INTEREST

The researchers declare that there was no conflict of interest.

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