Original Research Article

Antibiotics prescribing practices in a Paediatric Outpatient Clinic in Owerri, Imo state; How rational?

Abstract.

Background.

Antibiotics are amongst the most frequently prescribed drugs for children in outpatient clinics but how rational are these prescriptions. This study sought to assess the rationality of antibiotics prescribed for patients attending the children's outpatient clinic of the Federal university teaching hospital Owerri, Imo state using the World Health Organization prescribing indicators.

Material/Methods.

This was a descriptive prospective study carried out in the children's outpatient clinic (CHOP) of the Federal university teaching hospital Owerri, Imo state Nigeria between April and June 2021.

Result.

The medical records of 478 patients who met the inclusion criteria were evaluated. A total of 495 antibiotic medications were prescribed. 95.2% of patients received one antibiotic only which is in keeping with the optimal range of 1.6-1.8 per encounter. 1.6% of the antibiotics were prescribed as injections which was also within the prescribing indicator optimal value of 10%. 79.2% of antibiotics were prescribed as generics which was below the optimal value of 100%. The three most prescribed antibiotics were Amoxicillin/Clavulanic acid, Cefuroxime and Amoxycillin and are all listed in the Nigerian essential drug list.

Conclusion.

The outcome of this study suggests that antibiotic prescribing is ration with regards to number per encounter, route of administration and using drugs in the Essential drug list. It was irrational with regards to prescribing in generic names.

Key words. Antibiotics, Prescribing, Practices, Outpatient clinic.

Introduction.

Antibiotics are amongst the most frequently prescribed drugs for children in outpatient clinics giving the increased risk of infection in this age group**. 1-4** The question that then quickly comes to mind becomes, how rational are these prescriptions? The World Health Organization(WHO) defines rational use of medicines as patients receiving medications appropriate to 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. **5**

It is estimated that more than half of all medicines are prescribed, dispensed or sold inappropriately, and that half of all patients fail to take them correctly. This irrational drug use results in wastage of scarce resources and widespread health hazards. **5**Additionally, irrational prescribing can cause medication errors, antibiotic resistance and treatment failure. Examplesofirrational prescribing includes poly-pharmacy, over use of injections, inappropriate use of antimicrobials and failure to prescribe in accordance with treatment guidelines.**5**

The World Health Organisation (WHO) has specific indicators for assessing prescribing practices. They include average number of drugs per encounter, percentage of drugs prescribed

by generic names, percentage of encounters with antibiotics prescribed, percentage of encounters with injections prescribed and percentage of drugs prescribed from essential drug list or formulary.**6**

Umar *et al***2** identified significant irrational prescribing practices in the children's outpatient clinic of a teaching hospital in Zaria, Northern Nigeria. 41.2% of antibiotics prescribed were injections and only 48.2% of drugs prescribed were in generic names.Dahiyat*et al* **7** in a private Paediatric health facility in Abu Dhabi also documented irrational prescribing. They found polypharmacy and also irrational antibiotic use for inappropriate diagnoses such as acute otitis media and bronchiolitis. Additionally, 43% of antibiotics were prescribed for administration as injections.

Inappropriate prescribing of antibiotics for children was also prominent in primary care institutions in South-west China.**8**Only18.3% of antibiotic prescriptions were appropriate and the percentage of unnecessary use, incorrect spectrum of antibiotics and combined use of antibiotics were 76.9, 2.4 and 2.4%, respectively.

There is a paucity of studies assessing prescribing practices in children's outpatient clinics in South eastern Nigeria. This study sought to address that by assessing antibiotic prescribing practice using WHO prescribing indicators in the children's outpatient clinic of the Federal university teaching hospital Owerri, Imo State.

Material and Methods.

This was a prospective descriptive study carried out in the children's outpatient clinic (CHOP) of the Federal University Teaching Hospital Owerri, Imo state Nigeria between April and June 2021.

The hospital is a tertiary care facility providing services to patients in Imo state and surrounding states of Rivers and Abia. The CHOP acts as the first point of call except for emergencies that are attended to in the Emergency Paediatric Unit.

The clinic runs Monday through Fridays but is closed on official government public holidays

It is often run by a team consisting of doctors of different cadre.

At the end of each clinic day, during the study period, the medical record of patients who had antibiotics prescribed were collated. Information extracted included number of antibiotics per patient, type of antibiotic, route of administration and clinical diagnosis. Additionally, it was also documented whether the antibiotic was written in generic or brand name.

Data Analysis.

Statistical Package for Social Science (SPSS) version 20 was used for data analysis. Results are expressed as means, frequencies and percentages. Chi square was used to determine the level of significance of groups of categorical variables with P values.

Ethical clearance.

Authorization for this study was granted by the department of Paediatrics, Federal University Teaching Hospital, Owerri.

Result.

The medical records of 478 patients who met the inclusion criteria were assessed. They consisted of 256 (53.6%) males and 222 (46.4%) females giving a ratio of 1.2:1. Out of 478 patients, 36.8% were less than 1 year old, 46.2% were between 1 to 5 years old, 9.6% were between 6 to 10 years old, and 7.3% were 11 years and above. This is shown in **Table 1.**

A total of 495 drugs (antibiotics) were prescribed for the 478 patients. Out of these, (392) 79.2% were prescribed as generics and 20.8% in brand names.

Table 2 provides information on the number of antibiotics prescribed per patient. Out of 478 patients, 95.2% had one antibiotic prescribed, 4.4% had two and 0.4% had three prescribed.

Table 3 provides information on the route of administration of prescribed antibiotics. Out of 495 antibiotics prescribed, 93.1% were to be administered orally, 4.2% were in the form of creams, 1.6% were injectables and 1% were in the form of eye drops.

The three most prescribed antibiotics were Amoxycillin/clavulanic acid (39.8%) ,Cefuroxime (24.4%) and Amoxycillin (11.1%). Others accounted for 24.7%. The three topmost diagnoses in the 478 patients were Upper Respiratory Tract Infection(URTI) 22.2%, Pharyngotonsillitis (20.3%) and Bronchopneumonia (10.7%).

There was a significant association between the number of antibiotics prescribed and age group

of patients (chi-square = 62.7, df = 3, $p < 0.001$).

Table 1: Age distribution of patients.

Age	Number that had Antibiotics	Percentage(%)

Less than 1 year	176	36.8
1 year to 5 years	221	46.2
6 years to 10 years	46	9.6
11 years and above.	35	7.3
Total	**478**	**100**

Table 2: Number of Antibiotic(s) prescribed per patient.

Number of antibiotics	Number	percentage(%)
One	455	95.2
Two	21	4.4
Three	2	0.4
Total	**478**	**100**

Table 3. Route of administration of prescribed antibiotics.

Route	**number**	**percentage.**
Oral	461	93.1
Injectable	8	1.6
Creams	21	4.2
Eye drop	5	1
Total	**495**	**100**

Discussion.

This study sought to assess the antibiotic prescribing practice in the children's outpatient clinic of the Federal university teaching hospital Owerri, Imo state using WHO prescribing indicators.

95.2% of patients had only one antibiotic prescribed, this is in tandem with the recommendation of the WHO/INRUD Core drug use indicators. The advocated range of average number of

medicines prescribed per patient encounter is 1.6–1.8. In the clinic, prescribing was rational with regards to the number of antibiotics prescribed per encounter. This is similar to the pattern reported in Zaria **2** but lower than that reported from a private Paediatric facility in Abu Dabi **7** . Consequences of polypharmacy would include increased medication cost and increased risk of adverse drug reaction.

Antibiotics from the penicillin group (Amoxicillin, Amoxicillin/Clavulanic acid) were the most commonly prescribed followed by drugs from the cephalosporin class (Cefuroxime).This pattern has also been documented by several other studies. **2,8,9**where the most common Penicillin prescribed was Amoxicillin/ Clavulanic acid while the most commonly prescribed cephalosporin was Cefuroxime. Cefaclor was documented in the study in Abu Dhabi**7** while Ceftriaxone was in Zaria**2**. The top three antibiotics prescribed are all listed in the Nigerian essential drug. **10**This too is in keeping with theWHO prescribing indicators. The National Essential Drug List is a carefully curated list of medications that have been deemed essential for addressing the most prevalent health issues in a specific country or region.Prescribing antibiotics from the National Essential Drug List (EDL) offers several advantages for the healthcare system and patients. By promoting the rational use of antibiotics and reducing the misuse and overuse of these drugs, the burden on the healthcare system related to antibiotic resistance can be mitigated. This, in turn, contributes to the long-term sustainability of the healthcare system.

79.2% of antibiotics were prescribed as generics and it falls short of the optimal value of 100%. Umar et al in Zaria also documented figures less than the optimal value but El-Dahiyat*et al* in Abu Dhabi **7** reported a 100% prescribing in generic names. Generic drugs are usually significantly cheaper than their brand-name counterparts. Prescribing generics can help reduce

healthcare costs for patients and healthcare systems, making medications more accessible and affordable.

1.6% of the patients had antibiotics prescribed as injections. This within the optimal range of not prescribing greater than 10% of a patients medication as injections. It is lower than 16.9 % documented in Abu Dhabi **7** and 29.8% in Tiranna Albania**9** .The administration of oral medications is non-invasive and is generally easier and more convenient to administer than injections. The convenience and flexibility of oral medications would lead to better patient adherence to the prescribed treatment plan.

Antibiotics were prescribed during the study period in the children's outpatient clinic for a variety of conditions but respiratory system pathologies were the most common. A similar pattern was found in Abu Dahbi**7** and Tiranna**9**. The most common individual condition was Pharyngotonsillitis. The attendant finding that Penicillins were the most commonly prescribed antibiotics would be in keeping with recommendation by the Paediatric association of Nigeria.**11**

There isa significant association between the number of antibiotics prescribed and age group (chi-square = 62.7, df = 3, $p < 0.001$). Specifically, a higher proportion of patients for which only one drug was prescribed were in the younger age groups (less than 1 year and 1 year to 5 years) compared to the older age groups (6 years to 10 years and 11 years and above). The reason for this is not obvious.

Conclusion

The findings of this study suggest that antibiotic prescribing in the clinic is relatively rational, with almost all prescriptions being for one antibiotic per patient, majority of antibiotics being administered orally and the most prescribed antibiotics listed in the Nigeria Essential Drug list.

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