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# DRUG PRESCRIPTION PATTERN IN A NIGERIAN TEACHING HOSPITAL

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## ABSTRACT

**Background**: There is an increasing incidence of irrational drug use worldwide. The drug prescription pattern in Nigeria is characterised by inappropriate drug use which has led to increasing expenditure and loss of patient confidence in the health sector. This has led to calls to improve prescription patterns in Nigerian hospitals.

**Materials and Methods**: a descriptive cross sectional study was conducted from May 17 2016 to August 16 2016. The case files of 621 patients from outpatient department of the Lagos State University teaching Hospital were analyzed and compared with the WHO prescription indicator criteria using the spss version 16 for statistical analysis.

**Results**: There were 2020 drugs prescribed. An average of 3.25 ($\pm$1.60) drugs was prescribed per patient. The antibiotics prescription rate was 26.89% with 47.10% of medications prescribed as generics and 89.45% from the essential drugs list. The injection prescription rate was 0.84%. Analgesics were the most frequently prescribed medications with prescription rate of 50.89%

**Conclusion:** Polypharmacy, low use of generic medications and over prescription of antibiotics is still a problem in this facility. There is need to educate health workers especially doctors on rational drug use.

## INTRODUCTION

Drug prescription pattern in Nigeria has come under increased scrutiny because of the huge burden of increasing expenditure, side effects, and medication adherence issues amongst others. In a health system where payment for health services is largely dependent of out of pocket payment, inappropriate use and overuse of medicines waste resources will not only lead to wastage of resources but also adverse drug

others. In a health system where payment for health services is largely dependent of out of pocket payment, inappropriate use and overuse of medicines waste resources will not only lead to wastage of resources but also adverse drug reactions, and poor patient outcomes and adverse drug reactions.[1] Loss of confidence in the health sector, reduced hospital attendance, drug stock out, poor quality of life and high cost of health care are other consequences of irrational use of drugs [2,3]

According to the World Health Organisation (WHO), more than half of medicines prescribed, dispensed or sold globally are done inappropriately which has led to renewed calls by the WHO and other health related agencies for Rational Drug Use (RDU) in health institutions.[1] According to the WHO, rational drug use requires that patients receive 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.[2] The five important criteria for rational drug use are accurate diagnosis, proper prescribing, correct dispensing, suitable packing and patient adherence. The prescribers should make an accurate diagnosis and prescribe rationally and the pharmacist should ensure that effective form of the drug reaches the right patient in prescribed dosage and quantity, with clear instructions on its appropriate use.[2]

Irrational use of medicines include: polypharmacy, or the prescribing of too many

medicines for a patient, inappropriate use of antimicrobials, often in inadequate dosage, and sometimes for non-bacterial infections; failure to prescribe following established clinical procedures, such as, national treatment guidelines and hospital policies; inappropriate self-medication of prescription-only medicines; and incidences relating to various types of non-adherence to dosing regimens by patients.[4,5,6]

The WHO developed and tested a set of standardized indicators for general out patients care. These indicators are divided into core and complementary drug use indicators. The core drug use indicators test prescribers, patient care and the facility. Among the uses of these indicators are to describe current treatment practices, compare health facilities and prescribers and allow for identification of potential drug use problems that may affect patient care. [2,7]

Several studies within and outside Nigeria have reported varying degrees of inappropriate prescriptions and misuse of drugs in public sector health facilities.[8,] A WHO report indicated that about 60% of antibiotics prescription were either inappropriate or unnecessary .[10] The periodic assessment of the prescribing practices healthcare facilities will help to identify specific drug use problems, sensitize practitioners on rational drug prescription and provide policy makers with relevant information with which to make informed decision on.[11]

This study accessed the prescription patterns of doctors at the general out-patient clinic of the Lagos State university teaching Hospital (LASUTH) and their compliance with the WHO indicator for rational drug use.

**AIMS AND OBJECTIVES**: To assess the prescription pattern of doctors in the GOPD via the WHO prescription indicator with the aim of promoting rational drug use in LASUTH.

## METHODOLOGY

**Study Area: Lagos** is currently the second most populous city in Africa, and currently estimated to be the second fastest growing city in Africa ( ranked 7th fastest growing in the world. Lagos is located in  south-western Nigeria, on the Atlantic coast in the Gulf of Guinea, west of Niger River delta, located on longitude $3^0$ 4' E and latitude $6^0$ 27'N. The study location was the general outpatient (GOP) clinic of the family medicine department at Lagos State University Teaching Hospital (LASUTH), Ikeja.

**Study Design:** A descriptive, cross-sectional study was conducted from May 17 2016 to August 16 2016, to assess the prescription pattern of doctors in LASUTH. Data for computation of core prescribing and facility indicators of Rational Drug Use was collected as stipulated by the WHO for general out- patient care facilities. The WHO criteria for sample size calculation in cross sectional surveys of drug prescription pattern stipulates that at least 600 encounters with a greater number if possible

**Sampling Technique:** For each month, a suitable sampling interval was used to enable systematic random sampling of case notes which met the inclusion criteria of having a prescription. This gave a total of 621 case notes over 3 months. Sampling unit was each patient encounter taking place at the outpatient facility.

**Data collection and analysis:** A proforma was used to extract the WHO core indicators:[4] such as:

a) Mean number of drugs per encounter was calculated by dividing the number of different drugs prescribed by the number of patient encounters, each drug was counted singly.

b) Percentage of total drugs prescribed by generic name was calculated by dividing the number of drugs prescribed by generic name versus total number of drugs prescribed by 100.

c) Percentage of total patient encounters with an antibiotic prescribed was calculated by dividing the number of patient encounters in which an antibiotic was prescribed versus the total number of drugs multiplied by 100.

d) Percentage of total encounters with an injection prescribed was calculated by dividing the number of patient encounters in which an injection was prescribed versus the total number of drugs multiplied by 100.

e) Percentage of total encounters with multivitamins prescribed was calculated by dividing the number of patient

encounters in which a multivitamin was prescribed versus the total number of drugs multiplied by 100.

f) The percentage of drugs prescribed from the hospital list of essential medicines was calculated by dividing the number of drugs from the essential drug list versus the total number of drugs multiplied by 100.

A list of 12 commonly used classes of drugs was drawn up from the prescriptions in the case notes. Results were analysed using the SPSS (Statistical Package for the Social Sciences) for Windows 16 (SPSS Inc, Rochester, MN, USA). Descriptive statistics (means and percentages) was used to present the results.

## Operative Definitions

Generic drugs were categorised using the essential drug list of LASUTH as a basis to determine drugs as generic or branded.

Each drug prescribed was counted singly and in cases of two or more drugs in combination for a health condition, they were counted as one.

Ethical approval was obtained from the ethical committee of the Lagos State University Teaching Hospital, Ikeja.

## RESULTS

A total of two thousand two hundred and twenty drugs were prescribed and evaluated.

**Table 1 Frequency and Prescription Rates of Medications in the GOP Clinic**

| Drug Class | Prescription Rate (%) | Number of Drugs per 621 Prescriptions |
|---|---|---|
| Antimalaria | 14.81 | 92 |
| Anti Diabetic | 8.37 | 52 |
| Antihypertensive | 26.73 | 166 |
| Antibiotics | 26.89 | 169 |
| Analgesics | 50.89 | 316 |
| Multivitamin | 28.50 | 177 |
| Antidepressant | 4.67 | 2.9 |
| Antiasthma | 3.38 | 21 |
| Antiulcer | 11.92 | 74 |
| Anti cholesterol | 4.35 | 27 |
| Antihistamine | 7.57 | 47 |
| Others | 13.69 | 85` |

Table 2 shows analgesics were the most frequently prescribed medications with prescription rate of 50.89%, with multivitamins (28.50%), antibiotics (26.89%) and antihypertensive (26.73%), also frequently prescribed.

## Table 2 WHO PRESCRIBING INDICATOR INDICES

| Prescribing Indicator | Value | WHO Standards |
|---|---|---|
| **Average number of medications prescribed** | 3.25 ± 1.60 (1-9 ) | 1.6 -1.8 |
| **Drugs prescribed as antibiotics (%)** | 26.89 | 20-26.0% |
| **Drugs prescribed as generic (%)** | 47.10 | 100 |
| **Drugs prescribed as multivitamins (%)** | 28.50 | No recommendation By WHO |
| **Drugs prescribed as injections (%)** | 0.84 | 13.4 - 24.1 |
| **Drugs prescribed from essential drugs list (%)** | 89.45 | 100 |

Table 1 showed that an average of 3.25 (±1.6) drugs were prescribed per patient with the antibiotics prescription rate was 0.84%, with 47.10% of medications prescribed as generics and 89.45% from the essential drugs list.

## Discussion

Analgesics were the most commonly prescribed medication in this study. This is similar to results from a similar study in Ibadan.[11] This may be due to pain being a common complaint at outpatient departments. The high prescription rates noted for antihypertensive medications could be due to high prevalence of hypertension in Nigeria.[9]

The average number of drugs prescribed per patient was 3.25, ranging from 1 to 9 drugs. In the pioneer study of 12 countries by Hogerzeil et al, the average number of drugs prescribed per client was between 1.3 and 3.8 (with Nigeria accounting for the highest average of 3.8).[8] This figure appears abnormally high when compared with other countries. In the Asir region of Saudi Arabia the mean number of drugs prescribed per encounter was 1.44,[8] similarly findings in Sudan 1.4 and Zimbabwe 1.3 were similarly low.[12] It was however less than that seen in a study conducted in Ilorin which had an average number of drugs prescribed of 3.99 with at least 60% of the prescriptions containing at least 4 drugs.[9] A similar study in a public hospital in Warri, Nigeria reported an average number of drugs per encounter of 3.9.[1] The results from this study are in keeping with the national average and shows that prescription of several drugs per patients (poly pharmacy) is a serious problem in this study centre as in other parts of Nigeria.[9] The finding could be due to patients' demand for medciations;[1] desire to treat several ailments at the same time and inadequate diagnostic facilities to determine definitive cause of ill health at the time of presentation.[13]

WHO encourages the use of generic analogue of drugs, as they are cheaper than branded substitutes and have equal potency. [2] In this study, 47.10% of the drugs prescribed were generic Other studies in Nigeria have also reported low use of generics in Ilorin (46.2%), Kano (42.7%) and military reference hospitals (49.3%). [9,11,14] This is however in contrast to a study in Tanzania found that 84.0% of drugs were prescribed in their generic forms.[15] The low figure seen in this study may be due to pressure from pharmaceutical companies and a general belief that some branded dugs are more trusted than generic ones. In addition to the lower economic cost to patients and health systems, generic prescribing helps to reduce the incidence of therapeutic duplication errors.[14]

About 26.89 % of drugs prescribed in this study were antibiotics , this figure is higher than the WHO recommendation that not more than 26.0 % of general outpatient prescriptions should include antibiotics.[2] In Europe and South America, the antibiotic prescription rate is about 27% [8,13]. Our findings are however lower than figures reported in studies from countries in the Middle east and Africa with Bahrain (45.8%), Jordan (60.9%) , Sudan (63% ) and Saudi Arabia 56.2% .[16] The relatively lower rates in this study as compared with other African and Middle eastern countries could be due to use of protocols for patient management in the GOP clinic of the study centre. Unnecessary use of antibiotics promotes drug resistance, increases risk of side effects and is wasteful of medical resources.[11]

Inappropriate use of injections is another aspect of irrational drug use. Less than one percent of drugs prescribed in this study were injectables. A study on injection prescription rate in Nigerian army hospitals reported a 24% rate,[14] whilst a study in Osun State reported an injection prescription rate of 72.7% .[17] Reports from other African countries of 36% and 48% of injection use have been reported.[8] There is a belief in Nigerian and African settings that injections are more efficacious than tablets.[17] The low reported rate in this study could be due to training on the dangers of injection use in the study centre and the fact that the study was carried out in an outpatient department. Injectables can be complicated by injection abscess, paralysis, and infection with deadly viruses such as hepatitis B and human immunodeficiency virus.[14]

The vitamin prescription rate in this study was 28.50 %. The figure was however lower than those found in the Ilorin study which reported 62.9%.[9] The reason for these differences is not clear but the influence of drug companies representatives and demand by patients who believe in the efficacy of multivitamins has a role to play in its increasing prescription rates.[15]

The majority of drugs prescribed in this study were from the Essential Drug List (EDL). This was similar to the high reported rates in a study in Ibadan.[11] The reason for this could be due to the fact that the study centre has an EDL which is updated every 2-3 years .The utilization of EDL coupled with education to promote its use can improve prescribing practices. It is however worrying that despite the widespread use of drugs from the essential drugs list, there is still a low generic prescription rate.

## Limitations of the Study

The limitation of the study was that it was carried out in only in the general outpatient department; hence its results may not reflect the pattern in other departments of the hospital.

## Conclusion

The findings showed that polypharmacy alongside low use of generic medications and over prescription of antibiotics is still a problem in tertiary institutions in Nigeria. There is however progress as evidenced by low number of injection prescriptions recorded. There is a need for regular audit of prescription practices in hospitals and regular training of medical personnel to promote rational drug use.

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