

## Prescription Pattern at a Secondary Health Care Facility in Ilorin, Nigeria

T. M. Akande<sup>1</sup> and M. O. Ologe<sup>2</sup>

<sup>1</sup>Department of Epidemiology and Community Health, College of Health Sciences, University of Ilorin, Ilorin, Nigeria

<sup>2</sup>Department of Pharmacology and Therapeutics, College of Health Sciences, University of Ilorin, Ilorin, Nigeria  
Reprint requests to: Dr. T.M. Akande, Department of Epidemiology and Community Health, University of Ilorin Teaching Hospital, P.M.B. 1459, Ilorin, Nigeria. E-mail: [akandetm@yahoo.com](mailto:akandetm@yahoo.com)

### Abstract

**Background/Objectives:** Expenditures due to irrational use of drugs have been a strain on the meagre health budgets of several developing countries and inappropriate prescribing has been identified in many health facilities in developing countries. This study examines the prescription pattern in a secondary health facility.

**Method:** A descriptive cross-sectional survey was used in this study. Three hundred and three randomly selected prescriptions issued to patients attending out-patients' clinics in the facility over a period of three months were examined. Data obtained was analyzed using EPI-INFO 2000 computer software.

**Results:** Mean number of drugs per prescription in the health facility is  $3.99 \pm 1.55$ . At least 4 drugs were prescribed in 61.6% of the prescriptions. Generic prescribing was generally low. Out of a total of 1219 drugs prescribed 511 (41.9%) were prescribed in generic names. Analgesics, antimalarials, antibiotics and antihypertensives accounted for 19.7%, 10.2%, 13.0% and 4.9% of the drugs prescribed respectively. Only 124 (40.9%) of the prescriptions had all drugs prescribed available in the health facility.

**Conclusion:** This study found practice of polypharmacy prevalent as found in other studies in developing countries among prescribers and prescription in generic names is low. Regular orientation and re-orientation of prescribers on rational drug prescription and prescription in generic names in conformity with national drug policies is necessary.

**Key words:** Drug prescription, pattern, health facility

### Résumé

**Introduction/Objectifs:** Les dépenses dues à l'utilisation irrationnelles des médicaments ont été une rude épreuve sur des maigres budgets de la santé de plusieurs pays en voie de développement et de prescription inappropriée a été identifié dans de nombreux établissements de santé dans les pays en voie de développement. Cette étude fait un examen de la tendance de la prescription dans un centre des soins secondaire.

**Méthodes:** Une étude descriptive d'un groupe représentant a été utilisé dans cette étude. Trois cents trois ordonnances délivrées aux patients choisis au hasard, aux patients fréquentant le clinique des patients externes du centre hospitalier pendant une période de trois mois sont été étudiés. Des données obtenues ont été analysées à l'aide de EPI INFO 200 logiciels informatiques.

**Résultats:** Nombre moyen de médicaments par prescription dans le centre de la santé est  $3,99 \pm 1,55$ . Au moins, 4 médicaments sont prescrits dans 61,6% des ordonnances. Prescrivants des génériques a été généralement faible sur un total de 1219 médicaments prescrits 511 soit 41,9% ont été prescrits dans noms génériques. Analgésiques, le antipaludiques, les antibiotiques et les antihypertensions sont représentés 19,7% 10,2% et 4,9% des médicaments prescrits respectivement. Seulement 124 (40,9%) des prescriptions de médicaments prescrits sont tous disponibles dans les établissement de la santé.

**Conclusion:** A travers cette étude, nous remarquons que la pratique de la fréquence de la poly pharmacie comme trouvées dans d'autres études dans les pays en voie de développement entre les prescripteurs et la prescription des noms génériques est faible. Orientation régulières et de réorientation des prescripteurs sur la rationnelle de la prescription des médicaments et de prescription de noms génériques en conformité avec les politiques en matière de drogue est nécessaire.

**Mots clés:** Médicament sur ordonnance, tendance, centre hospitalier

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## Introduction

Appropriate drug utilization has a huge contribution to global reductions in morbidity and mortality with its consequent medical, social and economic benefits.<sup>1</sup> The WHO published its first report on selection of essential drugs in 1977. Essential drugs program was introduced in Nigeria through the promulgation by the Federal Government National Drug Formulation and Essential Drug list decree in 1989. One of the objectives of preparation of essential drugs list is to develop and follow a system of rational use of drugs. Expenditures due to irrational use of drugs have been a strain on the meagre health budgets of several developing countries.

Despite the Essential drug program in countries, there is some evidence of poor prescribing habits by physicians, including irrational use of drugs, high numbers of drugs per prescription and high use of injectable formulations and antibiotics.<sup>2</sup> Inappropriate prescribing has been identified in many health facilities in developing countries.<sup>3</sup> Misuse of antibiotics, overuse of injections, and under-use of life-extending drugs for illnesses such as HIV/AIDS, heart disease, and other chronic illnesses together constitute a global epidemic of irrational use of medicines. According to figures gathered by surveys presented to WHO, in 2000, about 60% of antibiotics in Nigeria were prescribed unnecessarily.<sup>4</sup> Irrational use of drugs due to inappropriate prescription can also lead to adverse drug events which cause illness or death. Surveys have shown that doctors prescribe drugs when they are not indicated.<sup>5,6</sup> There is no previous publication on prescription pattern in secondary health facilities in this part of Nigeria. This descriptive cross-sectional study examined prescription pattern in a secondary health facility in Ilorin, Nigeria. Findings from this study will sensitize health workers on rational drug use and also help policy makers have some information that can help in further review of policies as well as implementation of policies related to drug prescribing in the country.

## Materials and Methods

This descriptive cross-sectional study was conducted at Civil Service Hospital in Ilorin, Nigeria. It is a secondary health care facility run by Kwara State Ministry of Health. The facility is a 32-bed hospital and provides in-patient and out-patient health care. The physicians in the facility are general practitioners except one specialist in Ophthalmology. The health facility was initially meant to provide health care for the civil servants but for several years has been providing health care to the general public. The facility has 4 Pharmacists and 4 Pharmacy technicians. The facility has the essential drug list but this is not made available to prescribers.

Three hundred and three prescriptions issued to patients attending out-patients' clinics in the facility over a period of three months were examined. Data collection form was designed and used by trained

pharmacy technicians to record data and information on the prescribed drugs in the health facility. Systematic random sampling was used to select patients' prescriptions to be used for the study. The average number of prescriptions in the facility per day was 40. A sampling interval of 4 was used to select prescriptions used for the study. The starting point for the first prescription used was the selected by balloting and subsequent prescriptions was picked using the sampling interval of 4.

Data generated from the questionnaires were analyzed using EPI-INFO 2000 software<sup>7</sup> after manual data verification and cleaning. Frequency distribution tables were produced from the analysis.

## Result

The study was conducted at civil service clinic, Ilorin, a secondary health care facility run by Kwara State government. A total of 303 forms were filled by pharmacy technicians in the hospital. Majority 270 (89.1%) of the prescriptions were from doctors while other health care providers were responsible for 33 (10.9%) of the prescriptions.

In 291 (96.0%) cases, prescriptions sheets were used for writing the prescription. The number of items prescribed per prescription sheet for the patients ranged from 1 -13 with a mean of  $4.22 \pm 1.81$ . The number of drugs prescribed ranged from 1 – 9 with a mean of  $3.99 \pm 1.55$ . Majority of the prescriptions (61.6%) had at least 4 drugs prescribed. Majority of the prescriptions (80.5%) did not include consumables (needle and syringe, cotton wool, etc).

One hundred 100 (33.0%) of the prescriptions contained at least one antimalarial. Out of the total of 124 antimalarials prescribed only 45 (36.3%) were prescribed in generic name and 24 (19.4%) were prescribed as injectables. Of the antimalarials prescribed 47 (35.1%) was chloroquin, 66 (49.3%) was sulphadoxine combinations and the rest type of antimalarials constituted (15.7%).

Among the patients' prescriptions 124 (40.9%) had at least one analgesic, 58 (19.1%) had at least 2 types of analgesics prescribed. Out of the total 240 analgesics prescribed, 151 (62.9%) were in generic names and 26 (10.8%) were injectables. More than half (59.5%) of the analgesics prescribed was paracetamol, nimesulide (16.1%), metamizol, (10.3%), other analgesics prescribed included Ibuprofen and celecoxib.

As much as 189 (62.9%) of the prescriptions had at least one vitamin and 38 (12.6%) contained at least 2 vitamins which were mostly (66.7%) prescribed in generic names and oral form (97.8%). Out of the 303 prescriptions, 135 (44.7%) of prescriptions contained at least one antibiotic and only 23 (7.6%) had at least two antibiotics. Most commonly prescribed antibiotic is amoxicillin (25.0%) followed by combination of ampicillin and cloxacillin (16.7%), other antibiotics prescribed include tetracycline (7.7%), Ciprofloxacin (7.1%) and cotrimoxazole (6.4%), antibiotics prescribed in

generic name was (31.4%).

Of all the prescription 60 (19.8%) contained at least one antihistamine mainly as chlorpheniramine (91.0%), 7 (2.3%) had at least two antihistamines and only 3 (4.5%) were prescribed in generic names. Also, 46 (15.2%) of the prescriptions had at least one antihypertensive, 12 (4.0%) contained at least two antihypertensives and 24 (40.0%) of the antihypertensives were prescribed in generic names. A total of 41 (13.6%) of the prescriptions contained diuretics of which only 2 (4.8%) were in prescribed in generic name. About a tenth, 31 (10.3%) of the prescriptions contained antispasmodics and all not prescribed in generic name. All antihistamines (H<sub>1</sub>-blockers), antihypertensives, diuretics and antispasmodics prescribed were in oral form.

One hundred and forty seven (48.7%) of the prescription contained 210 other drugs mainly made up of drugs like antitussives (9.7%), haematinics (9.7%), antacids (6.5%), corticosteroids (6.9%), anxiolytics (7.4%). Sixty-seven (30.9%) of these other drugs were prescribed in generic names.

Out of a total of 1219 drugs prescribed (Table 1), 511 (46.2%) were prescribed in generic names. Out of the 303 prescriptions 124 (40.9%) had all the drugs prescribed available, 178 (59.1%) had at least one drug not available, 71 (23.5%) had at least 2 drugs not available and 28 (9.3%) had at least 3 drugs not available. The mean number of prescribed drugs per prescription that was available is  $3.056 \pm 1.68$  and the mean number of drugs not available was  $0.95 \pm 1.04$ .

**Table 1.** Distribution of 1219 prescribed drugs and type of prescription

Drugs	Generic name		Prescribed route	
	Yes (%)	No (%)	Oral (%)	Parenteral (%)
Analgesics	151(62.9)	89 (37.1)	214 (89.2)	26 (10.8)
Vitamins	152 (66.7)	76 (33.3)	223 (97.8)	5 (2.2)
Antimalarials	45(36.3)	79 (63.7)	100 (80.6)	24 (19.4)
Antihistamines	3(4.5)	64 (95.5)	54 (80.6)	13 (19.4)
Antibiotics	50 (31.4)	109 (68.6)	158 (99.4)	1(0.6)
Antihypertensives	24 (40.0)	36 (60.0)	60 (100.0)	-
Diuretics	2 (0.5)	39 (99.5)	39 (99.5)	2 (0.5)
Antispasmodics	-	31 (100.0)	30 (96.8)	1(3.2)
Eye medication	17 (28.8)	42 (71.2)	59 (100.0)	-
Others	67 (31.9)	143 (68.1)	190 (90.5)	20 (9.5)
Total	511 (41.9)	708 (58.1)	1127 (92.5)	92 (7.5)

## Discussion

In this study the prescribers as expected of a secondary health facility were mainly physicians. The mean number of drugs per prescription in this study was  $3.99 \pm 1.55$  and at least 60% of the prescriptions contained at least 4 drugs. This is similar to finding of average number of drugs per encounter of 3.9 in the public hospital in a study in Warri, Nigeria<sup>3</sup> and the finding in Iran<sup>2</sup> where average number of drugs prescribed was 3.4. The situation in tertiary health facility in Nigeria is not too different from findings in North Western Nigeria of 3.5 drugs per prescription.<sup>8</sup> The number of drugs per prescription in this study is however higher than the average number of drugs prescribed at  $2.41 \pm 0.02$  for Randle health center and  $2.64 \pm 0.02$  for Onikan health center both in Lagos, Nigeria.<sup>9</sup>

The most prescribed group of drugs in this health facility is analgesics received by 41.1% of the patients and this is followed by antimalarial which was prescribed for about a third of the patients. Sulphadoxine combinations were prescribed more than chloroquine in this center and very few received artesunate or artesunate based combinations. The study was conducted at a time when the Federal Ministry of Health had just introduced the policy of

making artemisinin-based drug combinations the first drug of choice in malaria treatment, thus it would be necessary to sensitize health care professionals at all levels of health care delivery on the advantages and benefits that these drug combinations have over the former antimalarial drugs.

According to figures gathered by surveys presented to World Health Organization (WHO) in 2000, about 60% of antibiotics in Nigeria were prescribed unnecessarily. In Nepal, over 50% of antibiotics prescribed in 1996 were not needed and 40% of medicines expenditure in the same year was wasted due to inappropriate prescriptions. Globally, the figure for unwarranted antibiotics prescriptions stands at roughly 50%.<sup>4</sup> In this study about 45.0% of the prescriptions contained antibiotics.

Parenteral route prescription of drugs in this study was found to be relatively low when compared with findings from other studies, only 7.5% of the drugs prescribed in this study were parenteral drugs as compared with 26.9% in a study in Enugu, Nigeria<sup>10</sup> and Isah et al reported percentage encounters with injections of 10.1 – 17.0% in a study in two States in Nigeria.<sup>11</sup>

Availability of drugs remains a problem in health facilities in developing countries. In this study only about 40% of the patients got all prescribed

drugs and an average of 1 out of 4 drugs prescribed per prescription was not available. This situation is worrying given the long period of time this country has accepted the principle of Bamako Initiative and drugs are not given to patients free in this facility. Since patients pay for drugs purchased there is no reason why these essential drugs should not be readily available for the patients. The health system needs to overhaul drug procurement system in health facilities. The over-centralized drug procurement in public health facilities particularly those run by State governments with its bureaucracy often affect drug availability in the health facilities.

Prescription of drugs in generic names is not a common practice in this health facility as no group of drugs except vitamins had more than 40% of drugs prescribed in generic names. The group of drugs least prescribed in generic names was diuretics with only 0.5% prescribed in generic names. Of all the prescribed drugs only 46.2% were prescribed in generic names. Prescription of antihypertensive in generic names in this facility is better than what was found in a Lagos University Teaching Hospital in which only 31.6% of antihypertensives prescribed were in generic names.<sup>5</sup> These findings are despite the fact that over 120 developing countries including Nigeria have now adopted the essential drugs concept and developed a national essential drugs list.<sup>12</sup>

Polypharmacy, non-prescription of drugs in generic names and non-availability of drugs in health facilities remain a problem in health facilities. Prescription of drugs in trade names is not in conformity with the national drug policy. This adversely affects the effectiveness of the essential drug program and reflects the state of irrational drug prescription. This study however was not able to capture prescriptions that were not taken to the facility's pharmacy by patients who go outside the facility to procure their drugs. Further studies are needed on drug prescribing habits in Nigeria, to help policy makers to be well informed of the problems and provide feasible policies to reduce these problems. Necessary measures should be put in place including re-orientation and training of clinicians on rational drug prescribing to avoid un-necessary expenses on drugs and avoid likely negative effects on health of the people.

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