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Prescription pattern of clinicians in private health facilities in Kano, Northwestern Nigeria

Igbiks Tamuno

Department of Pharmacology, Faculty of Medicine Bayero University, Kano, Nigeria

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ABSTRACT

Objective: To evaluate the prescription pattern of clinicians in private health care facilities in Kano, Northwestern Nigeria. **Methods:** One thousand prescriptions from ten private health facilities in Kano were evaluated retrospectively using WHO prescribing indicators. **Results:** Average number of drugs per encounter in these health facilities was 3.20. Generic prescribing was low at 55.40% while encounters with antibiotic prescription were high at 43.80%. About 91.20% of prescribed drugs were listed in the national essential drug list while 83.30% of the drugs for treatment of common health problems were available in these facilities. Nearly 18% of encounters had at least one injection prescribed while antihypertensives, analgesics, antimalarials, vitamins and anxiolytics were prescribed in 11.80%, 61.30%, 30.20%, 21.50% and 12.30% of encounters, respectively. **Conclusions:** Polypharmacy, overuse of antibiotics and injections, and low rate of generic prescribing occur in private health facilities in Kano. Therefore, there is a need to draw attention to the educational intervention.

1. Introduction

The introduction of the manual,"How to investigate drug use in health facilities", following the collaborative work of the international network for the rational use of drugs (INRUD) and the WHO essential drugs and medicines policy department (WHO−EDM) provided useful tools for objective and reproducible measures of the effectiveness and efficiency of drug use[1].

These measures enable the comparison of drug prescribing within and between facilities, regions and countries and offer potential tools for audit, supervision and monitoring of drug use practices[2,3].

Irrational prescriptions and use of drugs is a feature in health care settings of developing countries and is characterized by polypharmacy, excessive use of antibiotics and injections and use of drugs of doubtful origin. Prescription audit shows the way towards rational use of drugs[4]. Irrational drug use could also lead to ineffective and unsafe treatment, exacerbation or prolongation of illness, distress and harm to the patient, and higher costs[5].

Field tests carried out in various countries highlighted a significant degree of inappropriate prescription and use of drugs in the public sector health facilities studied[6].

Some studies in Nigeria have also highlighted different degrees of irrational prescriptions in public health facilities[6,7].

Private health institutions have a substantial clientele who patronize them for various reasons. Factors encouraging this patronage range from absence of long queues, convenience of opening times, better attitude of staff and the likelihood of privacy[8]. In these institutions, large volumes of drugs are prescribed by the practitioners.

Most studies on prescription practice focus on public health institutions. Studies on the characterization of prescription pattern among clinicians in private practice in this part of the country using WHO prescribing indicators are to our knowledge rare.

This study was therefore designed to evaluate the prescription pattern of clinicians in private health institutions in Kano State using the WHO drug use indicators. Findings from this study will sensitize health workers in private practice on rational drug use and help policy makers in formulating and implementing programmes aimed at improving prescription practices.

*Corresponding author: Dr Igbiks Tamuno, Department of Pharmacology Faculty of Medicine Bayero University, Kano, Nigeria.
 Tel: 08034511972
 E−mail: igbikstamuno@yahoo.com

2. Materials and methods

This retrospective cross sectional study was carried out in 10 different private health institutions selected by a systematic random sampling method from the one hundred and thirty two registered private health institutions in Kano State at the time of the study. These encounters were done between July 2007 to August 2008 when the study was undertaken.

A minimum of 100 prescriptions per facility were obtained from subsequent patient encounters in these selected institutions. Encounters with patients less than 12 years of age, those with purely surgical, obstetric or gynaecological conditions where drugs were not usually prescribed were excluded from the study.

Data obtained from each patient encounter were entered into a prepared data sheet and were later used to calculate the WHO core prescribing indicators. These are average number of drugs per encounter, percentage of drugs prescribed by generic name, percentage of encounters with an antibiotic prescribed, percentage of encounters with an injection prescribed, percentage of drugs prescribed from essential drugs list or formulary.

Prospective enquiries were made as to the availability of a copy of essential drug list at the point of prescription.

Further analysis of the data was done to characterize other indices including percentage of analgesics, antimalarials, multivitamins and anxiolytics, antihypertensives prescribed and percentage availability of key drugs made from a model list of 12 commonly used key drugs;

The Data were presented as percentages and averages and standard errors were also shown.

3. Results

Nine hundred and ninety eight prescriptions obtained from patient encounters in the 10 private health institutions were evaluated. Two prescriptions were invalidated for reasons of incomplete data. All the encounters had one or more drugs prescribed. A total of 3 162 drugs were prescribed in the 998 patient encounters evaluated with an average of (3.20 ±0.04) and a range of 1 to 8. (54.40±0.03)% of drugs (1 720) were prescribed in generic names while (43.80±0.02)% of all encounters (457) had at least one antibiotic prescribed. The percentage of drugs prescribed that were listed in the essential drugs list or formulary was (91.20±0.02)%. (83.30 ±0.03)% of key drugs for the treatment of common health problems were available in these facilities while a copy of essential drugs list was available only in (30.00±0.00)%[3] at the point of prescription in the facilities studied.

In (17.90±0.02)% of encounters (179), at least one injection was prescribed. (11.80±0.02)% encounters had at least an antihypertensive prescribed while analgesics, antimalarials, vitamins and anxiolytics were prescribed in (61.30±0.02)%, (30.20±0.02)%, (27.50±0.02)% and (12.30±0.07)% of encounters, respectively. Among the 301 prescriptions having antimalarials, 80 constituting 26.6% of all antimalarials

prescriptions had chloroquine prescribed.

4. Discussion

The WHO prescribing indicators have provided a reproducible and objective measure of characterizing prescriptions by clinicians. This study reveals areas of irrational prescribing that needs to be addressed with intervention programmes.

Whilst the WHO guidelines on rational use of drugs had reference values of (1.6–1.8) drugs per encounter[9], the average of 3.2 drugs prescribed per patient encounter as seen in this study is comparatively high.

However, this high average number is similar to those of public health institutions in the same setting, suggesting the therapeutic tradition in the regions[6,7]. However, it is lower than that observed by researchers in Benin City, Nigeria who ten years earlier, had recorded an average of 4.4 in a study conducted in private institutions in the South–South region[10]. This average however exceeds those reported from developing countries with programmes promoting rational drug use as well as standards proposed for the locality including Bangladesh and Lebanon[9], Bahrain[11] and Mali[12]. In the United Arab Emirates[13], Sharif *et al* reported a 2.2% average drug prescription while Owusu–Daaku and Sablah from Ghana[14] reported values similar to ours from clinicians in the institutions studied.

No doubt, a high number of drugs prescribed to a patient increases the risk of drug interactions, affects compliance and suggests a tendency towards polypharmacy with all its attendant ills. In this study, 70% of encounters had three or more drugs prescribed while five or more drugs were prescribed in over 15% of patient encounters. A relationship has been described between polypharmacy and chronic polypharmacy–the prescription of multiple medicines in itself a predisposing factor to adding further drugs[15]. Studies have also shown a clear relationship between polypharmacy and underprescribing, a situation in which an indicated drug was not prescribed even as no reasons could be found for not prescribing it. The probability of under prescription increases significantly with the number of medicines. This has been shown to result in the so called treatment risk paradox or risk treatment mismatch where patients at highest risk for complications have the lower probability to receive the recommended pharmacological treatment[16,17].

In this study, injection use was found to be 17.90%. This is close to the WHO reference values of 10.1–17.0 as reported in a WHO sponsored field test in South South, Nigeria[9]. It is much lower than that reported by other workers in Nigeria[7], Sudan and Uganda[1]. It is conceivable that efforts by governments and professional associations on education on the dangers of high injection use in an era of many blood borne infections like HIV and hepatitis B may be paying off since these studies were all done much earlier, most of them in the public sector.

The WHO expects a 100% prescription of drugs in generic

name. However, only 54.40% of drugs prescribed in this study were done in generic name. This is considerably low. Similar low values have been reported in Nigeria[6,7,10], Ghana[14], Lebanon and Nepal[1] while higher figures of 75.0% to 99.8% have been reported from Bangladesh[1], Ethiopia and Tanzania[1]. A much lower value of 4.4% was reported from Dubai in United Arab Emirates[13]. Increasing generic prescribing could substantially reduce the cost of drugs for the patients and reduce cost for pharmacies. Low generic prescribing could also add to the confusion of patients who are already faced with the burden of polypharmacy. This no doubt, could lead to duplication errors where patients may unknowingly take the generic and brand name. Generic prescribing is an indicator of prescribing quality[18] and the cost of prescribed medications can determine the level of compliance as shown by Maiga *et al* in Mali[19] who also showed in another study a marked difference in generic prescription between public and private health facilities with 88.2% and 30.9% for public and private facilities respectively[20]. However, for drugs with narroe therapeutic window or formulations with different bioavailabilities which can differ in dosing frequencies, use of proprietary names may be in order as advised the information services division in Scotland[21].

Over 91% of drugs prescribed in this study were found to be listed in the national essential drug list even though only 30.00% of facilities studied had a copy of the essential drug list at the points of prescription. However, all the clinicians admitted to having a knowledge of the existence and usefulness of the list. This value is similar to that reported from some parts of Nigeria[7] while it is higher than some other reports from Nigeria[9], India, Bangladesh, Burkina Faso, Nepal and Pakistan[1]. It is interesting to note that antibiotics were prescribed in 43.80% of encounters. This is rather high, much higher than the WHO reference value of 20.0%–25.4% in the study referred to earlier. This is however less than 50.4% seen in a similar study in private health facilities conducted over ten years ago[10], and a figure of 67.7% reported from public health facilities study in Kano done in 2004[7]. Reports from other lands have given less values from Nepal and Tanzania[1]. while reports from Bahrain had showed high levels of antibiotic prescriptions[22] with diurnal variation in prescribing practices where the training background of the prescriber influenced the pattern of prescription[23,24]. In this study, while 356 prescriptions had one antibiotic prescribed, 76 and 5 prescriptions had 2 and 3 antibiotics prescribed, respectively. This finding suggests that overprescribing of antibiotics is also a feature of practice in the private sector just as has been widely reported in public sector studies above. Appropriate use of antibiotics is necessary to prevent emergence of drug resistant strains of microorganisms.

A high percentage of encounters with analgesics (61.30%), multivitamins (27.50%) and anxiolytics prescribed is similar to that found in a private health institutions study[10]. It is possible that these drugs were prescribed to gratify patients, thus serving as mere placebos in some cases[25].

Antihypertensive prescriptions of 11.80% is lower than that

seen in a study in public facilities in Nigeria[6,26] particularly in secondary and tertiary hospitals. This is probably because of a tendency for patients to seek more specialized treatment for an ailment with an indeterminate period of treatment. Most of the medical specialists in Nigeria are employed in the public sector. More than half of the 118 encounters with anti–hypertensive drugs had more than one antihypertensive drug prescribed. This is in keeping with various guidelines on the treatment of hypertension which encourage combination therapy appropriately chosen.

30.20% of all encounters had antimalarials prescribed. This is down from a similar study done over ten years ago[10] in which 40.2% of encounters had antimalarials. It is conceivable that the rising "war" against malaria waged by various government and non governmental organizations including the roll back malaria programme and the distribution of free insecticide treated mosquito nets has an positive impact on the populace. However, in this study, 80 out of the 301 (26.6%) antimalarial prescriptions had chloroquine as first line. This, coming after nearly half a decade of the change in antimalarial policy in favour of artemisinin based combination therapy is worrisome and needs further exploration.

As treatment options continue to increase for the same conditions, clinicians will continue to face difficulty in selecting best treatment options. Modern clinical practice cannot rely on treatment based on clinicians' individual opinions and experience alone. Evidence based practice demands the use of current research information to guide clinical decisions while also considering the patient's values and circumstances[27,28]. This will no doubt promote rational use of drugs. In our environment where sources of reliable and unbiased drug information to clinicians are few, academic detailing, an outreach programme in which trained health professionals visit clinicians to provide evidence based information, will be very useful in encouraging rational prescription. This has been proven to work well in Sweden[29]. Furthermore, it can also be used as an interventional programme to improve clinician adherence to guidelines as successfully observed in Canada[30]. Treatment algorithms based on evidence from current research could also be used to reduce polypharmacy, improve rational prescription, save treatment costs, reduce adverse effects and improve evidence based care of patients[31]. Inappropriate prescribing may be partly due to the relatively weak evidence based guidelines for appropriate prescribing and existence of particular justifying exceptions to the rule in individual patients[32]. Identificaton of quantity and type of prescribing problems require that rational drug prescribing be promoted and potentially dangerous prescribing patterns be detected quickly and discouraged[33]. This will be most beneficial to our practice and our patients.

This study provides the first set of data from private facilities in Kano using the WHO indicators. It confirms the existence of a significant degree of inappropriate prescribing despite the presence of an essential drugs programme. It underscores the need for vigorous enlightenment on evidence based prescription practices among clinicians in

private health facilities.

Conflict of interest statement

We declare that we have no conflict of interest.

Acknowledgements

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