

Adherence to a Standard Prescription Writing Guidelines in a Tertiary Hospital in Sierra Leone

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Abstract: ***Introduction:** Errors relating to prescription writing are not uncommon and studies have demonstrated that rational prescribing will reduce both the cost and accessibility of drugs. **Aim:** The aim of this study is to assess adherence to WHO prescription writing guidelines in a tertiary teaching hospital in Sierra Leone. The results of this study will be used to create a sense of awareness regarding appropriate prescription writing guidelines. **Materials and Methods:** The study was a retrospective review of 500 prescriptions received at the hospital pharmacy of Connaught Hospital, Freetown over a 5 month period. All prescriptions were screened against the World Health Organization (WHO) prescription writing guidelines. **Results:** This study demonstrated that in more than 95% of prescriptions, the name, age and sex of the patients were written as well as prescriber's signature. In 74.2% of prescriptions, the drugs were prescribed as generic; In 91.2% and 89.2% of prescriptions the strength and dose of the drugs were prescribed respectively. In 59% of prescriptions, the diagnoses of the patients were not included; 52.8% did not have the duration of the medication included in the prescription. This study also shows that 13% of prescriptions showed no evidence of polypharmacy. **Conclusions:** The study revealed non-adherence to WHO optimal standard for average number of drugs prescribed per patient and for generic prescribing.*

Keywords: prescription writing, tertiary hospital, polypharmacy

1. Introduction

A prescription is a legal or formal instruction from a prescriber to a pharmacist or pharmacy technician. The prescription must be legible and should contain appropriate information¹. Prescription errors describe those related to the act of writing a prescription and it becomes clinically significant when the risk of harm is increased or treatment is delayed². An error suggests an action that is anticipated but not performed and may be a deliberate action or due to ignorance³. Errors happen due to lack of knowledge, poor performance and psychological lapses⁴. Prescription errors occur both in general practice and in hospital, and although they are rarely fatal, they can affect patients' safety and quality of healthcare⁵. Several studies have cited varying rates of prescription errors including 12.3 per 1000 patient admissions⁶, 0.4-1.9% of all medication orders⁷ and 8.9 errors per 100 medicine orders (in acute hospitals) and 4.9% (in general practice)⁸. Adverse events leading to harm were seen in about 1% of admitted patients⁹.

An outpatient study in four different hospitals in Sierra Leone, provided baseline data of prescribing patterns among doctors in Sierra Leone and postulated that rational prescribing would contribute to the affordability of medicines for individual patients in low-income countries¹⁰. Another study done in Sierra Leone showed that doctors were more rational than paramedical practitioners in prescribing antibiotics and fewer medicines per prescription but less rational in terms of prescribing generics¹¹. However, there has not been any article describing doctors' adherence to the World Health Organization (WHO) standard prescription writing guidelines. The aim of this study is to close this gap in knowledge by assessing adherence to WHO prescription writing guidelines in a tertiary teaching hospital in Sierra Leone. The results of this study will be used to create a sense of awareness regarding appropriate prescription writing by providing the feedback to the healthcare professionals.

2. Materials and Methods

Study setting

The study was conducted at the hospital pharmacy of Connaught Hospital, University of Sierra Leone Teaching Hospitals' Complex (USLTHC) situated in Freetown, the capital city of Sierra Leone with about 250 beds capacity. The hospital has departments such as: surgery, internal medicine, pharmacy, nursing, radiology, laboratory, ophthalmology, oral health, ear, nose and throat to name but a few.

Study Design

The study was a retrospective review of prescriptions received at the hospital pharmacy from March 2019 to July 2019.

Study Population

The study population included both in-patients and out-patients without gender or age specification and irrespective of the working diagnosis over a period of three months.

Sample size determination and sampling

The 500 prescriptions used in this study was determined using the Fisher single population proportion formula with 95% confidence level and 5% degree of precision used. The minimum sample size obtained was 384 which was rounded up to 500 to account for incomplete prescriptions. Patients prescriptions were arranged by dates and 500 were selected by simple random sampling from 613 prescriptions

Data collection tool and procedure

A team consisting of a Physician, a clinical pharmacologist and a Specialist Pharmacist assessed the prescriptions sampled for the study. All prescriptions were screened against the World Health Organization (WHO) guidelines for prescription Writing¹⁰ as detailed below:

WHO prescription writing guidelines:

- Name, address, telephone number of the prescriber.
- Date.
- Generic name of the drug and strength.
- Dosage form and total amount.
- Label: instructions and warning.
- Name, address and age of the patient.
- Signature or initials of prescriber.

The presence or absence of the following details were noted from each prescription: name, age, gender and occupation of patient, date of prescription, prescription of generic drugs, the strength and formulation of the drugs, duration of treatment, number of medications per prescription and the presence of the prescriber's signature and phone number.

The World Health Organisation/International Network of Rational use of Drugs (WHO/INRUD) prescribing indicators was used to record the average number of medicines per encounter and the number of medicines prescribed by generic name.

Ethical consideration

Ethical clearance was obtained from the Sierra Leone Ethics and Scientific Review Committee and a written permission to carry out the study was obtained from the hospital pharmacy department. All information obtained in the study were kept confidential and used only for this research.

Data Management

The data obtained was crosschecked for errors after collection and entered into a data analysis software. All data were analyzed using Statistical Package for Social Sciences (SPSS) version 20 (IBM statistics, Armonk, NY, USA). Descriptive statistics was used to calculate frequencies and percentages and the results were presented as tables and graphs. Frequency tables were used to summarise the data. Data was presented using tables, a 95% confidence interval was used and a P value < 0.05 was regarded as statistically significant.

3. Results

A total of 500 prescriptions were reviewed in this study.

Content of patients prescriptions (Table 1) –This table demonstrated that in more than 95% of prescriptions, the name, age and sex of the patients were written as well as prescriber's signature. In 74.2% of prescriptions, the drugs were prescribed as generic; 91.2% and 89.2% of prescriptions the strength and dose of the drugs were prescribed respectively. In 59% of prescriptions, the diagnoses of the patients were not included; 52.8% did not have the duration of the medication included in the prescription.

Table 1: Content of patient's prescription

Items recorded	N (%)
Patient name indicated	500 (100)
Patient sex	487 (97.4)
Patient age	480 (96.0)
Patient address	191 (38.2)
Patient occupation	340 (68)
Patient diagnosis	205 (41)

Generic prescribing	371 (74.2)
Drug strength	456 (91.2)
Drug dose	449 (89.8)
Medication duration	236 (47.2)
Prescriber's signature	489 (97.8)

Incidence of numerical polypharmacy (Table 2)–This table showed that 40% of prescriptions had 5 or more drugs prescribed; 13% of prescriptions showed no evidence of polypharmacy.

Table 2: Incidence of numerical only polypharmacy

Item	Number (percentage) of prescriptions
No polypharmacy	65 (13%)
Minor polypharmacy (2 to 4)	235 (47%)
Major polypharmacy (≥5 to 9)	185 (37%)
Hyperpolypharmacy (≥10)	15 (3%)

World Health Organization prescribing indicators (Table 3)

A total of 2135 medicines were prescribed for 500 patients with a mean of 4.27 medications per patient for prescriptions reviewed.

Table 3: Prescribing indicators compared to WHO guidelines

Prescribing indicator	Connaught Hospital	WHO optimal value
Average number of medicines per encounter	4.27	1.6-1.8
Percentage of prescriptions with generic prescribing	74.2%	100%

4. Discussion

The contents of the prescriptions reviewed in this study revealed that in many of our prescriptions from Connaught Hospital, there is lack of patient details like address of the patient, clinical diagnosis of the patient and duration of medication use. The lack of patient's address makes it difficult to contact the patient in the event of an overdose or a life-threatening error discovered after patient has left the hospital premises. The presence of the clinical diagnosis will help in medication review and reconciliation which are relevant in reducing medication errors. The duration of medication use will help prevent misuse, abuse or unrestricted purchase of medications by the patient. Incomplete sociodemographic details of patients in our prescriptions may provide a recipe for serious medication errors including dispensing medications to the wrong patient¹³.

According to the WHO, 100% of the medications should be prescribed generically in the prescription¹². Majority (74.2%) of prescriptions reviewed in this study were prescribed using generic names of drugs. This might suggest a fairly good compliance with standard prescription guidelines. In other studies done in Ethiopia and Nigeria, the use of generic names of drugs in prescriptions were seen in 98.7% and 42.7% of prescriptions respectively^{14,15}. Prescribing drugs using their generic names reduces the cost of the drug, makes it more accessible and limits illegitimate pharmaceutical marketing strategies¹³. From a physician's perspective, there is often not enough credible information

on the efficacy and quality of generic drugs¹⁶. This perspective is often enhanced by an ill-equipped drug regulatory and control systems and insufficient evidence of bioequivalence. Patients may see generic drugs as fake medicines or low quality drugs compared to brand drugs¹⁷. It has been documented that generic drugs may be less effective than brand drugs, and are held in low esteem¹⁸. In France, a group of patients reported adverse effects and reduced efficacy with a new generic drug¹⁹.

Major polypharmacy as well as hyperpolypharmacy were not uncommon in the prescriptions reviewed in this study. Polypharmacy is common in elderly patients and may be associated with inappropriate or potentially inappropriate prescribing and errors²⁰. A systematic review suggests that older people tend to have multiple co-morbidities that predispose to polypharmacy²¹. Prescriptions with many drugs may contain medications that are wrongly prescribed or drugs known to have severe adverse effects or narrow therapeutic index and so such prescriptions should be reviewed or reconciled by a doctor or pharmacist²². The risk of drug-drug interactions is also enhanced in such prescriptions thus warranting careful audit and evaluation²³. Even though polypharmacy is common in the elderly, it is also seen in prescriptions for younger or middle-aged patients in rising proportions²⁴. It may be associated with poor clinical outcomes in older patients and may also affect mental health²⁵. Polypharmacy among physicians may be addressed by continuing medical education, development of clinical guidelines and tools that can influence prescribing behavior for elderly patients. Patients on prescriptions with multiple drugs can cope by use of medication compliance aids²⁶. The mean of 4.27 medicines per prescription obtained in this study was identical to a mean of four medicines/prescription obtained in a previous study on prescriptions in Sierra Leone as well as another study done in neighbouring Liberia^{10,27}.

The study suggests the need to increase awareness and implementation of national and international prescribing guidelines. Prescribers and pharmacists are key in the implementation of good prescription writing practices, prescription interpretation and identification of potential drug therapy problems for better treatment outcomes. Our study also suggests that there is lack of team work and communication that will enhance appropriate prescription writing between medical doctors and pharmacists in the hospital.

5. Study Limitations

The study was a retrospective review of the selected prescriptions and may not entirely represent the complete picture.

6. Conclusions

This study demonstrates that there is still room for improvement in prescribing generic drugs and reducing our rates of prescriptions with multiple drugs (polypharmacy). The study revealed non-adherence to WHO optimal standard for average number of drugs prescribed per patient and for generic prescribing.

References

- [1] Roy V, Gupta P, Srivastava S. Medication errors: causes and prevention, *Health Adm.* 29 (2005) 60e64.
- [2] Velo GP, Mlnuz P. Medication errors: prescribing faults and prescription errors. *Br J Clin Pharmacol* 67:6 624-628.
- [3] McDowell SE, Ferner HS, Ferner RE. The pathophysiology of medication errors, how and where they arise. *Br. J. Clin. Pharmacol.* 67 (2009) 605e613.
- [4] Hugar SM, Suganya M, Vikneshan M, Kiran K. Medication errors and its implications in paediatric dentistry, *Indian J. Oral. Sci.* 5 (2014) 27e32.
- [5] Dean B, Barber N, Schachter M. What is a prescribing error? *Qual Health Care* 2000; 9: 232-7.
- [6] Lesar TS. Prescribing errors involving medication dosage forms. *J Gen Intern Med.* 2002;17(8):579-587.
- [7] Dean B, Barber N, Schachter M. What is a prescribing error? *Quality in Health Care* 2000;9:232-237
- [8] Cousins D, Crompton A, Gell J, Hooley J. The top ten prescribing errors in practice and how to avoid them. *The Pharmaceutical journal.* February 2019
- [9] Bates DW, Cullen DJ, Laird N, *et al.* Incidence of adverse drug events and potential adverse drug events: implications for prevention. *JAMA* 1995;274:29-34.
- [10] Cole CP, Routledge P. An evaluation of rational prescribing in hospital outpatient practice in Sierra Leone and assessment of affordability of a prescription as an outcome. *Pamj.* 2018; 31:174
- [11] Lisk DR, Palmer L. Who prescribes better? Doctors or dispensers. *World Health Forum.* 1997. 18;352-354. Accessed 8th December 2020.
- [12] De Vries TPGM, Henning RH, Hogerzeil HV, Fersle DA. Guide to good prescribing: a practical manual. Geneva, World Health Org. 94 (1994) 51e55 (WHO/DAT/94.11).
- [13] Sheikh D, Mateti UV, Kabekkodu S, Sanal T. Assessment of medication errors and adherence to WHO prescription writing guidelines in a tertiary care hospital. *Future Journal of Pharmaceutical Sciences* 3 (2017) 60e64.
- [14] A.A. Desalegn, Assessment of drug use pattern using WHO prescribing indicators at Hawassa university teaching and referral hospital, south Ethiopia: a cross-sectional study, *BMC Health Serv. Res.* 13 (2013) 170.
- [15] I. Tamuno, J.O. Fadare, Drug prescription pattern in a Nigerian tertiary hospital, *Trop. J. Pharm. Res.* 11 (1) (2012) 146e152
- [16] Toverud EL, Hartmann K, Ha konsen H. A Systematic Review of Physicians' and Pharmacists' Perspectives on Generic Drug Use: What are the Global Challenges? *Appl Health Econ Health Policy* (2015) 13 (Suppl 1):S35-S45 DOI 10.1007/s40258-014-0145-2
- [17] Sarradon-Eck A, Blanc M-A, Faure M. Users sceptical about generic drugs: an anthropological approach. *Rev Epidemiol Sante Publique.* 2007;55:179-85.
- [18] Iskounen S, Simoneau G, Mouly S. Prospective study of the factors associated with the acceptance of generics substitution by patients and their liberal doctors. [Article in French] *Rev Med Interne.* 2018;39(11):849-54.

<https://doi.org/10.1016/j.revmed.2017.11.009>. Epub
2017 Dec 28.

- [19] Casassus B. Risks of reformulation: French patients complain after Merck modifies levothyroxine pills. *BMJ*. 2018; 360:k714.
- [20] Spinewine A, Schmader KE, Barber N, Hughes C, Lapane KL, Swine C, Hanlon JT. Appropriate prescribing in elderly people: how well can it be measured and optimised? *Lancet* 2007; 370: 173–84.
- [21] Elliott R, Camacho E, Campbell F, Jankovic D, Martyn M, Kaltenthaler E, et al. Prevalence and Economic Burden of Medication Errors in The NHS in England. Rapid evidence synthesis and economic analysis of the prevalence and burden of medication error in the UK. 2018.
- [22] Durieux P, Trinquart L, Colombet I, Niès J, Walton R, Rajeswaran A, Rège Walther M, Harvey E, Burnand B. Computerized advice on drug dosage to improve prescribing practice. *Cochrane Database Syst Rev* 2008; (3): CD002894.
- [23] Hovstadius B, Hovstadius K, Astrand B, Petersson G. Increasing polypharmacy—an individual-based study of the Swedish population 2005–2008. *BMC Clin Pharmacol* 2010; 10:16.
- [24] Milton JC, Jackson SHD. Inappropriate polypharmacy: reducing the burden of multiple medication. *Clin Med* 2007; 7(5): 514–517.
- [25] Kadam UT. Potential health impacts of multiple drug prescribing for older people: a case-control study. *Br J Gen Pract* 2011; 61(583): 128–130.
- [26] Avery AJ, Payne RA. Polypharmacy: One of the greatest prescribing challenges in general practice. *British Journal of General Practice*, February 2011. DOI: 10.3399/bjgp11X556146
- [27] Harris J. Assessing the rational use of essential medicines in public health facilities Mont-serrado County, Liberia. (MSc Pharmaceutical Management) 2012. Tanzania: Muhimbili University. **Google Scholar**.