

Original Article

Medical Prescription Pitfalls of Uncomplicated Urinary Tract Infections in Government Healthcare Facilities in Zambia

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ABSTRACT

Objectives: The aim of this evaluation was to identify pitfalls in medical prescriptions of uncomplicated urinary tract infections in government healthcare facilities in Zambia.

Design: This was a cross sectional and government healthcare facilities were conveniently sampled.

Main outcome measures: Rate of compliance to Zambia national prescribing guidelines.

Results: A total of 42 (75.0%) out of 56 students participated in the survey of whom 66.7% were males. Findings in this study has demonstrated significant drug misuse and over-prescription as participants were healthy individuals. Only 75.6% of prescriptions indicated patient's name and very small proportions of prescriptions (11.5%) indicated patients' address. In addition, relatively small proportion of prescriptions (68.8%) had generic names and many prescriptions (58.1%) had large blank spaces left. Furthermore, relatively large proportion of prescriptions were not signed (10.7%) and not dated (12.0%). Almost half of the prescriptions (47.6%) did not show prescribers' names and only small proportions of prescriptions had prescribers' identification number (24.0%) and address or department (21.5%) indicated.

Conclusions: Overall, the evaluation has shown poor prescribing practices and not in compliance with national prescribing guidelines among prescribers in government healthcare facilities in Zambia.

INTRODUCTION

Prescribing of medicines has been reported to be one of the complex activity undertaken by many healthcare professionals.¹ The task of prescribing has been recognised to comprise of a mixture of sub-competences such as principles of clinical pharmacology, knowledge, skill and critical judgement, among many others.¹ Consequently, prescribing errors have been widely reported and have driven the World Health Organisation (WHO) to produce a six-step model of prescribing to guide prescribers to safe and effective practices.² For example, studies performed in the United kingdom (UK) among medical students and foundation year doctors found that prescribing was largely sub-optimal.³⁻⁵ When the WHO model was applied among healthcare professions in the UK, it was established that prescribing improved.^{6,7} Hence, the UK has realised that there is need to strengthen prescribing skills by means of revision of clinical pharmacology and therapeutics (CPT) curriculum in medical schools.⁸

For a long time there has been only one medical school in Zambia until recently when almost half a

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dozen medical schools including public and private institutions have been established. Furthermore, there is an influx of foreign trained healthcare professionals practising in both public and private healthcare facilities within the country. In this light, it is imperative that an evaluation of the extent of compliance by medical prescribers to national prescribing guidelines (ZNF, 2013) is conducted.

No studies have been performed so far in Zambia to determine the pitfalls in medical prescribing practices among medical practitioners in government healthcare facilities. Nevertheless, the ministry of health has published a national formulary that reflect the "National Medicines Policy" as a reference document to promote rational prescribing practices. The Zambia National Formulary (ZNF) is also expected to assist keeping the cost of medications reasonable, affordable and with reduced adverse effects.

The aim of this evaluation was to identify pitfalls in medical prescriptions of uncomplicated urinary tract infections in government healthcare facilities in Zambia. Findings from this study will assist in design or implementation of educational programs to promote rational prescribing practices in line with updated national guidelines.

METHODS

Study design

This was a cross sectional study conducted between March 2014 and April 2014.

Sample size and sampling

As a method of teaching, all the 56 medical and dental year 3 students received 10 copies of the questionnaire to administer to clients. Clients were conveniently sampled.

Ethical considerations

The study was approved by the Basic Science Department as part of teaching during school break .

The study was explained to students who freely participated in the study. Students were informed that their none participation will not affect them in any way.

Data collection

Students acted as patients with complaints of symptoms of uncomplicated urinary tract infections such as pain on passing urine to the healthcare prescribers at government health facilities in Zambia. On presentation, students asked for a medical prescription to enable them purchase antibiotics from a pharmacy. The obtained information was transcribed on to a questionnaire.

Variables

The questionnaire that was adapted from the Zambia National Formulary⁹ included the following variables on completion of the prescription (legibility, visit date, file number, patient's full name, address, age, gender), dose, dose frequency, duration of treatment, prescription signed and dated, prescriber's characteristics (name, identification number, address), prescription written on official paper and stamped.

Data management and analysis

Data was captured using Excel version 2007 and exported to SPSS version 16.0 for analysis. Frequencies were run to check for out of range errors during data analysis. Analysis involved running frequencies to describe the sample.

RESULTS

A total of 42 (75.0%) out of 56 students participated in the survey of whom 66.7% were males. No information on gender was indicated for 1 participant. The median (Q_1 , Q_3) age was 25.5 ($Q_1 = 24$, $Q_3 = 30$) years. No information on age was obtained from 2 participants. A total of 235 prescriptions were collected.

Table 1: Patient's details

| Observation | Prescriptions | | Total |
|---------------------|---------------|------------|-------|
| | Yes n(%) | No n(%) | |
| Full name indicated | 177 (75.6) | 57 (24.4) | 234 |
| Address indicated | 27 (11.5) | 207 (88.5) | 234 |
| Age indicated | 107 (45.7) | 127 (54.3) | 234 |

Only 75.6% of prescriptions had patient's name indicated and very small proportions of prescriptions (11.5%) indicated patients' address. In addition, almost half of the prescriptions did not show patients' age.

Table 2: Prescription legibility and content

| Observation | Prescriptions | | Total |
|------------------------------|---------------|------------|-------|
| | Yes n(%) | No n(%) | |
| Legibility | 214 (91.5) | 20 (8.5) | 234 |
| Generic drug name | 161 (68.8) | 73 (31.2) | 234 |
| Drug strength/dose indicated | 226 (97.0) | 7 (3.0) | 234 |
| Dose frequency indicated | 231 (98.7) | 3 (1.3) | 234 |
| Drug quantity specified | 4 (1.7) | 230 (98.3) | 234 |
| Treatment duration specified | 219 (93.6) | 15(6.4) | 234 |
| Large blank space left | 136 (58.1) | 98 (41.9) | 234 |

Large proportion of prescriptions were eligible (91.5%) indicating dosage, frequency and duration of treatment. However, relatively small proportion of prescriptions (68.8%) had generic names written. In addition, many prescriptions (58.1%) had large blank spaces left.

Table 3: Prescriber's relevant details

| Observation | Prescription | | Total |
|---------------------------------|--------------|------------|-------|
| | Yes n(%) | No n(%) | |
| Prescription signed | 208 (89.3) | 25 (10.7) | 233 |
| Prescription dated | 205 (88.0) | 28 (12.0) | 233 |
| Prescriber's name indicated | 111 (47.6) | 122 (52.4) | 233 |
| Prescriber's ID number indicate | 56 (24.0) | 177 (76.0) | 233 |
| Prescriber's address indicated | 50 (21.5) | 183 (78.5) | 233 |

Relatively large proportion of prescriptions were not signed (10.7%) and not dated (12.0%). In addition, almost half of the prescriptions (47.6%) did not show prescribers' names. Furthermore, only small proportions of prescriptions had prescribers' identification number (24.%) and address or department (21.5%) indicated.

DISCUSSION

The participants in this study were young and healthy individuals who should not have received medical prescriptions if the WHO six-step prescribing model² had been applied by the prescribers. The findings in this analysis represent gross drug misuse and over-prescription by prescribers in government healthcare facilities in Zambia. In addition, regional variation and antibiotic susceptibility has been reported among patients treated of UTIs in Cameroon¹⁰ which should encourage laboratory tests to support antibiotic drug treatment. Furthermore, high resistance rates among patients treated of UTIs has been reported in other African nations such as Ethiopia¹¹ and Uganda.¹² Therefore, all the prescriptions that were given to participants were inappropriately issued, as participants were healthy and did not receive appropriate clinical attention to establish accurate diagnosis to justify medical prescriptions. Clearly, findings in this study has demonstrated significant drug misuse and over-prescription in government healthcare facilities in Zambia.

Only 75.6% of prescriptions had patient's name indicated and very small proportions of prescriptions (11.5%) indicated patients' address. In addition, almost half of the prescriptions did not show patients' age. These findings indicate that a significant proportion of medical prescriptions would not be traced to the affected patients. In case of prescription errors or any follow-up of patients due to significant medication concerns such as defective drug batch, a significant proportion of patients would not be traced and advised appropriately.

Large proportion of prescriptions were eligible (91.5%) indicating dosage, frequency and duration of treatment. However, relatively small proportion of prescriptions (68.8%) had generic names written. Many prescriptions (58.1%) had large blank spaces left. Only a small proportion of prescriptions (28.5%) had generic names indicated on the prescription. The implication of these findings are that relatively large proportions of prescriptions are written using brand names making it a challenge to substitute drugs at pharmacy outlets. Furthermore, large blank spaces left makes it possible to include inappropriate medications to the treatment regimen by unqualified persons.

A significant proportion of prescriptions in this analysis were not signed (10.7%) and not dated (12.0%) by the prescribers. Almost half of the prescriptions did not have prescribers' names (52.4%). Furthermore, only small proportions of prescriptions had prescribers' identification number (24.0%) and address or department (21.5%) indicated. These observations may have many negative implications such as prescriptions being written by unqualified persons, identification of prescribers in case of drug errors, difficulty to targeted educational programmes to prescribers with prescribing challenges, even in case of medical errors resulting in medical-legal issues.

LIMITATIONS OF THE STUDY

In this study, sampling was non-random. Therefore, the results may not be generalised to all clients. Nevertheless, we have no reason to doubt that clients who did not participate in this study were any different from those who participated.

CONCLUSIONS AND RECOMMENDATIONS

Overall, the evaluation has shown poor prescribing practices and not in compliance with national prescribing guidelines among prescribers in government healthcare facilities in Zambia. We suggest that CPT is strengthened in Zambia so that relevant systems such as prescriptions monitoring and adverse drug reactions reporting are developed to promote safe and rational use of medicines. Furthermore, more research on prescribing practices need to be conducted in order to establish relevant gaps in this complex clinical task and put in place corrective interventions to ensure effective and safe use of medications within the country.

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CONTRIBUTORS

CB conceived the study, participated in the data collection, analysis and interpretation of the results. SS participated in the analysis and interpretation of results. Both authors participated in drafting of the manuscript and agreed its submission for publication.

REFERENCES

1. Maxwell SR. How should teaching of undergraduates in clinical pharmacology and therapeutics be delivered and assessed? *Br J Clin Pharmacol.* 2012;73(6):893-9.
2. de Vries TPGM, Henning RH, Hogerzeil HV, Fresle DA. Guide to Good Prescribing: a practical manual. Geneva: *World Health Organisation, Action Programme on Essential Drugs*, 1994.
3. Heaton A, Webb DJ, Maxwell SR. Undergraduate preparation for prescribing: the views of 2413 UK medical students and recent graduates. *Br J Clin Pharmacol.* 2008; 66:128-34.
4. Tobaiqy M, McLay J, Ross S. Foundation year 1 doctors and clinical pharmacology and therapeutics teaching. A retrospective view in light of experience. *Br J Clin Pharmacol.* 2007;64(3):363-72.
5. Wall D, Boshaw A, Carolan J. From undergraduate medical education to pre-registration house officer year: how prepared are students? *Med Teach.* 2006; 28(5):435-9.
6. Ross S, Loke Y. Do educational interventions improve prescribing by medical students and junior doctors? A systematic review. *Br J Clin Pharmacol.* 2009;67(6):662-70.
7. de Vries TP, Henning RH, Hogerzeil HV, Bapna JS, Bero L, Kafle KK et al. Impact of a short course in pharmacotherapy for undergraduate medical students: an international randomized controlled study. *Lancet.* 1995;346(8988):1454-7.
8. Ross S, Maxwell S. Prescribing and the core curriculum for tomorrow's doctors: BPS curriculum in clinical pharmacology and prescribing for medical students. *Br J Clin Pharmacol.* 2012;74(4):644-61.
9. Ministry of Health. Zambia National Formulary Committee (2013). *Zambia National Formulary 2011-2013*, 3rd Edition. Lusaka: Ministry of Health; 2013.
10. Akoachere JF, Yvonne S, Akum NH, Seraphine EN. Etiologic profile and antimicrobial susceptibility of community-acquired urinary tract infection in two Cameroonian towns. *BMC Res Notes.* 2012;5:219.
11. Kibret M, Abera B. Prevalence and antibiogram of bacterial isolates from urinary tract infections at Dessie Health Research Laboratory, Ethiopia. *Asian Pac J Trop Biomed.* 2014;4(92):164-8.
12. Odongo CO, Anywar DA, Luryamamoi K, Ondongo P. Antibiograms from community-acquired uropathogens in Gulu, northern Uganda – a cross-sectional study. *BMC Infect Dis.* 2013;13:193.