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Completeness and Legibility of Handwritten Prescriptions at Sana'a, Yemen

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Running title: Assessment of Prescriptions in Yemen

Significance of the Study

This study showed that the quality of handwritten prescriptions in Sana's, Yemen was very poor and could easily lead to dispensing errors. Hence, the need for introducing computerized physician order entry in general practice. The computerized physician order entry could improve the dispensing system in Sana'a, Yemen because only ten percent of the community pharmacies in Yemen have qualified pharmacists.

Abstract

Objective: The aim of this study was to investigate the completeness and legibility of prescriptions dispensed in community pharmacies located at Sana'a, Yemen. ***Materials and Methods:*** A cross-sectional study was conducted at 23 randomly selected community pharmacies throughout the capital city of Sana'a, Yemen from May 2015 to January 2016. A total of 2178 prescriptions were analyzed for the essential elements of a complete prescription using a validated checklist. ***Results:*** Of the 2178 prescriptions, 19 (0.87%) were considered as of good quality prescription. The remaining 2159 (99.12%) prescriptions were considered as being of very poor quality. Errors related to patients and prescribed medications were the most common prescription writing errors. ***Conclusion***: In this study, the quality of prescription writing was found to be very poor. Hence, continuous professional development programs are recommended to improve the quality of prescription writing among physicians. Future studies in other cities and investigation of the impact of continuous educational programs on the quality of prescription writing are strongly recommended.

Introduction

Good quality prescriptions are very important to minimize errors in the dispensing of medicines; physicians should adhere to the guidelines for prescription writing in order to provide quality treatment to the patients [1,2]. All prescriptions should contain accurate and appropriate information about the patient and the medication that is being prescribed. All prescriptions should contain information such as the prescriber's name, address, telephone number and signature; patient's name, address, age and weight; prescription date; drug name, formulation, strength, dose, frequency of administration, quantity prescribed, diagnosis/indication and instructions for use [3,4]. Therefore, the aim of this study was to investigate the completeness and legibility of prescriptions dispensed by community pharmacies in Sana'a, Yemen.

Materials and Methods

This was a cross-sectional study conducted in the city of Sana'a, Yemen using the cluster sampling method. A sampling frame was prepared using the list of registered pharmacies located at different areas within Sana'a, and a random number table was used. A total of 23 community pharmacies were selected taking into consideration the geographical location within Sana'a. A minimum of one pharmacy dispenser or pharmacist from each pharmacy participated in this study. The prescriptions dispensed at the selected pharmacies from May 2015 to January 2016 were analyzed by two trained independent researchers-cum-pharmacists. Prescriptions were analyzed for the required information to be included in the prescriptions by using a validated checklist [3].

The checklist contained the following prescription errors related to a) physician: name, contact details and signature (3 criteria); b) patient information: name, address, age, gender and weight (5 criteria); c) prescribed medications: drug name, strength, dose units, dosage form, quantity of medications, duration of therapy, route of administration, dose interval, instructions,

drug abbreviation, unit abbreviation, spelling mistakes (12 criteria); d) prescription: date of prescription, diagnosis and clarity of prescription/legibility (3 criteria).The prescription was considered as an error in legibility if both investigators were not able to decipher any of the information included in the prescription. Each prescription was scored based on the compliance to the above mentioned 23 parameters; with one point given for each erroneous criterion. The quality of the prescription was scored very poor: ≥10 errors; poor: 3-9 errors; fair: 2 errors and good: 1 error [3]. A total of 2178 prescriptions were analyzed in this study. The data obtained were descriptively analyzed using Statistical Package for the Social Sciences® (SPSS) version 15 (SPSS Inc. Chicago, USA).

The Research Ethics Committee, College of Pharmacy, University of Science and Technology, Yemen approved the study. The investigators had received permission to conduct the survey from community pharmacy managers. Written informed consent was obtained from the participants. No personal information of the respondents, pharmacists, physicians and patients were collected and strict confidentiality was observed.

Results

Of the 2178 prescriptions, only 19 (0.87%) were considered as good quality prescription. The remaining 2159 (99.12%) were considered to be of very poor quality. 1770 (81.26 %) were incomplete without indication or diagnosis while 1919 (88.10%) were partially illegible. The most errors were spelling: 2124 (97.52 %), instructions on drug use: 2067 (94.90 %), and dose interval: 1824 (83.74%). Errors related to patient (body weight) and spelling of the name of prescribed medication were the most common whereas the name of prescriber was the least common prescription writing errors (Table 1).

Discussion

In this study, 99.12% of the screened prescriptions were considered to be of very poor quality. The number of errors ranged from 5 to 20 writing per prescription. Errors related to patients and prescribed medications were the most common while errors related to the physicians were the least common prescription writing errors. These findings were similar to those of a previous study conducted in a tertiary care hospital in Yemen whereby 1904 prescriptions were screened and 99.12 % were considered as poor quality [3] but the contact details of physicians were one of the most common prescription writing errors [3].

Preventing prescription writing errors is very important to ensure the safety of patients. For example, a study that involved 24,767 prescriptions revealed that handwritten prescriptions caused pharmacists to spend eight times longer for intervention and interpretation compared to prescriptions prepared using computerized physician order entry (CPOE). Hence, CPOE orders, proven to be effective in eliminating prescribing errors [8,9] will augur well for the Yemeni dispensing system because only 10% percent of the community pharmacies have qualified pharmacists while the remaining 90 % are handled solely by technicians [5-7].

The major limitation of this study was that it was conducted in only one city in Yemen. Future studies investigating the impact of prescribing training and the pilot implementation of CPOE on the quality of prescription writing in all major cities of Yemen are strongly recommended. Furthermore, prescription writing errors could be prevented by re-training doctors on prescribing and common errors in writing prescriptions. Continuous professional educational programs to doctors, pharmacists and technicians could improve the quality of prescription writing as well as the proficiency of prescription screening before dispensing medications to patients.

Conclusion

This study indicated that the quality of hand-written prescription in the city of Sana'a was of very poor quality. Hence, it is important to devise means of improving the quality of prescription writing among physicians..

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Table 1. Type and frequency of writing errors in 2178 prescriptions

Types of error	Frequency (%)
Information related to physicians	
Name	26 (1.19)
Contact details	39 (1.79)
Signature	51 (2.34)
Information related to patient	
Weight	2173 (99.77)
Address	2102 (96.51)
Age	1524 (69.97)
Gender	1391 (63.86)
Name	482 (22.13)
Information related to prescribed medications	
Spelling	2124 (97.52)
Instruction of use	2067 (94.90)
Quantity of medications	1908 (87.60)
Dose interval	1824 (83.74)
Strength	1645 (75.52)
Route of administration	1608 (73.82)
Dose units	1573 (72.22)
Duration of therapy	1433 (65.79)
Drug name	1098 (50.41)
Dosage form	961 (44.12)
Drug abbreviation	456 (20.93)
Unit abbreviation	811 (37.23)
Information related to prescribed prescription	
Clarity of prescription/ legibility	1919 (88.10)
Diagnosis/indication	1770 (81.26)
Date of prescription	1619 (74.33)