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Prescription writing errors at a tertiary care hospital in Yemen: prevalence, types, causes and recommendations

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ABSTRACT

Prescription errors are most significant problems. The current study aims was to identify prescription writing errors; causes of prescription writing errors and make recommendation to improve the quality of prescriptions in Yemen. The current study consists of two phases. Phase 1: A cross-sectional study was conducted at a tertiary care hospital in Yemen during August 2012-September 2012. Prescriptions were analyzed for the essential elements to be included in the prescription order. Phase 2: A qualitative method used in this part, face-to-face interviews with six physicians was done. A semi-structured interview guide about the causes of prescription errors and recommendations to improve the quality of prescriptions was used during this phase. The data were descriptively analyzed using Statistical Package for the Social Sciences® (SPSS) version 15 for Windows. A total of 1904 prescriptions were collected during the time of study. The results of this study shows that the majority of prescriptions considered as a poor quality prescriptions. Contact details of physicians, address of patients, weight of patients, dosage form, quantity of medications, duration of therapy, instructions of prescribed medications and spellings were the most common prescription writing errors. Many factors were identified during the study. Prescriptions errors were common in this study. Causes of prescription errors were identified in this study. Educational interventions should be implemented in Yemeni hospitals to improve the quality of prescriptions, reducing and preventing prescription errors.

Keyword: Prescriptions, Prescription errors and Yemen.

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INTRODUCTION

Prescription writing one part of prescribing. Prescribing is an essential task for any physician and its divided into two parts: selection the treatment regimen and the prescription writing. Prescribing errors occur in both parts.[1] The definition of a prescribing error is: "A clinically meaningful prescribing error occurs when, as a result of a prescribing decision or prescription writing process, there is an unintentional significant reduction in the probability of treatment being timely and effective or increase in the risk of harm when compared with generally accepted practice".[1] Prescription errors are common in primary, secondary and tertiary care settings. Prescription errors are common in inpatients, intensive care unit (ICU) and outpatients.[2-7] The concept of prescribing errors was introduced 50 years ago.[8] Prescribing errors are a serious public problem. Prescribing errors is a serious problem worldwide and lead to increase the morbidity, mortality, cost of care and affecting patients, hospitals and policy makers. The prevalence and incidence of prescribing errors, prescription errors is high and varies from one study to another, in many studies reach more than twenty percent.[9-13] Prescription writing errors are significantly affect the outcome of treating patients as it is a tool of communication between physician or authorized prescriber and a pharmacist or authorized dispenser. Any missing data, information, wrong writing of items will lead to a mistakes during dispensing process which lead to bad outcomes. [8,10-13]

A prescription is an tool used for order the drugs or any supportive therapy to be an important commutation tool between physician, pharmacist and patient. Prescribing is the right and duty of physician or any authorized prescriber. Physicians and authorized prescribers should adhere to the guidelines for prescription writing for the quality of prescriptions as well as quality of treating patients .[14] Prescriptions must contain accurate and correct information about the physician, patient and the medication.[15] The aim of this study were; identify prescription writing errors; causes of prescription writing errors and make recommendation to improve the quality of prescriptions in Yemen.

MATERIALS AND METHODS

The current study consists of two phase.

Phase 1: A cross-sectional study was conducted at a tertiary care hospital in Yemen during August 2012-September 2012. The prescriptions was selected by using stratified sampling strategy. There were 750 inpatient prescriptions and 1154 outpatient prescriptions. Prescriptions were collected by four pharmacists. Theoretical and practical workshops about prescription

writing, prescription errors and data collection for four pharmacists was done before the study. Prescriptions were analyzed for the essential elements to be included in the prescription order.

Quality of prescriptions writing

A checklist was used during the study to facilitate the data collection and evaluation of prescriptions quality. The checklist contains the prescription errors which included in the study. Prescription errors included in this study were: 1. errors related to physician or authorized prescriber: name, contact details and signature. 2. errors related to patient information: name, address, age, gender and weight; 3. errors related to 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. 3. errors related to prescription: date of prescription, diagnosis and clarity of prescription if the three pharmacists couldn't read the prescription

Scoring system was used in this study (Table 1) as each prescription error was given a value of one, and a value of zero was given to the available and correct item. A total score equal to zero considered as very good quality prescription. A total score equal to one considered as good quality prescription. A total score equal to two considered as fair quality prescription. A score equal to and greater than three but less than 10 considered as poor quality prescription. A score equal to and greater than ten considered as very poor quality prescription.

Table 1. Prescription errors evaluation checklist

Types of errors	Score
Errors related to physician or authorized prescriber	
Name	
Contact details	
Signature	
Errors related to patient information	
Name	
Address	
Age	
Gender	
Weight	
Errors related to 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
Errors related to prescribed prescription
Date of prescription
Clarity of prescription
Diagnosis

The validity of check list and scoring system was assessed by a group of seven experts, the group is consist of two pharmacists, two physicians and three lecturers of pharmacy practice .

Phase 2: A qualitative method used in this phase, face-to-face interviews with six physicians was done. A semi-structured interview guide about the causes of prescription errors and recommendations to improve the quality of prescriptions was used during this phase.

Ethical Approval

This study was ethically approved from the director of hospital and Qassim University. Furthermore a verbal consent was obtained from the physician and patients. No personal information of the respondents and hospital was obtained.

Definitions

Prescription: is a written instruction by a physician or authorized prescriber to a pharmacist in the form of medication advices for a separate patient.[16]

Prescription writing error: any error occur when writing a prescription.[1,17]

Statistical analysis

The data were descriptively analyzed using Statistical Package for the Social Sciences® (SPSS) version 15 for Windows. Physician experience, age of physicians, physicians gender, country of graduation, hospital ward, time of prescriptions either early morning or end of day, attending workshop about prescription errors and specialty of physicians were tested with Chi-square test or Fisher's Exact test to investigate the causes of prescription errors. All reported *p*-values are two tailed, and the result is significant if *p*-value is ≤ 0.05.

RESULTS AND DISCUSSION

A total of 1904 prescriptions were collected during the time of study. There were 750 inpatient prescriptions and 1154 outpatient prescriptions written by 11 physicians. The number of drugs prescribed ranged between 1 and 8 and 73.5 % of prescriptions included five or more drugs.

Contact details of physicians, address of patients, weight of patients, dosage form, quantity of medications, duration of therapy, instructions of prescribed medications and spellings were the most common prescription writing errors with more than 90 % of total prescriptions.

Table 2. Prescription errors in prescriptions (1904 prescriptions)

Types of errors	**Errors** N (%)
Errors related to physician or authorized prescriber	
Name	198 (10.3)
Contact details	1876 (98.5)
Signature	1533 (80.5)
Errors related to patient information	
Name	627 (32.9)
Address	1842 (96.7)
Age	194 (7.8)
Gender	912 (47.8)
Weight	1895 (99.5)
Errors related to prescribed medications	
Drug name	856 (44.9)
Strength	1692 (88.8)
Dose units	1152 (60.5)
Dosage form	1733 (91)
Quantity of medications	1865 (97.9)
Duration of therapy	1801 (94.5)
Route of administration	1044 (54.8)
Dose interval	1503 (78.9)
Instructions	1820 (95.5)
Drug abbreviation	468 (24.5)
Unit abbreviation	754 (39.6)
Spelling	1880 (98.7)
Errors related to prescribed prescription	
Date of prescription	1599 (83.9)
Clarity of prescription	1603 (84.1)
Diagnosis	837 (43.9)

The number of prescription errors per prescription ranged between four errors and twenty errors per prescription. The results of this study shows that the majority of prescriptions considered as a poor quality prescriptions. about 9 % of the total prescriptions considered as a very poor quality prescription. None of the prescriptions have no errors or even considered as a good quality prescriptions. None of the prescriptions have considered as a fair quality prescriptions.

Very poor quality prescriptions associated with poly pharmacy prescriptions (five or more drugs per prescription).

The findings of this study showed that there was significant difference (p-value > 0.05) between the prescription errors and Physician experience, age of physicians, physicians gender, country of graduation, hospital ward, time of prescriptions either early morning or end of day, attending workshop about prescription errors and specialty of physicians.

A total of 6 physicians working in the hospital were interviewed for about one hour to investigate the factors of prescription writing errors. Thematic content analysis of the interviews identified

the following prescription writing errors factors: Heavy workload, lack of training about prescription errors, unfamiliar medication such as a new medicine, absence of guideline, absence of drug information centre at hospital, lack of communication with pharmacists, huge number of patients, lack of knowledge about prescription errors, multitasking at same time, slips in attention, emergency situation, staff shortage, busy day, lack of error awareness, lack of pharmacists in inpatient wards, lapses, improper handwriting, lack of references, lack of books, lack of internet access, tired especially at the end of working day, stressed, medications name confusion, medication units confusion, abbreviation confusion and lack of guidance.

Prescription is a communication tool between the physician or authorized prescriber and pharmacist or medication dispenser, any mistake in writing a prescription could lead to harm patients and sometimes will lead to death. Adherence to prescribing guideline an especially prescription writing guideline is very important to treat patients well, improve the treating outcomes and improve their quality of life's. The findings of this study shows that the prescription errors were common and the majority of prescriptions considered as a poor quality prescriptions. The current study identified several causes of prescription writing errors. Prevent prescription errors are very important before reaching the patients to ensure their safety. Collaboration between health care professional could be prevent prescription writing errors.

Prescription writing errors could be prevented by training, attending workshops, attending conferences, establish a prescribing guideline in hospitals, establish a drug information centres or units in hospitals, hire more pharmacists as well as physicians, improve the working environments, supervise new physicians, avoid use dangerous abbreviations as well as confusing drugs, pharmacists play a key role in preventing errors before reaching the patients by check and monitor prescriptions to detect any errors that happen at the most time, provide an update references and books to each ward, improve handwriting, identify high alert medications, improve communication and collaboration between physician and pharmacists as well as other health care professionals and consider apply new technology in hospital by apply electronic prescriptions.

CONCLUSION

Prescriptions errors were common in this study. Causes of prescription errors were identified in this study. Educational interventions should be implemented in Yemeni hospitals to improve the quality of prescriptions, reducing and preventing prescription errors. This study was done only on One hospital on one city. Studies on other cities on different hospitals and health care centers

are highly recommended. Increase the awareness towards the important of adherence to the good prescribing guideline are highly recommended. Study the second part of prescribing errors (selection the treatment regimen) are highly recommended. Study of the impact of different interventions to improve prescription quality, reducing and preventing prescription errors are highly recommended.

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