

Dispensing Errors in Community Pharmacies: A Prospective Study in Sana'a, Yemen

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Abstract

Aims: The aim of this study was to determine the dispensing errors that occurred during the dispensing process in a selected community pharmacies in the capital Sana'a, Yemen. **Methodology:** A prospective study was conducted among community pharmacies in the capital Sana'a, Yemen over three months period from mid-January till mid-April 2017. Dispensing errors that were detected during the dispensing process were recorded by the pharmacy dispensers using a data collection form. Detecting and reporting of dispensing errors, types and causes of dispensing errors was explained to the participated pharmacists before starting the study. The data were descriptively analyzed using Statistical Package for the Social Sciences® (IBM SPSS) version 21 for Windows. **Results:** A total of 47 (0.82 %) dispensing errors were reported in this study. Wrong dosage form was the most common dispensing error type reported in this study followed by wrong strength, wrong quantity, drug available in the pharmacy but not given and wrong drug. Factors most commonly reported as contributing to dispensing errors in this study were: prescriptions poor handwriting, similar medications packaging, medication on shelves not arranged correctly, similar drug names and work load. **Conclusion:** This study explored the type and causes of dispensing errors at five community pharmacies in the capital Sana'a Yemen. Dispensing errors can be prevented by educational interventions about dispensing errors and its potential causes. Effective collaboration and communication between community pharmacy dispensers and prescribers is an important key to minimize and prevent dispensing errors.

Keywords: Drug Safety, Medication Errors, Human Resource, Patient Safety

INTRODUCTION

The National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) defines medication error as "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use." [1] Medication errors are probably one of the most common types of medical error, and include prescribing errors, transcription errors, prescription errors, dispensing errors and administration errors. [2] There are so many definitions of dispensing errors such as: "A discrepancy between the prescriber's interpretable written order and the filled prescription including written modifications made by the pharmacist pursuant to contact with the prescriber or in compliance with pharmacy policy." [3] or "Errors that occur when distributing or selling prescription to patient's or patient's agents." [4] or "Discrepancy between the prescriber's written

order and the filled prescription." [5] or "Error caught by a pharmacist observer after verification by the pharmacist." [6] The types of dispensing errors reported in the literature are: wrong drug dispensed; wrong strength dispensed; wrong form dispensed; wrong quantity dispensed; failure to supply drug; labelling error; wrong drug name on label; wrong strength on label; wrong directions & warnings on label; wrong quantity on

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label; wrong patient name on label and completely wrong label. [7-18]. The literature reported the following causes of dispensing errors: similar drug names; similar packaging; staffing levels; poor handwriting; interruptions & distractions; design of dispensary; staff inexperience; ambiguous directions; failure to check; lack of procedures; job dissatisfaction; poor communication; computer software; noise; proximity of drugs on shelves; no breaks; failure to follow standard operating procedures; hunger; fatigue; stress; lack of training; lack of concentration; lighting; lone worker; complex prescription and lack of knowledge. [15, 19] Therefore the aim of this study was to describe the dispensing errors that occurred during the dispensing process in a selected community pharmacies in the capital Sana'a, Yemen to describe their types and causes.

METHODS

Study design and setting

A prospective study was carried out in among community pharmacies in the capital Sana'a, Yemen over three months from mid-January till mid April 2017. The inclusion criteria were community pharmacies located within the city of Sana'a that managed by at least one pharmacy staff (pharmacist or pharmacy technician). A sampling frame of all the eligible pharmacies were prepared and 8 community pharmacies were approached which finally five given consent to participate in the study.

Data collection procedure

Data were collected over three months from mid-January till mid April 2017. A standardized data collection form was prepared to facilitate the data collection procedure. Dispensing error in this context is defined as "Errors that occur when distributing or selling prescription to patient's or patient's agents". [4] Dispensing errors that were detected during or after the dispensing process were recorded by the pharmacy dispensers using a data collection form. Detecting and reporting of dispensing errors, types and causes of dispensing errors were explained to the participated pharmacy dispensers before starting the study through workshops, educational materials and training.

Statistical analysis

The data were descriptively analyzed using Statistical Package for the Social Sciences® (IBM SPSS) version 21 for Windows.

Ethical Approval

This study was approved from University of Science and Technology, Yemen. Consent was obtained from the community pharmacies managers and community pharmacy dispensers. No personal information of the community pharmacies, community pharmacy dispensers and patients were collected.

RESULTS

Two community pharmacists and eight pharmacy technicians were working in the five community pharmacies. They were male and graduated from Yemen. The mean age of the respondents was found to be 24.70 ± 4 years. The two pharmacists had an experience more than five years and the pharmacy technicians had an experience less than five years. It

has been found that 5680 prescriptions were dispensed and checked in the five community pharmacies. A total of 47 (0.82 %) dispensing errors were reported in this study. Types of dispensing errors is presented in Table 1.

Table 1. Type of dispensing errors (N=47)

Types of errors	n (%)
Wrong dosage form	33 (70.2)
Wrong strength	5 (10.6)
Wrong quantity	4 (8.5)
Drug available in the pharmacy but not given	3 (6.4)
Wrong drug	2 (4.3)

Factors most commonly reported as contributing to dispensing errors in this study were: prescriptions poor handwriting, similar medications packaging, medication on shelves not arranged correctly, similar drug names and heavy work load.

DISCUSSION

The majority of pharmacy dispensers in this study were pharmacy technicians (8/10) and this is consistent with the previous report that the ratio pharmacists working in community pharmacies in Yemen to the number of pharmacy technicians is low. [20-23]

The results of this study showed that all the pharmacy dispensers in the five community pharmacies were males and this is similar to the previous studies and could be due to that the percentage of pharmacy male students is about 70% of the total students and culture issues in Yemen. [20-23]

A total of 47 dispensing errors were reported in this study. Wrong dosage form was the most common dispensing error type (33/47), then wrong strength (5/47); wrong quantity (4/47) and drug available in the pharmacy but not given were (3/47). Finally the least common dispensing error reported in this study was wrong drug (2/47).

The incidence, types and causes of dispensing errors in this study difference from the reported in other studies world wide. [7-18] The difference could be due to the study setting and methods.

The findings of this study shows that the contributing factors to the dispensing errors were: prescriptions poor handwriting, similar medications packaging, medication on shelves not arranged correctly, similar drug names and work load.

In this study poor handwriting is considered as a major cause of error. Handwritten prescription errors can lead to misinterpretation by pharmacy dispensers and will lead to drug related problems. Good quality prescriptions are very important for minimize errors in the dispensing of medications, physicians should adhere to the guidelines for prescription writing for the quality of treatment of patients. All prescriptions should contain accurate and appropriate information about the

patient and the medication that is being prescribed. All prescriptions should contain: 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, why prescribed and instructions for use. [15-19, 24 - 35] The teaching and training of health care professionals about dispensing errors as well as collaboration and communication is the key to minimize and prevent dispensing errors

Limitation of the study

The limitations of this study were: design of study itself as it was self reported which may lead to underreported of dispensing errors and sample size and location of this study is low as only five pharmacies in one city (the capital Sana'a) accepted to share and participated in this study.

CONCLUSION

Wrong dosage form was the most common dispensing error type reported in this study followed by wrong strength, wrong quantity, drug available in the pharmacy but not given and wrong drug. Study of the dispensing errors incidence in other cities within Yemen, it's types and causes of dispensing errors are strongly recommended.

Study the impact of different interventions to improve dispensing quality, reducing and preventing dispensing errors are strongly recommended. The teaching and training of health care professionals about medication errors as well as collaboration and communication is the key to minimize and prevent dispensing errors.

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