ASSESSMENT OF THE QUALITY OF OUTPATIENT PRESCRIPTIONS FROM VARIOUS CLINICAL SETTING IN A TERTIARY HOSPITAL, SAUDI ARABIA

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ABSTRACT

Objective: The quality of prescribing influences, to a large extent, the health outcomes of patients as errors made could result in adverse drug reactions. The aim of this study is to assess determine the quality of outpatient prescriptions in various clinical settings in Aseer region, Kingdom of Saudi Arabia.

Methods: An observational, cross-sectional descriptive study was carried out in various community pharmacies where the prescriptions received were analyzed for their quality.

Results: The prescriptions were checked for the completeness of the patients' biodata (name, age, sex, and hospital number), categories of drugs, prescribing by generic name, legibility of prescriber's writing, the name, and signature of the prescriber. Two hundred and fifty prescriptions were collected and used for analysis. A significant number of the prescriptions were written in illegible (26%) handwriting. The name (15%), age (48%), and sex (46%) of the patient were not mentioned in the majority of the prescriptions. Most of the prescriptions (94%) failed to demonstrate the presence of address, height, and weight of the patient. Brand name of the drugs was mentioned in all the prescriptions, with only 17% of them having the generic name. The doctor's name, signature was present in 81% and 70% of the prescription, respectively.

Conclusion: Study shows that there is a need for improvement in the quality of prescription written by doctors. The adoption of a computer-aided prescribing system in an outpatient setting would go a long way in achieving this objective.

Keywords: Outpatient, Written prescription, Quality of prescription, Health outcomes.

INTRODUCTION

Prescriptions act as the core communicating medication plans from prescribers to pharmacists and finally, to patients [1]. Prescriptions can also be used as a measure of the quality of medical education, observance of the laws and regulations, and socio-cultural beliefs [2].

A good prescription is rational, evidence-based, clear, and complete and improves the treatment outcome of the patient. While prescribing without an appropriate indication, correct dose, frequency, route of administration, schedule or duration of treatment and duplicate therapeutic agents and medication of potential drug-drug interactions or adverse reactions are all forms of inappropriate prescribing [3].

The World Health Organization (WHO) estimates that worldwide, more than 50% of all medicines are prescribed, dispensed, or sold inappropriately, and about half of all patients fail to take their medicines correctly (WHO 2009). Lack of attention during prescription writing can lead to prescription errors which, in turn, can adversely affect patients' well-being. Thus, prescriptions are an important target area for improvement [4]. Prescription quality can be a direct predictor of the net outcome of a health-care delivery effort [5]. Thus, in the present study utilizes the WHO drug use indicators as a preliminary tool for analyzing prescriptions written by physicians in outpatient clinics.

METHODS

Study design

An observational, cross-sectional descriptive study was carried out in various community pharmacies where the prescriptions received were analyzed for their quality. The study was carried out in the outpatient clinics in Aseer Central Hospital, which is a tertiary hospital equipped with 550 beds in Abha city, Saudi Arabia.

Sample size and data collection

A sample size of 250 handwritten outpatient prescriptions were computed and they were collected from the community pharmacies that reached from various clinical settings. The duration of this study was 2 months. The prescriptions were collected for a period of 5 weeks (April 26, 2017, to May 27, 2017) and then analyzed for the clerical and clinical errors.

The prescriptions were then assessed for errors using a checklist of errors adapted from the WHO recommendations for guide to good prescribing [6]. The prescriptions were considered as having errors if they have at least one of the following errors.

- Missing patient/physician information
- Generic/brand name of drugs
- Drugs without indications/drugs without drugs
- Wrong formulation;
- Improper or omitted route of administration;
- Improper or omitted frequency;
- Drug duplication;
- Potential drug/drug interaction
- Unauthorized drug;
- Incorrect treatment duration;
- Illegible order; and
- Missing or inaccurate patient height and/or weight [6].

Legibility was checked as follows [7]:
1. Legible can read the medication order without consulting other health-care professional or references.
2. Legible with effort can read the medication order after consulting with one or more health care professionals and/or references.
3. Illegible, cannot read the medication order, despite consultation with one or more health-care professionals and/or references [7].

Data analysis

A special data collection form is prepared and the prescription errors were transferred.

Data were entered and analyzed using the descriptive statistics and represented as percentages (%).

RESULTS

Demographic data

During the study period, a total of 250 prescriptions, including in the checklist of the WHO guideline criteria the most common superscription errors are present in Table 1.

Date of prescription are not mention "absent" nearly 31% were patient's name not included for 15%, age 48%, sex 46%, weight absent for nearly 97%, the allergy 96%, and diagnosis are not included for 31%.

Drugs per prescription

The number of drugs per prescription from 1 to 8 is shown numbers number 1 as minimum and number 8 as maximum number, the figure one nearly 65 (26%), two 77 (31%), three 51 (20%), four 31 (12%), five 13 (5%), six 7 (3%), seven 5 (2%), and eight 1 (0.4%) are shown in Fig. 1.

Drug Duplication and omission errors

Duplication of the drug is occurring 14 (6%), drugs without indication 88 (35%), indications without drugs 9 (4%), usage of the drug for the indication supported by evidence 136 (54%), and medication available in the formulary or essential drug list 246 (98%) are shown in Table 2.

Categories of drugs

Categories of drugs prescribed are variation in a lot of categories, NSAIDs and analgesics 32 (13%), antipyretics 104 (42%), antibiotics 184 (74%), antihistamines and cold preparations 6 (2%), antacids and antiulcer 21 (8%), antidiabetics 30 (12%), corticosteroids 59 (24%), hormones and oral contraceptives 7 (3%), antidepressants/antipsychotics/CNS activators 18 (7%), antiepileptics 4 (2%), cough suppressants and expectorants 3 (1%), antispasmodics and antiemetics 7 (3%), bronchodilators 14 (6%), nasal decongestants 3 (1%), topical skin preparations 35 (14%), laxatives 4 (2%), antihypertensives and other CVS agents 30 (12%), antihyperlipidemic 7 (3%), drugs for BPH 0 (0%), vitamins, minerals, and nutritional supplements 11 (4%), oral rehydration solutions 7 (3%), eye/ear drops/ointments 94 (38%), antifungal 5 (2%), antiviral 6 (2%), anticoagulation 18 (7%), and the drugs cannot justify 17 (7%) that are shown in Table 3.

Drug-drug interaction

Drug-drug interaction in the prescriptions between three degrees (minor – moderate-severe); whereas the minor is occurring 0 (0%), moderate 18 (7%), and major 1 (0.04%) that are shown in Table 4.
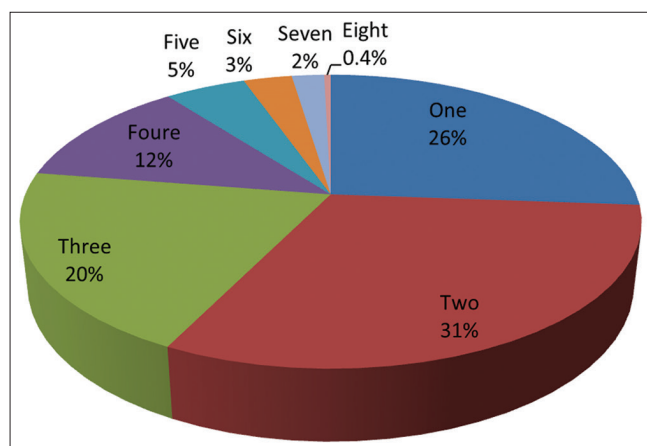

Fig. 1: Number of drugs per prescription

Mode of prescribing the product/drug is variation between three choices (generic-brand-mixed) names, the generic was mentioned 43 (17%), brand was mentioned 127 (51%), and mixed was presented nearly 80 (32%) times (Table 5).

Inscription errors

Most common inscription errors are included in prescription, illegible prescription or bad handwriting 66 (26%), omission or incomplete information on strength of medicine 140 (56%), omission or incomplete information on dosage form 59 (24%), omission or incomplete information on dose 35 (14%), omission or incomplete information on frequency 18 (7%), and omission or incomplete information on duration 47 (19%) that are shown in Table 6.

Prescriber's information errors

Most common errors in prescriber's information such as prescriber's name were missed (19%) and prescriber's signature missed (30%) that are shown in Table 7.

DISCUSSION

Medical prescription errors by health professionals cause a serious public health problem and these errors sometime become a threat to the patient's life. Many studies have reiterated that incomplete or omitted information in the prescriptions and poor handwriting leads to numerous errors [8,9]. In our present study, we analyzed the essential element of prescriptions such as legibility and completeness of handwritten prescription. It was suggested by Calligaris *et al*. that overall illegibility or incompleteness of more than 20% is unacceptably high [10].

In our study, we found the following superscription errors. The date of prescription, patients' name, age, sex, weight, allergies, and diagnosis was missing in 31%, 15%, 48%, 46%, 97%, 96%, and 31% of the prescriptions, respectively. Similar results were found in a study conducted by Balbaid and Al-Dawood [11], which demonstrates an omission of a patient's name in 14.5% of the prescriptions. On the other hand, a large number of gender and age are missing in the prescriptions

Table 1: Most common superscription errors

S. No.	Elements	Result	% of incidence
1	Date of prescription	Present	69
		Absent	31
2	Patient's name	Present	85
		Absent	15
3	Age	Present	52
		Absent	48
4	Sex	Present	54
		Absent	46
5	Weight	Present	3
		Absent	97
6	Allergies	Present	4
		Absent	96
7	Diagnosis	Present	69
		Absent	31

Table 2: Drug duplication and omission errors

S. No.	Error category	Frequency	% of incidence
1	Drug duplication	14	6
2	Drugs without indication	88	35
3	Indications without drugs	9	4
4	Is the usage of the drug for the indication supported by evidence?	136	54
5	Is the medication available in the formulary or essential drug list?	246	98

Table 3: Categories of drugs prescribed

S. No.	Category of drugs	Frequency	% of occurrence
1	NSAIDs and analgesics	32	13
2	Antipyretics	104	42
3	Antibiotics	184	74
4	Antihistamines and cold preparations	6	2
5	Antacids and antiulcer	21	8
6	Antidiabetics	30	12
7	Corticosteroids	59	24
8	Hormones and oral contraceptives	7	3
10	Antidepressants/antipsychotics/CNS activators	18	7
11	Antiepileptics	4	2
12	Cough suppressants and expectorants	3	1
13	Antispasmodics and antiemetics	7	3
14	Bronchodilators	14	6
15	Nasal decongestants	3	1
16	Topical skin preparations	35	14
17	Laxatives	4	2
18	Antihypertensives and other CVS agents	30	12
19	Antihyperlipidemics	7	3
20	Drugs for BPH	0	0
21	Vitamins, minerals, and nutritional supplements	11	4
22	Oral rehydration solutions	7	3
23	Eye/ear drops/ointments	94	38
24	Antifungal	5	2
25	Antiviral	6	2
26	Anticoagulation	18	7
27	Cannot justify	17	7

NSAIDs: Nonsteroidal anti-inflammatory drugs

Table 4: Drug-drug interaction

S. No.	Classification	Frequency	% of incidence
1	Minor	none	0
2	Moderate	18	7
3	Severe	1	0.4

Table 5: Mode of prescribing the product/drug

S. No.	Mode	Number of prescriptions	% of incidence
1	Generic	43	17
2	Brand	127	51
3	Mixed	80	32

and showed a higher percentage of the incompleteness of age when compared to the other studies conducted in other regions of Saudi Arabia [12,13].

The WHO recommends the presence of the age in the prescriptions especially for children and elderly [14]. This is extremely significant to have the right drug, right dose, and the right dosage form to the right aged person [14]. In addition, our findings showed nearly 31% of the prescriptions were not having a diagnosis which is in agreement with some similar studies, which also reported the missing of diagnosis in the prescription [11-13]. According to the hospital prescription regulations, it was recommended to include the diagnosis of the patient in the hospital prescription list. Therefore, our study results demonstrate to the hospital management to emphasize the necessity of writing clear and complete prescriptions to interpret correct patient information.

In the present study, only 17% of the medications were prescribed by generic name, 32% of prescriptions were written with both brand and generic names and 51% of medications were prescribed by their brand names. These results are in line with some similar studies conducted by Castilho *et al.* and Irshaid *et al.*, 2005 which report nearly 34% and 50.1% of the medications were written by brand names [12,15].

According to the WHO [6], it is recommended to use the generic name for all medications prescribed by physicians. A study by Shrank *et al.* showed that prescribing the medicines by generic name not only saved money but also improved the likelihood of patients taking their medicines [16]. The use of generic names will enable the pharmacist to maintain a more limited stock of drugs and avoid the unnecessary expensive drugs for the patient. Therefore, the use of generic names, especially in emerging countries such as Saudi Arabia, could potentially reduce medication prices, as well as facilitate patient access and adherence to treatment.

The inscription errors committed in the prescriptions included in our study were worse than those reported previously. Balbaid and Al-Dawood [11] reported that the dose, frequency, and duration of medications were deficient in 7.6%, 6.9%, and 10.2% of prescriptions, respectively. Bawazir [13] reported that the dose of the drug was missing in 4% of prescriptions. We found that more than half (56%) of prescriptions did not include the strength of the medication, the dose units were not included in 14%, and the dosage form of medications was not included in 24% of prescriptions. It sounds as if, these parameters are left to the pharmacist to decide upon and the implications for the duration of therapy will be dependent on the individual pharmacist. The strength of medication is particularly needed when the pharmaceutical product exists in more than one strength.

Illegible prescription is one of the factors, which can increase the risk for medication errors regardless of the accuracy, and completeness of the prescription [17]. Illegibility of physicians' handwritten prescription orders is a problem that has been mentioned in almost every publication related to prescribing errors [17]. The results of our study also corroborate with the study of Mendonca *et al.*, where they found the illegibility rate as 26% out of 300 dental prescriptions [18].

Our finding is in contrast with what was found by Balbaid and Al-Dawood [11] who reported illegible handwriting in only 7.2% of prescriptions. The high percentage of poor handwriting we found could be due to the fact we considered the presence even of a single unclear word or a dose unit as poor handwriting for the whole prescription. Poor handwriting is a serious problem that might lead to dispensing the

Table 6: Most common inscription errors

S. No.	Error category	Frequency	% of incidence
1	Illegible prescription or bad handwriting	66	26
2	Omission or incomplete information on the strength of the medicine	140	56
3	Omission or incomplete information on dosage form	59	24
4	Omission or incomplete information on dose	35	14
5	Omission or incomplete information on the frequency	18	7
6	Omission or incomplete information on duration	47	19

Table 7: Most common errors in prescriber's information

S. No.	Elements	Result	% of incidence
1	Prescriber's Name	Present	81
		Absent	19
2	Prescriber's Signature	Present	70
		Absent	30

wrong medication to the patient with serious or even fatal results [18]. Therefore, the study results indicate the physicians and other health professionals as their responsibility for clarity, accuracy, and precision of handwriting prescriptions.

CONCLUSION

This study is a small attempt to represent handwritten outpatient prescription errors in Aseer region, Kingdom of Saudi Arabia. In our study, the prescriptions we reviewed suffered from serious deficiencies and were not properly written, which indicates poor compliance of the prescribers to follow the national guidelines/WHO guidelines of prescribing. We found in this research that there is a deficiency in filling the patient-related information, prescriber related information, drug-related information, and legibility. Prescribing errors should be considered as a potential area for improvement in the medication management process and patient safety. Using a computer-aided prescribing system in the outpatient-clinics setting with must fill options (including full patient information, diagnosis, and name of the prescribing doctor) will help to decrease the possibility of medication errors.

CONFLICTS OF INTEREST

The author declares that they have no conflicts of interest.

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