

PHYSICIAN TRENDS OF DRUG PRESCRIPTION IN LIBYA: A PHARMACOEPIDEMIOLOGICAL STUDY

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ABSTRACT

Background: Prescription of medicines is the most prevalent treatment manner. Prescription writing errors may lead to a significant patient fatality. The aim of the current study was analyzing the quality of physicians' prescriptions and prescribing trends in public and private health centers in Tripoli city of Libya. Methods: A cross-sectional study was conducted on 216 randomly selected prescriptions collected from a random sample of 35 community pharmacies over a study period of 72 working hours. Information about the drug categories and elements in the prescription was analyzed. Results: Our findings revealed that documentation was not ideally completed. Physician-related variables were mostly noted; however, the patient's weight and diagnosis were missing in 10.1% and 26% of the prescriptions, respectively. Information regarding instruction to use the prescribed medications was missing in over 47% of the prescriptions. The average quantity of drugs per prescription was 3.0. Analgesics, antibiotics, and vitamin preparations were the most common classes of the prescribed drugs, respectively. Paracetamol, co-amoxiclav or amoxicillin, vitamin B complex, and pseudoephedrine were the specific medications, classified as highly frequent prescriptions. Conclusion: Trends of drug use in this study show that certain categories of drugs are overprescribed. The primary health-care physicians in Libya need ongoing training to progress their prescribing practices.

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Introduction

Pharmacoepidemiology denotes to the epidemiological study of the medicines clinical usage, and their therapeutic and side effects in a large number of population with the aim of enhancing cost-effective rational use of medications in order to attain a better health outcome [1]. Monitoring and auditing prescription are considered as efficient ways to advance the quality of care provided by the physicians both in private and public sectors [2]. Patients with clinical problems usually visit physicians for evaluation and diagnosis. Once diagnosis is confirmed, the physician generally decides for a drug therapy regimen through various therapeutic tactics [3]. This needs writing of a medical prescription. Prescription writing is not just drawing a few drug names on a piece of paper, rather it is an art which can be achieved only after years of knowledgeable experience of the basic subject [4]. Community pharmacies are known to be the first line of counselling prescribed medications, and are commonly faced with unidentified issues as they frequently dispensed antibiotics in incorrect doses and sell medications including steroids with no medical consultation [5].

Medications are crucial in healthcare delivery, and when used appropriately, they can help in treating diseases, alleviate symptoms, and lessen patient suffering. Nevertheless, irrational use of drugs is still globally identified as a main problem that most healthcare systems face with [6]. It has been estimated by the World Health Organization (WHO) that more than 50% of medicines are prescribed in an unsuitable manner. Moreover, about 50% of patients fail to take their medicines properly [7].

Notwithstanding the fact that pharmacy practice in community pharmacies has revealed improvement to some extent, during the last few years, it has not completely gained the belief of the public or other health experts, yet. In many countries, this would appear to be due to several factors, including the nonexistence of professionalism on the part of pharmacists, commercial pressure on community pharmacies, and an absence of administration of the regulations controlling pharmacy practice within both hospital and community settings [8].

The purpose of this study was to investigate the current trends in drug prescriptions, which were dispensed at community pharmacies in Tripoli city, Libya, and to screen for the important elements present in the dispensed prescription. The outcomes of the present study can be used by health policymakers to improve drug prescribing practices and enhance the patients' pharmaceutical care.

Materials and Methods

A prospective cross-sectional study design was conducted based on a validated anonymous self-administered questionnaire during Feb 2019. The research committee of the Department of Pharmacy, University of Tripoli Alahlia, Libya approved the study.

All community pharmacies in Tripoli were categorized into 7 subdistricts. A random sample of 5 or more pharmacies was selected from each sub-district, based on the number of pharmacies in the sub-district and also based on the willingness of the community pharmacist to contribute in the study. There were no rejections to contribute; therefore, the response rate was 100% and all of the 35 pharmacies were surveyed.

We collected the medical prescriptions written by specialists and general practitioners at public and private medical centres from the selected community pharmacies on the same day. Collecting of data was carried out by 2 pharmacy students. Each student was randomly assigned to a community pharmacy and was asked to collect all dispensed prescriptions on the study day.

The data assembled from the prescription was transferred to a special form for further analysis. The prescriptions were judiciously investigated for physician, patient and drug indicators using a prepared checklist for some items. Categories of prescribed medications were analyzed to assess the drug classes which were prescribed most frequently. All data were entered and analyzed using SPSS version 22. We verified data by 0 or 1 coding system. For each variable, a score of 1 was entered when the variable was present and compliant with the standard.

Results

During the study, a total of 216 prescriptions were collected and analysed. The majority used brand names in the prescriptions. The quantity of drugs prescribed per prescription was between 1 and 5, and 87.9% of prescriptions included 3 or fewer drugs. A total of 648 medications were present in 216 prescriptions, with an average of 3.0 per prescription. Most of the prescribed drugs were from gynaecology, general medicines, orthopaedic, and paediatric departments (Table 1).

Table 1. Drug Prescription collected based on the departments (N=648)

Department	Number	Percentage
Gynaecology	214	33.1%
General Medicine	163	25.1%
Orthopaedic	98	15.1%
Paediatric	87	13.4%
Dermatology	22	3.4%
ENT	14	2.1%
Urology	12	5.9%
Cardiology	9	1.8%
Neurology	8	1.2%
Others	21	3.2%

Most of the prescriptions included the date of the prescription, signature of the prescriber, name and age of the patient. Many of the prescriptions lack elements such as the weight or address of the patient (Table 2).

Table 2. Analysis of prescriber and patient information present on the prescriptions (n = 216)

Information present	No.	%
Physician-related		
Name	187	86.5
Specialization	63	29.1
Signature	187	86.5
Date	192	88.8
Patient-related		
Name	215	99.5
Age	169	78.2
Gender	155	71.7

Diagnosis	26	12.0
Weight	22	10.1
Address	0	0

The variables related to the drug were also examined. The medication strength was stated for certain drugs in 3.7% of the prescriptions and for all drugs in 93%. Moreover, in about 3.2% of the prescriptions, the medication strength was not mentioned for all drugs.

The dosage form of a drug to be dispensed was not indicated for any drug in almost 20% of prescriptions. The instructions for taking the medication were complete in only 52.7% of the prescriptions (Table 3).

Table 3. Analysis of the variables related to the drugs present on prescriptions

Variable	Included for all drugs in prescription		Included for some drugs in prescription		Not included for any drug in prescription	
	No.	%	No.	%	No.	%
Frequency	198	91.6	11	5.08	7	3.2
Quantity per dose	191	88.4	19	8.7	6	2.7
Dosage form	162	75.0	12	5.5	42	19.4
Instructions for use	114	52.7	68	31.4	34	15.7
Strength	201	93.0	8	3.7	7	3.2

The 11 most frequently prescribed medications, representing 51.3% of the total prescription drugs, are shown in Table 4. Paracetamol with 27.6% was at the top of the list followed by Co-amoxiclav or amoxicillin and Vitamin B complex preparations with 21.3% and 11.1%, respectively.

Table 4: The 11 common prescribed drugs

Rank	Drug name	Number	Percentage
1	Paracetamol	92	27.6
2	Co-amoxiclav or amoxicillin	71	21.3
3	Vitamin B complex	37	11.1
4	Antacid	32	9.6
5	Pseudoephedrine	25	7.5
6	Metoclopramide	21	6.3
7	Ibuprofen	16	4.8
8	Metformin	13	3.9
9	Cough mixture	11	3.3
10	Hyoscine-N-butylbromide	9	2.7
11	Chloramphenicol eye ointment	6	1.8

Regarding the prescription of antimicrobial, a total of 173 prescriptions involving antimicrobial agents were dispensed during the period of study, representing 80.0% of all prescriptions. The most typically prescribed antibiotic was amoxicillin alone or in combination (55.4%), followed by cefixime (13.8%), and clarithromycin (9.2%) (Table 5). Clindamycin, azithromycin, metronidazole, ciprofloxacin, and kanamycin were among the less prescribed antibiotics.

Table 5. Prescribing trends of various antimicrobial classes dispensed at community pharmacies

Drug	Number	% Percentage
Augmentin or amoxicillin	96	55.4
Cefixime	24	13.8
Clarithromycin	16	9.2
Clindamycin	12	6.9
Azithromycin	9	5.2
Metronidazole	5	2.8
Ciprofloxacin	4	2.3
Kanamycin	4	2.3
Others	3	1.7

Discussion

This was the first study with regard to the evaluation of the prescription writing quality and prescribing trends in public pharmacies in Libya. Community pharmacies are identified to be the main source of drugs and can play a major role in enhancing patient health care in the community [9]. The role of pharmacists in health care system and the involvement of their services on the general health of any country have been obviously stated in WHO statement since 1990 [10]. The present investigation was aimed to monitor the prescribing trends and prescription writing quality in community pharmacies in Tripoli. The study clearly displayed that there are some deficits in the prescription writing quality.

Audits for the presence of prescription information in this study reported that writing information such as patient's weight, diagnosis, physician specialization, and instruction to use were incomplete. These findings were in line with previous outcomes stated by other investigators [4, 11]. The absence of a regulatory policy of standards for prescription and an increased pressure on physicians by the heavy load of daily patient visits may be responsible for such practices.

In the current study, analysis of the prescriptions reported that the patient's name (99.5%), age (78.2%) and gender (71.7%) were written by majority of the physicians. The patient's diagnosis (12.0%), weight (10.1%), and address (0%) were missing in almost all of the prescriptions. Patients' information is very crucial to confirm that the correct medication goes to the correct patient and likewise for documentation and record maintenance. A comparable study conducted in Nigeria to evaluate the quality of prescription in a general hospital revealed that the patients' age was documented in most of the prescriptions, but the patient identifier (name, address, and the hospital number) was stated in majority of the collected prescriptions [12]. Another study conducted on 206 prescriptions to measure the prescription lettering quality showed that the patients name and age were written in 180 (87%) and 115 (55%) prescriptions, respectively [13].

The data collected from the doctor's information, in the current study, showed that almost all of the prescriptions contained physician name (86.5%), signature (86.5%), and date (88.8%). Doctor's specialization (29.1%) was missing in most of the prescriptions. A similar study conducted by Dyasanoor et al. in 2019 also revealed that doctor's information such as contact details (99.4%) and superscription (99.4%) were stated in almost all of the prescriptions. However, doctor's qualification (13.6%) and department name (4.4%) were absent in many of the prescriptions. Information about doctor is essential for patient or pharmacist to contact the physician for any explanation and clarification. Besides, nonappearance of prescriber signature would also invalidate the prescription and cause awkwardness to the patient and the elaborated staff. Another study, conducted in Belgaum exhibited that doctor's data including departments name, and signature were missing in most of the prescriptions while the name and phone number of the doctor were stated in many of the prescriptions [14].

Regarding data collected about drug information, our findings revealed that the instruction to use parameter were lacking, which might lead to poor compliance [Table 3]. Such deficiencies might generate misunderstanding for the dispensing pharmacist and the patient might obtain an incorrect form of the drug. Previous study in Saudi Arabia also revealed that some important elements of prescribing such as instruction to use are missed, which could endanger patient safety. This highlights the necessity for both community and private physicians to give more priorities in completing the instructions for the prescribed medicines. The necessity of maintaining a large amount of consultations, mostly in private settings, may contribute to this. Moreover, doctors may also think that providing this information is a part of pharmacist responsibility during medication dispensing.

Antibiotics and analgesics were the most common drugs, prescribed in our study. Analysis of the 11 most frequently prescribed medications exhibited that two-thirds of these medicines are used for relieving symptoms. Paracetamol, co-amoxiclav, vitamin B complex, and pseudoephedrine were the most frequent drugs prescribed in Libya. In Saudi Arabia, paracetamol, ampicillin, vitamin B complex, and antacid were the top four categories of the prescribed drugs [11]. However, in the United States, the drugs used for cardiovascular, nervous system, endocrine, and musculoskeletal disorders were mostly prescribed [15]. In Libya, antibiotics and analgesics were the most prescribed drug categories, allocating 25% and 23%, respectively, as reported by Sherif in 2008 [16]. In addition, in most of the prescriptions, brand names of the medications were used instead of generic names. Writing the brand names may impose dispensing problems for community pharmacists since not all of them can afford the wide range of brand names of the same drug [17]. The lack of generic prescribing in this study is comparable to the previous studies [4,18,19], but it differs from prescription practices in some other developing countries such as Cambodia 99.8% and India 46% [20,21]. There is no controlling policy on generic prescribing in Libya. Thus, generic prescribing should be strongly encouraged to enable rational and cost-effective prescribing practices.

As common in developing and undeveloped countries, anti-microbial drugs constitute a high quantity of dispensed drugs [22-24]. A possible reason for over-prescribing of antibiotics is the high occurrence of infection, as described in other studies [25]. Over-prescribing was mainly obvious for children and in situations where the infection was presumably from a viral origin. Newer generation antibiotics (co-amoxiclav, cefixime, and clarithromycin) usage was quite high, adding to the costs and possibly upraising resistance issues [26]. Unfortunately, data on bacterial resistance for the most frequently prescribed antibiotics is incomplete in Libya, which enables establishing evidence-based antibiotic prescription strategies.

There are some limitations in the study; it denotes a preliminary investigation in a complex area of prescribing. Moreover, the prescription collection was made on only 1-day prescription, which has to be expanded to improve the sample size. A larger sample size may assist in attaining further statistical power for the obtained results.

Conclusion

The outcomes of this study reveal the necessity for further improvement in the quality of prescription writing by the physicians. Encouraging the reasonable use of medicines needs influential policies as well as an efficient collaboration between health specialists, patients, and the whole communities. The interventions intended at enhancing knowledge and training, and reducing complexity, and the introduction of firm feedback control and audit systems are extremely desirable. Other approaches suggested to increase the prescriptions quality include the use of continuing professional educational programs and electronic computerized system of prescribing.

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Conflicts of interests

No conflict of interests was declared.

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