

# Drug Prescription Practice and Behavior: A Narrative Review with Special Emphasis on Prescribing Patterns in Libya

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## Abstract

Counseling has evolved into an essential component of community pharmacy practice. Patient counseling and addressing drug-related problems are the pharmacist's key activities to ensure the safe and effective use of medicines. There are currently no solid theoretical foundations for research on physician prescribing choices. In fact, doctors' drug prescriptions are a complex phenomenon that are influenced by a number of factors. The majority of current studies in the field of drug prescription use an exploratory approach rather than a theoretical one to describe how doctors make decisions. In Libya, a prescription of medications can easily be obtained from community pharmacies without prescription, resulting in potential drug misuse and health hazard. It was stated previously that there was overprescribing of certain categories of drugs written by Libyan physicians which necessitating further improvement. This review aimed to describe the dispensing practice of prescribed medicines in daily community pharmacy practice in Libya, focusing on counseling, and rational prescription based on the World Health Organization prescribing indicators.

**Keywords:** Counseling, drug, Libya, prescription

## INTRODUCTION

Medicines are an essential component of health care, and modern health care would be impossible without the availability of essential medicines. They not only save lives and promote health, but they also help to prevent epidemics and diseases. Every person has the fundamental right to have access to medicines.<sup>[1]</sup> However, in order to provide the greatest benefit, they must be safe, effective, cost-effective, and rational.

Irrational drug prescribing is a major public health issue that health-care systems around the world are dealing with.<sup>[2]</sup> It is defined by the World Health Organization (WHO) as "prescribing that does not adhere to good treatment standards."<sup>[3]</sup> It has a negative impact on drug therapy outcomes, increases the occurrence of adverse drug reactions (ADRs), raises the risk of drug-drug interactions, raises the demands on drug monitoring, and incurs unnecessary costs.<sup>[4]</sup> Furthermore, it may increase the frequency of the emergency department visits, the length of hospital stay, and medication-related mortality.<sup>[4]</sup> According to the WHO, more than half of all medicines in the world are inappropriately prescribed in developing countries, where drug monitoring and evaluation are in their infancy.<sup>[5]</sup>

Furthermore, nearly one-third of the world's population lacks access to life-saving medicines.<sup>[6]</sup>

It is necessary to examine drug use patterns to change prescribing patterns accordingly.<sup>[7]</sup> Several well-known survey approaches have been developed for this purpose, one of which is an assessment based on the WHO drug use indicators. These indicators including prescribing indicators, patient care indicators, and health-care facility-specific indicators. The use of these indicators is thought to monitor medication prescribing patterns and enhance good behavior among prescribers.<sup>[8]</sup>

Several studies have been conducted to determine the prescribing patterns of Libyan public health facilities. However, no comprehensive review of these studies has been

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conducted to provide an overall picture of the country's drug use pattern. As a result, the purpose of this review was to determine the drug prescription pattern in Libyan public health facilities using WHO prescribing indicators.

## WHAT IS A PRESCRIPTION

The word prescription originates from the words “pre” - (before) and “script” (writing). Prescription order is written for diagnosis, prevention, or treatment of a specific patient disease.

The medicines along with their appropriate amounts were mentioned by physicians on prescription, with instruction to pharmacist for dispensing the medicines in appropriate doses and amounts as well as duration.<sup>[1]</sup> It consists of the prescriber's details, the patient's details (name, age, gender, and address), the superscription, the inscription, the subscription, and the sign.<sup>[1]</sup> The first part is prescriber's details, consist of prescriber name, address, registration number of prescriber, and contact number of treating doctor for connection in case of emergency or ADR. It also has a superscription that is represented by symbol Rx, which always written at the beginning of prescription. In addition to that, there is inscription “is the main body of prescription” it contains the names and quantities of prescribed medicines (generic name, dose, frequency, and duration of therapy).

The physician knowledge about the medicines and his/her competence is reflected by what and how he writes. Moreover, there is a subscription that contains the prescriber's directions to the pharmacist regarding the dosage form, number of doses to be dispensed, and refills or change of brands under this section. Furthermore, signature/sign is one of the parts of prescription which consist of directions to be given to the patient regarding the administration of drug. Further, the prescription has date, which is important for the patient, physician and pharmacist to help ascertain the course of therapy, the timing of follow-up required, It indicates the compliance to treatment, and helps in determining the validity of the prescription and in avoiding unnecessary re-dispensing of the medication described in the prescription.

## Errors in prescription writing

A systematic and meticulous approach should be followed while writing a prescription. A prescription can be illegible, incomplete, and irrational. Illegible or unreadable drugs are the biggest challenges as they lead to a large number of prescription errors.<sup>[2]</sup> The national patient safety agency revealed that medication errors in all care settings in the United Kingdom occurred in each stage of the medication treatment process, with 16% of errors occurring in the prescribing, 18% in the dispensing, and 50% in the administration of drugs.<sup>[3]</sup> Incomplete prescriptions are prescription orders with missing or inappropriate information, i.e., the dosage form, the route of administration, the dosing schedule, and the duration of therapy. Prescriptions without signature of the prescriber, a review advice, instructions to patients, and refill instructions are also considered to be incomplete. This can lead to more of

guess work on the part of both the pharmacist and the patient, which may lead to a fatal outcome.<sup>[9-15]</sup>

## Irrational drug use index by World Health Organization

Irrational drug use remains a serious and widespread public health problem in developing countries due to a shortage of trained personnel, knowledge gaps, and economic constraints.<sup>[16,17]</sup> Resistance to antibiotics, inappropriate prescribing, inappropriate dispensing, and inappropriate use of drugs by patients in the diagnosis, prevention, and treatment of diseases are the leading public health challenges globally.<sup>[18,19]</sup> According to the WHO, “irrational use of medicines implies that patients get medications inappropriate to their clinical conditions, doses not that meet their requirements for the desired period.<sup>[20]</sup> Worldwide, over half of all medicines are prescribed, dispensed, or sold inappropriately and only half of all patients take their medicine correctly. Irrational use occurs when WHO drug use indicators are not met.<sup>[21,22]</sup> The use of wrong or unnecessary drug seriously affects public health worldwide. This leads to decreased treatment outcomes, drug resistance, increased treatment costs, and death.<sup>[23,24]</sup> Irrational drug use is a global problem, includes prescribing using brand names, polypharmacy, over-prescription of antibiotics, and overuse of injections among other practices.<sup>[25]</sup> Polypharmacy is associated with an increased risk of drug-drug interactions which may lead to ADRs, decreased adherence of patients due to pill burden, and unnecessary high drug costs. Over-prescription of antibiotics increases the risk of drug resistance and drug costs, while overuse of injections increases the risk of tissue injury and transmission of blood-borne diseases, such as HIV/AIDS and hepatitis B and C. Moreover, injections are relatively more expensive than oral medications.<sup>[21-25]</sup> The analysis of prescriptions and drug utilization studies can identify the problems and provide feedback to prescribers to curb the problem.<sup>[25,26]</sup> Irrational prescribing of drugs leads to misuse, overdose, underdoses, toxicity, ADR, cost, and shortage of drugs at health facilities.<sup>[27,28]</sup>

## Essential drug list and the national essential drug list

More than 110 countries worldwide have developed essential medicine lists to fit their country's specific needs and context.<sup>[29]</sup> The WHO has created a model list of essential medicines, i.e., updated every 2 years based on efficacy, safety, and tolerability. The WHO has stated that “each country has the direct responsibility of evaluating and adopting a list of essential drugs, according to its own policy in the field of health.”<sup>[30]</sup>

The first WHO essential list was published in 1977, although the children essential list was lately published in 2007.<sup>[30]</sup> By the turn of the century, over 150 countries had a national list of essential medicines, and over 100 countries had a national medicines policy. Although initially aimed at developing countries, the concept of essential medicines is increasingly seen as relevant for middle- and high-income countries as well.<sup>[31]</sup> The list helps establish which medication is more useful for the public than others, since than the list increase in size

year after year and the intention was shifted from an experience to an evidence-based process. The literature supports that the concept of essential medicines has evolved and broadened in scope, making it difficult to select and assess the appropriate use of essential medicines.<sup>[31]</sup>

Within a country, the selection of essential medicines is a two-step process. Regulatory approval is usually based on a review of efficacy, safety, and quality without comparison with other medicines. From these registered products, essential medicines within a therapeutic class are then selected based on comparative efficacy, safety, and cost. National lists of essential medicines are used to guide the procurement and supply of medicines in the public sector, reimbursement schemes, medicine donations, and local production of medicine; they also help define the training of health workers. In short, lists of essential medicines provide the scientific and public health basis for focus and expenditure in the pharmaceutical sector.<sup>[32]</sup>

WHO created the Model List of Essential Medicines (WHO-EML) to establish international pharmaceutical standards and guidelines to improve access to medicines. The WHO defined essential medicines as “those that satisfy the priority health-care needs of the population.” They are selected with due regard to disease prevalence, evidence on efficacy and safety, and comparative cost-effectiveness.<sup>[32]</sup> Essential medicines are intended to be available within the context of a functioning health system, at all times, in adequate amounts, in the appropriate dosage forms, with assured quality, and at a price, the individual and the community can afford.<sup>[33]</sup>

While the practice and use of medicines differ by culture, in today's age, it seems unimaginable that people are d from lack of access to basic medical treatments or medicines. Yet in the 21<sup>st</sup> century, access to safe and affordable medicines is not guaranteed to all. The disparity of access to medicines has been referred to by WHO as the “global drug gap.”<sup>[34]</sup> According to the WHO, approximately one-third of the global population still does not have access to basic medicines. This number rose to 50% in the poorest parts of Asia and Africa.<sup>[35]</sup>

To address this wide gap in access to medicines, and in line with the Alma Ata Declaration to promote equitable access to medicines, the WHO has developed the framework for access to essential medicines.<sup>[36]</sup> This framework considers rational selection of medicines, affordable prices, sustainable financing, and reliable health and supply systems. In November 2018, Libya's first EML was developed through the collaboration between Libyan pharmacy administration, and WHO under the EU- funded SHAMS project. The importance of the LEML in the health-care delivery system of Libya cannot be overemphasized.

Therefore, as a matter of policy directive, henceforth, all medicines to be procured by the public health facilities in Libya should be drawn from the LEML. From now onward, the LEML becomes an essential companion for all disciplines of health-care workers, general practitioners, specialists, and

health-care management personnel as well as students and interns.<sup>[37]</sup>

### Prescription practice and behavior

Poor prescription practices result in increased side effects, ADRs, and high cost of treatment. Furthermore, medication errors are a significant global concern and can cause serious medical consequences for patient. In recent years, an increasing number of articles have been published with the aim of describing programs designed to improve physician prescribing behavior. As powerful, expansive and new clinical information about them become more available, the need for accurate prescribing decisions grows proportionately.<sup>[38]</sup> On the other hand, several researches were trying to analyze and to understand the factors which influence physician prescribing decisions and practice. The related literature suggests several factors that may have a role in influencing the prescribing behavior of physicians.<sup>[39-42]</sup> Some factors are fixed and they do not offer any opportunity for modification and improvements in prescribing behavior. Such factors for instance include the age and sex of the physician or the patient, the socioeconomic characteristics of the practicing area or the reimbursement status of therapy.<sup>[43,44]</sup>

A study in Jeddah, Saudi Arabia showed that 51% of the prescriptions included diagnosis, in which 62% included the recommended drug dosage, whoever 7% of drug interactions were reported between the prescribed drugs, 17% of the physicians prescribed drugs that prevented the adverse effects used for diagnosis. Prescriptions for chronic conditions were scrutinized to be 18%. It was noteworthy that 29% of the pharmacists reported difficulty in reading the handwriting of prescriptions.<sup>[45]</sup>

In an Indian study, about 1609 prescriptions were analyzed. On an average, 2.2 drugs were prescribed per patient. Nearly 84% of the drugs were prescribed from the essential drug list. Antibiotics were prescribed in 45.3% of prescriptions, followed by vitamins (34.8%) and nonsteroidal anti-inflammatory drugs (33.9%). Drugs were prescribed in their generic names in 70% of cases. Diseases of the ear, nose, and throat (18%) were most common followed by the diseases of the gastrointestinal and renal (17%) and musculoskeletal system (16%). Only 40% of children suffering from diarrhea received oral rehydration salts while 80% of them received antibiotics. Among cases of upper respiratory tract infection, nearly 75% received antibiotics.<sup>[46]</sup>

### Prescription pattern in Libya

Good prescribing is an essential element for successful therapy. Prescribing of medicines continues to grow at rate of 10% a year. More than two-thirds of all general practice consultations generate a prescription.

In one study, 700 prescriptions were collected in Libya (400 prescriptions from Tripoli and 300 prescriptions from Al-zawia). Results showed that the average consultation time per patient of 5–10 min (44%). This time may be satisfactory



for common and certain known diseases in comparison with other studies which showed a very low time, about 1 min. Furthermore, dispensing time per patient was short, 1–3 min (51 %).<sup>[47]</sup>

A study in Benghazi revealed that drug use pattern in private practice was not in line with the WHO drug use guidelines. Information missing with regard to patient sex may lead to serious adverse effects particularly in the pregnant or lactating female. In addition, the address of patient is again essential for easy contact in case of erroneous prescribing or dispensing. Information regarding both the patient and the prescriber were missing in most of the prescription. This is irresponsible prescribing behavior particularly in the light of the fact that a prescription is considered a legal document that can be used in court. Such an issue of using a prescription for or against the prescriber or dispenser may arise in case of any serious health hazard.<sup>[48]</sup>

An antibiotic study was performed on a total of 185 doctors, showed that about 66.7% of the responding stated that they do follow standard infection control and prevention precautions. 37.4% of the respondents answered that they do prescribe antibiotics based on culture and sensitivity tests and exactly the same rate reported that they do not. About 75% of the doctors stated that they follow antibiotic prescribing guidelines. Only 18% declared that they may prescribe antibiotics even if they know they are not really needed. Most of those prescribers justified this practice due to the demand of patients. According to the results of this study, doctors seemed to follow general guidelines for antibiotic prescription and infection control, but cultures were not routinely done.<sup>[49]</sup>

Previous studies reported that the average number of drugs per prescription reported to be 2.85–3.00.<sup>[47,50]</sup> The value was higher than the WHO recommended optimum level of 1.6–1.8. The possible negative consequences of prescribing a large number of drugs per prescription are increased the occurrences of side effects, drug–drug interactions, patients' noncompliance with the drug regimen, and raised pharmacotherapeutic expenses as a result of the large number of drugs to be taken. The average quantity of drugs prescribed per prescription is influenced by the prevalence of diseases, the lack of clinical practice guidelines, financial incentives for prescribers, physician incompetence, culture, and other factors.<sup>[47]</sup> As a result, different values have been reported in various parts of Libya. Unnecessarily prescribed drugs could have a financial impact on the health-care system. Conversely, rational prescription can prevent medicine waste and minimize adverse effects on patients while lowering costs.<sup>[51]</sup>

## CONCLUSION

The observation of prescribed medicine dispensing practices at community pharmacies produced a picture of the processes and activities triggered by a customer with a prescription in an everyday practice setting. To ensure that drugs are used rationally in Libya, we recommend re-training and ongoing

education for prescribers. We encourage clinical pharmacists to take responsibility and actively participate in drug prescribing and dispensing practice, particularly in the outpatient setting. Furthermore, we advocate for effective and continuous drug monitoring.

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## Conflicts of interest

There are no conflicts of interest.

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