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Assessment of prescribing patterns and indicators in the Libyan private clinical settings

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Abstract: The pattern of prescribing and dispensing refers to the process by which healthcare professionals determine appropriate pharmacological interventions. Irrational medicine use can take several forms, the most common being self-medication and unqualified recommendations by pharmacy personnel or informal healthcare providers. This study aims to assess prescribing and dispensing patterns in Libyan private clinical settings. A cross-sectional quantitative survey was carried out between November 2023 and August 2024 in Tripoli City, Libya. A total of 1370 prescriptions were assessed retrospectively, which included 4110 medicines. This study aims to enroll private community pharmacies that receive a large number of prescriptions from the primary health center, public hospital, and the private sector of clinics. The number of medicines prescribed per prescription ranged from one to five or more. 38.7% of total prescriptions contained antibiotics, with 53.2% of one antibiotic, 26.3% two antibiotics, and 20.4% three antibiotics. Most medications were dispensed randomly without a prescription, and it was usual practice to dispense several low-risk medications over the counter. Data indicated low compliance with WHO prescribing indicators. Prescribing from the Essential Medicines List, generic, antibiotic prescribing, and polypharmacy were the major problems. The most common prescriptions were omission errors related to the Medicine. Thus, good prescribing practice is extremely important for minimizing medication errors; physicians should adhere to guidelines.

Introduction

The prescribing and dispensing of medications constitute fundamental elements of healthcare delivery, involving healthcare providers, pharmacists, and patients [1]. The pattern of prescribing and dispensing refers to the process by which licensed healthcare professionals determine appropriate pharmacological interventions and issue prescriptions. These prescriptions are then reviewed, prepared, and dispensed by pharmacists [2-4]. Upon receipt, pharmacists are responsible for verifying the prescription's accuracy, ensuring its clinical appropriateness, screening for potential drug interactions and contraindications, preparing the medication, and providing the patient with essential guidance [3, 4]. This process is governed by a framework of legal, regulatory, and professional standards that are designed to promote the rational, safe, and effective use of medicines. Conversely, irrational use of medicine can result in suboptimal clinical outcomes and diminished quality of care [5]. Essential medicines, identified for their efficacy, safety, and cost-effectiveness, are integral to achieving equitable access to healthcare. The World Health Organization (WHO) has developed a set of standardized prescribing indicators

to evaluate and monitor drug utilization patterns. Studies conducted in low and middle-income countries have revealed concerning prescribing trends, such as polypharmacy, overuse of antibiotics, and limited adherence to essential medicine guidelines [6-9]. Prescription errors are categorized as errors of omission and errors of commission. Such errors may compromise therapeutic efficacy and increase the risk of adverse drug reactions (ADRs), particularly when drug-drug interactions (DDIs) occur. DDIs have been implicated in 30.0% of all ADRs [10]. Prescribing error rates of 1.5% and 6.2% have been reported in the UK and the USA, respectively, with such errors accounting for up to 70.0% of all medication errors [11]. In Saudi Arabia, one-third of ADRs were found to be attributable to medication errors [12]. Inappropriate prescribing may result in adverse clinical outcomes, increased antimicrobial resistance, economic inefficiency, and erosion of public trust in the healthcare system [13, 14]. The implementation of computerized physician order entry systems, supplemented by manual review and pharmacist participation in clinical decision-making, has demonstrated effectiveness in enhancing medication safety and reducing errors [15-17]. Multiple factors influence prescribing behavior, including provider knowledge, patient expectations, healthcare infrastructure, legal frameworks, availability of medicines, and the quality of drug-related information. Poor communication, self-medication, unethical pharmaceutical marketing, and non-adherence to clinical practice guidelines contribute to irrational prescribing practices [18-21]. WHO, in collaboration with the International Network for Rational Use of Drugs (INRUD), introduced a comprehensive set of medicine-use indicators to monitor and improve prescribing behavior at healthcare facilities. These indicators provide a structured approach to identifying and addressing prescribing and dispensing inefficiencies [4, 18]. In Libya, regulatory oversight of prescriptions, especially in private healthcare settings, is minimal. The absence of robust monitoring mechanisms has contributed to widespread irrational prescribing. Although advances in medicine have contributed to increased life expectancy, challenges such as polypharmacy and a higher risk of medication-related complications among aging populations were presented [18, 22, 23]. This study aims to evaluate and monitor prescribing practices in private clinical settings with attention to prescribing and dispensing errors.

Materials and methods

Study setting: This study focuses on community pharmacies in different parts of the city of Tripoli and its suburbs. These pharmacies receive a large number of prescriptions from the public and private sectors of clinical practice. Most of these pharmacies are running without a qualified pharmacist [15, 19, 21].

Study design: A retrospective, cross-sectional, and quantitative survey designed to describe the current prescribing patterns and prescription of medicine in Tripoli, Libya, carried out between November 2023 and August 2024. Several indicators developed by the WHO provide an appropriate means to measure the efficacy of medicine interventions and to assess a country's medicine use patterns. The indicators recommended for inclusion in studies. They are highly standardized to provide a simple tool for reliably assessing some critical aspects of medicine use in primary health care [4, 16, 17].

A questionnaire with three parts (information about medicine, about the patient, physicians, diagnosis, and references to the self-order) was used. This study was compiled and validated with other questionnaires and a pilot study. Standard prescribing indicators, including the average number of medicines per encounter. The percentage of medicines prescribed by generic name and the percentage of encounters with antibiotic(s) prescribed. The percentage of encounters with injection(s) prescribed and the percentage of medicines prescribed from the EDL are all considered and compared with the previous findings [24]. Sample size: 1370 prescriptions were collected to fulfill the purpose of this study. Ethical considerations: oral ethical approval was obtained from each participant, who was used to the prescription to complete this study.

Statistical analysis: Descriptive statistics were used (data were presented as frequencies, means ± standard deviation, and percentages). Categorical data were compared using the Chi-square test and Fisher's exact test, and a p-value of less than 0.05 was considered significant.

Results

Table 1 shows that 1370 prescriptions are assessed retrospectively. A total of 4110 medicines were included in these prescriptions. The patient's name was found in 79.9% of prescriptions, while the prescription's date was present in 66.4% of prescriptions. Female prescriptions represented in 73.7% in total prescriptions. Out of 1007, of age group 51.8% of patients of 50 years or more. In the total prescription, 28.4% included the diagnosis mentioned. The prescriber's name and signature were in 54.4% of the prescriptions. This study primarily enrolled community pharmacies located in the city of Tripoli and its suburbs. These pharmacies receive a large number of prescriptions from the primary health center, 18.1%. public hospital, 26.2%, and the private sector of clinical practices, 55.7%. **Table 2** shows the WHO optimal levels for non-polypharmacy, generic name of the medicine, antibiotics, and injection levels in the prescription. **Table 3** shows the average number of medicines per prescription, and the percentage of encounters with antibiotics was presented and compared with WHO indicators. However, the number of encounters for injection, medicines prescribed for generic, and medicines prescribed from the EML is lower than the WHO standards.

Table 1: Socio-demographic distribution of the prescription

Variable	Frequency	Percent
Patient name	1095	79.9%
Date of prescription	911	66.4%
Gender		
Male	359	26.2%
Female	1011	73.8% *
Age in years	1007	73.5%
< 5	75	07.4%
5 - 20	123	12.2%
21 - 50	287	28.5%
> 50	522	51.8%
Diagnosis included	389	28.4% *
Prescriber name and signature	745	54.4% *

Table 2: WHO prescribing indicators

WHO prescribing indicators	Optimal level
Non-polypharmacy prescriptions	≤ 3
Medicines prescribed by generic names	100
Prescriptions with antibiotics	≤ 30
Prescriptions with injections	≤ 10
Medicines prescribed from the EML	100

Table 3: Prescribing indicators

Prescribing indicators assessed	Total medicines	Average	WHO standard
Average number of medicines per prescription	4110	3.2	1.6-1.8
Encounter with antibiotics	1592	38.7 *	20.0-26.8
Encounter with injection	75	1.82 *	13.4-24.1
Medicines from the EML	521	12.6 *	100%

Table 4 shows the frequency of medicines prescribed per prescription, with 13.1% prescriptions containing more than five medicines, resulting in an overall average of 3.2 per prescription. 38.7% of prescriptions contained antibiotic agents, with 53.2% of prescriptions containing one antibiotic, 26.3% two antibiotics, and 20.4% three antibiotics.

Table 4: Degree of medicine prescribed

Number of medicines per prescription	Frequency (Percent)
1	186 (13.5%)
2	251 (18.3%)
3	423 (30.8%) *
4	330 (24.1%) *
≥ 5	180 (13.1%) *

Table 5 shows the dispensing pattern of the antimicrobial agents. Thus, 75.8% of customers collected antimicrobials with a prescription, 15.6% took antimicrobial agents without a prescription, while 16.2% took antimicrobial agents under the supervision of a pharmacist. Out of the 1039 items dispensed with a prescription, 44.5% generic name, while 55.5% with trade name.

Table 5: Dispensing pattern of antimicrobials

Dispensing	Frequency	Percent
Prescription	1039	**75.8%**
Generic name	462	**44.5%** *
Trade name	577	**55.5%** *
Requested by the customer	163	**15.6%** *
Recommended by a pharmacist	168	**16.16%** *

In **Table 6**, a total of 4110 medicines were prescribed in 1370 prescriptions, of which 38.7% were antibiotics. Among the frequently prescribed medicines were gastrointestinal antiulcer agents, pantoprazole (5.7%), anti-inflammatory analgesics: Ibuprofen and acetaminophen (4.2%), anti-allergic antihistamines, levocetirizine (3.3%), and antibiotics. Among the frequently prescribed medicines are antibiotics, cephalosporin, azithromycin (2.8%), and macrolide plus penicillin antibiotics, which were 4.4%, 19.2%, respectively (**Table 6**).

Table 6: Most frequently prescribed medicine

Frequently prescribed medicine	Frequency (Percent)	Frequently prescribed antibiotic	Frequency (Percent)
Pantoprazole	**139 (5.7%)**	**Diclofenac**	**48 (2.0%)**
Rabeprazole	**127 (5.2%)**	**Amoxicillin**	**25 (7.4%)**
Ibuprofen plus acetaminophen	**102 (4.2%)**	**Mupirocin**	**17 (5.0%)**
Levocetirizine	**82 (3.3%)**	**Levofloxacin**	**15 (4.4%)**
Fexofenadine	**79 (3.2%)**	**Cefadroxil**	**11 (3.2%)**
Azithromycin	**68 (2.8%)**	**Clarithromycin**	**10 (3.0%)**
Amoxicillin plus clavulanic acid	**65 (2.7%)**	**Cefpodoxime**	**08 (2.4%)**
Aceclofenac	**56 (2.3%)**	**Doxycycline**	**08 (2.4%)**
Cefixime	**48 (2.0%)**	**Metronidazole**	**08 (2.4%)**

Table 7 shows that a total of 2996 prescription errors were observed in 1370 prescriptions, giving an average of 2.2 errors per prescription. The most common error in prescribing was errors of omission related

to the medicine, resulting in an average of 1.5 errors per prescription. The most common errorof omission related to the prescriber was failure to mention the prescriber's name, which was 87.5% in total prescriptions. The most common error related to medicine was a failure to mention the dose by 32.6% of the total prescribed medicines. The most common error of commission was due to drug-drug interaction, which was found to be10.2% in total medicines prescribed.

Table 7: Prescription errors

Errors	Frequency (percent)	Average error per prescription
Patient name not mentioned	00 (0.0%)	**0.0**
Age not mentioned	05 (0.6%)	**0.0**
Prescription date not mentioned	06 (0.8%)	**0.0**
Prescriber name not mentioned	674 (87.5%)	**0.9**
Prescriber's signature not mentioned	148 (19.2%)	**0.2**
Department not mentioned	240 (11.20%)	**0.1**
Diagnosis not mentioned	302 (39.2%)	**0.4**
Dose not mentioned	798 (32.6%)	**1.0**
Frequency not mentioned	27 (1.1%)	**0.0**
Dosage form not mentioned	110 (4.5%)	**0.1**
The quantity to supply is not mentioned	254 (10.4%)	**0.3**
Wrong strength	11 (0.5%)	**0.0**
Wrong medicine name (not spelling)	04 (0.2%)	**0.0**
Wrong dosage form	05 (0.2%)	**0.0**
Drug-drug interaction	**249 (10.2%)**	**0.3**

A total of 2,448 medications were prescribed across 770 prescriptions, within which 249 drug interactions were identified according to Medscape. These interactions were present in 19.1% of the prescriptions. The predominant category was monitoring closely interactions, accounting for 62.7% of all cases, 4.4% with serious interactions, and 32.9% minor interactions. The most frequently observed serious interactions occurred between digoxin and metoprolol (0.8%). The most common monitored interaction was observed between ibuprofen and salbutamol (albuterol) (2.4%), while the most frequent minor interactions involved rabeprazole and methyl-cobalamin (4.0%). The highest frequency of interactions recognized in a single prescription was 17.0%.

Discussion

Irrational medicine use can take several forms, the most common being self-medication and unqualified recommendations by pharmacy personnel or informal healthcare providers [1]. These practices have far-reaching public health implications, including increased healthcare costs, higher incidence of ADRs, and the development of antimicrobial resistance [5, 25]. In some countries, patients often rely on pharmacies for their convenience, reduced waiting times, lower costs, and flexible operating hours [3, 4, 10, 20]. In certain cases, pharmacists not only dispense medications but also offer basic clinical services, including the management of chronic diseases and minor injuries [1]. Studies in Libya have documented trends in self-medication and highlighted the role of community pharmacists [4, 8, 14, 26, 27]. In 2008, Sherif [4] was among the first author to assess dispensing patterns and their contribution to irrational medicine use. Previous literature confirms that irrational medicine use is a global phenomenon, with a minority of prescriptions aligning with rational use principles [15, 19, 25, 28].

In this study, when comparing the WHO's value of 1.6-1.8, the average number of medicines per contact was 3.2. The average medicine is lower than that of the Western Nepal's teaching hospital (2.5), Indian tertiary care hospital (3.03), and Nigerian tertiary hospital (3.04) [29-31]. 27.5% of prescriptions included four medications,

and 32.5% three medicines. Instead, according to the Ethiopian study, 30.5% of prescriptions contained one medicine and 36.4% contained two medicines [32]. The Indian study reported a lower value; 37.3% of prescriptions had three medicines, and 27.8% had two medicines per prescription [30]. The current study showed a maximum of nine medicines per prescription. This is due to the prescriber's knowledge of therapeutic issues, such as adverse effects of medicines, lack of clinical practice guidelines, or therapeutic choice of medicine. Antibiotic prescribing was higher than the WHO standard but lower than previous studies [7, 9, 13, 33]. An evidence-based, appropriate antibiotic policy is a current need for health care facilities to reduce inappropriate antibiotic use and consequent effects [13, 33, 34]. The medicine prescribing in the generic name was very low, while the WHO standard was 100 and 44.0% in earlier studies [4, 24]. However, the hospital pharmacy guidelines, the medical council ethical code, and the WHO manual on good prescribing direct that when prescribing a medication, the designation should default to its generic nomenclature [24]. A study conducted in Pakistan showed that a significant proportion of medical sales representatives exert pressure on prescribers to endorse their specific brands [26]. The influence of pharmaceutical representatives on prescribing behaviors is substantial, fostering a preference for branded medications and engendering a detrimental perception of generic alternatives [10]. The regulatory authority must take proactive measures in disseminating credible, evidence-based information on generic and branded medications [10]. Generic prescribing and promotion in developing countries substantially reduce the cost. The essential concept was recognized as a highly rational and sensible strategy to provide evidence-based, modern, cost-effective health care. The implementation of EM policy has been shown to improve the quality of medicine use, particularly in low-income countries [24].

The most commonly used medicine is pantoprazole, followed by rabeprazole, ibuprofen, and acetaminophen. Similarly, the common categories of medicine reported by the teaching hospital of Western UP, India, were NSAIDs plus serratiopeptidase 20.67%, antibiotics 17.48%, and antihistamine 15.38% [35, 36]. Also, the governmental hospital of Ethiopia showed antimicrobial 39.02%, analgesics 29.67%, and gastrointestinal agents 10.64% as highly prescribed categories of medicine [32]. The reason for the higher prescription could be due to pressure from patients seeking rapid symptomatic relief, overestimation of the illness severity, or sometimes competition among clinicians, which exacerbates irrational prescribing [31, 32]. The study indicated that nearly 26,000 deaths occur annually in the United States due to unintentional misuse of NSAIDs. The long-term inappropriate use of PPIs can lead to more adverse effects than benefits, including gastrointestinal bleeding, infections, nutritional deficiencies, and rebound hypersecretion [36]. The computerized practices of collecting patients' details have improved the collection of this information [17]. Prescriber information is particularly important for medications such as narcotics and antibiotics, which should be dispensed with a prescription from licensed medical doctors [37, 38]. Medication errors can result in adverse drug reactions, therapeutic failures, and ultimately the wastage of resources. The Drug Therapy Committee in a hospital, where pharmacists play a crucial role, is essential for monitoring and addressing medication errors. A study conducted in Saudi Arabia indicated that pharmacist interventions prevented up to 89.0% of medication errors [12]. Collaboration between pharmacists and other healthcare professionals has also been shown to reduce medication errors [39]. The diagnosis missing was less in Bhagalpur, Pakistan [26]. The diagnosis is the responsibility of the prescriber to mention, which was absent in more than half of the prescriptions. The determination of diagnosis is a part of rational prescribing, and computerized practices for collecting patients' details have improved the data [15, 17]. The prescriber's name and signature were missed by 19.2%. Similarly, at the tertiary care hospital of India, the tertiary care hospital of Nepal, and Saudi Arabia, prescribers were missed in 12.0%, 16.7 and 18.1%, respectively [12, 15, 29]. The prescriber details were comparatively greater in our study than in the above-mentioned studies. However, auditing and managing the errors depend on the competency and qualification of the dispenser [24]. The prescription should be written clearly and studied sincerely before dispensing; otherwise, identification of errors is untraceable and

can result in harmful consequences. The DTC of a hospital where the pharmacist plays a vital role in monitoring and addressing medication errors [1, 23]. The drug-drug interaction was a superior error, among total DDIs, the monitor closely category was 62.7%, superior to other types of interaction. Moderate types of interaction are less severe than major types, but they can cause harm. The study showed a significant number of drug interactions, which were not monitored and managed accordingly. An Iranian study declared that ignoring drug interaction was a predominant commission error [40]. DDIs should be prevented to reduce adverse drug events because these are responsible for 23.0% of the total hospital admissions. Pharmacists and physicians play a vital role in monitoring and evaluating the use of medicines to reduce drug interactions [17, 22]. Considering the WHO standards, which may not be exact for comparison, because the number of medicines used may vary based on the pharmacotherapeutic aspects of patients. Thus, the DTC should be strengthened to focus on developing evidence-based clinical guidelines and policies that address important medications, generic prescriptions, antibiotic use, and management of polypharmacy [18, 23, 41, 42]. Thus, it should be suggested that assessing consumption, identifying errors, dose-adjusting appropriately, professional interactions, and the clinical pharmacist's role are essential. In addition, the government must undertake programs that raise public knowledge of generic medications and promote the use of necessary medications.

Conclusion: This study reveals that the prescribing patterns and indicators in the Libyan private clinical settings show low compliance with WHO prescribing indicators. Prescribing from the EML, generic and antibiotic prescribing, and polypharmacy were the major problems in Libya.

References

1. Elfituri AA, Sherif FM. Novel clinical pharmacy practice: Extended role and improved competencies. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2022; 2(1): 1-3. doi: 10.5281/zenodo.6397651
2. Groves T. Evidence-based medicine. The British Medical Journal. 2010; 341: c5715. doi: 10.1136/bmj.c5715
3. Bennadi D. Self-medication: A current challenge. Journal of Basic and Clinical Pharmacy. 2013; 5(1): 19-23. doi: 10.4103/0976-0105
4. Sherif FM. An evaluation of the prescribing patterns of drugs in Libya. Jamahiriya Medical Journal. 2008; 8(3): 203-206. doi: Nil.
5. Chaturvedi VP, Mathur AG, Anand AC. Rational drug use - As common as common sense? Medical Journal of Armed Forces India. 2012; 68(3): 206-208. doi: 10.1016/j.mjafi.2012.04.002
6. Shankar PR. Medicines use in primary care in developing and transitional countries: Fact book summarizing results from studies reported between 1990 and 2006. Bull World Health Organ. 2009; 87(10): 804-805. WHO/EMP/MAR/2009.3
7. Morgan DJ, Okeke IN, Laxminarayan R, Perencevich EN, Weisenberg S. Non-prescription antimicrobial use worldwide: a systematic review. The Lancet. Infectious Disease. 2011; 11(9): 692-701. doi: 10.1016/S1473-3099(11)70054-8
8. Meerah WAA. Evaluation of self-medication with antibiotics in the Libyan community. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2023; 3(1): 77-81. doi: 10.5281/zenodo.7771724
9. Fatima E. Alhaddad, Khaleel M. Abuleid, Laylay A. Aljleedi. Dispensing of antibiotics in community pharmacy: An analytical study. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2023; 3(4): 26-32. doi: 10.5281/zenodo.10144799
10. Kamat VR, Nichter M. Pharmacies, self-medication and pharmaceutical marketing in Bombay, India. Social Sciences and Medicine. 1998; 47(6): 779-794. doi: 10.1016/s0277-9536(98)00134-8
11. Streatfield PK, Karar ZA. Population challenges for Bangladesh in the coming decades. Journal of Health Population and Nutrition. 2008; 26(3): 261-572. PMID: 18831223; PMCID: PMC2740702.
12. Irshaid Y, Al Homrany M, Hamdi A, Adjepon Yamoah K, Mahfouz A. Compliance with good practice in prescription writing at outpatient clinics in Saudi Arabia. East Mediterranean Health Journal. 2005; 11(5-6): 925-934. PMID: 16761662.

13. Dyab EA, Muftah EB, Najim SE. Prevalence of antibiotic misuse among the general public in Libya: A cross-sectional study. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2026; 6(1): 40-48. doi: 10.5281/zenodo.18705190
14. Alkerimi MA. Prevalence of pediatric self-medication use and associated factors: A cross-sectional survey in Derna, Libya. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2026; 6(1): 75-82. doi: 10.5281/zenodo.18902709
15. Basak S, Sathyanarayana D. Evaluating medicines dispensing patterns at private community pharmacies in Tamilnadu, India. South Medical Review. 2010; 3(2): 27-31. Corpus ID: 54809267.
16. Rahman N. Ethical and legal challenges of AI-based medical diagnostics: A perspective. Mediterranean Journal of Medicine and Medical Sciences. 2026; 2(1): 51-58. doi: 10.5281/zenodo.18772947
17. Luisetto M, Ferraiuolo A, Fiazza C, Cabianca L, Edbey K, Mashori GR, Latyshev OY. Artificial intelligence in the pharmaceutical galenic field: A useful instrument and risk consideration. Mediterranean Journal of Medical Research. 2025; 2(2): 10-19. doi: 10.5281/zenodo.15259824
18. El Yamani MA, Sherif FM. Assessment of drug prescribing patterns and prescription errors in elderly patients. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2021; 1(2): 46-50. doi: 10.5281/zenodo.5171325
19. Rakib A, Sarwar MS, Zannah S, Khanum S, Rashid M. A survey of the role of community pharmacists in Dhaka city, Bangladesh. Bangladesh Pharmaceutical Journal. 2015; 18(2): 137. doi: 10.3329/bpj.v18i2.24312
20. Aboulqassim NSS, Alterkawy AO, Alhosny BM, Alqtany FA, Alawamy OA, El.mabri ZM. Range of cardiovascular medications dispensing practice without a prescription: A cross-sectional study on pharmacists at community pharmacies in Libya. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2025; 5(2): 131-140. doi: 10.5281/zenodo15650755
21. Alssageer MA, Hassan AO, Rajab MO. Descriptive analysis to use of the community pharmacy by patients and customers. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2021; 1(4): 59-66. doi: 10.5281/zenodo.5806134
22. Khalil JR, Regaey FN, Aburawi SM. Exploration of drug-drug interaction in prescriptions of Libyan practitioners in community pharmacies. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2023; 3(4): 18-25. doi: 10.5281/zenodo.10125879
23. Alssageer MA, Sherif FM, Mohammed ES, Abd Alsalm SA. Patterns of drug-prescribed and drug-related problems among hospitalized elderly patients. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2022; 2(2): 64-76. doi: 10.5281/zenodo.6780506
24. Haque M. Essential medicine utilization and situation in selected ten developing countries: a compendious audit. Journal International of Society of Preventive and Community Dentistry. 2017; 7(4): 147-160. doi: 10.4103/jispcd.JISPCD_224_17
25. Atif M, Azeem M, Sarwar MR, Malik I, Ahmad W, Hassan F, et al. Evaluation of prescription errors and prescribing indicators in the private practices in Bahawalpur, Pakistan. Journal of Chinese Medical Association. 2018; 81(5): 444-449. doi: 10.1016/j.jcma.2017.12.002
26. Sherif FM. Continuing pharmacy education and training in Libya. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2023; 3(4): 1-2. doi: 10.5281/zenodo.8412162
27. Atia AE, Alsherif E, Alrieibi E, Baloumi H, Almejerbi S. Self-medication patterns among Libyan University Medical Students. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2025; 5(3): 11-18. doi: 10.5281/zenodo.15813894
28. Benkhaial A, Ibzaew I, Elkezza S, Amed H, Abdulkader Y. Common errors in writing of prescriptions in Benghazi. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2022; 2(3): 7-11. doi: 10.5281/zenodo.7115118
29. Kafle KK, Gartoulla RP, Pradhan YM, Shrestha AD, Karkee SB, Quick JD. Drug retailer training: Experiences from Nepal. Social Sciences and Medicine. 1992; 35(8): 1015-1025. doi: 10.1016/0277-9536(92)90241-h
30. Phalke VD, Phalke DB, Syed MA, Mishra A, Sikchi S, Kalakoti P. Prescription writing practices in a rural tertiary care hospital in Western Maharashtra, India. The Australasian Medical Journal. 2011; 4(1): 4-8. doi: 10.4066/AMJ.2011.515
31. Babatunde OA, Fadare JO, Ojo OJ, Durowade KA, Atoyebi OA, Ajayi PO, Olaniyan T. Self-medication among health workers in a tertiary institution in South-West Nigeria. Pan African Medical Journal. 2016; 24: 312. doi: 10.11604/pamj.2016.24.312.8146
32. Gashaw T, Sisay M, Mengistu G, Amare F. Investigation of prescribing behavior at outpatient settings of governmental hospitals in eastern Ethiopia: An overall evaluation beyond World Health Organization core prescribing indicators. Journal of Pharmaceutical Policy and Practice. 2018; 11: 26. doi: 10.1186/s4055-018-152-z

33. Elfowiris AO, Majed NSS. Antibiotic prescribing in pediatric health care services. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2022; 2(3): 12-16. doi: 10.5281/zenodo.7115130
34. Elmezughi SO, Abdelmaula K, Sherif FM. The role of the clinical pharmacist in the infectious diseases department: Bridging the gap between antimicrobial resistance and optimized patient health outcomes. Iberoamerican Journal of Medicine. 2026; 8(2):1-9. doi: 10.53986/ibjm.2026.0008
35. Cryer B, Barnett MA, Wagner J, Wilcox CM. Overuse and misperceptions of nonsteroidal anti-inflammatory drugs in the United States. American Journal of Medical Sciences. 2016; 352(5): 472-480.
36. Uddin MN. Long-term use of proton pump inhibitors: Possible unwanted effects and mitigation strategies. Mediterranean Journal of Medicine and Medical Sciences. 2026; 2(1): 36-39. doi: 10.5281/zenodo.18651656
37. Rai MA, Bhat R, Shabaraya AR. Knowledge, attitudes, and practice of pharmacists in opioid abuse prevention: A cross-sectional study in Mangalore, India. Mediterranean Journal of Medical Research. 2025; 2(2): 38-44. doi: 10.5281/zenodo.15455698
38. Radyowijati A, Haak H. Improving antibiotic use in low-income countries: An overview of evidence on determinants. Social Sciences and Medicine. 2003; 57(4): 733-744. doi: 10.1016/s0277-9536(02)00422-7
39. Alssageer MA, Khattab BF, Bakouri AH. Physicians' attitudes, expectations, and experiences about clinical pharmacists and the barriers they face in developing a collaborative relationship with them. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2024; 4(3): 27-38. doi: 10.5281/zenodo.13324209
40. Sepehri G, Khazaelli P, Dahooie FA, Sepehri E, Dehghani MR. Prevalence of potential drug interactions in an Iranian general hospital. Indian Journal of Pharmaceutical Sciences. 2012; 74(1): 75-79. doi: 10.4103/0250-474X.102548
41. Elkbuli GL, Draidi RA. Prevalence of the self-medication phenomenon with antibiotics among university pharmacy students. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2021; 1(4): 44-49. doi: Nil.
42. Boshhiha AM, Boshaiha ZM, Yousuf AT, Sad HA. Use of over-the-counter medications among adolescents. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2021; 1(4): 9-14. doi: 10.5281/zenodo.5805918

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