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Original Article

Prevalence and Practices of Self-Medication Among Pharmacy Students in Tripoli, Libya

Almabrok D. Saeed[1,2,3], Mahmoud B. Agena[4], Khayri A. Ali[5], Mohamed D. Said[6], Mohamed M. Mhimed[2,7], Ahmad B. Ajdidi[1]

1. Tripoli College of Medical Sciences.

2. Libyan Biotechnology Research Center, Tripoli, Libya.

3. Libyan Horseracing Authority.

4. Libyan Medical Research Centre, Zawia, Libya

5. Faculty of Medical Technology, University of Zawia

6. Faculty of Medical Technology, Sabratha University, Sabratha, Libya

7. Epidemiology Office, National Center for Disease Control, Tripoli, Libya.

Corresponding emails: Almabrok D. Saeed, almabroksaeed@gmail.com

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ABSTRACT.

Background: Self-medication (SM) is prevalent among university students, particularly in pharmacy programs, raising concerns about misuse and antimicrobial resistance. **Aim**: To assess the prevalence, conditions, treatments, and reasons for SM among pharmacy students in Tripoli, Libya. **Material and Methods**: A cross-sectional study was conducted from October 2023 to June 2024 at a Tripoli university. Of 140 invited students, 95 responded (67.9%) via a self-administered questionnaire. **Results**: SM prevalence was 90.5% (86/95), with 89.9% of females and 93.8% of males self-medicating. Headache and common cold (84.2% each) were the most treated conditions, with analgesics (82.1%), antibiotics (67.4%), and vitamins (74.7%) commonly used. The Internet was the primary information source (42.1%). Prior experience with illness (69.5%) and drugs (67.4%) drove SM. No significant gender differences were found (P>0.05). **Conclusion**: findings ofhigh SM prevalence, especially antibiotic misuse (67.4%), highlight the need for educational interventions and stricter regulations in medicines and health care providers.

Keywords: Self-medication, pharmacy students, antibiotic misuse, Tripoli, Libya

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INTRODUCTION:

Self-medication (SM), the use of medicines without professional supervision, is widespread among university students, particularly those in health sciences [1,2]. Pharmacy students, with access to pharmacological knowledge, are prone to SM due to perceived competence in managing minor ailments [3,4]. Self-medication offers convenience and cost savings but carries significant risks, including misuse, adverse effects, and antimicrobial resistance, especially with antibiotics [5]. Globally, SM prevalence among students ranges from 38% to 98%, with higher rates in developing countries due to lax regulations and over-the-counter (OTC) drug availability [6,7] Common conditions treated include headache, common cold, and gastrointestinal disorders, with analgesics, antibiotics, and vitamins frequently used [8,9] . Mentioned that the prevalence of self-medication was found to be at 87.9% where the headache, fever, cold and cough were the predominant self-medicated symptoms. Similar results shown that 86% of the study sample confirmed regular practises of self-medication for symptoms including Antibiotics (54%) of participants. [10]. SM among pharmacy and medical students is strongly linked to increased risks of misuse, adverse effects, and antimicrobial resistance (AMR), despite high awareness of these dangers. Students often use antibiotics for viral infections (e.g., colds, flu), discontinue treatment early, or switch antibiotics without medical guidance, all of which are forms of misuse [11,12,13] Regarding the antimicrobial resistance, there is a clear consensus that self-medication and misuse of antibiotics are major contributors to the development and spread of AMR [13;14;15]. Even students with good knowledge about AMR frequently engage in risky behaviors, indicating a gap between knowledge and practice [16,17]. In addition to above, an advert effects can be rise due to SM including: the risk of side effects, and inappropriate drug interactions and recurrence of symptoms [18;19].

The Internet, family, and peers often serve as information sources, increasing risks of misinformation [20]. In Libya, where OTC drugs are easily accessible, SM practices among pharmacy students remain understudied, despite their potential to influence public health [21]. This study focuses on assessing the prevalence, circumstances, and reasons for self-medication among pharmacy students in Tripoli, Libya, with the aim of guiding targeted educational and regulatory interventions.

MATERIALS AND METHODS

Study Design and Setting.

A cross-sectional study was conducted from October 2023 to June 2024 at a pharmacy faculty in Tripoli, Libya.

Participants

Of 140 invited pharmacy students, 95 responded (response rate: 67.9%) via convenience sampling. Inclusion criteria included enrolled students willing to participate. Exclusion criteria included incomplete questionnaires.

Data Collection

A self-administered questionnaire, adapted from prior studies [6;8] collected data on demographics (age, gender, marital status, residence), SM prevalence, conditions treated, treatments used, reasons for SM, and information sources. The questionnaire was pre-tested for clarity among 10 students (not included in the final sample).

Data Analysis

Data analyzed using IBM SPSS version 23. Descriptive statistics (frequencies, percentages) summarized demographics, SM practices, and information sources. Chi-square tests assessed associations between SM prevalence and gender, with significance at $P<0.05$.

Ethical Considerations

Informed consent was obtained from all participants. The study was exempt from ethical approval as an anonymous survey, per Tripoli College Of Medical Sciences guidelines. No identifiable data were collected.

RESULTS:

Of 140 invited pharmacy students, 95 responded (response rate: 67.9%), with 83.2% female (n=79) and 16.8% male (n=16) (Table 1). Most were aged 18–23 years (85.3%, n=81), single (95.8%, n=91), urban residents (86.3%, n=82), and lived with family (100%, n=95). The predominance of females reflects higher female enrollment in pharmacy programs in Libya, while the young age distribution aligns with typical undergraduate demographics. Urban residence and cohabitation with family members may increase reliance on familial advice and access to over-the-counter medications, both of which can

influence SM practices. The Internet was the primary SM information source (42.1%, n=40), followed by family/friends' advice (17.9%, n=17), books (16.8%, n=16), and physicians (16.8%, n=16) (Table 2). Females relied more dependent on the internet than males (44.3% and 31.3%) respectively, while males were somewhat more likely to consult physicians (25.0%) compared with females (15.2%). , though differences were not significant (P=0.412). The heavy Internet reliance indicates accessibility but raises concerns about misinformation in Libya's unregulated digital health space.

Table 1: Demographic Characteristics of Respondents

Characteristic	Female (n=79)	Male (n=16)	Total (N=95)
Age (years)			
18–23	68 (86.1%)	13 (81.3%)	81 (85.3%)
24–26	11 (13.9%)	2 (12.5%)	13 (13.7%)
>26	0 (0%)	1 (6.3%)	1 (1.1%)
Marital Status			
Single	76 (96.2%)	15 (93.8%)	91 (95.8%)
Married	3 (3.8%)	1 (6.3%)	4 (4.2%)
Residence			
Urban	68 (86.1%)	14 (87.5%)	82 (86.3%)
Rural	11 (13.9%)	2 (12.5%)	13 (13.7%)
Living Arrangement			
With Family	79 (100%)	16 (100%)	95 (100%)

Table 2: Sources of Self-Medication Information

Source	Female (n=79)	Male (n=16)	Total (N=95)
Internet	35 (44.3%)	5 (31.3%)	40 (42.1%)
Family/Friends	15 (19.0%)	2 (12.5%)	17 (17.9%)
Books	13 (16.5%)	3 (18.8%)	16 (16.8%)
Physicians	12 (15.2%)	4 (25.0%)	16 (16.8%)
Journals	1 (1.3%)	0 (0%)	1 (1.1%)
TV	1 (1.3%)	0 (0%)	1 (1.1%)
Other	2 (2.5%)	2 (12.5%)	4 (4.2%)

Self-medication prevalence was 90.5% (86/95), with 89.9% of females (71/79) and 93.8% of males (15/16) reporting SM in the past year (Table 3). Headache and common cold were the most treated conditions (84.2% each, n=80), followed by gastrointestinal disorders (26.3%, n=25) and skin diseases (16.8%, n=16) (Table 4). These conditions, perceived as minor, align with students' pharmacological knowledge, enabling self-diagnosis. Females reported slightly higher rates for headache (82.3% vs. 93.8% for males) and common cold (84.8% vs. 81.3%), but differences were not significant (P>0.05).

Table 3: Prevalence of Self-Medication in the last Year

Self-Medication	Female (n=79)	Male (n=16)	Total (N=95)
Yes	71 (89.9%)	15 (93.8%)	86 (90.5%)
No	8 (10.1%)	1 (6.3%)	9 (9.5%)

Table 4: Conditions Prompting Self-Medication

Condition	Female (Yes/No)	Male (Yes/No)	Total (Yes/No)
Headache	65/14	15/1	80/15
Common Cold	67/12	13/3	80/15
Gastrointestinal	21/58	4/12	25/70
Skin Diseases	13/66	3/13	16/79
Musculoskeletal	4/75	1/15	5/90

Analgesics (82.1%, n=78), antibiotics (67.4%, n=64), and vitamins (74.7%, n=71) were the most used treatments (Table 5; Figure 1). Antibiotic misuse was notably high, with 67.1% of females (n=53) and 68.8% of males (n=11) reporting use, often for common colds, which are typically viral. This reflects a critical public health issue in Libya, where antibiotics are available OTC. Common cold treatments (82.1%, n=78) and vitamins (74.7%) were also prevalent, suggesting students prioritize symptom relief and health maintenance. Prior experience with illness (69.5%, n=66) and drugs (67.4%, n=64) were the leading reasons for SM, followed by time constraints (22.1%, n=21) and drug availability (14.7%, n=14) (Table 6; Figure 2). These reasons highlight students' confidence in self-diagnosis and the convenience of OTC drugs in Libya's healthcare system.

Table 5: Prevalence of Self-Medication Treatments

Treatment	Female (Yes/No)	Male (Yes/No)	Total (Yes/No)
Analgesics	63/16	15/1	78/17
Common Cold	67/12	11/5	78/17
Antibiotics	53/26	11/5	64/31
Vitamins	59/20	12/4	71/24
Anti-allergic	16/63	3/13	19/76
Herbal	19/60	4/12	23/72
Psychoactive	2/77	0/16	2/93
Tranquilizers	6/73	1/15	7/88

Figure 1: Bar chart of self-medication treatments, showing analgesics (82.1%), antibiotics (67.4%), and vitamins (74.7%) as the most prevalent.

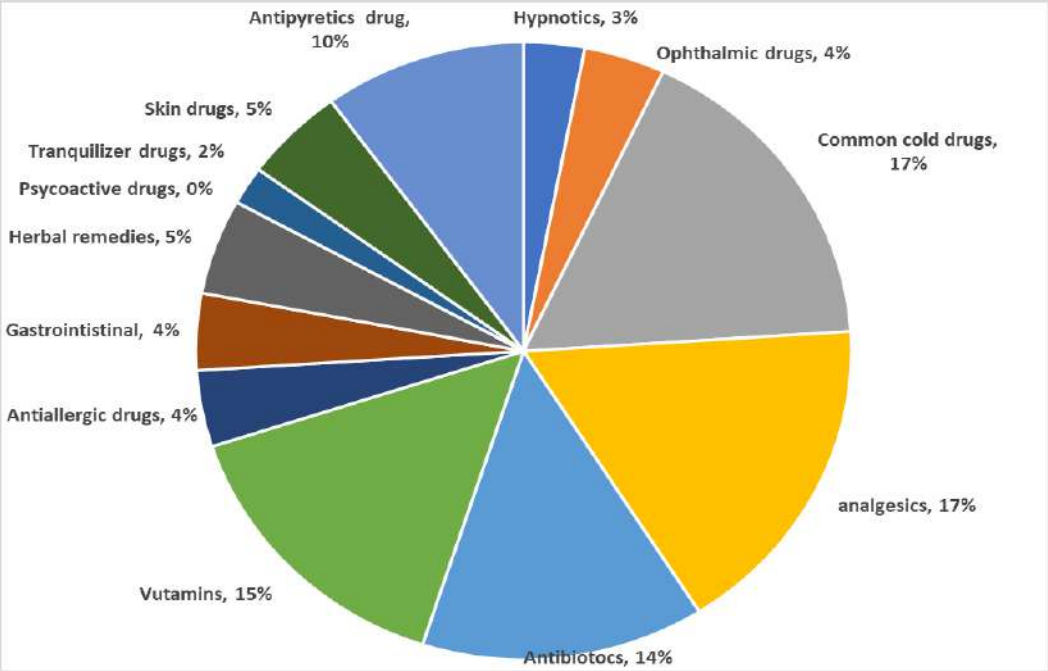
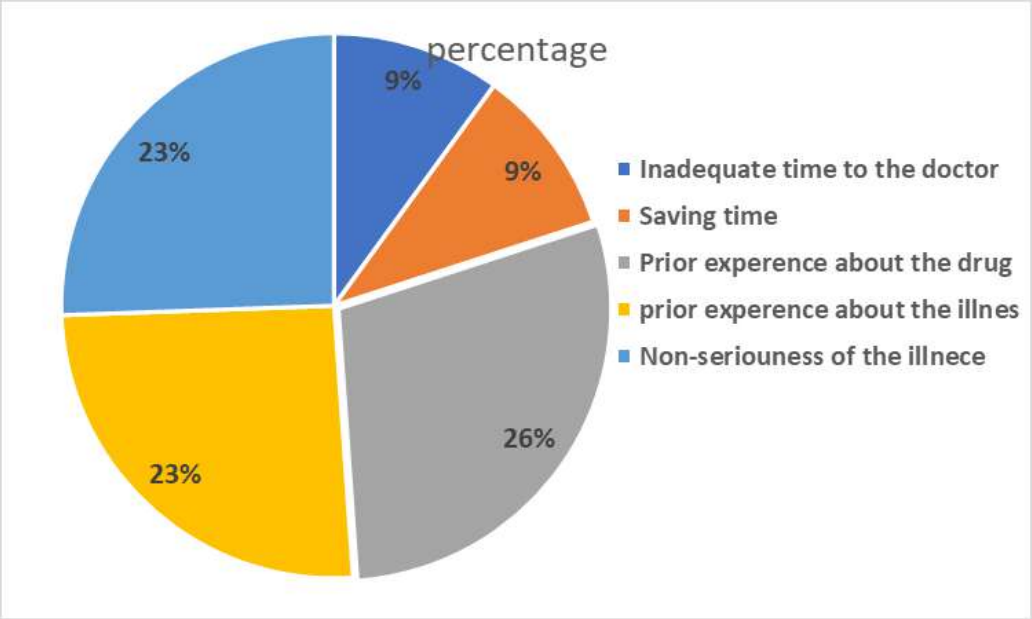


Table 6: Reasons for Self-Medication

Reason	Female (Yes/No)	Male (Yes/No)	Total (Yes/No)
Prior Experience (Illness)	56/23	10/6	66/29
Prior Experience (Drug)	51/28	13/3	64/31
Save Time	17/62	4/12	21/74
Inadequate Time	17/62	4/12	21/74
Drug Availability	11/68	3/13	14/81

Figure 2: Pie chart illustrating reasons for self-medication, with prior experience with illness (69.5%) and drugs (67.4%) as the most common.



DISCUSSION:

The prevalence SM (90.5%) among Tripoli pharmacy students is alarmingly high, aligning with rates of 79%–98% reported in Palestine, India, and Serbia [5,7,20]. This elevated prevalence likely stems from students' pharmacological training, which fosters confidence in managing minor ailments like headache and common cold (84.2% each), often perceived as not warranting professional consultation [6]. The absence of strict regulations on over-the-counter drugs in Libya exacerbates this trend, facilitating unrestricted access to medications without a prescription. [8]. The high prevalence suggests SM is normative among pharmacy students, possibly due to their training and OTC drug availability. The predominance of female participants in this study (79 vs 16) may be attributed to the higher enrollment of females in pharmacy programs, which is a common trend in many institutions. Furthermore, female students are often more responsive to survey participation and may demonstrate greater interest in health-related topics, thereby contributing to the higher proportion of female respondents in the present questionnaire [21, 23, 24, 25, 26]. However, no significant difference in self-medication was observed between genders (P=0.672), indicating SM is equally common across genders. The 67.4% prevalence of antibiotic misuse is highly concerning and aligns with studies from Sudan (55%) and Ethiopia (71%), where unrestricted over-the-counter access substantially contributes to inappropriate consumption [8,21]. Such practices represent a critical public health challenge, exacerbating the risk of antimicrobial resistance and undermining effective infection control. Students' frequent use of antibiotics for viral conditions like the common cold underscores a knowledge-practice gap, despite their training. This contributes to antimicrobial resistance (AMR), a global crisis costing millions annually in healthcare expenses and increasing mortality from resistant infections [19]. In Libya, weak enforcement of prescription-only policies and limited public awareness amplify this issue, placing pharmacy students in a pivotal role as future dispensers who may perpetuate or mitigate AMR [8]. The Internet's dominance as an SM information source (42.1%) highlights its accessibility but raises concerns about misinformation, especially in Libya's unregulated digital health landscape [20]. Females' higher Internet reliance (44.3% vs. 31.3%) may reflect greater engagement with online health resources, while males' slightly higher physician consultation (25.0% vs. 15.2%) suggests gender-specific information-seeking patterns, though not statistically

significant (P=0.412). Family/friends (17.9%) and books (16.8%) as secondary sources indicate a blend of informal and academic influences, common among students in resource-limited settings [20].Prior experience with illness (69.5%) and drugs (67.4%) as primary SM drivers reflects students' reliance on self-diagnosis, consistent with studies showing familiarity breeds confidence in medication use [8,23]. Time constraints (22.1%) and drug availability (14.7%) further underscore systemic issues, such as limited healthcare access and OTC drug proliferation in Libya. These findings underscore the aurgent need for integrated strategies, including education on responsible SM, strict enforcement of prescription-only antibiotic policies, and targeted public health initiatives to enhance health literacy and reduce reliance on unverified online sources.

Limitations:

The study's single-institution focus limits generalizability to other Libyan pharmacy programs. The small sample size (n=95) and 67.9% response rate may introduce selection bias, as non-respondents may differ in SM practices. Self-reported data risk recall and social desirability biases, potentially inflating reported SM or underreporting sensitive practices like psychoactive drug use (2.1%). The lack of data on comorbidities or academic year restricts analysis of contextual factors influencing SM. Future research should employ multi-center designs, larger samples, and objective measures (e.g., pharmacy purchase records) to validate findings and explore SM trends across Libya.

CONCLUSION:

The high prevalence of self-medication (90.5%), particularty antibiotic misuse (67.4%), among pharmacy students in Tripoli highlights an urgent need for intervention. Pharmacy curricula should prioritize education on responsible medication use, While the Ministry of Health and its official bodies should implement stricter regulations for non-prescription medicines and encourage public awareness campaigns.

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