Self-medication practices pattern among medical students, University of Tripoli- Libya, 2019

Miluda R Elhamadi[1 (*)], Entisar K Aboukanda[2], Abdubasit E Afhayl Alboum[3]

[1]Family and community medicine department, faculty of medicine, Tripoli university, Libya

[2]Family and Community medicine department, Faculty of medicine, Al-Zawia university, Libya

[3]National Disease Control Center, Tripoli, Libya

Abstract

Objectives: *This study was conducted to determine the magnitude of self-medication and to describe the pattern of self-medication practices among medical students.* ***Methods:*** *This was a cross-sectional study involving a random sample of medical students at University of Tripoli. Data were collected using a self-administered questionnaire containing*

(*) Email: e.aboukanda@zu.edu.ly

socio-demographic characters, and questions about the patterns of self-medication practices. The data was analyzed using SPSS version 19. Descriptive and inferential statistics were used, where suitable, to describe data and to find associations between dependent and independent variables. ***Results:*** *A total of 423 medical students were participated in the study, two-thirds of respondents were females and the mean age was 23.3 ± 2.7 years; 262 (61.9%) were practicing self-medication and 53 (20.2%) of them had a chronic disease. Females showed a greater preference than males for using pharmaceutical products as opposed to herbs (P=0.001). Sex, age and academic level were significantly associated with the use of self-medication (P=0.026, P= 0.006 and P= 0.026), respectively. The common symptoms that motivated the participants to self-medicate were headache and body pain (67.9%), fever (29.4%) and cough (27.9%). Recurrent (40.1%) and mild disease (37.4%) were the most reasons for self- medication. The most commonly used medications categories for self-medication were antipyretics (76.3%), analgesics (63.0%), and antibiotics (42.0%).* ***Conclusions:*** *The prevalence of self-medication was high. Headache, body pain and fever were the most frequently reported symptoms that motived students to self-medication. The most frequent reasons cited were the condition is a recurrent and mild illness. Commonly used drugs were antipyretics, analgesics, and antibiotics. Sex and academic year were found to be the independent predictors for self-medication practice. Strict regulations to monitor availability and accessibility of medication are needed.*

Keywords: *Self-medication; Medical student; Prevalence; Reason; Libya.*

Introduction

Self-medication is "the use of medicinal products by consumers to treat self-recognised disorders or symptoms, or the intermittent or continued use of a medication prescribed by physicians for chronic or recurring diseases or symptoms". [1] Self-medication also includes obtaining medicines without a prescription, sharing medicines with relatives or friends, or using left-over medicine stored at home. [2,3]

The reasons for self-medication are poorly understood. Most studies point to loose regulation of medications and inadequate access to health care as the main reasons, [4] as well as administrative delays or economic factors hindering medical consultation. [5]

Inappropriate use of medications is associated with health risks and serious health hazards such as adverse drug reactions, prolonged suffering and drug dependence. [6] It is also wasteful, imposes an economic burden, and decreases the affordability of medicine to patients. [2]

Self-medication patterns vary among different populations and are influenced by many factors, such as age, sex, income, cost, self-care orientation, educational level, medical knowledge, exposure to advertisement and perception of illness. [7-9]

Studies have shown that self-medication is more common among women, those who live alone, have a lower socioeconomic status, more chronic ailments, or psychiatric conditions, are of younger age and among students. [10-12]

Self-medication prsactices in Libya have not been well described, this issue is particularly important in countries such as Libya, where most drugs can be obtained without a prescription; and medical students were chosen for this study because they are highly influenced by the internet and the media which promotes self-medications behavior. Therefore, this

study conducted aimed to determine the magnitude of self-medication and to describe the patterns of self-medication practices among medical students at University of Tripoli (UOT).

Methods

This cross-sectional study was carried out at the faculty of medicine at University of Tripoli- Libya during four months period from July to October 2019. A stratified random sampling technique was used to recruit a representative random sample of medical students from each academic level. The sample size was calculated online (Raosoft, Inc.).[13] According to official figures, there were 8990 students enrolled in medical faculty. The confidence level was set at 95%, and the alpha margin of error was kept at 5%. The calculation gave a sample size of 369 students**,** but to ensure that an adequate number of correctly completed questionnaires are obtained, 450 students were targeted.

A self-administered questionnaire was prepared to collect data on self-medication practices. The questionnaire consisted of three sections. The first section covered sociodemographic characteristics of the participants. The questionnaire inquired about the presence of chronic diseases, and whether the participants had health insurance. In addition, the participants were asked if they have ever practiced self-medication. The second section of the questionnaire included questions about whether self-medication was their first choice when feeling ill, the types of drugs they used for self-medication, and the pattern of use. The third section was about the symptoms leading them to self-medication, the frequency of self-medication, the preferred route of administration, and the source of information on drugs used in self-medication. The reasons for self-medication were also investigated.

A pilot study was carried out, including 40 students and distributed randomly on all the academic years, the questionnaire was tested to assess the understanding of the questions, to estimate the average time needed for filling the questionnaire and to identify any difficulties that might arise during data collection. Adjustments to the questionnaire were not needed. The data of pre-tested are not included in the study sample. Official approval was obtained from the faculty of medicine, Tripoli. Before collecting information, the participants were informed of the objectives of the study, the expected benefits, and the types of information to be obtained. Informed consent was obtained, the questionnaire was anonymous, and confidentiality of the data was ensured.

The completed data were checked, cleaned, coded, and entered into SPSS for Windows version 19 for analysis, descriptive statistics, like tabulation, frequencies, percentages, means, and standard deviation were used to present the descriptive result; and to test the association between dependent and independent variables Chi-square test was used. The independent t-test was used to test the significance of the difference in mean age between self-medication users and non-users. Binary logistic regression was used to explain factors associated with self-medication practice; only variables found significant in the bivariate analysis were included in the model. The strength of the association was presented by an adjusted odds ratio and 95% Confidence interval. All statistical analyses were carried out using two-tailed tests, and a p-value < 0.05 was considered to be statistically significant.

Results

Of the 450 questionnaires distributed, 423 were completed, giving a response rate of 94%. The age of the participants was ranged between 18–30 years with a mean of 23.3 ± 2.7 years. About two-thirds of the participants (290, 68.6%) were females. Mean age was 23.0 ± 2.8 years for females and 23.9 ± 2.5 years for males, with no significant difference between them (*P*= 0.173). About half of the participants (208, 49.2%) were 22–25 years old, and only 2.1% were 30 years or older. Most participants (90.3%) were single. The participants were distributed approximately equally among the five academic levels. About three-quarters of them (312, 73.8%) reported not being covered by health insurance and 333 (78.7%) had no known diseases. (Table I)

Of the 423 students, 262 (61.9%) were practicing self-medication, and most of them were females (183, 69.8%). Roughly half of those using self-medication (51.9 %) were 22–25 years old and two-thirds (66.4%) were in the third academic year or above. Most of the self-medication users were single (234, 89.3%) and most had no medical insurance (189, 72.1%). Moreover, 209 of the 262 participants practicing self-medication (79.8%) did not have a known medical condition. (Table I)

Sex, age and academic level were significantly associated with the use of self-medication (*P*=0.026, *P*= 0.006 and *P*= 0.026), respectively. But marital status, health insurance and health status were not significantly associated with self-medication practice. (Table I)

A higher proportion of participants used pharmaceutical products (176, 67.2%) compared to herbal remedies (86, 32.8%). There was a highly significant statistical difference between males and females regarding the type of medications they use (*p* = 0.001). (Table II)

Almost the same number of respondents stated that they were advising only themselves on self-medication (124; 47.3%) or themselves and their families (125; 47.7%), with no significant difference between males and females. Nearly three quarters of the participants (194, 74%) self-medicated as they deemed necessary, with no significant difference between males and females (p= 0.441). (Table II)

The majority of males and females preferred to take medications orally (224, 85.5%), with no significant difference between the sexes (p= 0.562). The main reason prompting practice self-medication was the frequent condition (105, 40.1%), followed by the condition being mild (98, 37.4%) and saving time (59, (22.5%). There was a statistically significant difference between males and females regarding the reasons for their use of self-medication (p = 0.025). (Table II)

When asked about the common symptoms that motivated the participants to self-medicate, headache, body pain and tooth pain represented the main reason and were cited by 67% of the participants (74.7% of males and 65.0% of females). This was followed by fever (29.4%) and cough (27.9%). (Table III)

Antipyretics and analgesics were the medications most commonly used by males (76.3%) and females (63.0%), followed by antibiotics (48.1% and 39.3%, respectively). Multivitamins were used by a larger proportion of females (41.5%) compared to males (25.3%). Stimulants were the least used class of medications (males 1.3%; females 1.6%). (Table IV)

A consumer medicine information leaflets were the most frequent source of information for self-medication, 43.6% for males and 53.4% for females. (Figure 1)

The internet was the second most frequent source of information, and this seems to have been more frequent among males than females (36.1% versus 29.0%). The third most frequently used source of information was pharmacists (males 25.6%, females 30.0%). Only a small fraction of participants consulted text books, friends or family members. (Figure 1)

Logistic regression analysis was performed to identify the determinants of self-medication practice among the sample. Age was not significantly associated with self-medication, but females were about twice as likely as males to self-medicate (OR = 1.80; 95% CI 1.47 to 2.45; p = 0.002). Also, students in higher academic years (third to fifth) were twice more likely to use self-medication than those in the early years (OR = 2.022; 95% CI 1.79 to 4.31; p= 0.032). (Table V)

Discussion

Self-medication has been proven to harm both the patient and the health system more than it helps. Self-medication leads to increase risks such as excessive use of medication, extended duration of consumption, incorrect diagnosis, adverse drug reactions, and poly-pharmacy, in addition to wastage of resources, development of microbial resistance, and drug dependence. [11,14] Despite all the aforementioned risks, previous studies revealed a high prevalence of self-medication use among the population in general and medical students in particular. The prevalence of self-medication in the present study was found to be 62%, taking into account that practicing self-medication was found to be more common in females (P = .026). In comparison with previous findings, many studies revealed a higher prevalence of self-medication by university student. The prevalence of self-medication was 94% among university students in

Oman, [14] 92.4% in Iraq, [11] 81.6% in Iran, [15] a Karachi study found that 80.4% of university students were using self-medication. [16] Also, the prevalence of self-medication was 85.4% among Indian medical students. [17]

On the other hand, the present study reported prevalence of self-medication higher than the prevalence of self-medication among medical students in studies conducted at the Ain Shams University in Egypt (55%)' [18] among medical students of Kerman University of Medical Sciences, Iran (50.2%), [19] and at Gondar University, Ethiopia (38.5%). [20]

Although the prevalence of self-medication differs from previous studies (higher or lower), the prevalence reported by this study remains a high rate that needs policy and regulatory interventions.

This study showed that age, sex, and academic level were significantly associated with the use of self-medication. This was similar to studies conducted among university students in Baghdad, Iraq, [11] at Alexandria, Egypt [4] and among medical students in Anbar and Fallujah Universities, Iraq. [21]

Unlike some other studies, [4,16] more than half of the participants in our study (67%) reported using pharmaceuticals during the previous month and herbal types were the less frequently used by participants with significant differences between sex ($p< 0.001$). This finding may be explained by that there was less control and easy accessibility of drugs without prescription in Libya.

In the present study, headache, body and teeth pain represented the common symptoms that motivated the students to self-medicate; this was followed by fever and cough. Antipyretics, analgesics, and antibiotics were the medications most commonly used by respondents to treat the above-mentioned symptoms, followed by Multivitamins which have been

used by a larger proportion of females compared to males. Locally, our finding with regard to antibiotics self-medication was similar to the study conducted among medical and nonmedical students at two Universities in Benghazi City, Libya in 2015. [22] The study reported 43% and 46% of medical and nonmedical students, respectively, were antibiotics self-medicated. In contrast to the study that was conducted in Tripoli in 2011,[12] the percentage of antibiotics self-medication was 24 %. This finding was a serious indicator, because self-medication is one of the leading global causes of antimicrobial resistance and can lead to health hazards because of the incorrect diagnosis, formulation, dosage, route of administration; risk of adverse drug reactions; and drug interactions. [23]

Globally, previous studies have also stated similar findings. The studies conducted in Egypt, [4] Baghdad, Iraq, [11] Oman, [14] Iran, [15] Pakistan, [16] Al Fallujah and Anbar, Iraq [21] and Jordan [24] stated that antipyretics, Antibiotics and Analgesics, in a different order from the current study, were found to be the most commonly used medications by the participants for the treatment of headache, fever, and pain followed by medications for cough and cold.

The main reason prompting participants in this study to practice self-medication was the conditions are frequent illness and its treatment is known, followed by the condition being mild. There was a statistically significant between males and females regarding the reasons for their use of self-medication ($p = 0.025$). Similarly, the mild illness was the reason that was reported in studies carried out in Baghdad, Iraq, [11] Jordan [24] and Oman. [14] But contrary to Anbar and Fallujah university study, that reported the main reasons for self-medication were previous prescription and pharmacists advice. [21]

However, practicing self-medication based on recurrent previous symptoms or illness leads to potential risks includes incorrect diagnosis, delay in seeking medical advice when needed and masking of sever disease. (1)

Most of the participants who reported to practice self-medication in this study stated that their information about self-medication was obtained from consumer medicine information leaflets and the internet. A very small percentage of them mentioned that the sources of their information were physicians or pharmacists. This may be due to medical knowledge of student regarding the disease and treatment.

conclusions and Recommendations

The prevalence of self-medication among medical students at the University of Tripoli was high. Antipyretics, analgesics, and antibiotics were the most commonly reported types of medications consumed in self-medications. Sex and academic year were found to be the independent predictors for self-medication practice.

Increase awareness of community and medical students regarding self-medication practices' consequences and risks is recommended. Also, improvement of monitoring measures; and implementation of effective regulations to reduce the availability and easy accessibility of drugs without prescriptions are needed.

Furthermore, this study recommends more in-depth studies to evaluate the situation of self-medication among the population.

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Table 1: Socio-demographic characteristics of medical students, University of Tripoli, 2019

Character	Total (n = 423)		Practice of self-medication				P-value
			Yes (n =262)		No (n =161)		
	No.	%	No.	%	No.	%	
Sex							
Male	133	31.4	79	30.2	54	33.5%	0.026[F]
Female	290	68.6	183	69.8	107	66.5%	
Age group (years)							
18 – 21	120	28.4	71	27.1	49	30.4	0.006[C]
22 – 25	208	49.2	136	51.9	72	44.7	
26 – 29	86	20.3	46	17.6	40	24.8	
≥ 30	9	2.1	9	3.4	0	0	
Academic year							
First	78	18.4	48	18.3	30	18.6	0.026[C]
Second	73	17.3	40	15.3	33	20.5	
Third	99	23.4	62	23.7	37	23.0	
Fourth	86	20.3	65	24.8	21	13.0	
Fifth	87	20.6	47	17.9	40	24.8	
Marital status							
Single	382	90.3	234	89.3	148	91.9	0.417[C]
Married	41	9.7	28	10.7	13	8.1	
Health insurance							
Yes	111	26.2	73	27.9	38	23.6	0.197[F]
No	312	73.8	189	72.1	123	76.4	
Illness							
No known diseases	333	78.7	209	79.8	124	77.0	0.290[F]
Chronic diseases	90	21.3	53	20.2	37	23.0	

[C]:Chi square test. [F]:Fisher exact test. P < 0.05 is statistically significant.

Table II: Pattern of self-medication among participants according to sex, UOT, 2019

Variable	Total (n = 262)	Males (n= 79)	Females (n=183)	P-value
Type of medication used				
Drug	176 (67.2%)	64 (81.0%)	112 (61.2%)	0.001[F]
Herbal remedies	86 (32.8%)	15 (19.0%)	71 (38.8%)	
Usually, you give medication advice for				
Only myself	124 (47.3%)	33 (41.8%)	91 (49.7%)	
Myself & family members	125(47.7%)	42 (53.2%)	83 (45.4%)	0.485[C]
Myself &people asking for advice	13 (5.0%)	4 (5.1%)	9 (4.9%)	
How often do you practice self-medication?				
Daily	9 (3.4%)	5 (6.3%)	4 (2.2%)	
Once a week	11 (4.2%)	4 (5.1%)	7 (3.8%)	
Once every two weeks	11 (4.2%)	4 (5.1%)	7 (3.8%)	0.441[C]
Monthly	37 (14.1%)	12 (15.2%)	25 (13.7%)	
As needed	194 (74.0%)	54 (68.4%)	140 (76.5%)	
Which type of formulation do you prefer to recommend to others?				
Oral	224 (85.5%)	68 (86.1%)	156 (85.2%)	
Intramuscular	8 (3.1%)	3 (3.8%)	5 (2.7%)	
Intravenous	7 (2.7%)	2 (2.5%)	5 (2.7%)	0.562[C]
Topical	13 (5.0%)	5 (6.3%)	8 (4.4%)	
Other	10 (3.8%)	1 (1.3%)	9 (4.9%)	
What are the reasons that motivated you to practice self- medication ?[M]				
Mild illness	98 (37.4%)	29 (36.7%)	69 (37.7%)	
Quick relief	42 (16.0%)	15 (19.0%)	27 (14.8%)	
Time saving	59 (22.5%)	20 (25.3%)	39 (21.3%)	0.025[C]
Recurrent condition	105 (40.1%)	27 (34.2%)	78 (42.6%)	
Chronic disease	50 (19.1%)	17 (21.5%)	33 (18.0%)	
Poor quality of healthcare system	12 (4.6%)	9 (11.4%)	3 (1.6%)	

[M]: Multiple responses were allowed. [C]:Chi square test. [F]:Fisher exact test. P < 0.05 is statistically significant

Table III: Common symptoms motivating participants to self-medicate (n =262)

Symptoms	Males No. (%)	Females No. (%)	Total No. (%)
Pain (head, body, teeth)	59 (74.7)	119 (65.0)	178 (67.9)
Fever	22 (27.8)	55 (30.1)	77 (29.4)
Cough	22 (27.8)	51 (27.9)	73 (27.9)
Epigastric pain	26 (32.9)	38 (20.8)	64 (24.4)
Diarrhea	12 (15.2)	29 (15.8)	41 (15.6)
Constipation	10 (12.7)	25 (13.7)	35 (13.4)
Vomiting	9 (11.4)	23 (12.6)	32 (12.2)
Insomnia	10 (12.7)	18 (9.8)	28 (10.7)
Rash /allergy	4 (5.1)	10 (5.5)	14 (5.3)
Others	4 (5.1)	5 (2.7)	9 (3.4)

Multiple answers were allowed.

Table IV: Types of drugs used for self-medication

Drug types	Males	Females	Total
Antipyretics	59 (74.7%)	141 (77.0%)	200 (76.3%)
Analgesics	43 (54.4%)	122 (66.7%)	165 (63.0%)
Antitussives	25 (31.6%)	63 (34.4%)	88 (33.6%)
Antidiarrheal	9 (11.4%)	16 (8.7%)	25 (9.5%)
Sedatives	4 (5.1%)	14 (7.7%)	18 (6.9%)
Laxatives	7 (8.9%)	13 (7.1%)	20 (7.6%)
Antacids	19 (24.1%)	27 (14.8%)	46 (17.6%)
Multivitamins	20 (25.3%)	76 (41.5%)	96 (36.6%)
Antiallergic	5 (6.3%)	19 (10.4%)	24 (9.2%)
Antianxiety	4 (5.1%)	6 (3.3%)	10 (3.8%)
Antibiotics	38 (48.1%)	72 (39.3%)	110 (42.0%)
Antispasmodics	15 (19.0%)	30 (16.4%)	45 (17.2%)
Topical	19 (24.1%)	52 (28.4%)	71 (27.1%)
Stimulants	1 (1.3%)	3 (1.6%)	4 (1.5%)

Multiple answers were allowed.

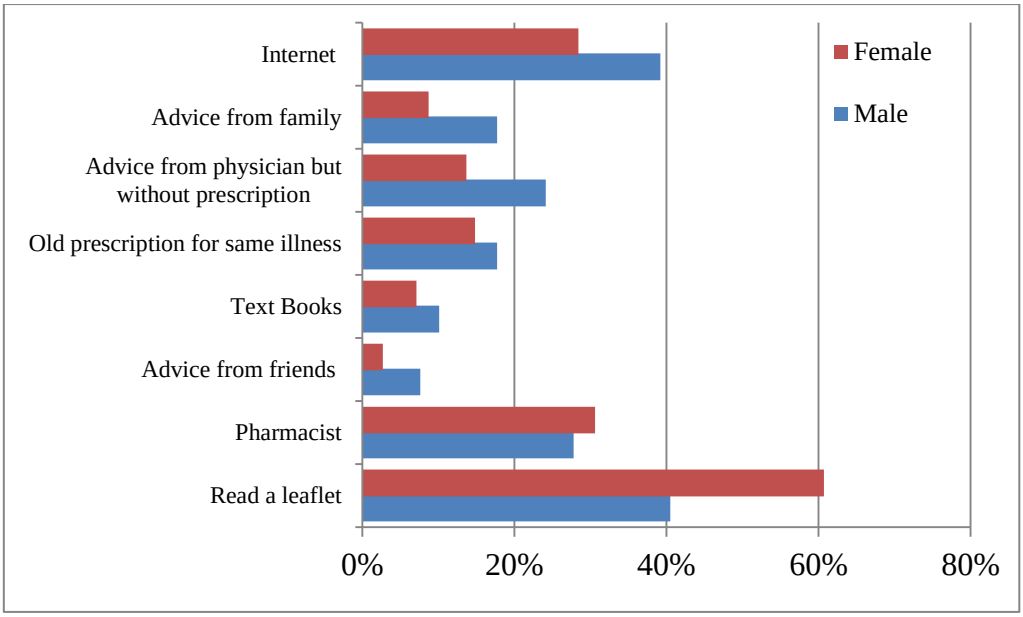

Figure 1: Sources of information for self -medication among participants.

Table V: Logistic regression analysis of the factors associated with practicing self-medication among medical students in UOT, Libya, 2019

Characteristic	Coefficient B	P-value	OR	95% CI
Age	–0.092	0.696	0.912	0.574–1.449
Sex	1.980	0.002	1.803	1.479–2.458
Academic year	0.913	0.032	2.022	1.793–4.312
Constant	–2.617	-	-	-

OR = odds ratio; CI = confidence interval