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Self-medication practices and associated factors among medical students in Iraq

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Abstract
Background: Self-Medication (SM), the use of medications without professional guidance, is a common practice with both potential benefits and risks. This study aimed to estimate the prevalence of SM and identify associated factors among Iraqi medical students.
Methods: A cross-sectional design employing a self-administered questionnaire was used to survey medical students from various Iraqi universities. The questionnaire assessed demographics, SM practices, reason for SM, and information sources used. Data analysis employed descriptive statistics to summarize key characteristics of the data, while chi-square tests were used to assess associations between categorical variables.
Results: The study included 454 participants, with a female predominance (74.4%). A high prevalence of SM(75.8%) was found. Females reported significantly higher SM rates than males (82.2% vs. 56.9%). The most common reasons for SM were headache (33.2%), flu (20.5%), and menstrual discomfort (22.5%). Pharmacists were the primary source of information for SM (27.5%), followed by relatives/friends (15.6%) and the internet (11.0%). Notably, 26.7% reported using no information source before self-medicating. Students in urban areas exhibited a significantly higher association with SM than rural students.
Conclusion: This study highlights a high prevalence of SM among Iraqi medical students. The findings emphasize the need for targeted interventions to promote safe and responsible SM practices within this population group. Educational programs encouraging students to consult healthcare professionals before self-medicating, particularly for conditions beyond minor ailments, are crucial to minimizing potential risks and ensuring optimal health outcomes.

Keywords: Prevalence, self-medication, medical students, Iraqi

Introductions
Self-Medication (SM), the use of medicines without professional medical guidance, has become a ubiquitous practice globally [1]. This stands in contrast to the mid-20th century Western medical model, which emphasized a paternalistic approach focused on treatment rather than prevention [2]. This historical shift reflects not only evolving cultural attitudes towards self-care but also the changing realities of healthcare systems worldwide.
Traditionally, SM has been defined as the consumption of drugs, herbs, or home remedies without consulting a doctor. Sources for SM information can range from family and friends to pharmacists, previously prescribed medications, and even advertisements [3]. It is important to differentiate SM from self-care, a broader concept encompassing practices aimed at maintaining health and preventing illness. SM is considered one component of the larger self-care framework [4].
The World Health Organization (WHO) offers a more nuanced definition, encompassing both self-diagnosed conditions and the continued use of prescribed medications for chronic illnesses [5]. This broader definition reflects the reality of SM practices observed globally.
Several factors, including economic, political, and cultural influences, have contributed to a continuous rise in SM practices worldwide. This trend has raised concerns within public health circles, as it can pose significant challenges [6].
The prevalence of SM practices varies considerably between developed and developing countries. These disparities stem from differences in cultural and socioeconomic factors, as well as healthcare system variations. Factors such as compensation rules, access to

healthcare, and medication dispensing policies influence SM practices [7].

Economically disadvantaged countries often witness a higher prevalence of SM due to limited access to healthcare services or the high cost of consulting trained professionals [8]. This reliance on self-medication, however, can lead to irrational use of medicines, raising concerns for public health

SM can offer some advantages, such as increased access to medicines and potentially lower healthcare costs [9]. However, these benefits are often overshadowed by significant risks. Potential drawbacks include wastage of resources, increased antimicrobial resistance, adverse drug reactions, and delayed diagnosis or treatment [10].

Research across various countries has identified common conditions managed through self-medication. These include headaches, fever, abdominal discomfort, respiratory infections, and diarrheal diseases [11]. Likewise, studies have reported frequently self-medicated medications like analgesics, antipyretics, antibiotics, and anti-acid medications [12].

Several factors contribute to the decision to self-medicate. Studies have identified perceived mildness of the illness, self-perceived knowledge of medications, time constraints, cost considerations, and past experiences with similar illnesses as common reasons behind SM practices [13].

Socio-demographic characteristics, including age, gender, education level, and income are significantly associated with SM practices [7]. Understanding these factors is crucial for developing targeted interventions aimed at promoting responsible SM practices.

Objectives of the study

1. Estimate the prevalence of SM among Iraqi medical students
2. Identify the factors associated with SM practices in this study population.

Subjects and Methods

Study design: This study employed a cross-sectional analytical design. This design is suitable for investigating the prevalence of SM and associated factors at a specific point in time within a defined population.

Setting and study time: The research was conducted among Iraqi medical students from various universities across the country. The data collection period spanned from July to September 2022, encompassing both male and female students.

Sampling Technique: A convenience sampling approach was utilized. This method involves recruiting participants who are readily available and accessible to the researcher. While convenient, this approach may not ensure a representative sample of the entire population of Iraqi medical students.

Study population: The target population for this study included Iraqi medical students aged 18-25 years. The sample selection encompassed students from Baghdad Medical College, Al-Kindy Medical College, Al-Mustansiriyah Medical College, Babylon Medical College, and Hammurabi Medical College.

Data Collection Instruments: A self-administered questionnaire developed by the researcher served as the primary data collection tool. The questionnaire was designed to capture the demographic details (gender, age, university, stage, living area, cigarette consumption, consumption of self-medication), causes of using self-medication, and sources of information about self-medication.

Data Analysis: Data entry and analysis were performed using SPSS version 26 software. Data analysis employed descriptive statistics to summarize key characteristics of the data as frequencies and percentages. Associations between categorical variables were analyzed using Pearson's chi-square independence test to assess the association between using SM with gender, age, living area, and cigarette consumption and descriptive study to assess the frequency or the percentage for the other questions. A significance level of alpha < 0.05 was applied.

Ethical Considerations and Approval: Official approvals were procured from the pertinent educational authorities, facilitating the successful completion of the study within these institutions. Informed consent was acquired from participants through their voluntary completion of a Google Form questionnaire. This approach ensured participant autonomy and adherence to ethical research principles.

Data availability: Due to ethical considerations and privacy concerns, the data of individual participants cannot be publicly shared

Results

An analysis of the baseline demographic characteristics in Table 1 revealed that the study participants were predominantly female (74.4%) and young adults, with the largest age group being 20-21 years old (53.7%). Most participants (50.7%) were from the College of Medicine at the University of Baghdad, with a smaller representation from other universities. The majority of participants was in their third year (36.8%) and lived in urban areas (93.8%). Self-reported cigarette consumption was low (15.9%), while a significant portion of participants (75.8%) reported consuming SM.

Table 2 shows the association between demographics, cigarette consumption, and SM with analgesics over the past academic year. There was a statistically significant association between gender and SM (p-value = 0.001), with females reporting higher rates of SM than males (82.2% vs. 56.9%). However, there were no statistically significant associations between SM and either living area (urban vs. rural) or cigarette consumption (p-values = 0.538 and 0.19, respectively). Overall, 75.8% of the participants reported using SM with analgesics in the past academic year.

Table 1: Characteristics of the study sample

Variable	N=454	%
Gender		
Male	116	25.6
Female	338	74.4
Age groups (years)		
18-19	100	22
20-21	244	53.7
22-23	79	17.4
24-25	31	6.8
College of Medicine, University Of		
Baghdad	230	50.7
Al-Kindy	26	5.7
Hammurabi	9	2.0
Al-Mustansyria	83	18.3
Babylon	14	3.1
Other colleges	92	21.2
Grade Level		
First	62	13.7
Second	98	21.6
Third	167	36.8
Fourth	76	16.7
Fifth	22	4.8
Sixth	29	6.4
Living area		
Rural	28	6.2
Urban	426	93.8
Cigarette consumption		
Yes	72	15.9
No	382	84.1
Self-Medications consumption		
Yes	344	75.8
No	110	24.2

Table 2: Association between Gender, living area, cigarette consumption, and Self-Medication.

		Did you self-medicate for pain during the last academic year?		Total 454 (100)	P value
		Yes 344 (75.8)	No 110 (24.2)		
Gender	Male	66 (56.9)	50 (43.1)	116 (25.6)	0.001
	Female	278 (82.2)	60 (17.8)	338 (74.4)	
Living area	Urban	323 (75.8)	103 (24.2)	426 (6.2)	0.538
	Rural	21 (75.0)	7 (25.0)	28 (93.8)	
Cigarette consumption	Yes	47 (65.3)	25 (34.7)	72 (15.9)	0.19
	No	297 (77.7)	85 (22.3)	392 (84.1)	

Table 3 shows the frequency of self-treated medical conditions among a sample of 454 individuals. Headache was the most frequent self-treated condition, reported by 33.2% of the participants. Flu and menstrual discomforts were the following most prevalent conditions, affecting 20.5% and 22.5% of the sample respectively. In contrast, sports injuries were the least frequent self-treated medical condition (1.9%). These findings suggest that individuals are more likely to self-treat common conditions for which effective over-the-counter medications are available and less likely to self-treat more serious or complex conditions.

Table 4 shows the sources of medicines and information for self-medication. Pharmacists are the most common source of information, at 27.5%, followed by relatives, friends, and neighbors (15.6%) and the internet (11.0%). Interestingly, mass media (TV, radio) is the least common source of information, at 0.0%. Doctors (from previous visits) are also a source of information for 11.7% of people who self-medicate, and professional literature (class books) is used by 7.5%. A significant number of people (26.7%) reported not using any source of information for SM.

Table 3: Frequency of Self-Treated Medical Conditions*

Variables		N=454	%
Causes	Headache	265	33.2
	Menstrual discomforts	179	22.5
	Flu	163	20.5
	Toothache	67	8.4
	Abdominal pain	67	8.4
	Back pain	41	5.4
	Sports Injuries	15	1.9

*Note that the participant has the right to choose more than one medical cause

Table 4: Sources of Information for Self-Medication

Variables		N=454	%
Sources of Information for Self-Medication	No Self-Medication use	121	26.7
	Pharmacist	125	27.5
	Relatives, friends, neighbors	71	15.6
	Medical doctor (From previous visits)	53	11.7
	Internet	50	11.0
	Professional literature (Class books)	34	7.5
	Mass media (TV, radio)	0	0.0

Discussion

SM, the use of medicines without consulting a healthcare professional, is a widespread public health concern with significant social, economic, and health consequences [14]. This practice can lead to adverse effects due to the potential for misuse and overuse of medications [15].

Extensive research has documented a high prevalence of SM in Eastern Mediterranean countries, ranging from 35.4% to 83% in Iran, Jordan, Saudi Arabia, and Pakistan [16]. Similar trends are observed among adolescents in the region, with studies reporting usage rates exceeding 80% in Jordan, Palestine, Kuwait, and the United Arab Emirates [16]. A systematic review conducted in Southeast Asia revealed a substantial variation in SM prevalence across the region, ranging from 7.3% to 85.59% with an overall average of 42.64% [17]. Countries like India and Nepal exhibited a higher prevalence, while Indonesia and Bangladesh reported lower rates [s]. Developed nations generally demonstrate lower SM prevalence compared to developing countries. Studies in the United States, Australia, and Germany reported usage rates around 11-13%, while countries like Italy, Mexico, and Switzerland showed even lower prevalence (8%) [18].

These disparities can be attributed to several factors, including socioeconomic profiles, cultural beliefs, demographics of the study population, research methodology, and the instruments used for data collection. Common reasons cited for SM practices include perceived mildness of symptoms, prior experience with similar conditions, time constraints, perceived affordability compared to doctor visits, and the need for immediate relief [18].

These findings align with prior research from diverse geographical regions, studies in Jordan (2008), Oman (2014), Ethiopia (2014), and Serbia (2014) identified similar rationales for SM, including minor symptoms, long wait times for doctor consultations, and cost concerns [19, 20, 21, 22]. This convergence in reasoning suggests potential underlying similarities in cultural beliefs, educational attainment, and economic realities across these populations.

The most frequently self-treated conditions identified in this study were headache, menstrual cramps, influenza, toothache, abdominal pain, backache, and sports injuries. These findings align with previous research. An Iraqi study (2010) reported SM for headaches, influenza, upper respiratory tract infections, diarrhea, and tonsillitis [23]. Similarly, studies in Yemen (2010), the United Arab Emirates (2013), and Iran (2012) documented a high prevalence of SM for respiratory and gastrointestinal issues, headaches, fever, dysmenorrhea, stomach problems, and joint pain [24, 25, 26].

The present study also highlights the potential side effects associated with SM. The most commonly reported adverse reactions included headaches, bone and joint pain, drug interactions, and dysmenorrhea. Interestingly, students residing in urban areas exhibited a significantly higher association with SM. This observation might be linked to the easier accessibility of medications in urban areas, with a higher number of pharmacies and increased exposure to pharmaceutical advertisements.

Conclusions and Recommendations

This study investigated the prevalence of SM and associated factors among Iraqi medical students. The key findings are: A high prevalence (75.8%) of SM was reported among medical students. Females were more likely to self-medicate than males. Headache, flu, menstrual discomfort, toothache, and abdominal pain were the most common reasons for SM. Pharmacists were the most common source of information for self-medication, followed by relatives, friends, and the Internet.

A significant number of students reported not using any information source before self-medicating. Students living in urban areas were more likely to self-medicate compared to rural students. These findings suggest a need for educational interventions to promote safe and responsible SM practices among medical students. Encouraging students to consult with pharmacists or doctors before self-medicating, especially for conditions beyond minor ailments, could help reduce the risk of adverse effects and promote better health outcomes.

Limitations of study

This study employed a convenient sampling approach to recruit participants, specifically medical students from a limited number of universities across Iraq. While this method facilitated data collection, it introduces limitations to the generalizability of the findings. The sample might not be entirely representative of the entire population of Iraqi medical students.

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Conflict of interest

The authors affirm that no conflicts of interest exist regarding the publication of this article.

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