Self-Medication Practices Among Population in the Sulaimani City, Kurdistan Region, Iraq

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ABSTRACT

Background: Self-medication is a prevalent practice worldwide, playing a vital role in managing minor ailments and symptoms, particularly in regions with limited healthcare access. However, prevalence, impact, and justifications for self-medication are varied across communities.
Objectives: To evaluate the prevalence and identify determinant factors related to self-medication practices among the residents of Sulaimani city in the Kurdistan region of Iraq.
Materials and methods: A descriptive cross-sectional study was conducted in Sulaimani City from November 2022 to March 2023. All adults ($\geq$ 18 years) were eligible for this study. The data was collected from different zones of the city via the convenience sampling method. A structured questionnaire was prepared and applied via face-to-face interviews, which took place in large malls and door-to-door approaching individuals in residential neighbourhoods, and recruiting participants, for data collection.
Results: The survey involved 500 participants; the self-medication prevalence was 73.4%. The age, educational level, and occupation of the participants were factored into the practice of self-medication (P-value = 0.001). Pharmacists were the main providers of information on self-medication (54.5%) and primary sources of medications (92.9%). The primary reason for self-medication was participants' perception that their illness was not severe (65.4%). Headache was the most common ailment (64.6%), followed by the common cold and flu (57.2%). Analgesics were the most frequently used drugs (82.3%). The majority of self-medicated individuals (71.9%) did not report experiencing any adverse effects from self-medication.
Conclusion: Self-medication was highly prevalent in Sulaimani City, primarily for minor ailments, with headaches being the most common reason. Pharmacies are crucial for information and drug procurement. Even though, the study suggests that while self-medicated individuals are unlikely to experience adverse effects from their drugs, promoting rational drug use is recommended to mitigate its negative consequences.
Keywords: Self-medication; Over-the-counter drugs, Antibiotic resistance, Non-prescription medications, Prescription-free drugs.

INTRODUCTION

Self-medication is defined as the act of people to select and use medication, over-the-counter or prescription drugs that are not ordered by physicians to treat their unhealthy conditions [1]. Patients often resort to self-medication, particularly in regions with limited healthcare services, as it serves as a common method for preventing and treating minor ailments and symptoms [2].

Self-medication offers numerous benefits, including the ability to reduce doctor visits and provide a cost-effective solution for minor symptoms [3]. However, many studies have confirmed the deleterious consequences of self-medication, including misdiagnosis, antibiotic-induced resistance, drug interactions, delays in pursuing health care, adverse drug reactions, polypharmacy, and congenital anomalies. These effects

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occur as a result of most people having insufficient information and knowledge about the side effects of drugs [4].

Many factors are associated with self-medication practices, for example, a low level of education, low income, lack of time to visit physicians, young age, medical knowledge [5], greater availability of different types of medical products, insufficient health services, and previous history of illnesses may lead individuals to self-medicate based on prior knowledge, and minor symptoms [6].

Nowadays, self-medication is progressively used worldwide. According to various studies in different countries, the incidence of self-medication ranges from 11.2 to 93.7%, and the mean occurrence was more significant in Eastern Europe and Asian countries compared to other parts of the world [7]. Various societies may have different motives for self-medication that determine public health intervention policies. Researchers frequently conduct studies on self-medication among specific groups, such as medical students and healthcare workers. However, the general population, particularly in the Kurdistan region of Iraq, lacks information on self-medication practice. Therefore, this study aimed to investigate the frequency and factors influencing self-medication among Kurdish-speaking residents of Sulaimani City.

MATERIALS AND METHODS
Study Design and Setting

A cross-sectional study design was conducted in Sulaimani City (where approximately 93% of its population are Kurdish speakers) of the Kurdistan region, Iraq, from November 2022 to March 2023.

Ethical consideration

The scientific committees in the College of Health and Medical Technology, Nursing Department, Sulaimani Polytechnic University authorised ethical approval; under the project number NUR 00099 on August 27, 2022. After the purpose of the study was explained to the participants, they were informed that the participation is voluntary and the participant has the right to withdraw at any time. They assured their confidentiality and anonymity would be secured. The participants were requested to give verbal consent to take part in the study.

Participants

All Kurdish speakers' adults were eligible to participate in this study, including all ages ($\geq$ 18 years), genders, ethnicities, education levels, and occupations. A convenience sampling method was used to collect the data. Applying a well-structured questionnaire that was prepared in Kurdish language involved demographic and self-medication-related questions through face-to-face interviews. Eight trained interviewers conducted interviews in large malls (Majidi Mall and Family Mall) and residential neighborhoods, going door-to-door to recruit participants. The sample size was calculated using the following equation:

n = [(Z^2 * p * q) / E^2] / [1 + ((Z^2 * p * q) / E^2N)]

Where n = required sample size, N = total population (in this case, the total population of Sulaimani City was 779,000 from data of 2022, nearly 60% (467400) of them are adults, Z = Z-score corresponding to the desired level of confidence (e.g., 1.96 for 95% confidence), P = is the expected proportion of the population with the characteristic of interest (if unknown, use 0.5 for maximum sample size), Q = is 1 – p, and E = is the desired margin of error (0.05 in this case).

Plugging in the values, we get:

N = [(1.96^2 * 0.5 * 0.5) / 0.05^2] / [1 + ((1.96^2 * 0.5 * 0.5) / 0.05^2 * 467400)]

N = 385.

Since the larger sample gives more study power, a sample of 500 participants was taken. The study collected data from various zones of the city. The household survey technique was used for data collection, the interviewers applied the questionnaire through face-to-face interviews. The questionnaire consists of two main parts. The first part included questions on socio-demographic characteristics such as sex, age, occupation, and educational level. The second part included questions on self-medication habits (self-medication status, purpose for self-medication, history of drug side effects, the type of drugs used, medication supplier, and source of knowledge about the drugs. Four specialists revised the questionnaire to improve its validity. Before the main research, we conducted a pilot study with 50 participants to check the feasibility and improve the research design. The reliability of the questionnaire was assessed using Cronbach's alpha test, its result was 0.67. We also employed multiple interviewers to reduce the impact of observer biases. Finally, to ensure uniformity, we conducted interviews using a structured Kurdish questionnaire, which contained the same questions in the same order.

Statistical analysis

Data were initially organised using Microsoft Excel and subsequently imported into the statistical package for the social sciences (SPSS) version 27 for further analysis. We used descriptive statistics, such as frequencies and percentages, to summarize the data. Additionally, the Chi-squared test was employed to examine the relationship between categorical variables, specifically to determine if there were significant associations between demographic characteristics and self-medication items. A P-value of < 0.05 was considered a cut-off level for determining the statistical significance of the tests.

RESULTS

The vast majority (n = 367, 73.4%) of the participants practiced self-medication (Figure 1).
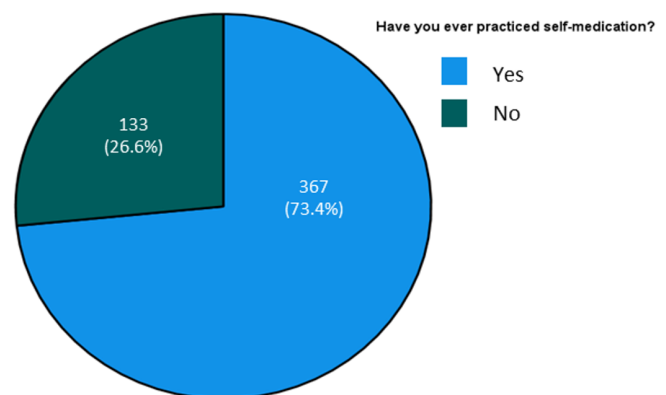

Figure 1. Self-medication practice among the participants.

Table 1. Socio-demographic characteristics of the respondents (n = 500).

Variables	Total (n=500)	Have you ever practiced Self-medication?		P-value
		Yes (n = 367)	No (n = 133)	
Sex				
Male	268 (53.6%)	205 (55.9%)	63 (47.4%)	0.093
Female	232 (46.4%)	162 (44.1%)	70 (52.6%)	
Age (years)				
18–30	193 (38.6%)	181 (49.3%)	12 (9.0%)	
31– 40	149 (29.8%)	81 (22.1%)	68 (51.1%)	
41–50	94 (18.8%)	69 (18.8%)	25 (18.8%)	0.001
51–60	50 (10%)	29 (7.9%)	21 (15.8%)	
> 60	14 (2.8%)	7 (1.9%)	7 (5.3%)	
Educational status				
Illiterate	15 (3%)	0 (0.0%)	15 (11.3%)	
Primary education	84 (16.8%)	5 (1.4%)	79 (59.4%)	
Secondary education	101 (20.2%)	86 (23.4%)	15 (11.3%)	0.001
High school	130 (26%)	109 (29.7%)	21 (15.8%)	
Higher Education	163 (32.6%)	160 (43.6%)	3 (2.3%)	
Postgraduate (Master, Ph.D.)	7 (1.4%)	7 (1.9%)	0 (0.0%)	
Occupation				
Unemployed	48 (9.7%)	34 (9.4%)	14 (10.5%)	
Self-employed	94 (19.1%)	51 (14.2%)	43 (32.3%)	
Student	119 (24.1%)	99 (27.5%)	20 (15%)	
Health worker	26 (5.3%)	17 (4.7%)	9 (6.8%)	0.001
Teacher	67 (13.6%)	49 (13.6%)	18 (13.5%)	
Engineer	5 (1%)	3 (0.8%)	2 (1.5%)	
Police and military	11 (2.2%)	3 (0.8%)	8 (6.0%)	
Other Employees	123 (25%)	104 (28.9%)	19 (14.3%)	

Table 2. The prevalence of self-medication and other related factors.[*][†]

Variables	Frequency	Percent
How often do you self-medicate per year		
Occasionally (2-5 times a year)	122	33.2
Frequently (More than five times a year)	39	10.6
Regularly (Monthly or more often)	185	50.4
Total	367	100
Where do you get the medicine, you used during self-medication?		
From pharmacies	341	92.92
From someone you know, such as family members and friends	36	9.81
Unused medicines are stored at home.	61	16.62
Other sources	13	3.54
Total	451[*]	
What is the source of information about medications when self-medicating?		
Previous experience/old prescription	164	44.68
Experience of family members, relatives or friends	53	14.44
Medications recommended by the pharmacist.	200	54.49
Other sources	20	5.44
Total	437[*]	
Have you ever experienced any adverse effects or complications from self-medication?		
Yes	103	28.37
No	260	71.63
Total	363[†]	100

[*] Due to the choice of multiple answers by the respondents the frequencies are more than 367.

[†] There were 4 missed to answer question 4.

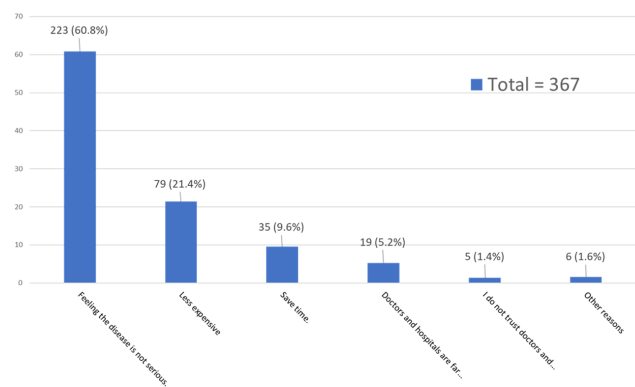**Figure** 2. The reasons for self-medication.

The age of the participants ranged from 18 to 70 years old with a mean age of 23.82 ± 16.64 years. The majority (n $=193$, 38.6%) were in the age group 18-30 years with 53.6% of the participants being males. Only 3% were illiterate and 32.6% of the participants had a higher education level. There were statistically significant differences between the participants who practice self-medication with their age, educational level, and occupation (P-value = 0.001) (Table 1).

Almost half of the participants were using self-medication regularly. Pharmacies were the primary source of drug acquisition for 92.9% of the participants. The typical source of information about self-medication was the pharmacist (54.5%). Concerning the adverse effects or complications of self-medication, 71.6% of self-medicated individuals claimed they did not experience any adverse effects, while 28.4% of them said that they experienced the adverse effects of self-medication at least one time, the details are shown in (Table 2).

The most important justification for self-medication practices was feeling that the ailment was not severe (60.8%). While not trusting doctors and hospitals was a reason for 1.4% of the study population (Figure 2).

The highest indication of self-medication was headaches (n $= 237$, 64.57%), while the least eye pain (n $= 18$, 4.9%). Analgesics/Antipyretics was the commonest (n $= 237$, 64.57%) group of drugs used by the participants (Table 3).

There were significant (P-value = 0.001) relationships between sex and awareness of overdosage potential risks and understanding of food-medication interactions. Self-medication side effects were more common among females compared to males (P-value = 0.016), as shown in Table 4.

DISCUSSION

Self-treatment through self-medication is a widespread practice globally, however, its rate dramatically varies in different countries [8]. In developed countries, self-medication remains a major public health issue even with sophisticated healthcare systems and regulatory frameworks. The desire for autonomy in healthcare decisions, the ease of access to over-the-counter pharmaceuticals, and internet-based health information are some of the reasons why this issue still exists [9]. Nevertheless, to mitigate the risks connected to self-medication, many prosperous nations have put regulations and implemented strategies, for example, the regulations related to over the counter medications in the Federal Regis-

Table 3. Symptoms and types of medications used among 367 participants.*

Variables	Frequency	Percent
What conditions or symptoms do you typically self-medicate for?		
Headache	237	64.57
Common cold and flu	210	57.22
Body ache	129	35.14
Cough	109	29.70
Fever	81	22.07
Diarrhea	69	18.80
Abdominal pain/heartburn	57	15.53
Nausea and vomiting	55	14.98
Toothache	55	14.98
Other conditions (e.g. Acne, Hair loss)	20	5.44
Eye pain	18	4.90
Total	1040*	
The types of medications you have used for self-medication		
Analgesics/Antipyretics	302	82.28
Antibiotics	108	29.42
Cough syrup	86	23.43
Multivitamins	65	17.71
Antidiarrhea	34	9.26
Antiemetics	33	8.99
Skin and hair topical medications and shampoo	32	8.71
Other drugs	10	2.72
Total	670*	

* Due to the choice of multiple answers by the respondents the frequencies are more than 367.

ter [10]. According to a systematic review by Limaye et al. (2017), the prevalence of self-medication in developed countries ranges from 19% to 68% [11]. The prevalence rate of self-medication practices was high (73.4%) in this study, as it was anticipated in this region where there are no restricted rules on how one handles medications. This rate bears resemblance to a 2024 study in Basra, where 75.9% of the participants relied on self-medication for their headaches [12]. While it is higher than the other two studies conducted in Baghdad, Iraq (35.3% and 60%) [13, 14]. In Bangladesh, the prevalence of self-medication was 61.8% in Thimphu and 41.5% in Chattogram cities [15]. On the other hand, our prevalence rate was lower than the other study conducted in Duhok city, Kurdistan region, Iraq, where self-medication practice was very high among medical and pharmacy students (85%) [16]. Similarly, in another study in Iraq among non-medical university staff, the prevalence of self-medication toward antibiotics use was 88% [17]. Medical students and other health-related students in Iran reported similar results [18]. This might be due to the effect of medical education and medical training on drugs. The study revealed that self-medication was more prevalent among the 18 to 30-year-old population than other age groups. This may be attributed to increased access to online health information, peer influence, and a sense of invulnerability among younger individuals [19, 20].

Self-medication is a double-edged sword that can be beneficial in treating minor illnesses and lessening the strain on hospitals and healthcare facilities, but it can also be harmful

Table 4. Association between sex and self-medication survey responses.

Survey items	Responses	Sex		Total	P-value
		Male	Female		
Are you aware of the overdose risks from self-medicating?	Yes	147 (55%)	172 (74%)	319 (64%)	0.001
	No	121 (45%)	60 (26%)	181 (36%)	
Are you aware of drug interactions with food or other drugs?	Yes	106 (40%)	129 (56%)	235 (47%)	0.001
	No	162 (60%)	103 (44%)	265 (53%)	
Have you ever experienced any adverse effects or complications from self-medication?	Yes	47 (23.3%)	56 (34.8%)	103 (28.4%)	0.016
	No	155 (76.7%)	105 (65.2%)	260 (71.6%)	
Have you ever recommended someone else to take a medication that you have already benefited from?	Yes	64 (31%)	39 (25%)	103 (28%)	0.192
	No	142 (69%)	118 (75%)	260 (72%)	
Do you read the instruction sheet of the medicine you are taking for self-medication?	Yes, all times	112 (42%)	102 (44%)	214 (43%)	0.860
	No, never	93 (35%)	82 (36%)	175 (35%)	
	Sometime	59 (22%)	46 (20%)	105 (21%)	

due to the emergence of antibiotic resistance and the presence of drug side effects. However, in the current study, the benefits outweigh the harms as the low rate of respondents have experienced the side effects of drugs. This aligns with a study conducted in Eritrea, which found that only 9.2% of participants faced adverse drug reactions from self-medication practices [21].

The current study identified three reasons that contribute to self-medication practices: the individual's perspective that the ailment is not severe enough to warrant medical attention, the lower cost of self-medication, and the lack of time to schedule an appointment with a physician. This complies with the results of the former studies in Iraq and Ethiopia [22, 23]. In contrast, a study in Basra and another study in Ethiopia found that the predominant reason for self-medication practice was a similarity of symptoms with past illness [12, 24]. Studying self-medication reasons thoroughly is of utmost importance for the health authorities and policymakers because the public perspectives regarding the severity of an illness may not be the same as medical perspectives, and using self-medication may delay the diagnosis of serious life-threatening diseases. Nonetheless, public education is crucial regarding the public's perspective on the value of money and individuals' time compared to their health. These concepts should be the priority for future educational interventions.

The present study revealed that pharmacy was the primary source of medications by 92.9%, just like several other studies; for example, studies in Baghdad and Ethiopia showed that pharmacy accounts for 92.91% and 73.1% of self-medication practices [23, 25]. The possible explanation for that might be due to the easy accessibility to drugs from pharmacies in Sulaimani city and other countries. Thus, strict regulations regarding the handling of certain types of drugs and the implementation of an educational program for pharmacists could potentially reduce the harm caused by this phenomenon.

Regarding the indication of self-medication practices, this study was in agreement with other studies that reported that headache is the most common reason for self-medication [25, 26]. However, analgesics were the most often used medications among the participants in this study, followed by

antibiotics. Analgesics and antibiotics are the most commonly used self-medicated drugs, according to research conducted in Iraq and Kabul [17, 27]. On the other hand, research from Thailand and India showed that non-steroidal anti-inflammatory drugs, primarily analgesics, were the most commonly used medications during self-medication practices, followed by antibiotics [28, 29].

Females demonstrated a higher awareness of the potential risks associated with overdosing and food-drug interactions (P-value = 0.001). This could be a reflection of greater health literacy or more cautious health behaviour among females [30]. A US study by Kessler et al. found that women were more likely to express concerns about drug interactions and side effects [31]. Parallel to this, a European study found that women were better aware of the risks associated with taking medicine when pregnant or breastfeeding [32]. A systematic review on medication adherence and awareness found that women are generally more knowledgeable about their medicines and potential interactions [33]. These findings suggest that women's enhanced knowledge of pharmaceutical dangers may be a worldwide phenomenon and highlight the need for targeted interventions to improve medication safety among men.

The study has several limitations that should be recognized. In the beginning, the questionnaire translation may have been incomplete, affecting response accuracy and reliability. Second, the use of convenience sampling limits the generalizability of the findings, as the sample may not be representative of the broader population. Another source of its limitations could be the study's exclusive focus on a single city. Lastly, recall bias is probable, as participants were asked to reflect on their previous experiences with self-medication, which may lead to inaccuracies in their recollections.

CONCLUSION

The study reveals a high prevalence of self-medication in Sulaimani city, with pharmacists being the primary source of knowledge and suppliers. Health education programs should emphasize the risks of non-professional medication recommendations and encourage consulting healthcare providers for

guidance. Health authorities should enforce stricter drug regulations and involve pharmacists in educational interventions.

ETHICAL DECLARATIONS

Acknowledgments

Ethics Approval and Consent to Participate

The scientific committee in the Nursing Department, College of Health and Medical Technology, Sulaimani Polytechnic University, authorized ethical approval under the project number NUR 00099 on August 27, 2022. The study required the participants to verbally consent to participate.

Consent for Publication

Not applicable (no individual personal data included).

Availability of Data and Material

Data generated during this study are available from the corresponding author upon reasonable request.

Competing Interests

The author declares that there is no conflict of interest.

Funding

Authors' Contributions

Hamalaw SA was significantly, directly, and intellectually contributed to the work. The author read and approved the final version of the manuscript.

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