



(RESEARCH ARTICLE)



PREVALENCE, PATTERNS, AND FACTORS ASSOCIATED WITH SELF-MEDICATION WITH ANALGESICS AMONG PHARMACY STUDENTS IN AL-HILLA, IRAQ

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GSC Biological and Pharmaceutical Sciences, 2026, 37(01), 246–253

Publication history: Received on 14 September 2026; revised on 22 October 2026; accepted on 24 October 2026

Article DOI: <https://doi.org/10.30574/gscbps.2026.37.1.0369>

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ABSTRACT

This study assesses the prevalence and pattern of self-medication with analgesics in Al-Hilla, Iraq across pharmacy students. Self-medication known as the utilization of medicines without consulting a doctor, encompassing utilization of old prescriptions or directly buying drugs from pharmacies. The aim of our study is to detect the prevalence of self-medication with analgesics across and determine the common factors influencing their decision to self-medicate. The current study was a cross-sectional survey using a questionnaire distributed to 118 pharmacy students from different academic years in Al-Hilla. Data were collected on the use of analgesics, sources of information, and reasons for self-medication. The results showed that around 95% of the students practiced self-medication with analgesics such as paracetamol and ibuprofen. Pharmacists were the primary source of information. The most common reason for self-medication was the belief that the illness was mild. Some students did not follow the instructions properly, leading to adverse effects. The conclusion of the study showed that self-medication with analgesics is more common across pharmacy students, highlighting the need for focusing on enhancing education and awareness regarding the safe use of medications to minimize the probable negative effects.

Keywords: Self-medication; Analgesic use; Pharmacy students; Drug safety; Non-prescription drugs.

1 INTRODUCTION

Self-medication is a universal and recently identified phenomenon. It presents a public health problem regarding numerous challenges encompassing risk of adverse drug effects, drug-drug interaction, antibiotic resistance, and elevated morbidity [1]. Depending on data from the World Health Organization (WHO), self-medication can be defined as “the drug utilization to manage self-diagnosed disorders or symptoms, or the intermittent or continued utilization of a prescription only medication for chronic or recurrent disease or symptoms”. This definition reveals that self-medication is not limited to the use of non-prescription medications only, but may also involve previously prescribed drugs that are reused without appropriate medical guidance. Furthermore, self-medication can be defined as the utilization of medicines to manage an illness or symptom when any person is not a medically qualified professional. The

definition may also include the use of medications beyond their approved license, commonly referred to as off-label use. Such practices may expose individuals to potential risks including misdiagnosis, incorrect dosing, drug interactions, adverse drug reactions, and antimicrobial resistance [2]. As pain is a common and self-recognized symptoms, analgesics are among the widely self-utilized medicines. Several studies among young people and university students have reported analgesics among the frequently self-medicated drug specifically for headache and mild conditions. While paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) are frequently utilized in this case, revealing widespread accessibility and perceived safety, self-administration of analgesics may lead to incorrect dosing, drug-drug interactions, and several risks, especially when users have poor knowledge in maximum doses, contraindications, and prolonged use. [3,4]. The main university students participants are those enrolled in health related scopes which represent a substantial participants in the study of self-medication due to the easy access to information related to drug regarding their academic knowledge which affect their medication use practices. As they receive formal education regarding pharmacological sciences, pharmacy students are of specific interest and still practice self-medication. Studies showed that self-medication with analgesics and antipyretics being the most widely utilized medication among pharmacy and other health sciences students. In Iraq, Salih et al. [5], reported that 63.3% of pharmacy students surveyed in Baghdad had practiced self-medication, while analgesics/antipyretics represented one of the most commonly used medication groups. Similar findings have been reported among health sciences students in other countries, highlighting the need to investigate self-medication practices and the factors influencing analgesic use among future healthcare professionals [4]. Although self-medication has been investigated among university students and healthcare-related students in Iraq, available evidence remains geographically limited and might fail to accurately indicate medication-taking practices across pharmacy students in different Iraqi settings. Some previous studies in Iraq specifically in Baghdad and the Kurdistan provinces have showed an elevated rate of self-medication and significant utilization of analgesics across university and health sciences students. However, differences in educational environment, accessibility of medicines, sources of health information, and local healthcare practices may influence self-medication behaviors across populations [5,6]. Therefore, generating local evidence on the occurrence, patterns, and factors correlated with analgesic self-medication among pharmacy students in Al-Hilla is important for identifying potentially inappropriate medication-use practices and informing educational strategies aimed at promoting rational and safe analgesic use. This study aimed to assess the prevalence and patterns of self-medication with analgesics across pharmacy students in Al-Hilla, Iraq, and to identify factors associated with this practice.

2 MATERIAL AND METHODS

2.1 Study design

The current study utilized included a cross-sectional descriptive design to assess the frequency and patterns of self-medication with analgesics across pharmacy students. The study was conducted at the Colleges of Pharmacy in Al-Hilla, Iraq. Data collection was achieved for a time of three-month period, from November 2025 to January 2026. The study population encompassed undergraduate pharmacy students enrolled from the first to fifth academic years.

Sample size determination

The needed sample size was calculated utilizing a standard statistical formula for cross-sectional studies considering a 95% confidence level and 5% margin of error. Guided by an expected prevalence of self-medication from previous literature, the minimum required sample size was estimated to be (100-130) students .

2.2 Study Instrument (Questionnaire Development)

Data acquisition was achieved via the utilization of a validated self-regulated survey tool designed followed reviewing relevant published studies on self-medication practices.

2.3 The questionnaire was structured into four sections

- Demographic data (age, gender, academic year)
- Prevalence of analgesic self-medication
- Patterns of analgesic use (frequency, indications, dosage, and sources)
- Knowledge and attitudes regarding the safety and risks of analgesics

The questionnaire was prepared in English and Arabic languages for clarity.

2.4 Validity and Reliability Assessment

Content validity was assessed via two academic pharmacists to guarantee clarity and connection of the questions. Necessary modifications were made based on their feedback.

2.5 Data Collection Procedure

Students were contacted during scheduled lectures. The purpose of the research was briefed to them, and verbal consent was obtained. Questionnaires were distributed and collected on the same day to minimize missing data.

2.6 Study Variables

2.6.1 Dependent Variables

- Self-medication with analgesics (Yes/No)
- Frequency of analgesic use
- Types of analgesics used

2.6.2 Independent Variables

- Age
- Gender
- Academic year
- Source of drug information
- Reasons for self-medication

2.7 Outcome Measures

The primary endpoint was the prevalence of self-medication across pharmacy students. Secondary outcomes encompasses patterns of utilization, knowledge regarding analgesic safety and common indications.

2.8 Statistical analysis

Data analysis was achieved via Statistical Package for the Social Sciences (SPSS) software, version 26. standard deviation (SD) were used to represent the data. The Chi- square test (χ^2) was performed for the assessment of potential correlations regarding categorical variables. A p-value of less than 0.05 was considered statistically significant.

3 RESULTS

3.1 Socio-demographic Characteristics

A total of 118 pharmacy students participated in the study. Data were regulated via two approaches: 87 students (73.7%) answered the online questionnaire, whereas 31 (26.3%) were face-to-face interviewed. The mean age of all respondents was 21.71 ± 1.09 years. Females participants represented the majority of respondents (79.7%). Fifth-year respondents constituted the predominant group (54.2%), succeeded by fourth-year students (31.4%). Most participants who provided residence information lived in urban regions. Table 1.

3.2 Prevalence and Patterns of Analgesic Self-Medication

The prevalence of analgesic self-medication among the participating pharmacy students was high. Of the 118 participants, 112 (94.9%) stated consuming analgesics without a physician's prescription. Regarding frequency, self-medication was most commonly reported as rare (45.8%) or occasional (38.1%). Paracetamol (acetaminophen) was the most frequently reported analgesic (78.8%), followed by ibuprofen (21.2%). Table 2.

3.3 Sources of Information and Reasons for Self-Medication

Pharmacists confirmed the intake of information regarding analgesic use (70.3%), followed by previous medical knowledge (26.3%). Headache emerged as the most common reason for analgesic use (66.1%), followed by menstrual pain (47.5%). The most prevailing indicated rationale for choosing self-medication rather than consulting a physician was the perceived mild nature of the illness (44.1%), followed by previous experience with the same type of pain (35.6%). Table 3.

3.4 Safety Awareness and Behaviors Regarding Analgesic Self-Medication

Most participants reported being aware of the potential adverse effects associated with analgesics. However, this awareness was not always accompanied by appropriate medication-safety behavior. Only 15.3% reported always reading medication instructions or package leaflets, whereas 21.2% reported never doing so. In addition, 16.1% of the total sample reported having experienced side effects associated with self-medication. Table 4.

3.5 Comparative Analysis of Side-Effect Awareness

A statistical comparison was conducted to evaluate the degree of awareness among students. A highly significant difference was found based on the data collection method ($p = 0.0005$), with online participants reporting a significantly higher awareness rate (84.9%) compared to face-to-face participants (48.4%). As it may affect the statistical weight of each group, when interpreting these comparative results, the substantial differences in sample size between the online group ($n=87$) and the face-to-face group ($n=31$) should be taken into consideration. Table 5.

3.6 Attitudes Toward Self-Medication and the Educational Role of Pharmacists

Table 1: Baseline demographic characteristics of the study populations

Variable	Category	Frequency (n)	Percentage (%)
Data collection method	Online	87	73.7
	Face-to-face	31	26.3
Gender	Female	94	79.7
	Male	23	19.5
	Missing	1	0.8
Study level	5th year	64	54.2
	4th year	37	31.4
	3rd year	9	7.6
	2nd year	7	5.9
	1st year	1	0.8
Residence	Urban	93	78.8
	Rural	17	14.4
	Missing	8	6.8

Age Mean $\pm$ SD = 21.71 $\pm$ 1.09; Note: Totals may vary slightly due to missing responses in specific categories. 79.7%.

Table 2: Patterns of self-medication among students (N=118)

Variable	Category	Frequency (n)	Percentage (%)
Ever practiced self-medication	Yes	112	94.9
	No	6	5.1
Frequency of use	Rarely (< once/month)	54	45.8
	Occasionally (1–3 times/month)	45	38.1
	Frequently (weekly)	17	14.4
	Regularly (almost daily)	1	0.8
Duration of practice	<6 months	54	45.8
	6 months–1 year	10	8.5
	1–2 years	44	37.3
	>2 years	10	8.5
Type of analgesic used*	Paracetamol (acetaminophen)	93	78.8
	Ibuprofen	25	21.2
	Other analgesics (e.g., diclofenac, naproxen)	13	11.0

Multiple responses were permitted for applicable items; therefore, percentages may exceed 100%.

Participants demonstrated mixed attitudes regarding whether self-medication should be discouraged. The mean score was 2.67 ± 1.14 on a five-point scale, where 1 represented “Strongly Agree” and 5 represented “Strongly Disagree”. Most notably, 94.9% of participants believed that pharmacists should have a stronger role in educating the public about the safe use of analgesics. Table 6.

Table 3: Sources of information and reasons for self-medication (N=118)

Variable	Category	Frequency (n)	Percentage (%)
Source of information	Pharmacists	83	70.3
	Previous medical knowledge	31	26.3
	Internet/social media	20	16.9
	Friends/family	16	13.6
Reason for analgesic use	Headache	78	66.1
	Menstrual pain	56	47.5
	Fever or cold symptoms	33	28.0
	Toothache	19	16.1
	Muscle or joint pain	18	15.3
Reason for preferring self-medication	Mild nature of illness	52	44.1
	Previous experience with same pain	42	35.6
	Time-saving	11	9.3
	Cost-saving	7	5.9
	Confidence in self-knowledge	6	5.1
	Easy drug availability	5	4.2

Table 4: Safety awareness, behaviors, and side effects (N=118)

Variable	Category	Frequency (n)	Percentage (%)
Reads instructions/leaflets	Sometimes	74	62.7
	Never	25	21.2
	Always	18	15.3
	Missing	1	0.8
Aware of potential side effects	Yes	88	74.6
	No	28	23.7
	Not sure	1	0.8
	Missing	1	0.8
Believes non-prescription analgesics are safe	No	46	39.0
	Not sure	34	28.8
	Yes	37	31.4
	Missing	1	0.8
Experienced side effects	No	77	65.3
	Yes	19	16.1
	Not sure	21	17.8
	Missing	1	0.8

Table 5: Comparative Analysis of Side Effect Awareness (N=118)

Variable	Category	Aware (Yes) n (%)	Not Aware (No) n (%)	P-value
Data Collection Method	Online (n=87)	73 (84.9%)	14 (15.1%)	0.0005*
	Face-to-Face (n=31)	15 (48.4%)	16 (51.6%)	
Study Level (Stage)	5th year	10 (52.6%)	8 (42.1%)	0.521
	4th year	1 (100%)	0 (0.0%)	
	3rd year	3 (50.0%)	3 (50.0%)	
	2nd year	1 (25.0%)	3 (75.0%)	
	1st year	0 (0.0%)	1 (100%)	

Note: A Chi-square test was used for analysis, Statistical significance was defined as a p-value < 0.05.

Table 6: Attitudes towards self-medication and role of pharmacists (N=118)

Variable	Category	Frequency (n)	Percentage (%)
Self-medication should be discouraged (N=114)	Strongly Agree (1)	23	20.2
	Agree (2)	23	20.2
	Neutral (3)	46	40.4
	Disagree (4)	13	11.4
	Strongly Disagree (5)	9	7.9
Would advise others to self-medicate (N=116)	Depends on the situation	82	70.7
	Yes	17	14.7
	No	17	14.7
Pharmacists should have a stronger educational role (N=118)	Yes	112	94.9
	Not sure	4	3.4
	No	2	1.7

Note: N values for specific questions vary (N=114 for discouraging scale; N=116 for advice) due to incomplete responses Discouragement score: Mean $\pm$ SD = 2.67 $\pm$ 1.14.

4 DISCUSSION

Our study is a cross-sectional study about the prevalence and pattern of self-medication with analgesics among pharmacy students in Al-Hilla, Iraq. It revealed a very high extent of self-medication with analgesics among pharmacy students, reaching 94.9% of the participants. This finding indicates that self-medication is a common practice among students in pharmaceutical fields. The high prevalence may be explained by students' medical knowledge, easy access to medications, and their familiarity with common drug indications. Pharmacy students usually believe that they can manage minor health conditions without consulting a physician due to their educational background and exposure to pharmacological knowledge during their studies. Additionally, analgesics are widely available over the counter, which further facilitates their use without medical supervision [7]. The results showed that most students practiced self-medication rarely or occasionally, while only a small proportion reported frequent or regular use. These findings suggest that although the prevalence of self-medication is high, the frequency of use is generally moderate. This pattern may indicate that, when required, students may utilize analgesics for occasional symptoms rather than on continuous basis. The duration of self-medication practice also varied among participants, with many students reporting less than six months of practice, while others had been practicing it for more than one year [8].

The study determined paracetamol as the major analgesic utilized across pharmacy students and ibuprofen is the subsequent one, while other analgesics like diclofenac and naproxen were less frequently utilized. The elevation rate of paracetamol consuming could be attributed to its reputation as a safe analgesic with lower gastrointestinal side effects in comparison with non-steroidal anti-inflammatory drugs. In addition, paracetamol is commonly available and majorly recommended for mild to moderate pain, which may interpret its widely consuming across students [9].

Also the study showed that pharmacists were the primary source of information, followed by previous medical knowledge, while the internet and friends or family members were less commonly reported. This highlights the important role of pharmacists as trusted healthcare professionals who provide guidance regarding medication use. Since pharmacy students often interact with pharmacists during their training or work in pharmacies, they may rely heavily on professional advice when choosing medications [10]. The most commonly reported indications of analgesic self-medication were headache and cycle pain, cold symptoms, toothache and musculoskeletal pain are followed. These health complaints are typically viewed as benign or self-limiting, which may encourage individuals to manage them independently using over-the-counter analgesics. Headache, in particular, is common among university students due to stress, academic pressure, and irregular sleep patterns [11, 12]. Several causes were detected for the selection of self-medication over visiting a physician. The most common reason was the mild nature of the illness, followed by previous experience with similar symptoms. Other reasons included saving time, reducing healthcare costs, and confidence in personal knowledge about medications. These findings showed that students realize self-medication as a convenient and efficient method for managing minor health problems. Students' Awareness of Analgesic Safety and Side Effects Although 74.6% of students reported being aware of the potential side effects of analgesics, this awareness was not always reflected in their behavior [4, 13].

This study has several limitations that should be considered when interpreting the findings. First, the study was conducted in a single city (Al-Hilla) and included only pharmacy students, thereby constraining the external validity of the results to other populations. Second, the use of a convenience sampling method may introduce selection bias, as participants were not randomly selected. Third, data were collected through a self-administered questionnaire, which potentially introduces subject to recall inaccuracies and response bias. Also, the cross-sectional design does not permit for demonstrating causal relationships between study variables. Finally, the small sample size may impact the overall representativeness and precision of the results.

Conclusion

Our study shows a predominance of analgesic self-medication among pharmacy students in Al-Hilla, Iraq. The most frequently utilized analgesics for controlling headaches and menstrual pain were paracetamol and ibuprofen, and the main drivers were perceived mild illness and prior personal experience. Misuse practices persisted, though students showed general awareness regarding side effects. The primary source of drug information were community pharmacists, demonstrating their critical role in supporting safe medication utilization among healthcare students.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Acknowledgments

The author would like to acknowledge the undergraduate pharmacy students and the College of Pharmacy/ University of Babylon for their support.

Statement of ethical approval

The study protocol was reviewed and authorized by the Scientific Committee of the College of Pharmacy, University of Babylon.

Statement of informed consent

Verbal informed consent was obtained from all participants prior to participation.

Author Contributions

The author contributed to all aspects of the study.

Data Availability Statement

Raw data supporting the findings of this research are obtainable from the corresponding author upon reasonable request.

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