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Original Article

Self-Medication Among Pharmacy Students: A Cross-Sectional Study on Prevalence, Patterns, and Determinants

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ABSTRACT

Background: Constraint-induced movement therapy is used to improve upper-limb recovery after stroke, Background: Self-medication is common among university students, particularly those enrolled in health-related disciplines. Pharmacy students may be more likely to self-medicate because academic exposure to pharmacology and therapeutics can increase confidence in selecting medicines without professional consultation. Inappropriate self-medication, especially antibiotic use without prescription, may contribute to adverse drug reactions, delayed treatment, drug interactions, and antimicrobial resistance. Objective: To determine the prevalence, patterns, reasons, medication classes, sources of information, and socio-demographic associations of self-medication among pharmacy students at Shahida Islam Medical College, Lodhran, Pakistan. Methods: A descriptive cross-sectional study was conducted among 263 pharmacy students using a structured questionnaire. Participants were recruited through convenience sampling. Data were analyzed using SPSS version 20. Frequencies and percentages were calculated, and chi-square tests were used to assess associations between self-medication practice and selected socio-demographic variables. Results: Self-medication was reported by 165 students, giving a prevalence of 62.7%. Physicians were the most frequently reported source of medication information (63.1%). The leading reasons were prior experience with illness (64.6%), drug availability (60.1%), and saving time (57.0%). Headache (74.5%) and common cold (71.9%) were the most frequently reported conditions, while common cold medicines (67.3%) and antibiotics (65.4%) were the most frequently reported medication classes. No statistically significant association was found between self-medication and age, gender, marital status, residence, habitation, or health insurance status. Conclusion: Self-medication was common among pharmacy students, with frequent reported antibiotic use highlighting a public health concern. Educational interventions, antimicrobial stewardship training, and stronger prescription-only medicine regulation are needed. Keywords: Self-medication; pharmacy students; antibiotics; antimicrobial resistance; cross-sectional study; Pakistan.

EDITORIAL INFORMATION

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INTRODUCTION

Self-medication is the use of medicines by individuals to manage self-recognized symptoms or illnesses without direct consultation with a licensed healthcare professional. It may involve the use of over-the-counter medicines, reuse of previously prescribed drugs, sharing medicines with family members or peers, or using medicines stored at home for recurrent symptoms (1,2). Although responsible self-medication can

contribute to timely relief of minor ailments and may reduce unnecessary burden on healthcare services, inappropriate or unsupervised medicine use can result in misdiagnosis, delayed treatment, incorrect dosage, adverse drug reactions, drug interactions, masking of serious disease, and antimicrobial resistance (3,4).

Self-medication is widely practiced among university students, particularly those enrolled in health-related disciplines. Pharmacy students represent a clinically important subgroup because they receive formal academic exposure to pharmacology, therapeutics, dosage forms, indications, contraindications, adverse effects, and principles of rational drug use. This knowledge may improve their ability to make informed decisions about minor ailments; however, it may also increase confidence in self-diagnosis and self-treatment without adequate clinical evaluation (5,6). Previous studies among university and health sciences students have reported a high prevalence of self-medication, with analgesics, antipyretics, antibiotics, anti-allergic medicines, vitamins, gastrointestinal drugs, and common cold preparations frequently used (7–10).

Antibiotic self-medication is particularly concerning because inappropriate antibiotic use contributes to antimicrobial resistance, treatment failure, avoidable adverse drug reactions, and increased healthcare burden (11,12). This issue is more critical in low- and middle-income countries, where prescription-only medicines may be accessible without strict regulatory control, and where students may obtain medicines directly from pharmacies or use previous prescriptions without medical reassessment (13,14). In Pakistan, self-medication is influenced by easy availability of medicines, previous illness experience, cost and time barriers to healthcare consultation, informal advice from family or peers, and growing access to digital health information (15–17). These factors may encourage students to treat symptoms independently even when professional consultation is clinically indicated.

Pharmacy students are future medication experts and will have professional responsibilities in dispensing, patient counseling, pharmacovigilance, antimicrobial stewardship, and promotion of rational drug use. Their personal medicine-use behavior is therefore relevant not only to student health but also to future professional practice. Unsafe self-medication habits during pharmacy training may influence later attitudes toward medicine access, prescription-only drug regulation, and patient counseling practices (18,19). Understanding self-medication among pharmacy students is therefore essential for designing educational strategies that reinforce responsible self-care while discouraging inappropriate use of antibiotics and other prescription-only medicines.

Despite increasing global evidence on self-medication among university and health sciences students, local institutional data remain important because medicine access, cultural beliefs, academic exposure, healthcare-seeking behavior, and regulatory enforcement vary across settings. There is limited local evidence regarding the prevalence and pattern of self-medication among pharmacy students at Shahida Islam Medical College, Lodhran. The present study was therefore conducted to determine the prevalence of self-medication among pharmacy students, identify the common conditions and medication classes associated with this practice, assess the main reasons and sources of medication information, and examine the association between selected socio-demographic characteristics and self-medication practice (20).

MATERIALS AND METHODS

A descriptive cross-sectional observational study was conducted among pharmacy students at Shahida Islam Medical College, Lodhran, Pakistan. This design was selected because the study aimed to estimate the prevalence of self-medication and describe its associated patterns, reasons, medication classes, information sources, and socio-demographic associations at a single point in time. Data were collected over a two-month period from students enrolled in the Department of Pharmacy.

The study population comprised male and female pharmacy students aged 17–31 years who were enrolled at Shahida Islam Medical College and were available during the data collection period. Students were eligible if they belonged to the pharmacy program and provided informed consent to participate. Students

from departments other than pharmacy, administrative and non-administrative staff, and students who declined voluntary participation were excluded. Participants were selected using a convenience sampling technique by directly approaching accessible pharmacy students within the institution. This approach allowed feasible recruitment of the target academic population, although the findings were interpreted in relation to the single-institution setting and non-probability sampling method.

The sample size was calculated using Raosoft software with a 95% confidence level and a 5% margin of error. A total of 263 pharmacy students participated in the study. Before data collection, the purpose and nature of the study were explained to the students, and informed consent was obtained. Participation was voluntary, and students were informed that their responses would be used for research purposes while maintaining confidentiality and anonymity. The questionnaire was completed through face-to-face interaction, and the investigators addressed any participant queries before completion. The approximate time required to complete the questionnaire was 10 minutes.

Data were collected using a structured English-language questionnaire adapted from previously published studies on self-medication and modified according to the objectives of the present study (1,7,10). The questionnaire included items on socio-demographic characteristics, self-medication practice, sources of medication information, reasons for self-medication, conditions for which medicines were used, and medication classes used. Socio-demographic variables included age, gender, marital status, residence, habitation, and health insurance status. The main outcome variable was self-medication practice, recorded as a binary response. Self-medication was operationally defined as the use of any medicine without current prescription or direct consultation with a licensed healthcare professional for the treatment of self-recognized symptoms or illnesses. This included the use of over-the-counter medicines, reuse of previously prescribed medicines, and medicine use based on prior experience, family advice, peer advice, or other informal sources.

To improve data quality, completed questionnaires were reviewed for completeness and consistency before data entry. Responses were coded and entered into SPSS version 20 for analysis. Categorical variables were summarized using frequencies and percentages. The prevalence of self-medication was calculated as the proportion of students who reported practicing self-medication among the total number of participants. Sources of medication information, reasons for self-medication, conditions treated, and medication classes used were summarized descriptively. For multiple-response items, percentages were reported using the total sample denominator as available in the dataset.

Associations between self-medication practice and selected socio-demographic variables were assessed using the chi-square test. The variables examined included age, gender, marital status, residence, habitation, and health insurance status. A p-value of <0.05 was considered statistically significant. Since the study was descriptive and cross-sectional, the analysis focused on prevalence estimation, frequency distribution, and bivariate associations rather than causal inference. Confidentiality and anonymity were maintained throughout the study. Permission was obtained from the relevant departmental authority before data collection, and the study involved no invasive procedure or intervention-related risk.

RESULTS

Table 1. Socio-demographic Characteristics of Pharmacy Students, N = 263

Variable	Category	n (%)
Age	Under 18 years	11 (4.2)
	18–24 years	235 (89.4)
	25–31 years	17 (6.5)
Gender	Male	118 (44.9)
	Female	145 (55.1)
Marital status	Married	17 (6.5)
	Single	243 (92.4)
	Divorced	3 (1.1)
Residence	Urban	200 (76.0)
	Rural	63 (24.0)
Habitation	With family	194 (73.8)

Variable	Category	n (%)
	Student dormitory	69 (26.2)
Health insurance	Yes	38 (14.4)
	No	225 (85.6)

A total of 263 pharmacy students were included in the study. Most participants were aged 18–24 years, representing 235 students (89.4%). Female students constituted 145 participants (55.1%), while male students constituted 118 participants (44.9%). The majority were single, urban residents, living with family, and without health insurance.

Table 2. Sources of Medication Information Among Pharmacy Students, N = 263

Source	n (%)
Physician	166 (63.1)
Family	42 (16.0)
Others	20 (7.6)
Books	19 (7.2)
Friends	14 (5.3)
Journals	2 (0.8)

Physicians were the most frequently reported source of medication information, reported by 166 students (63.1%). Family members were the second most common source, reported by 42 students (16.0%). Books, friends, journals, and other sources were less frequently reported.

Table 3. Prevalence of Self-Medication Among Pharmacy Students, N = 263

Self-medication practice	n (%)
Yes	165 (62.7)
No	98 (37.3)

Self-medication was reported by 165 out of 263 pharmacy students, giving an overall prevalence of 62.7%. Ninety-eight students (37.3%) reported that they did not practice self-medication.

Table 4. Association Between Socio-demographic Characteristics and Self-Medication Practice

Variable	Category	Self-medication n	Non-self-medication n	p-value
Age	Under 18 years	6	5	0.840
	18–24 years	148	87	
	25–31 years	11	6	
Gender	Male	81	37	0.074
	Female	84	61	
Marital status	Married	10	7	0.387
	Single	152	91	
	Divorced	3	0	
Residence	Urban	125	75	0.887
	Rural	40	23	
Habitation	With family	123	71	0.709
	Student dormitory	42	27	
Health insurance	Yes	22	16	0.504
	No	143	82	

Chi-square test was used where applicable.

No statistically significant association was observed between self-medication practice and age, gender, marital status, residence, habitation, or health insurance status. Gender showed the lowest p-value among the tested variables, but it did not reach the conventional threshold for statistical significance.

Table 5. Reported Reasons Related to Self-Medication, N = 263

Reason	n (%)
Prior experience with illness	170 (64.6)
Availability of drugs	158 (60.1)
Saving time	150 (57.0)
Prior experience with drug	138 (52.5)
Inadequate time to attend doctor's office	130 (49.4)
Non-seriousness of illness	98 (37.3)

Percentages are based on the total sample denominator, N = 263, as provided in the dataset.

Prior experience with illness was the most frequently reported reason related to self-medication, reported by 170 students (64.6%). Availability of drugs and saving time were also common, reported by 158 students (60.1%) and 150 students (57.0%), respectively. These findings indicate that previous experience, convenience, and access to medicines were major contributors to self-medication-related behavior.

Table 6. Conditions for Which Self-Medication Was Reported, N = 263

Condition	n (%)
Headache	196 (74.5)
Common cold	189 (71.9)
Gastrointestinal disorders	89 (33.8)
Skin diseases	80 (30.4)
Menstrual disorders	35 (13.3)
Prevention of osteoporosis	25 (9.5)
Joint diseases	23 (8.7)
Hematological disorders	22 (8.4)
Musculoskeletal disorders	21 (8.0)
Neurological diseases	18 (6.8)

Percentages are based on the total sample denominator, N = 263, as provided in the dataset.

Headache and common cold were the most frequently reported conditions, with 196 students (74.5%) and 189 students (71.9%) reporting these conditions, respectively. Gastrointestinal disorders and skin diseases were also reported, but less frequently. Other conditions, including menstrual disorders, joint diseases, hematological disorders, musculoskeletal disorders, and neurological diseases, were reported by smaller proportions of students.

Table 7. Medication Classes Reported for Self-Medication, N = 263

Medication class	n (%)
Common cold medicines	177 (67.3)
Antibiotics	172 (65.4)
Vitamins	135 (51.3)
Anti-allergic drugs	118 (44.9)
Analgesics	116 (44.1)
Gastrointestinal drugs	88 (33.5)
Antipyretics	83 (31.6)
Skin medications	80 (30.4)
Herbal remedies	65 (24.7)
Ophthalmic drugs	47 (17.9)
Hypnotics	19 (7.2)
Tranquilizers	19 (7.2)

Percentages are based on the total sample denominator, N = 263, as provided in the dataset.

Common cold medicines were the most frequently reported medication class, reported by 177 students (67.3%). Antibiotics were reported by 172 students (65.4%), making them the second most frequently reported class. Vitamins, anti-allergic drugs, and analgesics were also commonly reported. The reported use of antibiotics is clinically important because antibiotic use without prescription may contribute to antimicrobial resistance and unsafe medication practices.

Table 8. Ranking of the Three Most Frequently Reported Reasons, Conditions, and Medication Classes

Domain	Rank 1	Rank 2	Rank 3
Reasons	Prior experience with illness, 170 (64.6)	Availability of drugs, 158 (60.1)	Saving time, 150 (57.0)
Conditions	Headache, 196 (74.5)	Common cold, 189 (71.9)	Gastrointestinal disorders, 89 (33.8)
Medication classes	Common cold medicines, 177 (67.3)	Antibiotics, 172 (65.4)	Vitamins, 135 (51.3)

The highest-ranking responses across domains show that self-medication-related behavior was mainly associated with prior illness experience, easily available medicines, and time-saving motives. Headache and common cold were the dominant conditions, while common cold medicines and antibiotics were the dominant medication classes. This pattern suggests that students primarily used self-medication for common symptoms, but the high ranking of antibiotics indicates an important public health concern.

The study included 263 pharmacy students, of whom 165 reported practicing self-medication, giving a prevalence of 62.7%. Physicians were the leading source of medication information. Prior experience with illness, drug availability, and saving time were the most common reasons related to self-medication. Headache and common cold were the most frequently reported conditions, while common cold medicines and antibiotics were the most frequently reported medication classes. None of the assessed socio-demographic characteristics showed a statistically significant association with self-medication practice.

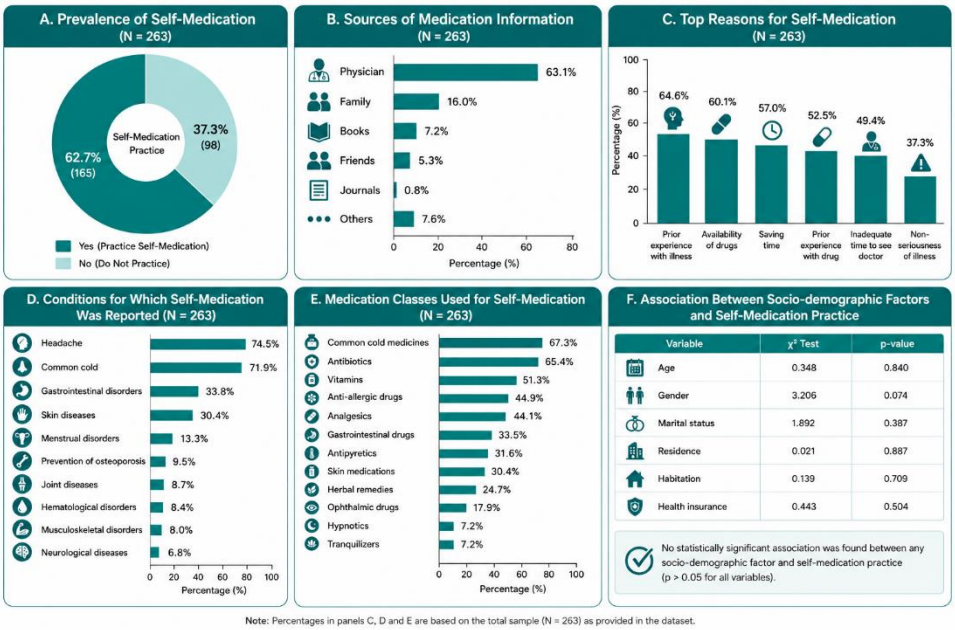

Figure 1. Summary of self-medication practices among pharmacy students (N = 263): (A) prevalence of self-medication (62.7%); (B) sources of medication information, with physicians being the most frequently reported source (63.1%); (C) top reasons for self-medication, led by prior experience with illness (64.6%) and availability of drugs (60.1%); (D) conditions for which self-medication was reported, with headache (74.5%) and common cold (71.9%) being the most common; (E) medication classes used, dominated by common cold medicines (67.3%) and antibiotics (65.4%); and (F) association between socio-demographic factors and self-medication practice, showing no statistically significant association for any variable (p > 0.05 for all). Percentages in panels C, D, and E are based on the total sample (N = 263) as provided in the dataset.

DISCUSSION

The present study assessed the prevalence, patterns, reasons, medication classes, sources of information, and socio-demographic associations of self-medication among pharmacy students at Shahida Islam Medical College, Lodhran. The overall prevalence of self-medication was 62.7%, indicating that self-medication is common in this student population. This finding is consistent with previous evidence showing that self-medication is highly prevalent among university students and health sciences students in different settings, including pharmacy students (21,22). The finding is also aligned with regional and international studies suggesting that students with medicine-related academic exposure may be more likely to manage perceived minor illnesses without formal consultation because of increased confidence in their knowledge of medicines, symptoms, and therapeutic choices (23,24).

The observed prevalence may reflect the combined influence of academic exposure, perceived familiarity with common symptoms, previous illness experience, and easy access to medicines. Pharmacy students receive formal instruction in pharmacology, therapeutics, dosage forms, indications, contraindications, and adverse effects. While this knowledge is essential for rational drug use, it may also create a perception that minor illnesses can be safely managed independently. In the present study, prior experience with illness, availability of drugs, and saving time were the most frequently reported reasons related to self-medication. These findings are consistent with previous studies in which students reported self-medication because of convenience, previous experience, perceived non-seriousness of illness, and avoidance of delays in medical consultation (25,26).

Headache and common cold were the most frequently reported conditions associated with self-medication-related behavior. These conditions are commonly perceived as minor, recurrent, and manageable without professional consultation. Similar patterns have been reported in other student populations where headache, fever, respiratory symptoms, gastrointestinal complaints, and allergies were common reasons for unsupervised medicine use (27,28). Although responsible use of appropriate over-the-counter medicines may be acceptable for minor ailments, the boundary between responsible self-care and unsafe self-medication becomes problematic when students use prescription-only medicines, incorrect dosages, incomplete courses, sedatives, tranquilizers, or multiple drugs without clinical evaluation.

Common cold medicines and antibiotics were the most frequently reported medication classes. The frequent use of common cold medicines may reflect the high occurrence of upper respiratory symptoms and the availability of symptomatic treatments. However, the high reported use of antibiotics is a major public health concern. Antibiotic self-medication is associated with inappropriate drug choice, incomplete treatment courses, incorrect dosing, adverse reactions, treatment failure, and antimicrobial resistance (29,30). This concern is especially important in settings where antibiotics may be obtained without strict prescription control. Since pharmacy students are future medication experts, their personal antibiotic-use behavior has implications for future dispensing practices, patient counseling, and antimicrobial stewardship.

Physicians were the most frequently reported source of medication information, followed by family members. This pattern suggests that students may rely on previous clinical advice or prior prescriptions when making later medication decisions. However, the reuse of previous prescriptions does not necessarily represent safe practice because symptoms may have different causes, disease severity may vary, and contraindications or interactions may be present. The role of family members as a source of medication information also indicates that informal social influence remains important even among students with pharmacy-related academic training. Similar findings have been reported in studies where students used a combination of professional, academic, family, peer, and online sources when selecting medicines (31,32).

No statistically significant association was found between self-medication practice and age, gender, marital status, residence, habitation, or health insurance status. This suggests that self-medication was broadly distributed across the pharmacy student sample rather than concentrated in a specific socio-demographic subgroup. Gender showed the lowest p-value among the assessed variables but did not reach statistical significance. These findings should be interpreted cautiously because the study was conducted at a single institution, used convenience sampling, and relied on bivariate analysis. Multivariable analysis may be needed in future studies to determine whether academic year, knowledge level, access to medicines, prior prescription history, or attitudes toward drug safety independently predict self-medication behavior.

The findings have practical implications for pharmacy education and public health. Pharmacy students should receive structured training on responsible self-care, prescription-only medicine regulation, antibiotic stewardship, adverse drug reactions, drug interactions, and pharmacovigilance. Educational interventions should not be limited to selected demographic groups because the practice was common across the sample and was not significantly associated with the measured socio-demographic variables. Instead, institution-wide interventions, case-based teaching, counseling simulations, and stewardship workshops may be more appropriate. At the regulatory level, stronger enforcement of prescription-only medicine dispensing, particularly antibiotics, is essential to reduce inappropriate access and promote safer medication practices.

This study has several limitations. First, the cross-sectional design limits causal interpretation and only permits assessment of prevalence and associations at one point in time. Second, convenience sampling may have introduced selection bias and may limit generalizability to pharmacy students in other institutions or regions. Third, the study was conducted in a single institution, which further limits external

validity. Fourth, self-reported data may be affected by recall bias and social desirability bias. Fifth, the analysis was limited to descriptive statistics and bivariate associations; therefore, independent predictors of self-medication could not be identified. Finally, reasons, conditions, and medication classes were reported using the total sample denominator as provided in the dataset. Future studies should clearly distinguish responses among all participants from responses among only those who practiced self-medication and should use validated questionnaires, probability sampling, multicenter recruitment, and multivariable statistical models.

CONCLUSION

Self-medication was common among pharmacy students at Shahida Islam Medical College, Lodhran, with 62.7% of participants reporting this practice. The most frequently reported conditions were headache and common cold, while common cold medicines and antibiotics were the most frequently reported medication classes. Prior experience with illness, drug availability, and saving time were the leading reasons related to self-medication. No statistically significant association was observed between self-medication practice and age, gender, marital status, residence, habitation, or health insurance status. The high reported use of antibiotics highlights an important public health concern and supports the need for targeted educational interventions, antimicrobial stewardship training, responsible self-care education, and stronger enforcement of prescription-only medicine regulations among pharmacy students.

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