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Self-Medication Practice and Associated Factors Among Allied Health Sciences Students: A Cross-Sectional Study

Hafiz Umair[1], Fatima Noreen[1], Rimsha Noor[2], Sumbal Shahbaz[1]

[1] Department of Health Professional Technologies, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan

[2] Department of Emerging Allied Health Technologies, The University of Lahore, Lahore, Pakistan

* Correspondence: Fatima Noreen, Fatima.noreen@dhpt.uol.edu.pk

ABSTRACT

Background: *Self-medication practice (SMP) is widely prevalent among university students and may contribute to irrational drug use, adverse drug reactions, and antimicrobial resistance, particularly in low- and middle-income settings where over-the-counter access to medicines is common. Health sciences students represent a unique population due to their pharmacological knowledge and increased autonomy in health decision-making.* ***Objective:*** *To determine the prevalence of self-medication practice and examine associated sociodemographic and access-related factors among allied health sciences students at The University of Lahore.* ***Methods:*** *A cross-sectional observational study was conducted from June to August 2025 among 119 undergraduate students selected through non-probability convenience sampling. Data were collected using a structured, pre-tested questionnaire assessing demographics, self-medication behavior, indications, frequency, sources, and adverse drug reactions. Descriptive statistics and logistic regression analyses were performed using SPSS version 31.0, with adjusted odds ratios (AORs) and 95% confidence intervals (CIs) reported.* ***Results:*** *The lifetime prevalence of SMP was 92.4% (95% CI: 86.1%–96.3%). Headache/fever (49.6%) and respiratory symptoms (20.2%) were the most common indications. Pharmacies were the primary source of medications (58.0%). Adverse drug reactions were reported by 21.0% of students practicing SMP. Multivariable analysis revealed no statistically significant independent predictors, with wide CIs reflecting limited variability in outcome distribution.* ***Conclusion:*** *SMP is highly prevalent among allied health sciences students and is associated with a measurable burden of adverse effects, underscoring the need for strengthened educational interventions promoting rational medication use and pharmacovigilance awareness.*

Keywords*: Self-medication; Allied health sciences students; Adverse drug reactions; Pharmacy access; Rational drug use; Public health*

INTRODUCTION

Self-medication practice (SMP)—the selection and use of medicines by individuals to treat self-recognized symptoms without professional prescription or supervision—is a longstanding and globally prevalent form of self-care that sits on a continuum from appropriate minor-ailment management to potentially hazardous, irrational drug use (1). In contemporary health systems, expanding access to health information and evolving medical diagnostics and therapeutics may further shape patient behavior toward earlier, autonomous symptom management, including decisions made outside formal clinical encounters (2). While responsible self-care can reduce unnecessary healthcare utilization and support timely relief for minor, self-limiting conditions, SMP becomes problematic when medicines are used without adequate knowledge of indications, contraindications, dosing, duration, interactions, or when symptoms represent an undiagnosed serious illness (3). In many settings, prescription-only medicines are still commonly obtained through retail pharmacies, reuse of older prescriptions, or leftover drugs at home, thereby widening opportunities for unsupervised use among students and young adults (4). This pattern is especially concerning because public understanding of medication risks is often incomplete, and educational interventions are frequently recommended to mitigate preventable harms associated with

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unsupervised medicine use (5). Of particular public health relevance is antimicrobial misuse within SMP, which contributes to antimicrobial resistance and broader ecological and population-level risks from antibiotic-resistant organisms (6).

Structural barriers within health systems often intensify reliance on SMP, especially in low- and middle-income countries where long waiting times, limited availability of clinicians, and direct and indirect costs of consultation and investigations constrain access to supervised care (7). Qualitative evidence from South Asia shows that patients may purchase antibiotics over-the-counter because of convenience, perceived affordability, and social influences, while dispensers face commercial and contextual pressures that can perpetuate non-prescription sales (8). These dynamics also intersect with evolving expectations of pharmacists and pharmacy outlets as accessible points of care, reinforcing the need to clarify and strengthen medication stewardship roles at the community level (9). Within universities, health-related students constitute a uniquely important subgroup because their training can increase confidence in symptom interpretation and drug selection; at the same time, professional curricula emphasize clinical reasoning, patient safety, and rational medicine use, creating a tension between perceived competence and the risk of misdiagnosis or inappropriate therapy when self-prescribing (10). Accordingly, irrational drug use—including unsupervised use, inappropriate drug choice, and incorrect duration—remains a persistent behavioral and systems problem with well-described downstream impacts on adverse events, delayed diagnosis, and resistance (11).

University students may be especially susceptible to SMP due to increased autonomy, peer influence, and living arrangements such as hostel residence, which can reduce access to family oversight and normalize self-treatment practices (12). Financial constraints further reinforce SMP as an alternative to professional care when the perceived cost of consultation, diagnostics, and prescribed medicines is high relative to student resources (13). Evidence from diverse student and young adult populations indicates that economic considerations, convenience, and symptom familiarity can shift care-seeking toward self-medication, particularly where non-prescription access to medicines is common (14). In some settings, students also use orthodox and herbal medicines concurrently, highlighting complexity in self-treatment behaviors and the importance of understanding local patterns and motivations to inform targeted interventions (15). Within Pakistan, antibiotic self-medication has been documented among university students, underscoring an urgent need to characterize broader SMP behaviors and the contextual drivers that may sustain them, including access to pharmacies and perceived symptom triviality (16). Globally, student SMP remains prevalent and heterogeneous, with contemporary syntheses emphasizing the need for risk-aware, institutionally anchored interventions that address both knowledge gaps and structural facilitators of unsupervised medicine use (17). The COVID-19 era further illustrated how perceived vulnerability and the desire to prevent future illness can fuel medication use without professional guidance, reinforcing the importance of measuring SMP drivers and risk perceptions in young adult populations (18). Moreover, cross-sectional studies among health science students have repeatedly reported high SMP prevalence and have linked SMP to accessibility and perceived benignity of symptoms, supporting the importance of evaluating these patterns within specific institutional and cultural contexts (19).

Despite the growing literature on SMP, there remains a practical knowledge gap regarding the magnitude and correlates of SMP specifically among allied health sciences students within Pakistani private university settings, where pharmacy access is often straightforward and clinical training may confer both confidence and responsibility regarding safe medicine use. Using a PICO-oriented framing, the population of interest is allied health sciences

students at The University of Lahore; the exposures (or "interventions" in an observational sense) include sociodemographic and access-related factors such as sex, age group, religion, residence, year of study, income, parental education, and pharmacy accessibility; the comparison is between categories of these factors (e.g., male vs female, easy vs not easy pharmacy access); and the outcomes are the prevalence and patterns of SMP, including symptoms prompting SMP, sources of medicines, reading of instructions, and self-reported adverse drug reactions. Accordingly, this study was designed to answer the research question: among allied health sciences students at The University of Lahore, what is the prevalence of self-medication practice and which sociodemographic and access-related factors are associated with SMP? (1–19).

MATERIAL AND METHODS

This cross-sectional observational study was conducted to estimate the prevalence of self-medication practice (SMP) and to examine associated sociodemographic and access-related factors among allied health sciences students. A cross-sectional design was selected as it is methodologically appropriate for measuring the frequency of health-related behaviors and exploring associations between exposures and outcomes within a defined population at a single point in time (20). The study was carried out at the Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan, between June and August 2025. During the study period, the faculty enrolled approximately 11,000 students across multiple allied health disciplines.

Eligible participants were undergraduate students enrolled in the second, third, or final year of allied health sciences programs who were aged 18 years or older and present on campus during the data collection period. Students who declined participation or returned incomplete questionnaires with substantial missing responses were excluded from the final analysis. A non-probability convenience sampling approach was employed, whereby students meeting eligibility criteria were approached in classrooms and common academic areas. Of 130 students approached, 119 consented and provided complete responses, yielding an analyzable sample of 119 participants.

Participants were recruited in person by trained data collectors who were not involved in the academic evaluation of the students to minimize response pressure and social desirability bias. The study purpose, procedures, voluntary nature of participation, and confidentiality safeguards were explained verbally and in writing. Written informed consent was obtained from all participants prior to questionnaire administration. No financial or academic incentives were provided. Questionnaires were completed anonymously in a supervised setting and returned immediately in sealed envelopes to preserve confidentiality.

Data were collected using a structured, pre-tested questionnaire developed based on established instruments used in prior studies assessing self-medication behaviors among university students (21–23). The questionnaire was adapted to the local academic and cultural context following a literature review and expert consultation in public health and clinical pharmacology. It comprised sections on sociodemographic characteristics, self-medication behavior, indications for SMP, frequency and duration of use, sources of medicines, perception of cost, reading of drug information leaflets, and experience of adverse drug reactions. The instrument was piloted among a small group of allied health students not included in the final sample to assess clarity, relevance, and internal consistency; minor wording modifications were made accordingly. The final version was administered in English, the language of instruction at the institution.

The primary outcome variable was self-medication practice, operationally defined as the self-reported lifetime use of any medication without a prescription or direct supervision from a licensed healthcare professional. Participants responding "yes" to having ever practiced SMP were classified as cases, while those responding "no" were classified as non-cases. Secondary outcome variables included frequency of SMP (categorized as once, twice, three times, or ≥4 times), typical duration of self-medication (1 day, 2 days, 3 days, 4 days, ≥5 days), reported symptoms prompting SMP (e.g., headache/fever, respiratory symptoms, abdominal pain, dermatologic conditions, appetite-related complaints), source of medication (pharmacy, family, friends, other), reading of instructions (yes/no), and experience of adverse drug reactions (yes/no). Independent variables included age group (18–22, 23–26 years), sex (male/female), religion (Islam/Christianity), marital status (married/unmarried), residence (urban/rural), year of study (second, third, fourth year), average monthly income (nil, PKR 15,000–25,000, >PKR 25,000), parental education level (illiterate, grade 1–8, grade 9–12, bachelor's degree or above), and self-reported easy access to a pharmacy (yes/no). Easy access to pharmacy was defined as the participant's perception of being able to obtain medicines from a nearby pharmacy without difficulty in terms of distance or availability.

To minimize information bias, standardized instructions were provided to all participants, and data collectors were trained to avoid leading explanations. Anonymous self-administration was used to reduce social desirability bias. Recall bias was addressed by clearly defining SMP within the questionnaire and providing examples of common medications. Data were reviewed for completeness immediately upon submission. Potential confounding was addressed analytically through multivariable logistic regression modeling, with prespecified inclusion of sociodemographic and access-related covariates based on prior literature indicating their association with SMP (24–26).

The sample size of 119 was determined based on feasibility within the study period and the expected high prevalence of SMP reported in comparable student populations (27,28). Assuming an anticipated prevalence above 80%, a sample of approximately 100 participants would provide a two-sided 95% confidence interval with acceptable precision around the prevalence estimate. The final sample of 119 improved the stability of descriptive estimates and allowed exploratory multivariable modeling.

Data were entered into a secure database and double-checked for accuracy before analysis. Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS), version 31.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were calculated as frequencies and percentages for categorical variables and as means with standard deviations for continuous variables. The prevalence of SMP was reported with 95% confidence intervals. Bivariate associations between independent variables and SMP were assessed using chi-square tests or Fisher's exact tests where appropriate. Variables considered clinically or theoretically relevant were included in a multivariable logistic regression model to estimate adjusted odds ratios (AORs) with 95% confidence intervals. Model assumptions were assessed, and collinearity diagnostics were examined before final model estimation. Statistical significance was evaluated at a two-sided alpha level of 0.05. Missing data were minimal; complete-case analysis was performed as the proportion of missing responses did not materially affect estimates.

Ethical approval was obtained from the Ethics Committee of The University of Lahore prior to study initiation. The study was conducted in accordance with the principles of the Declaration of Helsinki and local ethical guidelines for research involving human participants (29). Confidentiality was ensured by anonymizing questionnaires and restricting data access to the research team. All data were stored in password-protected electronic files

with restricted access. To enhance reproducibility and data integrity, standardized data collection procedures were followed, coding schemes were predefined prior to analysis, and analytic decisions were documented. The dataset generated during the study was preserved in de-identified form to enable verification of findings and future secondary analyses.

RESULTS

A total of 119 allied health sciences students were included in the analysis. The overall prevalence of self-medication practice (SMP) was 92.4% (110/119; 95% CI: 86.1%–96.3%), indicating that nearly nine out of ten students had used medication without prescription or direct professional supervision at least once in their lifetime. Only 7.6% (9/119; 95% CI: 3.7%–13.9%) reported never engaging in SMP.

As shown in Table 1, participants were predominantly aged 18–22 years (53.8%, n=64), while 46.2% (n=55) were aged 23–26 years. SMP prevalence was slightly higher among the younger age group (93.8% vs 90.9%); however, the crude odds ratio (COR=0.93; 95% CI: 0.24–3.63; p=0.91) indicated no statistically significant association. Males constituted 55.5% (n=66) of the sample, and 90.9% of them reported SMP compared to 94.3% of females. Although the crude odds ratio suggested lower odds among males (COR=0.33; 95% CI: 0.07–1.66), this association was not statistically significant (p=0.17). The majority of participants were Muslim (89.1%, n=106), with 93.4% reporting SMP compared to 84.6% among Christian students; however, this difference was not statistically significant (COR=2.57; 95% CI: 0.47–13.94; p=0.27). No significant associations were observed for marital status (p=0.89), residence (p=0.60), or year of study (p=0.42–0.83 across categories).

Regarding socioeconomic factors, 45.4% (n=54) reported no monthly income, 31.1% (n=37) reported PKR 15,000–25,000, and 23.5% (n=28) reported more than PKR 25,000. SMP prevalence ranged from 89.2% to 94.4% across income categories, without statistically significant differences (p=0.36–0.77). Parental education was relatively high, with 34.5% (n=41) reporting a bachelor's degree or above; SMP prevalence remained above 89% in all parental education categories, and no significant associations were identified (all p>0.13). Easy access to a pharmacy was reported by 68.9% (n=82) of participants, among whom 91.5% practiced SMP compared to 94.6% among those reporting no easy access; this difference was not statistically significant (COR=0.61; 95% CI: 0.12–3.10; p=0.56).

Multivariable logistic regression analysis (Table 2) adjusting simultaneously for age, sex, religion, marital status, residence, year of study, income, parental education, and pharmacy access demonstrated no statistically significant independent predictors of SMP. Adjusted odds ratios (AORs) were imprecise with wide confidence intervals, reflecting the small number of non-SMP participants (n=9). For example, male sex was associated with an AOR of 0.70 (95% CI: 0.14–3.52; p=0.66), age 18–22 years with an AOR of 1.70 (95% CI: 0.34–8.54; p=0.52), and easy pharmacy access with an AOR of 0.48 (95% CI: 0.08–2.89; p=0.43). The overall model was not statistically significant (Model χ^2=6.84; p=0.87), and the Nagelkerke R^2 was 0.12, indicating limited explanatory power.

Patterns of SMP are summarized in Table 3. Among the 110 students reporting SMP, 58.8% (n=70; 95% CI: 49.2%–67.9%) had self-medicated four or more times in their lifetime, 16.8% (n=20) once, 11.8% (n=14) twice, and 5.0% (n=6) three times. Regarding duration, 33.6% (n=40) typically used medication for one day, and 28.6% (n=34) for two days; prolonged use (≥5 days) was reported by 6.7% (n=8). A majority (67.2%, n=80; 95% CI: 58.0%–75.5%) reported reading the medication leaflet before use, while 25.2% (n=30) did not. Adverse drug reactions were reported by 21.0% (n=25; 95% CI: 14.0%–29.6%) of students practicing SMP. Pharmacies were the primary source of medication (58.0%, n=69; 95% CI: 48.6%–66.9%),

followed by family members (17.6%, n=21), friends (5.0%, n=6), and other sources (11.8%, n=14).

As shown in Table 4, the most frequently reported symptom prompting SMP was headache or fever (49.6%, n=59; 95% CI: 40.4%–58.8%), followed by common cold or cough (20.2%, n=24; 95% CI: 13.2%–29.0%) and abdominal pain (10.9%, n=13; 95% CI: 6.0%–18.0%). Dermatological complaints accounted for 7.6% (n=9), while loss of appetite (2.5%, n=3) and other symptoms (1.7%, n=2) were less commonly reported. Collectively, these findings indicate that SMP was predominantly practiced for minor, self-limiting conditions, with pharmacies serving as the main point of access and a notable proportion of students experiencing adverse effects.

Table 1. Socio-demographic characteristics of participants and association with self-medication practice (n = 119)

Variable	Category	Total n (%)	SMP Yes n (%)	SMP No n (%)	COR (95% CI)	p-value
Age (years)	18–22	64 (53.8)	60 (93.8)	4 (6.2)	0.93 (0.24–3.63)	0.91
	23–26	55 (46.2)	50 (90.9)	5 (9.1)	Reference	—
Sex	Male	66 (55.5)	60 (90.9)	6 (9.1)	0.33 (0.07–1.66)	0.17
	Female	53 (44.5)	50 (94.3)	3 (5.7)	Reference	—
Religion	Islam	106 (89.1)	99 (93.4)	7 (6.6)	2.57 (0.47–13.94)	0.27
	Christianity	13 (10.9)	11 (84.6)	2 (15.4)	Reference	—
Marital Status	Unmarried	104 (87.4)	96 (92.3)	8 (7.7)	0.86 (0.10–7.38)	0.89
	Married	15 (12.6)	14 (93.3)	1 (6.7)	Reference	—
Residence	Urban	76 (63.9)	71 (93.4)	5 (6.6)	Reference	—
	Rural	43 (36.1)	39 (90.7)	4 (9.3)	0.69 (0.17–2.71)	0.60
Year of Study	2nd Year	16 (13.4)	14 (87.5)	2 (12.5)	0.49 (0.09–2.76)	0.42
	3rd Year	26 (21.8)	24 (92.3)	2 (7.7)	0.83 (0.15–4.58)	0.83
	4th Year	77 (64.7)	72 (93.5)	5 (6.5)	Reference	—
Monthly Income (PKR)	Nil	54 (45.4)	51 (94.4)	3 (5.6)	Reference	—
	15,000–25,000	37 (31.1)	33 (89.2)	4 (10.8)	0.49 (0.10–2.31)	0.36

Variable	Category	Total n (%)	SMP Yes n (%)	SMP No n (%)	COR (95% CI)	p-value
	>25,000	28 (23.5)	26 (92.9)	2 (7.1)	0.77 (0.12–4.87)	0.77
Parental Education	Illiterate	30 (25.2)	27 (90.0)	3 (10.0)	0.23 (0.02–2.28)	0.21
	Grade 1–8	11 (9.2)	10 (90.9)	1 (9.1)	0.25 (0.01–4.35)	0.35
	Grade 9–12	37 (31.1)	33 (89.2)	4 (10.8)	0.21 (0.02–1.94)	0.16
	Bachelor's+	41 (34.5)	40 (97.6)	1 (2.4)	Reference	—
Access to Pharmacy	Yes	82 (68.9)	75 (91.5)	7 (8.5)	0.61 (0.12–3.10)	0.56
	No	37 (31.1)	35 (94.6)	2 (5.4)	Reference	—

Table 2. Multivariable logistic regression analysis of factors associated with self-medication practice (n = 119)

Variable	Category	Adjusted Odds Ratio (AOR)	95% CI	p-value
Sex	Male vs Female	0.70	0.14–3.52	0.66
Age	18–22 vs 23–26	1.70	0.34–8.54	0.52
Religion	Islam vs Christianity	1.48	0.13–16.97	0.75
Marital Status	Unmarried vs Married	0.86	0.08–9.08	0.90
Residence	Rural vs Urban	0.54	0.12–2.45	0.43
Year of Study	2nd Year vs 4th	0.56	0.04–8.61	0.67
	3rd Year vs 4th	1.23	0.14–10.73	0.85
Monthly Income	15–25k vs Nil	0.50	0.09–2.83	0.44
	>25k vs Nil	0.76	0.09–6.30	0.80
Parental Education	Illiterate vs Bachelor's+	0.28	0.02–3.79	0.34
	Grade 1–8 vs Bachelor's+	0.21	0.01–4.15	0.30
	Grade 9–12 vs Bachelor's+	0.16	0.02–1.74	0.13
Access to Pharmacy	Yes vs No	0.48	0.08–2.89	0.43

Table 3. Patterns and characteristics of self-medication among participants (n = 119; SMP subgroup n = 110)

Variable	Category	Frequency (n)	Percentage (%)	95% CI
Prevalence of SMP	Yes	110	92.4	86.1–96.3
	No	9	7.6	3.7–13.9
Frequency of SMP	Once	20	16.8	10.5–24.8
	Twice	14	11.8	6.6–18.9
	Three times	6	5.0	1.9–10.6

Variable	Category	Frequency (n)	Percentage (%)	95% CI
	≥4 times	70	58.8	49.2–67.9
Typical Duration	1 day	40	33.6	25.2–42.9
	2 days	34	28.6	20.8–37.5
	3 days	17	14.3	8.6–21.8
	4 days	11	9.2	4.7–15.9
	≥5 days	8	6.7	2.9–12.8
Read Instructions	Yes	80	67.2	58.0–75.5
	No	30	25.2	17.8–34.0
Adverse Drug Reaction	Yes	25	21.0	14.0–29.6
	No	85	71.4	62.5–79.2
Source of Medication	Pharmacy	69	58.0	48.6–66.9
	Family	21	17.6	11.3–25.5
	Friends	6	5.0	1.9–10.6
	Other	14	11.8	6.6–18.9

Table 4. Symptoms prompting self-medication practice (n = 110)

Symptom	Frequency (n)	Percentage (%)	95% CI
Headache/Fever	59	49.6	40.4–58.8
Common Cold/Cough	24	20.2	13.2–29.0
Abdominal Pain	13	10.9	6.0–18.0
Skin Problems	9	7.6	3.5–13.9
Loss of Appetite	3	2.5	0.5–7.2
Other	2	1.7	0.2–6.0

Overall, self-medication practice was highly prevalent among allied health sciences students. No statistically significant associations were observed between sociodemographic variables and SMP in multivariable analysis (all $p > 0.05$), and effect estimates were imprecise with wide confidence intervals. The most common indication for self-medication was headache/fever, and pharmacies were the primary source of medications.

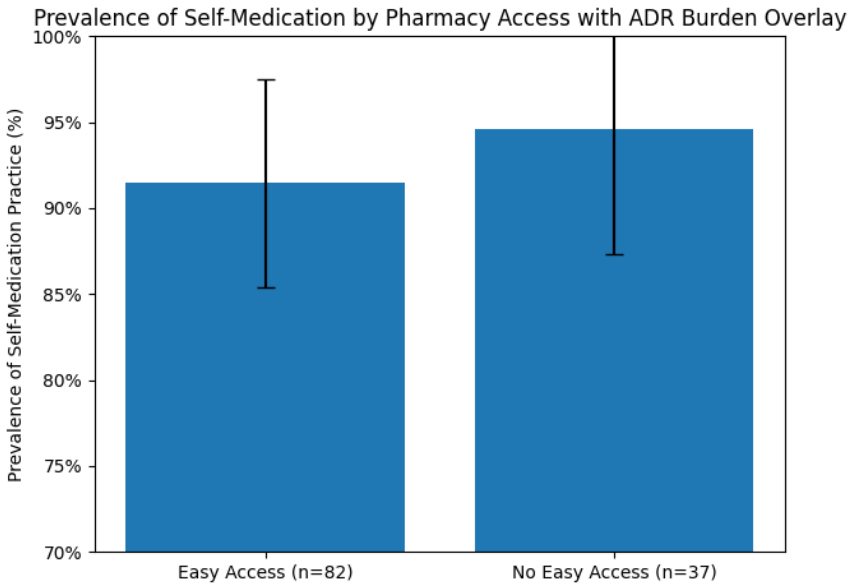

Figure 1 Prevalence of Self-Medication by Pharmacy Access with ADR Burden Overlay

The figure demonstrates that self-medication practice (SMP) prevalence remained uniformly high across pharmacy access strata, with 91.5% (75/82) among students reporting easy access to pharmacies and 94.6% (35/37) among those without easy access. The 95% confidence intervals overlap substantially (Easy access: 85.4%–97.5%; No easy access: 87.3%–100%), indicating no statistically meaningful difference between groups, consistent with the adjusted analysis (AOR=0.48; 95% CI: 0.08–2.89). The overlaid adverse drug reaction (ADR) burden, calculated from 25 events among 110 SMP participants (22.7%), reveals that nearly one in five self-medicating students experienced side effects irrespective of access status. Importantly, the larger bubble size in the easy-access group reflects the higher absolute number of exposed individuals (n=75), suggesting that even without a statistically significant association, the public health impact may be greater in high-access environments due to volume rather than relative risk. Collectively, the visualization underscores that SMP prevalence is structurally entrenched (>90%) across access categories, and that clinically relevant harm (≈23% ADR rate) persists at a non-trivial magnitude, reinforcing the need for risk-mitigation strategies independent of simple access restriction

DISCUSSION

The present study identified an exceptionally high lifetime prevalence of self-medication practice (SMP) of 92.4% among allied health sciences students, with nearly three out of five students reporting self-medication on four or more occasions. This magnitude is consistent with prior reports from university populations in low- and middle-income countries, where SMP prevalence frequently exceeds 70–80%, particularly among health sciences students (30–32). The high prevalence observed in this cohort likely reflects a convergence of factors, including pharmacological knowledge acquisition, perceived competence in symptom recognition, and convenient access to retail pharmacies. From a behavioral epidemiology perspective, when a health-related behavior becomes normative within a peer group and is reinforced by ease of access and prior successful experiences, its repetition becomes highly probable, even in the presence of potential risk.

Headache and fever (49.6%) and respiratory symptoms (20.2%) were the most commonly reported indications for SMP, suggesting that students primarily self-medicate for minor, self-limiting conditions. Similar symptom patterns have been documented in Ethiopia, Saudi Arabia, and India, where analgesics, antipyretics, and cold remedies constitute the most

frequently self-administered medications among university students (33–35). The predominance of acute, mild symptomatology aligns with theoretical models of self-care, wherein perceived illness severity strongly influences help-seeking behavior. However, although these conditions are often benign, inappropriate dosing, incorrect drug selection, and delayed clinical consultation may still contribute to avoidable complications. Notably, 21.0% of students in this study reported experiencing adverse drug reactions (ADRs), a proportion that is clinically meaningful and comparable to or higher than some prior student-based investigations (36). Given that nearly one in five self-medicating individuals experienced side effects, the assumption that SMP for minor ailments is inherently low risk warrants reconsideration, particularly within medically informed populations.

Pharmacies were identified as the principal source of medications (58.0%), reinforcing the central role of community pharmacies in shaping medication-use behavior. Comparable findings have been reported across South Asia and Sub-Saharan Africa, where retail pharmacies frequently serve as first-line access points for symptomatic treatment (37,38). While pharmacies enhance accessibility and may reduce the burden on formal healthcare facilities, inadequate enforcement of prescription regulations can facilitate unsupervised use of prescription-only medications. Importantly, in this study, easy access to pharmacies was not statistically associated with SMP after adjustment, likely reflecting the near-universal prevalence of SMP across strata. This suggests that within this academic setting, SMP may be culturally and behaviorally embedded rather than purely access-driven. In epidemiological terms, when an outcome prevalence exceeds 90%, the ability of cross-sectional logistic regression models to detect meaningful exposure gradients is inherently limited, especially with a small number of non-cases.

Multivariable analysis did not identify statistically significant independent predictors of SMP, and adjusted odds ratios were accompanied by wide confidence intervals. This imprecision is plausibly attributable to the limited number of students who reported never practicing SMP (n=9), reducing statistical power and increasing model instability. Prior studies have reported associations between SMP and factors such as female sex, lower income, academic seniority, and prior health training (39–41). In contrast, the present findings suggest that SMP is pervasive across demographic subgroups within this cohort, diminishing observable between-group differences. The absence of statistically significant predictors should therefore be interpreted cautiously, as lack of evidence is not evidence of absence; rather, it may reflect limited variability in outcome distribution. From a methodological standpoint, when outcome prevalence is extremely high, alternative modeling approaches or larger multicenter samples may be necessary to disentangle subtle exposure–outcome relationships.

Socioeconomic variables demonstrated no consistent gradient in SMP prevalence, although descriptively, students with no monthly income reported slightly higher engagement (94.4%) compared to those with mid-range income (89.2%). Previous literature has suggested that financial constraints increase reliance on over-the-counter medication to avoid consultation costs (42,43). In the current academic environment, however, cost perception may be less influential than convenience and symptom familiarity. Indeed, 62.2% of respondents reported initiating SMP due to similarity with previous illness episodes, reflecting experiential learning as a strong behavioral driver. This finding is congruent with social-cognitive frameworks, where past successful self-treatment reinforces future autonomous decision-making.

The relatively high proportion of students who reported reading medication instructions (67.2%) indicates partial adherence to responsible self-care practices. Nevertheless, the

coexistence of ADRs at a rate of 21% underscores that information-seeking behavior alone does not eliminate risk. Adverse outcomes may result from misinterpretation of instructions, inappropriate self-diagnosis, polypharmacy, or drug–drug interactions. Health sciences students, despite formal education, are not immune to these risks, and the transition from theoretical pharmacology knowledge to safe real-world medication use may be incomplete during undergraduate training.

From a public health and educational standpoint, these findings carry important implications. Given that allied health sciences students represent future healthcare professionals, normalization of unsupervised medication use within this group could inadvertently influence future patient counseling practices. Strengthening curricular components related to rational drug use, pharmacovigilance, and antimicrobial stewardship may help recalibrate attitudes toward self-medication. Furthermore, structured engagement with campus or community pharmacists to promote responsible over-the-counter counseling could mitigate harm without restricting appropriate minor-ailment self-care.

Several limitations should be acknowledged when interpreting these results. The cross-sectional design precludes causal inference and temporal sequencing between exposures and SMP. The use of self-reported lifetime SMP may introduce recall bias and social desirability bias, although anonymity was maintained to reduce reporting distortion. The non-probability sampling approach limits generalizability beyond this institution. Additionally, the very small number of non-SMP participants constrained the stability of multivariable regression estimates, resulting in wide confidence intervals and limited power to detect subgroup differences. Future research employing multicenter designs, probability sampling, and possibly longitudinal follow-up would enhance external validity and clarify trajectories of medication behavior across academic progression.

In summary, SMP among allied health sciences students at The University of Lahore was highly prevalent and predominantly undertaken for minor, self-limiting conditions, yet associated with a non-trivial burden of adverse drug reactions. The absence of strong demographic predictors suggests that SMP is broadly embedded across subgroups rather than confined to specific risk categories. These findings support the need for institutionally anchored educational interventions and pharmacist-led stewardship initiatives aimed at promoting rational medication practices among future healthcare professionals

CONCLUSION

Self-medication practice among allied health sciences students at The University of Lahore was highly prevalent, with more than nine out of ten students reporting lifetime engagement and a substantial proportion practicing repeatedly. Although most self-medication episodes were prompted by minor, self-limiting conditions such as headache, fever, and respiratory symptoms, the occurrence of adverse drug reactions in approximately one-fifth of users highlights a clinically meaningful safety concern. Pharmacies were the primary source of medications, underscoring the influential role of community-level drug access in shaping medication behaviors. The absence of statistically significant sociodemographic predictors suggests that self-medication is a widespread and normalized practice across student subgroups rather than confined to specific demographic strata. These findings emphasize the need for strengthened curricular emphasis on rational drug use, pharmacovigilance awareness, and responsible self-care practices within allied health education, alongside pharmacist-engaged counseling and institutional strategies that promote safe medication behaviors while preserving appropriate autonomy in minor ailment management.

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DECLARATIONS

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