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ASSOCIATION BETWEEN SELF-MEDICATION PRACTICES AND HEALTH IMPACTS AMONG ADULTS IN JAMSHORO

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Abstract

Objective: *The objective of this study was to assess the prevalence, patterns, and health impacts of self-medication among adults in Jamshoro District, and to examine their association with key socio-demographic factors, motivations, and awareness regarding antibiotic misuse.*

Methodology: *A community-based descriptive cross-sectional study was conducted from April to September 2025 among 151 adults in Union Council Mohro Jabal, Jamshoro District. Data were collected through structured face-to-face interviews and analyzed using SPSS version 26 with descriptive and Chi-square statistics.*

Results: *Out of 151 participants, the majority were female (70.9%) and young adults aged 18–25 years (59.6%). More than half (55%) had no formal education, and 57.6% were unemployed. The prevalence of self-medication was high, with painkillers, antibiotics, and cough syrups being the most frequently used drugs. Reported impacts included side effects such as gastrointestinal discomfort, delayed diagnosis, and the need for medical assistance. Chi-square analysis showed significant associations between self-medication practices and socio-demographic factors, including age, education, and awareness levels ($p < 0.05$).*

Conclusion: *Self-medication is highly prevalent among adults in Jamshoro and is strongly linked with low education, limited healthcare access, and lack of awareness. Public health interventions, community education, and stricter regulation of over-the-counter medicines are urgently needed to reduce their harmful impacts.*

INTRODUCTION

Self-medication (SM) is defined as the use of medicines by individuals to treat self-recognized symptoms or minor illnesses without consulting a healthcare professional, often relying on

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previously prescribed drugs or over-the-counter (OTC) products (1). Although responsible SM can provide quick relief and reduce the burden on healthcare facilities, its irrational use is associated with adverse drug reactions (ADRs), masking of serious illnesses, drug interactions, and antimicrobial resistance (AMR) (2). The World Health Organization (WHO) considers SM a component of self-care but highlights the dangers of misuse, particularly regarding antibiotics (3). Globally, SM is highly prevalent, with rates ranging from 35% to 80% (4). Self-medication (SM) is defined as the use of medicines by individuals to treat self-recognized symptoms or minor illnesses without consulting a healthcare professional, often relying on previously prescribed drugs or over-the-counter (OTC) products. Although responsible SM can provide quick relief and reduce the burden on healthcare facilities, its irrational use is associated with adverse drug reactions (ADRs), masking of serious illnesses, drug interactions, and antimicrobial resistance (AMR) (5). The World Health Organization (WHO) considers SM a component of self-care but highlights the dangers of misuse, particularly regarding antibiotics(6). Globally, SM is highly prevalent, with rates ranging from 35% to 80% (7). The practice is more common in low- and middle-income countries due to limited healthcare access, high consultation costs, and long waiting times(8). Analgesics, antipyretics, and antibiotics are the most frequently used medicines, often consumed without awareness of associated risks (9). Inappropriate antibiotic use through SM has been identified as a major driver of AMR, which increases disease severity, prolongs hospital stay, and elevates healthcare costs(10). In Pakistan, SM is reported at consistently high levels, ranging from 53% to over 80% across different groups(11). Factors contributing to this trend include poverty, weak drug regulations, and the easy availability of non-prescription medicines (12). Local studies reveal frequent misuse of analgesics and antibiotics, with delayed consultation leading to worsened disease outcomes and additional economic burden(13). Evidence from Sindh shows similar trends, with university students and the general population practicing SM at high rates, often influenced by peers, prior experiences, or affordability constraints(14). Jamshoro District represents a unique setting due to its combination of rural and urban populations, low literacy levels, poor health-seeking behavior, and socioeconomic limitations(15). Despite the presence of Liaquat University of Medical and Health Sciences (LUMHS), one of the largest tertiary care hospitals in Sindh, community-level data on SM in Jamshoro remain scarce. This study was therefore conducted to assess the prevalence, patterns, and impacts of self-medication among adults in Jamshoro District and to examine its association with socio-demographic factors and awareness of antibiotic misuse.

Material and Methods

A descriptive, community-based cross-sectional study was conducted from April to September 2025 in Union Council (UC) Mohro Jabal, Jamshoro District, Sindh, Pakistan. Mohro Jabal is a rural, non-administrative community with high illiteracy rates and socio-economic constraints. Although Jamshoro city hosts Liaquat University of Medical and Health Sciences (LUMHS), one of the largest tertiary care institutions in Sindh, residents of Mohro Jabal face barriers such as low awareness, poor health-seeking behaviors, and limited affordability, which encourage reliance on non-prescribed medicines. The study population included adult residents aged 18 years and above, both male and female, to ensure representation of the general community rather than hospital-based individuals. The sample size was calculated using a prevalence of 10% from a previous study (15) , applying the formula $n = t^2 \times p(1-p) / e^2$ at a 95% confidence interval. The minimum sample size of 138 was increased by 10% to account for potential non-response, yielding a final sample of 151 participants. Recruitment was carried out through household visits and community gatherings using a non-probability convenience sampling technique. Data were collected via structured, face-to-face interviews using a validated questionnaire adapted from previous published study (16).Data were coded and analyzed using SPSS version 26. Descriptive statistics summarized categorical variables as frequencies and percentages, and

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continuous variables, such as age, as the mean ± standard deviation. Inferential statistics were performed using the Chi-square test to assess associations between independent and dependent variables, with statistical significance set at $p < 0.05$. Ethical approval was obtained from the Ethical Review Committee of LUMHS (Ref. No. LUMHS/REC/-807). Written and verbal informed consent was secured from all participants in English, Urdu, and Sindhi. Confidentiality was maintained using anonymized identifiers and secure data storage. Participation was voluntary, with respondents informed of their right to withdraw at any stage without consequences. Prior permission for community entry was also obtained from the UC councilor to ensure local support.

Results:

Table 1: Demographic Characteristics of Respondents (n = 151)

Characteristic	Category	Frequency (n)	Percentage (%)
Age (years)	18–25	90	59.6
	26–35	26	17.2
	36–45	22	14.6
	46–60	9	6.0
	>60	4	2.6
Gender	Male	44	29.1
	Female	107	70.9
Education Level	No formal education	83	55.0
	Primary	29	19.2
	Secondary	36	23.8
	Graduate	3	2.0
Employment Status	Employed	4	2.6
	Self-employed	59	39.1
	Unemployed	87	57.6
	Retired	1	0.7

The majority of respondents were young adults aged 18–25 years (59.6%, n=90). Most participants were female (70.9%, n=107). A large proportion had no formal education (55.0%, n=83), and the majority were unemployed (57.6%, n=87), followed by self-employed individuals (39.1%, n=59). Only small proportions were employed, retired, or graduates.

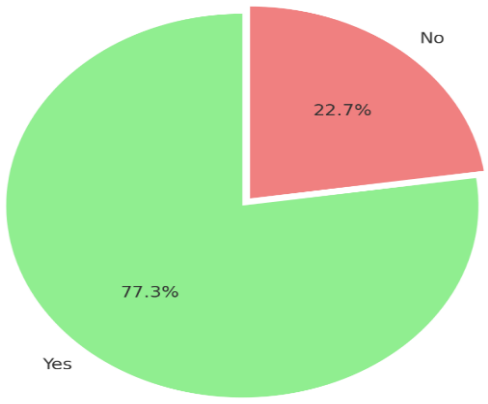

Figure 1: Have you ever used medication without prescription?

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The results show that a majority of respondents (77.3%) reported using medication without a prescription, while 22.7% stated that they had never engaged in self-medication.

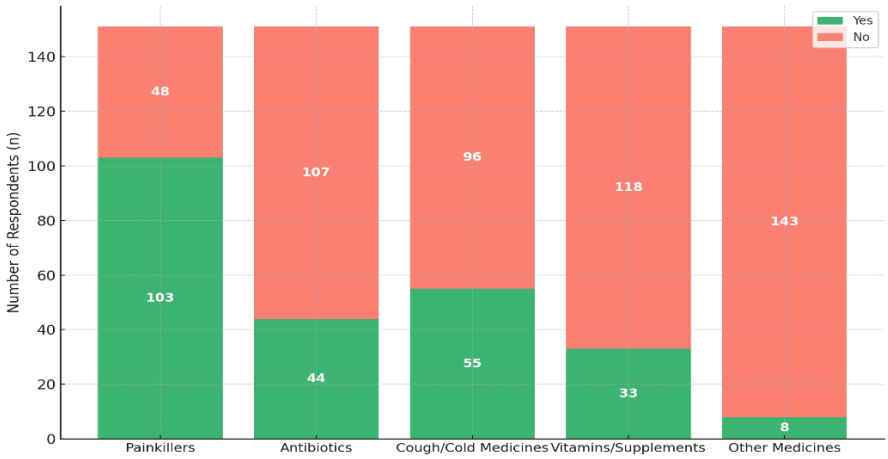
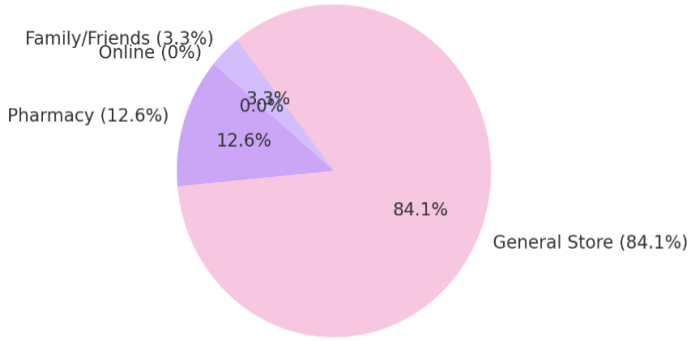
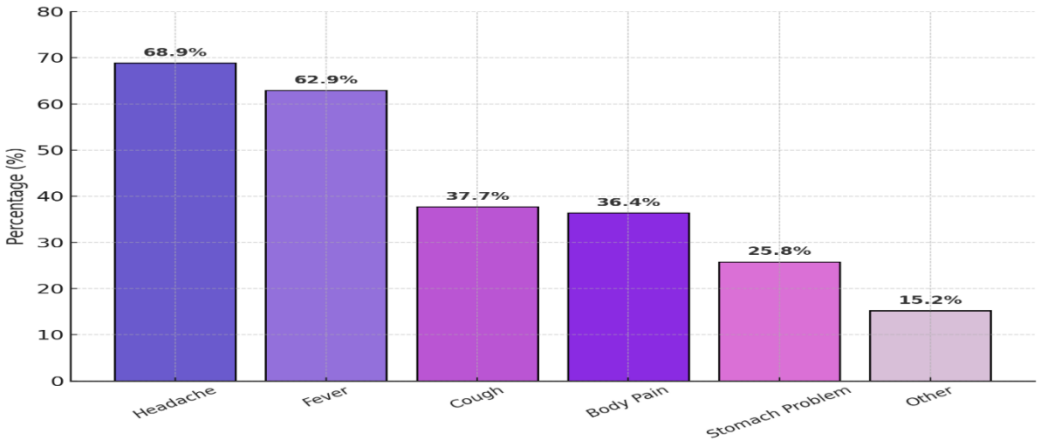


Figure 2: What types of medicine do you usually take without a prescription?



Fiqure 3: Where do you usually obtain non-prescription medicine?



Fiqure 4: Which illness have you self-medicated for in the past 6 months?

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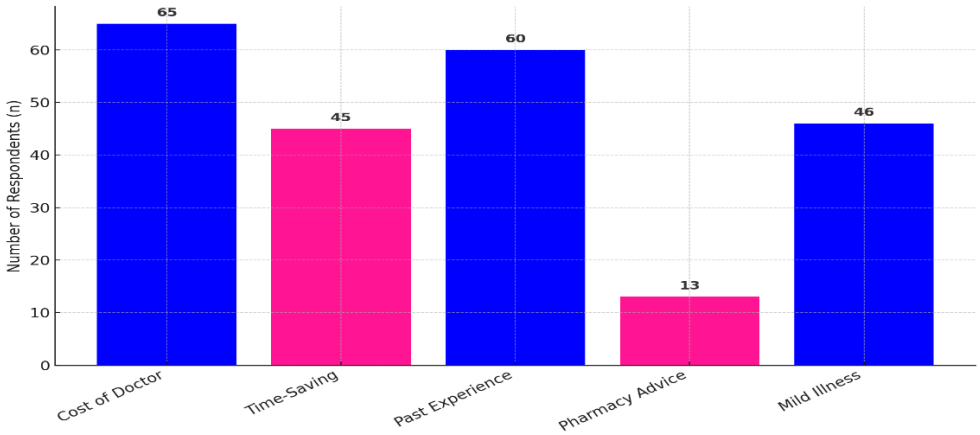

Figure 5: Why do you use medicine without prescription?

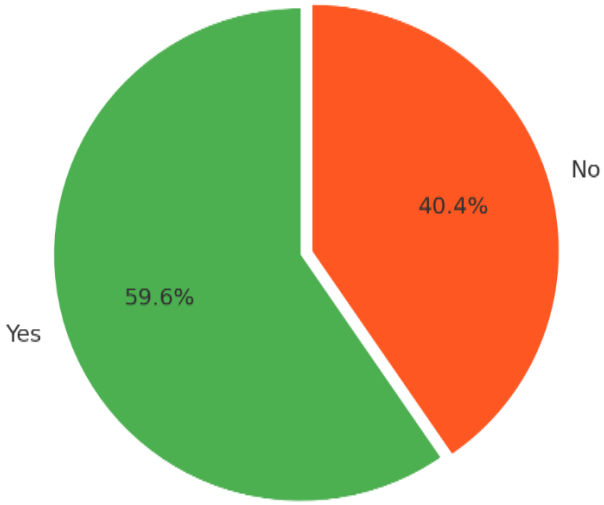

Figure 7: Have you ever found it difficult to consult a doctor when needed?

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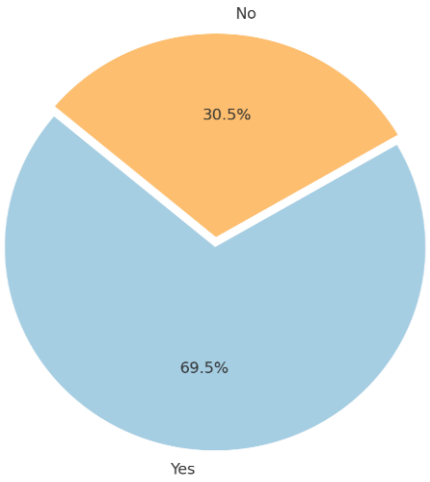

Figure 8: Do your family members also use non-prescription medicine?

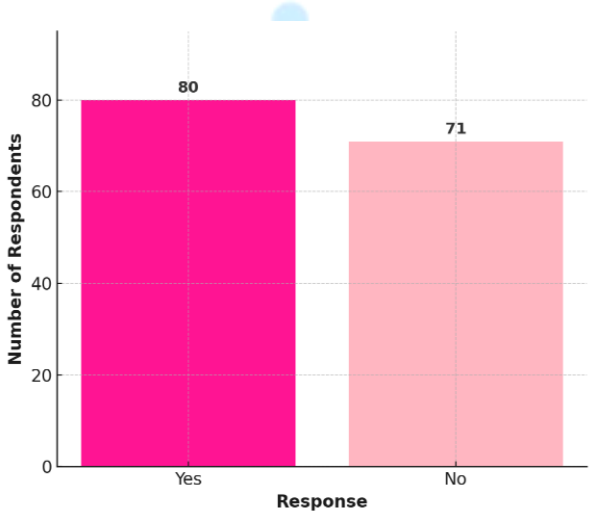

Figure 9: Have you ever experience side effect from non prescripyion medicine?

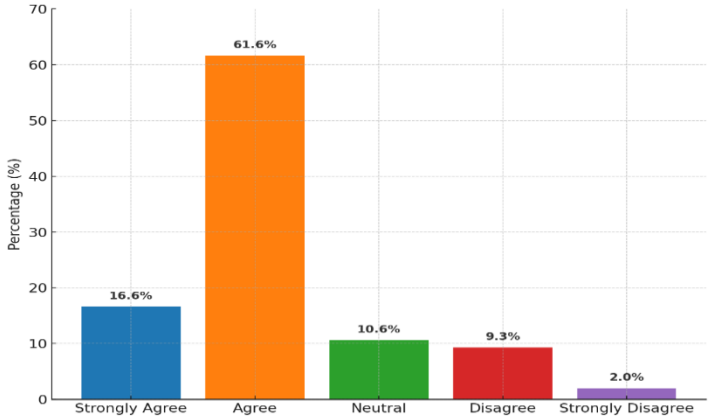

Figure 10: Do you believe using non prescription medication can be harmful?

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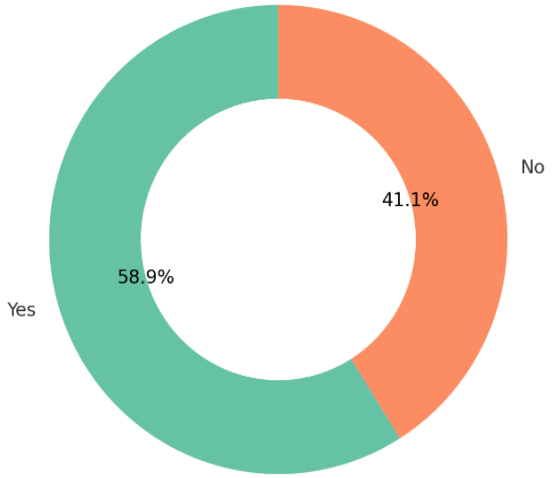

Figure 11: Are you aware of the risk of using medicine without a prescription?

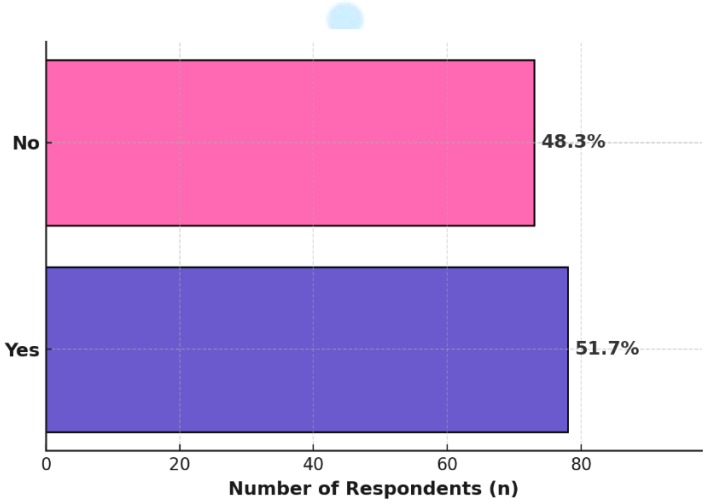

Figure 12: Do you know that antibiotic misuse can lead to resistance?

Table 2: Association Between Age and Self-Medication Variables(n = 151)

Variables Compared	Association	p-value	Significance
Age × Self-Medication Practice (Q1+Q6)	Self-medication was most common in younger age groups	0.029	Significant
Age × Frequency of Self-Medication (Q1+Q7)	Frequency was highest in 18–25 age group, decreasing with age	0.004	Significant
Age × Experience of Side Effects (Q1+Q19)	Side effects were more frequently reported in younger respondents	0.000	Significant

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Age × Awareness of Risks (Q1+Q23)	Younger respondents showed lower awareness than older groups	0.000	Significant
Age × Awareness of Antibiotic Resistance (Q1+Q24)	Awareness was low in younger groups	0.000	Significant

This table summarizes the associations between age and different aspects of self-medication. Results show that younger respondents were more likely to self-medicate, reported higher frequency and side effects, and had lower awareness about risks and antibiotic resistance. All associations were statistically significant ($p < 0.05$).

Table 3: Association Between Gender and Self-Medication Variables(n = 151)

Variables Compared	Findings Summary	p-value	Significance
Gender × Self-Medication Practice (Q7)	Females (137) were more likely than males (4) to use medicines without prescription.	0.034	Significant
Gender × Frequency of Self-Medication	Females reported higher self-medication frequency than males.	0.034	Significant
Gender × Experiencing Side Effects (Q19)	All males (100%) reported no side effects, while 55.8% of females reported experiencing side effects.	0.026	Significant
Gender × Awareness of Risks of Self-Medication (Q23)	None of the males were aware of risks, while 25.2% of females reported awareness.	0.000	Highly Significant
Gender × Awareness of Antibiotic Resistance (Q24)	None of the males and only 19.9% of females were aware of antibiotic resistance.	0.321	Not Significant

This table indicates a significant association between gender and self-medication. Females were more likely than males to practice self-medication, reported higher frequency, and experienced more side effects. Awareness of risks was also higher among females, while awareness of antibiotic resistance remained low in both genders and showed no significant association.

Table 4: Association Between Education Level and Self-Medication Related Variables (n = 151)

Variables Compared	Findings Summary	p-value	Significance
Education Level × Self-Medication Practice (Q6)	Self-medication practice was most common among those with no formal education.	0.010	Significant
Education Level × Frequency of Self-Medication (Q7)	Respondents with no formal education reported the highest frequency; association was significant.	0.006	Significant

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Education Level × Awareness of Risks of Self-Medication (Q23)	Awareness of risks did not differ notably across education levels.	0.360	Not Significant
Education Level × Awareness of Antibiotic Resistance (Q24)	Awareness about antibiotic resistance was generally low across all groups.	0.739	Not Significant

This table presents the association between education level and self-medication variables. A significant relationship was found between education and practice of self-medication (p = 0.010), with the highest proportion observed among respondents with no formal education. Similarly, the frequency of self-medication was significantly higher in this group (p = 0.006). In contrast, awareness of risks of self-medication did not vary notably across education levels (p = 0.360), and awareness of antibiotic resistance remained uniformly low across all groups, showing no significant association (p = 0.739).

Table 5: Association Between Employment Status and Self-Medication Related Variables (n = 151)

Variables Compared	Findings Summary	p-value	Significance
Employment Status × Self-Medication Practice (Q6)	Self-medication was most common among self-employed (100%) and unemployed (85.7%), compared to employed.	0.002	Significant
Employment Status × Frequency of Self-Medication (Q7)	Occasional use was highest among self-employed (72.5%), while unemployed showed higher rare and frequent use.	0.000	Significant
Employment Status × Experience of Side Effects (Q19)	Side effects were more reported among unemployed (82.9%) compared to self-employed (30%).	0.000	Significant
Employment Status × Awareness of Self-Medication Risks (Q23)	Awareness was higher among self-employed (40%) than unemployed (5.7%).	0.000	Significant
Employment Status × Awareness of Antibiotic Resistance (Q24)	Awareness was low overall but slightly higher among self-employed (31.3%) compared to unemployed (5.7%).	0.000	Significant

Self-medication practice was highest among self-employed (100%) and unemployed (85.7%) (p = 0.002). Frequency differed significantly, with occasional use highest among self-employed (72.5%) and rare/frequent use higher among unemployed (p = 0.000). Side effects were more common in the unemployed (82.9%) than the self-employed (30%) (p = 0.000). Awareness of risks was higher among self-employed (40%) than unemployed (5.7%) (p = 0.000), while awareness of antibiotic resistance was generally low but slightly higher among self-employed (31.3%) compared to unemployed (5.7%) (p = 0.000).

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Table 6: Association Between Types of Medicines Used Without Prescription and Side Effects (n = 151)

Type of Medicine	χ^2 Value	df	p-value	Significance
Painkillers	6.695	2	0.035	Significant
Antibiotics	1.822	1	0.177	Not Significant
Cough/Cold Medicines	3.357	1	0.067	Not Significant
Vitamins/Supplements	14.179	1	0.000	Highly Significant
Other Medicines	10.039	1	0.002	Significant

A significant association was found between self-medication and the use of painkillers (χ^2 = 6.695, df = 2, p = 0.035) and other medicines (χ^2 = 10.039, df = 1, p = 0.002). A highly significant association was observed with the use of vitamins/supplements (χ^2 = 14.179, df = 1, p = 0.000). However, no significant association was found with antibiotics (χ^2 = 1.822, df = 1, p = 0.177) or cough/cold medicines (χ^2 = 3.357, df = 1, p = 0.067).

Discussion:

Self-medication has transitioned from an occasional practice to a routine health-seeking behavior, particularly for common ailments such as fever, headache, and cough. In rural Union Council Mohro Jabal of Jamshoro District, we found that 77.3% of participants practiced self-medication, substantially higher than the global pooled prevalence of ~49% reported during the COVID-19 period (17) and within the upper range of Pakistani reports (53–61%) (18). Similar high levels have been documented in Rawalpindi (83%) and among university students in different provinces(19),(20). Comparable high rates have been documented in Rawalpindi (83%) and among university students nationwide (21, 22), underscoring the widespread and entrenched nature of this practice across both urban and rural populations. Consistent with previous studies, analgesics, cough remedies, and antibiotics were the most commonly used medicines, largely for headache and fever. Similar patterns have been observed internationally, where pain and febrile illnesses are leading drivers of self-medication (17, 23). While providing short-term relief, these practices increase the risk of hidden illnesses, adverse effects, and antimicrobial resistance (24, 25) Demographic analysis revealed that young adults (18–25 years) were most likely to self-medicate, echoing findings from studies among students and youth populations where quick access to pharmacies, peer influence, and financial constraints were key drivers (20, 26). Female participants reported higher prevalence and frequency of self-medication than males, a trend consistent with both local and global literature (27, 28). Education played a significant role: individuals with no formal schooling were more likely to rely on self-medication, reflecting limited health literacy and dependence on informal sources of care (19, 29). However, evidence from other studies also indicates that more educated groups, including medical students, frequently self-medicate due to perceived drug knowledge (20, 30). Employment status further influenced practices, with unemployed individuals showing higher prevalence and frequency, aligning with earlier reports linking economic constraints and healthcare costs to reliance on non-prescribed medicines (31, 32). More than half of the respondents experienced adverse effects, most commonly dizziness, nausea, and gastrointestinal upset. Some required medical attention, highlighting the hidden burden self-medication places on healthcare systems. Similar findings have been reported in community and student populations in Pakistan (22, 29) , and international evidence likewise shows that unsupervised drug use can escalate from mild discomfort to severe complications requiring hospitalization(17, 25). Awareness of risks was limited in our study, particularly regarding antibiotic misuse and antimicrobial resistance. These gaps mirror findings from Jamshoro, Karachi, and other LMIC settings (22, 29). Importantly, international studies confirm that knowledge alone does not always prevent self-

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medication, as individuals may continue the practice despite awareness of potential harms (32, 33). Our chi-square analysis showed significant associations: younger participants had higher prevalence and frequency of use but lower awareness of risks; females reported higher prevalence and more frequent side effects; uneducated and unemployed participants were more likely to self-medicate and to experience adverse outcomes. These findings are consistent with national and international literature linking demographic and socioeconomic vulnerabilities to unsafe self-medication (17, 28, 34-36) Overall, this study highlights self-medication as a serious public health concern. The unrestricted availability of antibiotics and analgesics in Pakistan continues to fuel irrational practices (22, 29) Addressing this requires a multi-pronged approach: strengthening the enforcement role of the Drug Regulatory Authority of Pakistan (DRAP), ensuring strict compliance with prescription-only drug sales, and empowering pharmacists to provide guidance at the point of access. Targeted awareness campaigns focusing on high-risk groups youth and females alongside integration of self-medication education into community health programs and antimicrobial resistance (AMR) strategies, are crucial to mitigating the burden this practice imposes on individuals, healthcare systems, and public health at large (29, 32, 37).

Conclusion:

Self-medication is highly prevalent among the rural population of Jamshoro, with analgesics, cough remedies, and antibiotics most commonly used for minor ailments such as headache and fever. Over half of the participants reported adverse effects, some requiring medical attention. Younger age, female gender, low education, and unemployment were significant predictors of self-medication, while awareness of associated risks and antimicrobial resistance remained limited. These findings underscore the need for stricter regulation of non-prescription drug sales, greater pharmacist involvement, and targeted awareness campaigns to mitigate unsafe practices and their public health consequences.

Conflict of interest: None

Funding disclosure: None

Authors' Contributions

SA: Conception and design, data collection, drafted the manuscript.

GU: Supervision, and critical revision of the manuscript.

PA: Literature review, data interpretation.

QBA: Data collection, tables and figures, discussion.

ARN: Discussion.

IBA: Statistical analysis, interpretation of results.

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