

ASSESSMENT OF SELF-MEDICATION PRACTICES FOR ORAL HEALTH PROBLEMS AMONG COLLEGE STUDENTS IN PARACHINAR, DISTRICT KURRAM

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Abstract

Self-medication is the use of medicines without professional consultation to treat self-recognized symptoms or illnesses. In oral health, self-medication is commonly practiced for problems such as toothache, gum bleeding, sensitivity, and oral lesions. Although it may provide temporary relief and reduce healthcare costs, inappropriate use of medicines can lead to adverse drug reactions, delayed diagnosis, antimicrobial resistance, and worsening of oral diseases. College students are particularly vulnerable to self-medication because of increased independence, financial limitations, fear of dental procedures, and easy access to over-the-counter medicines. This descriptive cross-sectional study was conducted among 385 college students from public and private sector colleges in Parachinar, District Kurram, Pakistan, from January to April 2026. A non-probability convenience sampling technique was used. Data were collected through a structured questionnaire after informed consent and analyzed using SPSS version 24 with descriptive statistics. The prevalence of self-medication among participants was 83.4%. Among the respondents, 51.17% were male and 48.83% were female, while most participants (70.39%) belonged to the 15–19 years age group. Knowledge regarding self-medication was reported by 83.1% of participants, and 74.5% believed that self-medication could be harmful to health. Tooth pain was the most common oral health problem leading to self-medication (52.6%), followed by sensitivity (19%) and gum bleeding (11.2%). Painkillers were the most commonly used medications (48%), followed by antibiotics (27.7%) and herbal or home remedies (16.8%). The leading reasons for self-medication were dental procedure phobia (25.2%), perception of illness as minor (21.8%), and time and cost saving (19.3%). Family members and friends were the major sources of advice regarding medicine use (46.7%). Most participants used medications for only a few days (66%). The study concludes that self-medication for oral health problems is highly prevalent among college students in District Kurram. Despite awareness regarding its harmful effects, students continue to self-medicate because of fear, limited dental access, and financial concerns. Public

health awareness programs, stricter regulation of over-the-counter medicines, and improved access to affordable dental care are necessary to reduce irrational self-medication practices and improve oral health behavior among students.

INTRODUCTION

Oral health is an essential component of general health and significantly influences an individual's physical, psychological, and social well-being. Proper oral health enables individuals to perform basic daily activities such as chewing, speaking, swallowing, and smiling without pain or discomfort. Oral diseases can adversely affect nutritional intake, communication, social interaction, self-esteem, and quality of life. According to the World Health Organization and the FDI World Dental Federation, oral health extends beyond the absence of disease and includes the ability to function effectively and maintain psychosocial well-being (1).

Globally, oral diseases remain among the most prevalent non-communicable diseases, affecting nearly 3.5 billion people worldwide. Dental caries, periodontal diseases, tooth loss, oral infections, and mucosal lesions contribute significantly to the global burden of disease. Untreated dental problems often lead to severe pain, inflammation, impaired chewing, poor nutritional intake, and reduced quality of life (3,4). In many developing countries, limited access to oral healthcare services and the high cost of dental treatment further increase the burden of oral diseases (7).

Dental pain is one of the most common reasons individuals seek relief through self-medication. Toothache and oral discomfort frequently interfere with daily activities and may lead people to consume analgesics, antibiotics, and herbal remedies without professional consultation. Pain originating from dental pulp inflammation or periapical tissues can be severe and persistent (6). As a result, many individuals attempt to manage symptoms independently before seeking professional care.

Self-medication is defined as the use of medications to treat self-recognized illnesses or symptoms without consulting a healthcare professional. It includes the use of over-the-counter drugs, previously prescribed medicines, leftover medications, and herbal or traditional

remedies (15). Although responsible self-medication may offer temporary symptom relief and reduce healthcare costs, irrational medication use can lead to several complications including adverse drug reactions, delayed diagnosis, drug dependency, masking of serious conditions, and antimicrobial resistance (29,30).

The growing availability of over-the-counter medicines and unrestricted access to pharmacies have contributed significantly to the increasing prevalence of self-medication worldwide. The rise of digital media and online health information has also encouraged self-diagnosis and unsupervised treatment practices (21,22). In oral healthcare, antibiotics and analgesics are frequently used without prescription, increasing the risk of inappropriate drug use and antibiotic resistance (25).

College students represent a vulnerable population regarding self-medication practices. Young adults often experience increased independence and autonomy in health-related decisions. Academic stress, financial limitations, fear of dental procedures, and lack of awareness regarding oral health complications may further influence self-medication behavior among students (34,35). In many low-resource settings, students rely on advice from family members, friends, pharmacists, or social media rather than consulting dental professionals.

Several international studies have reported a high prevalence of self-medication for oral health problems among university students and young adults. Studies from India, Croatia, Egypt, Ethiopia, the United Arab Emirates, and Pakistan have consistently demonstrated widespread use of analgesics and antibiotics without prescription (38-46). Toothache, sensitivity, and gum bleeding remain the most common triggers for self-medication. Common contributing factors include lack of time, financial constraints, perception of illness as minor, previous

medication experience, and fear of dental treatment.

Despite growing research globally, limited data are available regarding self-medication practices for oral health problems in rural and underserved regions of Pakistan, particularly in District Kurram. The geographical isolation limited dental healthcare infrastructure, socioeconomic challenges, and lack of awareness may increase the tendency toward self-medication in this region. Understanding the prevalence, patterns, and determinants of self-medication among college students is essential for developing targeted public health interventions.

Therefore, the present study was conducted to assess self-medication practices for oral health problems among college students in Parachinar, District Kurram. The study aimed to determine the prevalence of self-medication, identify common oral health problems leading to medication use, evaluate the types of medicines consumed, and assess factors contributing to self-medication behavior among students.

MATERIALS AND METHODS

Study Design

A descriptive cross-sectional study design was employed to assess self-medication practices for oral health problems among college students in Parachinar, District Kurram.

Study Setting

The study was conducted in selected public and private sector colleges as well as community settings in Parachinar, District Kurram, Khyber Pakhtunkhwa, Pakistan.

Study Duration

The duration of the study extended from January 2026 to April 2026.

Study Population

The study population included male and female college students aged 15–24 years enrolled in public and private educational institutions in District Kurram.

Sample Size

The sample size was calculated using the WHO-approved formula:

$$n = p(1 - p) (z/e)^2$$

Where:

- n = required sample size
- p = estimated prevalence
- z = z-score at 95% confidence interval
- e = margin of error

Using a prevalence value of 50%, confidence interval of 95%, and margin of error of 5%, the final calculated sample size was 384. A total of 385 participants were included in the study.

Sampling Technique

A non-probability convenience sampling technique was used to recruit participants.

Inclusion Criteria

- Students enrolled in public and private colleges.
- Both male and female students.
- Participants willing to provide informed consent.

Exclusion Criteria

- Students refusing to participate.
- Individuals residing outside District Kurram.

Data Collection Procedure

Ethical approval was obtained from the Institutional Ethical Review Committee of KMU-IHS Kurram Campus and relevant institutional authorities before initiation of the study. A structured questionnaire was developed to collect data regarding demographic characteristics, awareness of self-medication, prevalence of oral health problems, medication practices, reasons for self-medication, and duration of medication use.

Participants were informed about the purpose and confidentiality of the study before obtaining informed consent. Data collection was conducted through direct interaction with participants in educational institutions and community settings.

Data Analysis

The collected data were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 24. Descriptive statistical methods including frequencies, percentages, and tables were used to summarize and present the findings.

Ethical Considerations

Confidentiality and anonymity of participants were maintained throughout the study. Participation was voluntary, and respondents had the right to withdraw from the study at any stage without any consequences.

RESULTS

Table 1: Demographic Characteristics of Participants

Variable	Frequency	Percentage
Age 15-19 years	271	70.4%
Age 20-24 years	114	29.6%
Male	197	51.2%
Female	188	48.8%
Low Economic Status	99	25.7%
Middle Economic Status	259	67.3%
High Economic Status	27	7.0%

The demographic analysis showed that the majority of participants (70.4%) belonged to the age group of 15-19 years, indicating that younger college students constituted the largest proportion of the study population. Male participants represented 51.2% of the sample while females

accounted for 48.8%, showing nearly equal gender distribution. Most respondents belonged to the middle socioeconomic group (67.3%), whereas only 7% belonged to the high socioeconomic category.

Table 2: Knowledge and Attitude Regarding Self-Medication

Variable	Frequency	Percentage
Knowledge about self-medication (Yes)	320	83.1%
Knowledge about self-medication (No)	65	16.9%
Believe self-medication is harmful (Yes)	287	74.5%
Believe self-medication is harmful (No)	98	25.5%

A high proportion of participants (83.1%) reported having knowledge regarding self-medication practices. Furthermore, 74.5% believed that self-medication could be harmful to

health, indicating awareness regarding the risks associated with irrational medication use. Despite this awareness, self-medication practices remained highly prevalent among respondents.

Table 3: Prevalence of Self-Medication

Response	Frequency	Percentage
Yes	321	83.4%
No	64	16.6%

The prevalence of self-medication for oral health problems among college students was found to be 83.4%, demonstrating that the majority of participants had used medications without

professional consultation. Only 16.6% reported that they had never practiced self-medication for oral health issues.

Table 4: Oral Health Problems Leading to Self-Medication

Symptoms	Frequency	Percentage
Tooth pain	169	52.6%
Sensitivity	61	19.0%
Gum bleeding	36	11.2%
Soft tissue lesions	26	8.1%
Other symptoms	29	9.0%

Tooth pain was identified as the most common oral health problem leading to self-medication, reported by 52.6% of participants. Dental sensitivity was the second most common complaint (19%), followed by gum bleeding

(11.2%). Soft tissue lesions such as ulcers and candidiasis accounted for 8.1% of cases, while other oral problems including abscesses and halitosis were reported by 9% of respondents.

Table 5: Types of Medications Used for Self-Medication

Medication Type	Frequency	Percentage
Painkillers	154	48.0%
Antibiotics	89	27.7%
Antifungal Drugs	20	6.2%
Antiviral Drugs	4	1.2%
Home remedies/Herbal medicines	54	16.8%



Painkillers were the most frequently used medications for oral health problems, consumed by 48% of participants. Antibiotics represented the second most common medication category (27.7%), raising concerns regarding irrational

antibiotic use and antimicrobial resistance. Home remedies and herbal medicines were also commonly practiced, highlighting the role of traditional treatment methods in the community.

Table 6: Reasons for Self-Medication

Reason	Frequency	Percentage
Dental procedure phobia	81	25.2%
Perception as minor illness	70	21.8%
Time and cost saving	62	19.3%
Emergency treatment	42	13.1%
Unable to access dental services	41	12.8%
Previous prescription use	25	7.8%

Dental procedure phobia emerged as the leading reason for self-medication among participants (25.2%). Perceiving oral problems as minor illnesses and attempting to save time and

treatment costs were also major contributing factors. Limited access to dental services and reliance on previous prescriptions further encouraged self-medication practices.

Table 7: Sources of Advice for Self-Medication

Source	Frequency	Percentage
Friends and family	150	46.7%
Personal knowledge	104	32.4%
Pharmacists	43	13.4%
Social media	24	7.5%

Family members and friends were the primary source of advice regarding medication use, influencing 46.7% of participants. Personal knowledge regarding medicines accounted for

32.4% of responses. Pharmacists and social media also contributed to medication decisions among respondents.

Table 8: Duration of Self-Medication

Duration	Frequency	Percentage
Few days	212	66.0%
Few weeks	64	19.9%
Few months	21	6.5%

Until symptoms subsided

Most participants (66%) used medications for only a few days to manage oral health symptoms. However, some respondents continued medication for weeks or months, while others used medicines continuously until symptoms subsided. Such prolonged unsupervised medication use may increase the risk of adverse drug reactions and delayed professional diagnosis.



Table 9 Medicine type used for self-medication:

Different types of medicine were used by the research participants to treat their oral health problems. Among the types of medicine pain killer were mostly used by 154 (48%) participants to subside pain, antibiotics were used by 89 (27.7%) participants, furthermore 20 (6.2%) participants used antifungal, a very small group 4 (1.2%) participant used antiviral for related illness and finally, home remedies or herbal medicine were used by 54 (16.8%) participants.

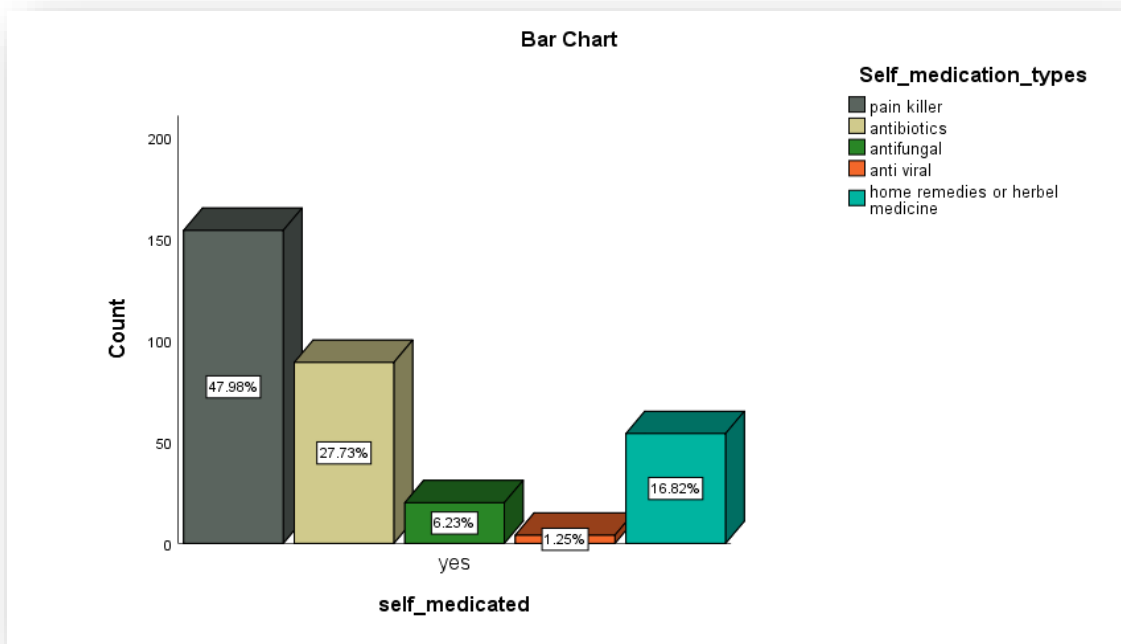


Figure 4.9

Medicine type used for self-medication

Self-Medication Types

Painkillers	154	48.0%
Antibiotics	89	27.7%
Antifungal drugs	20	6.2%
Antiviral drugs	4	1.2%
Home remedies or herbal medicines	54	16.8%
Total	321	100.0%



Self-Medication Types	Frequency	Percent
Painkillers	154	48.0%
Antibiotics	89	27.7%
Antifungal drugs	20	6.2%
Antiviral drugs	4	1.2%
Home remedies or herbal medicines	54	16.8%
Total	321	100.0%

Table 10 Reasons for Self-Medication

Table 4.9 presents the reasons reported by participants for practicing self-medication without consulting a qualified healthcare professional. Dental procedure phobia was the most common reason, reported by 81 (25.2%) participants. Perception of oral health problems as minor illnesses was the second most common factor, reported by 70 (21.8%) participants. Time and cost saving was another important reason for self-medication, mentioned by 62 (19.3%) participants.

Additionally, 42 (13.1%) participants used medicines as an emergency treatment because they experienced temporary relief. Limited access to dental healthcare services was reported by 41 (12.8%) participants, while 25 (7.8%) participants practiced self-medication based on previous prescriptions used for similar illnesses. These findings indicate that fear, financial limitations, and poor accessibility to professional dental care are major contributors to self-medication practices among college students.

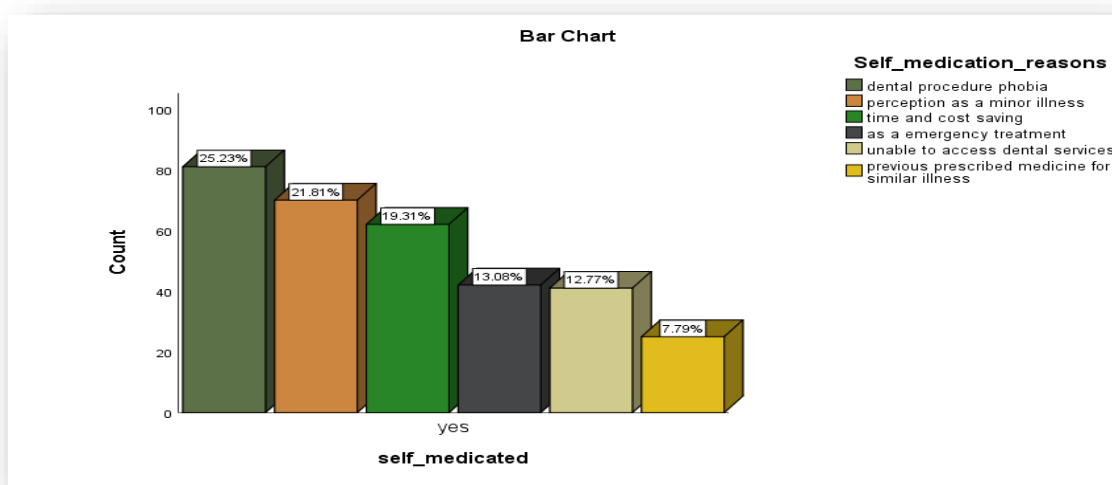


Figure 4.10

Table 11 Reasons for Self-Medication

Self-medication Reasons	Frequency	Percent
Dental procedure phobia	81	25.2%
Perception as a minor illness	70	21.8%
Time and cost saving	62	19.3%
As an emergency treatment	42	13.1%
Unable to access dental services	41	12.8%
Previous prescribed medicine for similar illness	25	7.8%
Total	321	100.0%



Table 12 Advice Regarding Self-Medication

Table 4.10 demonstrates the sources of advice influencing participants to use medicines without a doctor’s prescription. Family members, friends, and relatives were the major source of advice, reported by 150 (46.7%) participants. Personal knowledge regarding medicines was reported by 104 (32.4%) participants, indicating that many students relied on their own understanding while

self-medicating. Pharmacists contributed to medication advice for 43 (13.4%) participants, while 24 (7.5%) participants were influenced by social or electronic media advertisements. These findings suggest that social influence and informal information sources play an important role in encouraging self-medication practices among students.

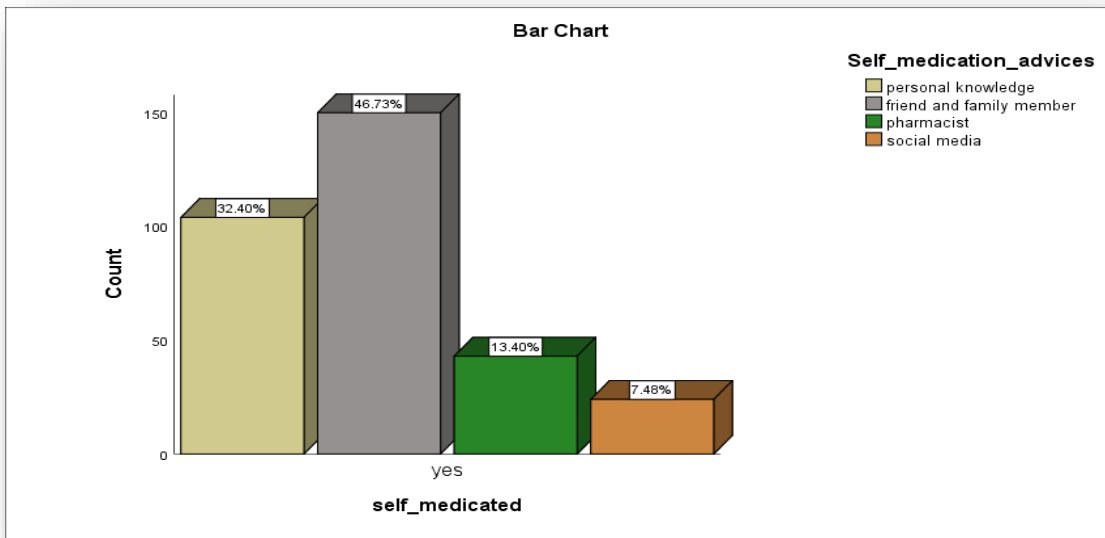


Figure 4.14

Table 13 Sources of Advice for Self-Medication

Source of Advice	Frequency	Percent
Personal knowledge	104	32.4%
Friends and family members	150	46.7%
Pharmacist	43	13.4%
Social media	24	7.5%
Total	321	100.0%

Table 14 Duration of Self-Medication

Table 4.11 summarizes the duration of medicine use among participants practicing self-medication. The majority of participants, 212 (66%), reported using medicines for only a few days. Furthermore, 64 (19.9%) participants used medicines for a few weeks, while 21 (6.5%) participants continued medication for a few months. A smaller group, 24

(7.5%) participants, continued taking medicines until their symptoms completely subsided. These findings indicate that although most students used medications for short durations, a considerable number practiced prolonged unsupervised medication use, which may increase the risk of adverse effects and delayed professional treatment.

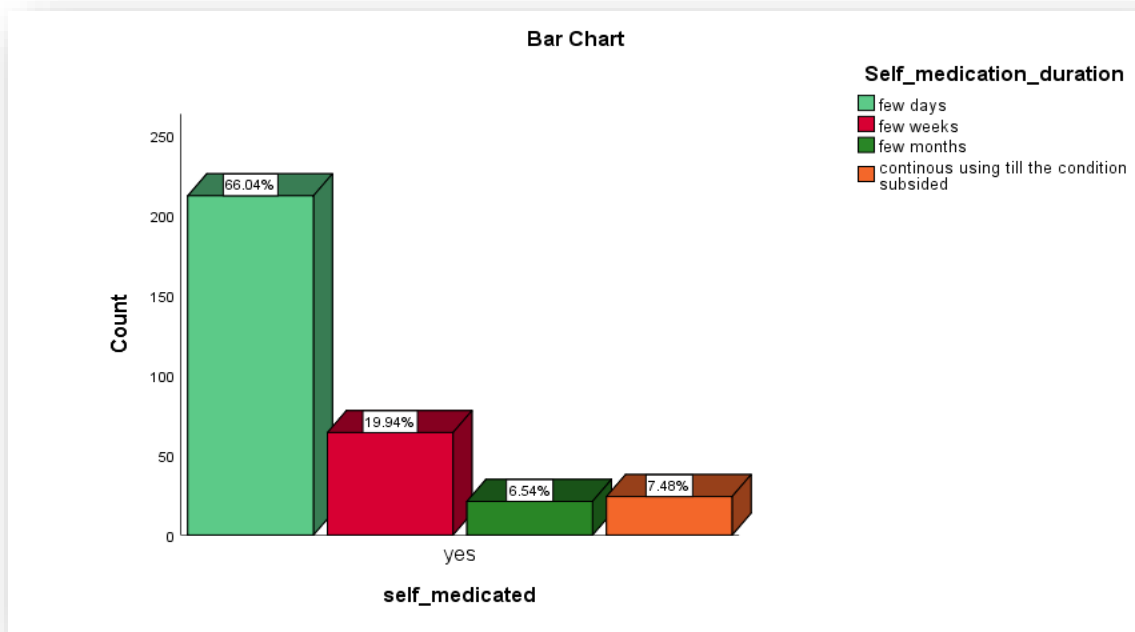
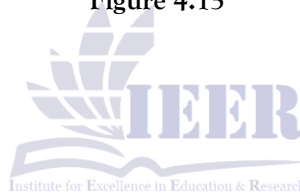


Figure 4.15

Table 15: Duration of Self-Medication

Duration of Self-Medication	Frequency	Percent
Few days	212	66.0%
Few weeks	64	19.9%
Few months	21	6.5%
Continuous use until condition subsided	24	7.5%
Total	321	100.0%



DISCUSSION

The present study assessed self-medication practices for oral health problems among college students in Parachinar, District Kurram. The findings demonstrated a very high prevalence of self-medication among participants, with 83.4% reporting that they had used medications without consulting healthcare professionals. This high prevalence reflects the growing trend of unsupervised medication use among young adults in low-resource settings where healthcare accessibility remains limited.

The prevalence observed in this study is consistent with previous international and regional studies. Khazir et al. reported a prevalence of 78.7%

among participants in India, while studies conducted in the United Arab Emirates and Nigeria also reported high rates of self-medication among dental patients and university students. The similarity of findings suggests that self-medication for oral health problems is a widespread public health concern, particularly among young adults.

The majority of participants in the present study belonged to the age group of 15–19 years, indicating that younger students were more likely to engage in self-medication practices. Younger individuals often rely on self-care measures due to increased independence, academic stress, and inadequate healthcare-seeking behavior. Similar

findings were reported by Sohal et al., who observed that self-medication was more common among younger adults experiencing dental pain. Gender distribution in the study showed nearly equal participation of males and females, although males were slightly more involved in self-medication practices. Previous studies have reported varying gender differences regarding self-medication. Some investigations suggest higher prevalence among females due to increased health awareness and medication familiarity, while others indicate greater self-medication among males due to delayed healthcare-seeking behavior.

Socioeconomic status played an important role in self-medication behavior. Most participants belonged to the middle socioeconomic class, and individuals with lower or middle income were more likely to self-medicate compared to those with higher economic status. Financial barriers often prevent students from seeking professional dental care, leading them to rely on inexpensive over-the-counter medicines or traditional remedies. Similar observations have been reported in studies conducted in Egypt and Iran, where economic limitations significantly influenced self-medication practices.

An important finding of this study was that although 74.5% of participants believed self-medication could be harmful, they still practiced it extensively. This indicates that awareness alone may not be sufficient to prevent irrational medication use when access to healthcare services remains inadequate. Fear of dental treatment, financial limitations, and convenience may outweigh awareness regarding medication risks.

Tooth pain was the most common oral health complaint leading to self-medication, affecting more than half of the participants. Dental pain is often sudden, severe, and disruptive to daily life, prompting individuals to seek immediate relief through analgesics or antibiotics. Similar findings have been consistently reported in studies from Pakistan, India, and Tanzania, where toothache was identified as the primary trigger for self-medication.

Painkillers were the most frequently used medications in this study, followed by antibiotics. The extensive use of analgesics is understandable

because these drugs provide rapid symptomatic relief from dental pain. However, the high use of antibiotics without prescription is concerning because inappropriate antibiotic use contributes significantly to antimicrobial resistance. Many participants believed antibiotics were necessary for toothache management even in conditions requiring operative dental treatment rather than antimicrobial therapy.

Home remedies and herbal medicines were also commonly used among participants. Traditional practices such as clove oil application, herbal preparations, and saltwater rinses remain popular in many communities due to cultural beliefs, accessibility, and affordability. Although some herbal remedies may provide temporary relief, reliance on unverified treatments may delay professional care and worsen oral conditions.

Dental procedure phobia emerged as the leading reason for self-medication in the present study. Fear and anxiety related to dental procedures often discourage individuals from seeking timely professional treatment. Many participants also perceived oral health problems as minor illnesses that could be managed independently. Time and cost-saving considerations further contributed to self-medication behavior, especially among students with limited financial resources.

The findings also demonstrated that family members and friends were the most common source of advice regarding medication use. This highlights the strong influence of social networks on healthcare decisions in the community. In many cases, medications are shared among relatives or recommended based on previous experiences rather than professional guidance. Pharmacists and social media also contributed to self-medication practices, emphasizing the importance of regulating pharmaceutical dispensing and online health information.

The duration of medication use varied among participants, although most reported using medicines for a few days. However, some participants continued medications for prolonged periods or until symptoms subsided completely. Prolonged unsupervised use of antibiotics and analgesics increases the risk of adverse drug

reactions, gastrointestinal complications, masking of underlying diseases, and antibiotic resistance. The findings of this study highlight the urgent need for targeted interventions to reduce irrational self-medication practices among students. Educational institutions should organize oral health awareness programs focusing on the dangers of inappropriate medication use and the importance of seeking professional dental care. Public health authorities should strengthen regulations regarding over-the-counter sale of antibiotics and analgesics. In addition, affordable and accessible dental services should be expanded in underserved regions such as District Kurram to improve healthcare utilization.

Although this study provides important insights into self-medication practices among college students, certain limitations should be acknowledged. The study used a cross-sectional design, which does not establish causal relationships. Convenience sampling may limit the generalizability of findings, and self-reported responses may introduce recall bias. Despite these limitations, the study provides valuable baseline information regarding oral health self-medication practices in a geographically underserved region of Pakistan.

CONCLUSION

The present study concludes that self-medication for oral health problems is highly prevalent among college students in Parachinar, District Kurram. Toothache and dental sensitivity were the major oral health problems leading to self-medication, while painkillers and antibiotics were the most commonly used medications. Fear of dental procedures, financial limitations, perception of oral problems as minor illnesses, and limited access to dental care significantly contributed to self-medication behavior.

Despite awareness regarding the harmful effects of self-medication, a large proportion of students continued to practice unsupervised medication use. This indicates the need for improved oral health education, stricter pharmaceutical regulations, and accessible dental healthcare services. Public health interventions targeting young adults and college students are necessary to

promote rational medication practices and reduce the risks associated with self-medication.

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