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INVESTIGATING SELF- MEDICATION PRACTICES FOR ORAL HEALTH PROBLEMS AMONG NON- MEDICAL STUDENTS IN PESHAWAR

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Abstract

Inappropriate self-medication can have major negative impacts on health. This study aims to investigate the prevalence of self-medication for oral health problems among non-medical students in Peshawar and explore the factors that influence with self-medication. This was a cross-sectional study conducted among non-medical students in Peshawar. Approximately 400 participants were selected through a non-probability, convenience sampling technique. Data were collected after securing ethical approval, and the obtained data were analyzed using SPSS version 25.0. The prevalence of self-medication was 71.0% with higher frequency in females (78.1%) than male (65.8%) and rural areas (75.7%) were more engage in self-medication compare to urban areas (65.2%). it was observed that analgesics and antibiotics (26.1%) was frequently used medicine. The most common symptom that led to self-medication was toothache (30.28%) and pharmacist (31.3). It was noted that gender, residency and economic status of participants was statistically associated (p = < 0.5) with self-medication. Self-medication was very common among students, and it was influenced by a number of factors, including participant knowledge and awareness, financial situation, and place of residence. Therefore, interventions that may reduce the high prevalence of self-medication and its associated factors are essential. special attention should be given to students who enrolled in the university.

INTRODUCTION

Medication is one of the fundamental demands of the general public and a vital resource in every nation. Significant advancements in the field of medicine have made it possible for more people to access medication, which has led to the emergence of a negative social phenomenon known as irrational use of drugs (1). An example of such irrational use of drugs is self-medication, which is defined as "the use of medications, herbal products, or any alternative home remedy to treat self-recognized illnesses or symptoms without the supervision of a trained medical practitioner" (2). In other words, self-medication refers to the use of medication by individuals who want to treat symptoms or issues they recognize by themselves (3). This practice includes utilizing over-the-counter medicines, leftover medicine that was prescribed for similar illnesses, obtaining drugs by copying previous prescriptions, or getting advice from family members or others (4). Drugs used for self-medication are often called non-

prescription or over-the-counter (OTC) drugs (5). The first thing that patients undertake when they encounter the initial symptoms of a disease is self-medication (6).

When utilize accurately, self-medication could have a positive impact on individuals as well as the healthcare system by reducing lengthy wait times for medical consultations, possibly saving lives in emergency situations, and being convenient and affordable (7). As a result, WHO has supported appropriate use of self-medication for managing minor illnesses that do not necessitate medical consultation (8). Additionally, self-medication is increasingly recognized as a component of self-care (5). However, it can also pose risks, such as unnecessary medication use, prolonged consumption, potential drug interactions, and polypharmacy (7). Self-medication patterns differ across various populations and are influenced by factors such as age, gender, income and expenditure, self-care attitudes, educational background, medical knowledge, satisfaction with healthcare, and the severity of illnesses (5).

The reasons for self-medication include an urgent need for self-care, time-saving, difficulty accessing healthcare services, easy availability of drugs, a prior prescription for the drug, cost-saving, a lack of transportation, ignorance, heavy advertisements, and a desire to avoid the complications of traditional treatment (9). Sources of information and advice about the drugs used for self-medication include pharmacists, family members, friends, conventional practitioners, print and digital media, and an individual's personal knowledge (10).

The prevalence of self-medication practices is notably high worldwide, ranging from 32.5% to 81.5% (11). Self-medication is common in both developed and developing countries (10). In the United States of America (USA), the prevalence is reported at 75% (12), while it is significantly higher in developing nations, with rates such as 92% in Kuwait (10), 69% in Italy (13), 94.5% in Saudi Arabia (10), 71% in South India (14), and 76% in Karachi, Pakistan (15). Self-medication is one of the most important medical issues among university students, who are educated members of the community. They are considered as role models for others in terms of health behaviors (1). As social media's influence grows, students are turning more to the Internet than consulting healthcare professionals for health-related information. This raises the possibility that college students might resort to self-medication to treat self-diagnosed illnesses (16).

While several studies have explored self-medication practices among medical students in Pakistan, research on non-medical students remains scarce. It is crucial to assess the current trends in self-medication among this group due to the differences in medical knowledge. Additionally, while many studies have examined self-medication for general health, none have specifically focused on oral health. The uniqueness of this study lies in its emphasis on self-medication for oral health among non-medical students. Thus, the aim of this study is to investigate the prevalence of self-medication for oral health problems among non-medical students and explore the factors that influence self-medication, the symptoms of oral health issues commonly treated through self-medication, common medicine used for this practice, and understanding the reasons behind self-medication.

MATERIAL AND METHOD:

It was a descriptive cross-sectional study conducted among non-medical students of University of Peshawar (UOP) and Islamia University located in Peshawar, Pakistan. These institutions were chosen due to their extensive range of non-medical programs and their status as the largest and most established universities in the region. This study was conducted for the period of six months.

The non-probability, convenient sampling technique was the method used for sampling. The sample size was calculated using the formula $N= Z^2 \times P \times (1 - P)/E^2$, where (N) represents sample size and (P) represents the prevalence of self-medication among the population which is assumed to be 50%. Taking a Z value for a 95% confidence interval (CI) (1.96) and a margin of error (E) of 5%. The estimated sample size was calculated to be 384; however, we increased it to 400 because of readily availability of data. This raising of the simple size was aimed at increasing the validity and reliability of the finding, providing a more accurate knowledge of SMP.

The student currently enrolled in non-medical programs who were willing to complete the

questionnaire and provide informed consent were included in this study, and students enrolled in pharmacy, veterinary, and psychology programs are excluded. Medically compromised Students and foreign students are also excluded from this study.

Ethical approval for this study was obtained from the institutional ethical review committee at KMU, ensuring the study adhered to all ethical standards. A proposal, along with an approval letter, was prepared and submitted to the Institutional Research Board (IRB) at the University of Peshawar and Islamia University to secure departmental approval before commencing data collection. The proposal was approved by both the registrar and head of department. Data was collected after obtaining written informed consent from participants who satisfied the inclusion criteria.

Data was collected using self-administered questionnaires adopted from similar previous studies based on the objectives of this study. It was a closed-ended questionnaire in English and organized into 19 questions under four sections. Section A gathered sociodemographic information (age, gender, marital status, economic status), and Section B focused on the participants' educational background and their knowledge and practice of self-medication. Section C addressed self-medication practices, including the conditions commonly treated, reasons for self-medication, advice received, and types of medicines used, and Section D focused on outcomes of self-medication and assessed participants' attitudes and future intentions towards this practice.

To ensure accurate data collection, the most senior students in the department were selected due to their greater maturity and knowledge. Questionnaires were distributed manually to the students during their elective classes, utilizing a few minutes at the end of each session. The nature and purpose of the study were explained to the students in the class through a brief presentation. Clear instructions on how to complete the questionnaire were provided. All completed questionnaires were collected, reviewed, and scrutinized for any missing or incorrect information.

The obtained data was analyzed using the Statistical Package for Social Science (SPSS version 25.0). Descriptive statistics were applied to summarize the basic characteristics of the data, such as means, medians, modes, standard deviations, frequencies, and percentages. All the data was presented in the form of tables and graphs. The Pearson chi-square test was applied to assess the statistical association between the dependent and independent variables at a 95% confidence interval.

RESULTS:

Table 1 represents the socio-demographic information of respondents. A total of 400 students participated in the study, out of which 231 (57.8%) were males and 169 (42.3%) were females. The mean age of the responders was 22.13 ± 2.57 years, with a range of 13 to 30 years. The majority of participants were residents of rural areas 222 (55.5%), with 178 (44.5%) residents in urban areas. Most of participants 262 (65.3%) have a middle economic status, with 82 (20.5%) have a low economic status, and 57 (14.3%) have a high economic status.

Table 1 also displays the association between socio-demographic characteristics and respondents' self-medication practices. Pearson Chi square and Fishers exact test were applied at 95% confidence interval to quantify the association. The result show that gender (p=0.007), residence (p=0.021), and economic status (p=0.000) are statistically significant with self-medication.

Table 1: Sociodemographic characteristics of the participants.

Variables	Categories	Total Participants (n=400)		Prevalence (n=284)		Statistical Association	
		frequency	percentage	frequency	percentage	Chi-square	p-value
Gender	Male	231	57.8 %	152	65.8 %	7.178	0.007
	Female	169	42.3 %	132	78.1 %		
Residence	Rural	222	55.5 %	168	75.7 %	5.297	0.021
	Urban	178	44.5 %	116	65.2 %		
Economic	Low	82	20.5 %	62	75.6 %	45.946	0.000

status	Middle	262	65.3 %	203	77.8 %		
	High	57	14.3 %	19	33.3 %		
Age	Minimum	Maximum	mean	Median	Mode	Std. Deviation	
	17	30	22.13	22.00	22	2.57	

Regarding knowledge about self-medication, majority of respondents 217 (54.3%) were aware, while 184 participants (45.8%) were unaware. The prevalence of self-medication was 284 (71.0%) and 116 (29.0 %) participants claimed that they did not self-medicate [table 2].

Table 2: Prevalence of self-medication

Variable	Category	Frequency (n)	Percentage (%)
Knowledge about self-medication	Yes	217	54.3 %
	No	184	45.8 %
Have participants ever self-medicated	Yes	284	71.0 %
	No	116	29.0 %

The most common symptom treated by self-medication was toothache (30.3%), followed by sensitivity (16.2%), bleeding gum (7.7%), both toothache and sensitivity (14.8%), other like Pericoronitis, abscess etc. (15.8%), while soft tissue lesion was the least reported (6.3%). Both Analgesics and antibiotics (26.1%) were the most regularly used medicines, followed by antibiotic along (21.1%), analgesic along (18.3%), herbal medicine (12.7%), while antifungals and antivirals were the least used [table 3].

The most common reason given by participants for self-medication was the perception that the illness is minor (32.7%), followed by time and cost savings (24.6%), dental procedure phobia (12.7%), unavailability of dentist (11.3%), as an emergency treatment (8.3%), and other reasons (3.2%). The commonly mentioned advisor who recommend medicine was unlicensed pharmacists (31.3%), followed by friend or relative (28.9%), personal knowledge (21.5%), media (15.8%), and others (2.5%) [table 3].

Table 3 represent the outcome of self-medication, 48.2% participants claimed that their symptom were temporary resolved, 33.1% participants have completely recovery from their symptom, 12.7 % participants claimed that self-medication did not effect, and 6.0% participants experience adverse effect after practicing self-medication.

Table 3: Practices of Participants regarding self-medication.

Variables	Frequency (n=284)	Percentage (%=100)
Symptoms leading to Self-medication?		
Tooth/teeth pain (toothache)	86	30.3 %
Sensitivity (hot/cold)	46	16.2 %
Bleeding gum /periodontitis	22	7.7 %
Soft tissue lesions (ulcer, candidiasis, etc.)	19	6.3 %
Both tooth pain and sensitivity	42	14.8 %
Tooth pain, sensitivity, and bleeding gum	24	8.5 %
Other (Pericoronitis, tooth mobility, bad breath, Abscess, tumor etc.)	45	15.8 %
Types of medicines used for Self-medication?		
Pain killer (Analgesics)	52	18.3 %
Antibiotics (amoxicillin)	60	21.1 %
Both Analgesics and Antibiotics	74	26.1 %
Anti-fungal / Anti-viral	16	5.6 %

Herbal medicine, home remedies	36	12.7 %
Couldn't recall the name	46	16.2 %
Reasons for self-medication?		
Dental procedure phobia	36	12.7 %
Perception as a Minor illness	93	32.7 %
Time and Cost saving	70	24.6 %
As emergency treatment	18	8.3 %
Unavailability of Dentist	32	11.3 %
Previous prescription of treating similar illness	26	9.2 %
Other Reason (self-confidence, traditional believe, lazy, privacy)	9	3.2 %
Advice of self-medication?		
Unlicensed pharmacists	89	31.3 %
Friend and family member	82	28.9 %
Personal knowledge	61	21.5 %
Media (print, electronic, social)	45	15.8 %
Other (traditional healer, etc.)	7	2.5 %
Result of self-medication?		
Temporary symptom were resolved	137	48.2 %
Complete recovery	94	33.1 %
Did not effect	36	12.7 %
Adverse effect	17	6.0 %

DISCUSSION:

Humans frequently experience illness, and they naturally have a propensity to treat themselves with medicines, herbs, their own remedies, etc. (17). Self-care is the phrase used to describe the activities people do for themselves in order to achieve and maintain health as well as stay off and avoid illness. Self-medication can be considered an integral component of self-care (18). Self-medication, thus aligning with the WHO definition, refers to the administration of drugs for self-diagnosed disorders or symptoms without consulting a qualified health care practitioner (2). The present study attempted to investigate the prevalence of self-medication and its associated factor. Probably, this would be the first study to highlight pattern of self-medication in non-medical students.

The findings of this study reveal that the prevalence of self-medication practice among participants was 71.0%, which is comparable to 71.7%, and 70% reported from similar studies conducted by Kasulkar, Arti A., and Monish Gupta (19), and Donkor, Eric S., et al. (20) respectively. However, this prevalence is notably higher than 62.5% reported by Kalyan, Venumbaka, et al. (21). Conversely, it is lower than 90% reported by Basha, Nabeela, et al. (3). This difference may be attributed to several factors, including differences in sociodemographic characteristics, methodology, the specific populations studied, cultural contexts, and healthcare systems.

There was a significant association between gender and self-medication in the present study; observations in our survey show that female was significantly more practicing self-medication then male ($p<0.007$), which is in agreement with the study conducted by Zeru, Nuhamin, et al. (22) and Malli, Israa Abdullah, et al. (23). However, opposite finding was found in a study conducted in Bangalore which show male predominance over female gender (24). It is generally believed that female is more aware of their health and have better health practices than men, but they also have a lower tolerance for pain and are more likely to be afraid of dental procedures and this may account for the significantly higher prevalence of self-medication in females (25).

Students from rural areas reported more engaging in self-medication compared to urban areas ($p<0.021$), which is in agreement with the findings of previous studies conducted in Sri Lanka (26). however, in Pakistan, the prevalence rate in urban areas was higher than in rural areas (27). Limited access to health care services, socio-cultural factors, belief in

traditional remedies, and lack of knowledge regarding the potential risks associated with self-medication in rural populations have been accountable for This discrepancy.

The present study showed that participants who practiced self-medication, toothache **(tooth pain)** was the principle reason as the triggering factors for administration of self- medication and the least reported symptoms were soft tissue lesions, such as ulcers and infections. This finding aligns with research conducted by KomalRaj et al. (24), and by Zareef, D. U., et al. (28).

The findings of this study indicate that both analgesics and antibiotics are regularly used medicines for self-medication, owing to the fact that toothache is the most prevalent dental problems, while antifungal (fluconazole) and antiviral (acyclovir) are most rarely used medications. This lesser utilization may indicate a lack knowledge of specific fungal or viral diseases, or a general preference for more familiar treatments like antibiotics and painkillers.

The students had several reasons for using self-medication; In our survey, the main reason cited for hesitancy in seeking professional dental consultation among the study population was the belief that dental issues are minor. This aligns with research from Bangalore, India, which also identified this perception as a common barrier to seeking professional care (24). Other reason given by participants includes long waiting times, financial concerns, fear of surgical dental procedures, and unavailability of dentists.

Unlicensed pharmacists were emerging as most trusted advisor who recommend medicine for participants which is supported by research conducted in Bangalore (24). This is followed by relative and friends, the participants' own knowledge, print, electronic, and social media, and others (traditional healers, etc.). Regarding the efficacy of self-medication, the majority of participants stated that their symptoms were relieved either temporarily or permanently, but some reported that self-medication had no effect and that using it had negative side effects.

There are a number of limitations in this study: the investigation of self-medication knowledge and attitudes was carried out only among university students in Peshawar, Pakistan; as such it is not possible to generalize the results of this study for Pakistani students overall. Another methodological strength of this study is that it is restricted to nonmedical students, therefore results may not be generalized to medical students or other general populations. The work describes the nature of self-medication for oral health and does not focus on the self- medication for general health. The application of convenient and non-probability sampling methods raises the problem of selection bias that determine the extent of a study's generalization. The cross sectional approach captured only one-time point, therefore when it comes to comparisons, causality or behavioral change over time is very hard to define.

CONCLUSIONS:

It was important to identify the degree of self-medication practice among students, along with factors connected with the problem, in order to reduce drug abuse and its effects. The present investigation also shows that self-medication is prevalent among university students of Peshawar. This practice was frequently used for toothache while the most used medications were analgesics and antibiotics. The base was founded on the fact that the pharmacist was expected to advise the client, and self-medication was most often due to relative insignificance of the dental issue. Thus increasing the awareness and knowledge of student regarding the possible risks of self-medication practices through their peers seems to be the best Strategy to reduce the high prevalence of self-medication among students. Educating people on dental hygiene and providing affordable dental treatment along with free consultation to eschew self-medication can reduce it.

Recommendations:

Based on the findings of this study, it is recommended that targeted interventions be developed to address the high prevalence of self-medication. Given that analgesics and antibiotics were the most frequently used medications, and that toothache was the most common symptom leading to self-medication, public health campaigns should prioritize educating the population on the risks of unsupervised use of such drugs, especially antibiotics due to the risk of resistance. Pharmacists, who were

reported as a common source of guidance for self-medication, should be actively involved in awareness programs to ensure they provide appropriate counsel and discourage unnecessary medication use. Moreover, universities should implement health education initiatives focused on promoting responsible health behaviors among students. Strengthening regulatory measures on over-the-counter drug sales and improving access to affordable healthcare services, especially in rural areas, are also crucial steps in mitigating self-medication practices.

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