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Evaluate the Prevalence, Knowledge, and Attitude of Self-Medication with Analgesics among College Students in NUST, Oman

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ABSTRACT:

Background: In the modern world, self-medication is not uncommon, either among the public or among a somewhat smaller subset of medical students. Medical students may have different experiences from the public due to their exposure to information regarding medications and illnesses. The goal of the current study was to ascertain National University students' knowledge, attitudes, and practices regarding self-medication.
Methods: During the years 2021–2022, a descriptive study with an anonymous questionnaire design was carried out among National University of Oman students. To find students, a multistage random sampling technique was employed. Through online "Google forms," a pre-validated questionnaire with closed-ended questions was distributed to the among National University of Oman students. The questionnaire covered sociodemographic information, common indications and side effects of analgesics, as well as the frequency with which students used them. Every day, the data was inspected, evaluated, and arranged to ensure its consistency and completeness. The statistical program for social sciences (SPSS) version 21.0 was used to code, enter, and analyze the data before using descriptive statistics (frequency, percentage, and mean) to interpret the results.
Results: Maximum number of participants were from age group 18-20 (47%) followed by 21-23 (32.47%). Majority of students (81.19%) are taking analgesics without prescriptions. Consumption of analgesics amongst female students is much higher and maximum number of students consuming analgesics without prescription belongs to age group 18-23. The consumption of analgesics without prescription were found maximum in students who are staying alone (83.33%) and least with who are staying with family (79.2%). The most common cause of taking analgesics is headache (44%) followed by period pain (30.8%, this is due to a greater number of female participants), joint and muscle pain (10%), tooth pain (8.6%) and back pain (6.2%).
Conclusion: The current study offers an insight about analgesic self-medication behaviors in students of a National University. This information can be used for drug awareness programs to make students aware of potentially harmful side effects and to curtail their irresponsible analgesic self-medication behavior.

Keywords: Analgesics, pain, headache, side effects

1. Introduction

Self-medication involves selecting and using non-prescription medicines on one's own initiative to treat self-recognized illnesses or symptoms [1]. According to the World Health Organization (WHO), self-medication is when individuals treat anonymously diagnosed diseases by selecting medications by themselves [2]. There is a worldwide public health problem associated with self-medication with Over the Counter (OTC) drugs, which is typically more prevalent in developing countries. [3]. OTC medicines include some analgesics and are commonly used around the world. There may be different side effects experienced by

different individuals, and overuse could cause harm. By educating people about the indications, contraindications, and side effects of these drugs, these problems could be minimized [4]. Self-medication can lead to a delay in the diagnosis of illness, resistance to drugs, co-morbidities, and, in some cases, death [5].

Students, especially young adults, usually make health-related decisions without adequate protection. The usage of OTC drugs including analgesic among students at universities is common and inappropriate, according to studies conducted worldwide [6]. Globally, analgesic self-medication is very common, and Oman is no exception. An exhaustive study is needed to confirm and further analyze the use of analgesic in the population. However, only a few studies have been conducted on self-medication for analgesia, especially in Oman. The objectives of the current study were to determine the prevalence, knowledge, and attitude of self-medication with analgesics among college students at the National University of Science and Technology, Oman.

2. Methodology

An online questionnaire-based cross-sectional study was conducted among students at National University of Science and Technology (NUST), Oman, during the period from November to December 2021. A convenient sample of 351 students from all three colleges (college of medicine and health sciences, college of pharmacy and college of engineering) were invited to participate in the study. This survey is based on stratified random sampling, which included 50% of students at the colleges chosen at the time of the study. Students were also invited to participate in the survey if they had agreed to participate.

Randomly selected NUST students from Medicine, Engineering, and Pharmacy colleges in proportion to size were used in the study. This study included all students who were available and willing to participate during the study period. We excluded students who were on annual leave or seriously ill during the data collection period. The participants were selected by simple random sampling after students from the three colleges were allocated proportionally to their sizes. Based on the dependent variables, knowledge of self-medication, attitude toward self-medication, and practice of self-medication were examined, while sociodemographic characteristics (age, gender, ethnicity, education level, occupation, marital status), and prior experience were examined. The questionnaire was implemented into google form and distributed multiple times to the students throughout the period of data collection. The study objectives, confidentiality and voluntary of participation was addressed to the participants before they fill the survey. Afterwards, the data was collected through analysing google form. We revised the questionnaire with the help of a scientific committee (community medicine consultants) to ensure reliability and content validity. Pilot testing was carried out on a small sample of 30 college students from different universities to assess the clarity and applicability of the study tools and to identify any difficulties encountered during data collection. During this pilot study, we also estimated the time needed by students to fill out the questionnaire forms. Based on the results, we modified the questionnaire. Pilot samples were not incorporated into the study. The questionnaire (tool) was evaluated by an expert for clarity, comprehensiveness, content validity, and reliability before data collection started using 10% of the total sample at NUST. The reliability of the questionnaire was evaluated using Cronbach's α test and it was found to be 85%. Daily, the principal investigator reviewed the collected data to ensure that it was complete and consistent.

To collect information relevant to the study variables, a semi-structured questionnaire was developed. The questionnaire was mostly multiple-choice questions to encourage the

participants to fill the form. Participants were allowed to fill the form once. The questionnaire consisted of closed ended questions and inquired about personal and socio-demographic data, use of self-medication and self-medication with analgesics during the six months preceded the study. To ensure quality data, data collectors and supervisors were trained in data collection procedures by the principal investigator. In addition to designing a questionnaire in Arabic, an English version was used to collect the data. There were two sections, one in English and one in Arabic. Participants' general information is presented in the first section, which includes their age, gender, the field of study, and residency information. In the second section, NUST students were asked to answer 9 questions regarding self-medication with analgesics, prevalence, knowledge, and attitude. One open-ended question is asked in this section, which is: Do you take analgesics without a prescription, if yes, how often? Explain the reason you take them. Why do you self-medicate? What type of analgesics do you use? Why do you choose one over another? Have you ever considered the side effects associated with the drug? Is the frequency higher when examinations are scheduled? Do you utilize any other methods for pain relief? Data were collected using a validated, constructed, anonymous, confidential, and self-administered questionnaire.

Data was checked, reviewed, and organized daily to make sure it was complete and consistent. After coding, entering, and analyzing the data, they were interpreted using descriptive statistics (frequency, percentage, mean) using the statistical package for social sciences (SPSS) version 21.0. The results are expressed as absolute percentages (percentages in the tables). To prove the statistical significance between the different variables in our study we applied chi square test and fixed the P value to find out the level of significance $p < 0.05$. Both descriptive and analytic statistics were done.

NUST's Ethical and Biosafety Committee provided ethical clearance. EBC was registered under NU/COMHS/ EBC0025/2021. It was explained to the study participants the purpose, rationale, and outcomes of the study, and their consent was obtained in writing to ensure their choice of participation or not. This study was maintained in strict confidentiality and all information was kept anonymous.

3. Result

The maximum number of participants were from the age group 18-20 (47%) followed by 21-23 (32.47%). For age groups less than 23 years number of female are more as compared to male, while for more than 23-year age groups males are more (Table: 1).

Table: 1 Shows age and gender distribution of doing self-medication in the study.

		Gender		**Total no. (%)**
		Female no. (%)	Male no. (%)	
Age	+27	7(2.42)	15(24.19)	22(6.26)
	18-20	150(51.9)	15(24.19)	165(47)
	21-23	96(33.2)	18(29.03)	114(32.47)
	24-26	36(12.45)	14(22.58)	50(14.24)
Total		289(100)	62(100)	351

Most students (81.19%) are taking analgesics without prescriptions. Consumption of analgesics amongst female students is much higher than male (245 out of 285) and it proved to be statistically significant also (Table: 2).

Table: 2 Shows gender distribution of taking analgesics (painkiller) without prescription

		Do you take analgesics (painkiller) without prescription?		**Total**	
		No (%)	Yes (%)		
Gender	Female	45(15.57)	244(84.43)	289(100)	Chi square 11.197
	Male	21(33.88)	41(66.12)	62(100)	P< 0.001
Total		66(18.81)	285(81.19)	351	

The maximum number of students consuming analgesics without prescription belongs to age group 18-23 (78.59%). The difference between different age groups related to consumption of analgesics without prescription was found to be statistically highly significant (P<0.0001) (Table: 3).

Table: 3 Shows Age distribution of taking analgesics (painkiller) without prescription

		Do you take analgesics (painkiller) without prescription?		**Total**	
		No (%)	Yes (%)		
Age	18-20	45 (68.18)	120 (42.1)	165	Chi square 18.837
	22-23	10 (15.15)	104 (36.49)	114	P< 0.0001
	24-26	5 (7.57)	45 (15.78)	50	
	+27	6 (9.09)	16 (5.61)	22	
Total		66 (100)	285(100)	351	

Most students were staying in hostels or along with friends (55.84%), followed by along with family (35.61%). Very few students (8.54%) were staying alone. The consumption of analgesics without prescription were found maximum in students who are staying alone (83.33%) and least with who are staying with family (79.2%), but the difference between them was not found to be statistically significant (p>0.05) (Table: 4).

Table: 4 Shows students taking analgesics (painkiller) without prescription during residency (study days)

Residency during study days		**Do you take analgesics (painkiller) without prescription?**		**Total no. (%)**	
		No (%)	Yes (%)		Chi square
	Alone	5 (16.67)	25 (83.33)	30 (8.54)	0.535 P<0.767
	With family	26 (20.8)	99 (79.2)	125 (35.61)	
	With friends/hostel	35 (17.88)	161 (82.12)	196 (55.84)	
Total		66	285	351	

The most common cause of taking analgesics is headache (44%) followed by period pain (30.8%, this is due to a greater number of female participants), joint and muscle pain (10%), tooth pain (8.6%) and back pain (6.2%). Some of the rare causes were cold, ear infection, jaw pain, neck pain, sore throat, to sleep faster, fever and kidney pain (Table: 5).

Table: 5 Shows frequencies distribution of causes for taking analgesics

		Responses		Percent of Cases
		N	Percent	
Causes for taking analgesics	Headache	276	44.0%	80.7%
	Period pain	193	30.8%	56.4%
	Joint and muscle pain	63	10.0%	18.4%
	Back pain	39	6.2%	11.4%
	Tooth pain	54	8.6%	15.8%
	Fever	1	0.2%	0.3%
	Kidney pain	1	0.2%	0.3%
Total		627	100.0%	183.3%

Amongst all who were taking analgesics, most of them were consuming acetaminophen (65.6%) followed by ibuprofen (17%), mefenamic acid (7.1%), diclofenac (5.4%) and aspirin (5%) (Table: 6).

Table: 6 Shows frequencies distribution of taking analgesics

		Responses		Percent of Cases
		N	Percent	
Which analgesics you take?	Acetaminophen	316	65.6%	93.2%
	Diclofenac	26	5.4%	7.7%
	Ibuprofen	82	17.0%	24.2%
	Mefenamic acid	34	7.1%	10.0%
	Aspirin	24	5.0%	7.1%
Total		482	100.0%	142.2%

The most common cause of self-medication is self-diagnosis on basis of experience (32.4%) followed by availability (27.9%), family guidance (18.4%), time shortage (14.1%), and friend guidance (4.3%) and to reduce consulting cost (2.9%). Some of the rare causes were common cold, inability to focus on study and to relieve temporary pain (Table: 7).

Table: 7 Shows frequencies distribution of Causes for self-medication

		Responses		Percent of Cases
		N	Percent	
Causes for self-medication	Past practice or experience	225	32.4%	65.6%
	Family guidance	128	18.4%	37.3%
	Friend guidance	30	4.3%	8.7%
	Availability	194	27.9%	56.6%
	Consulting cost	20	2.9%	5.8%
	Time shortage	98	14.1%	28.6%
Total		695	100.0%	202.6%

Table: 8 Shows Person's correlation coefficient used to find correlation between different variables and taking analgesics without prescription.

Variable	Do you take analgesics without prescription	Inference

Age	0.118, p = 0.027	Weal positive significant correlation
Gender	0.179, p = 0.001	Weal positive significant correlation
Field of study	0.001, p = 0.984	No correlation
Residency during study day	0.014, p = 0.799	No correlation

4. Discussion

This study was conducted to evaluate the knowledge, attitude, and prevalence of self‑medication among undergraduate university students. The prevalence of self‑medication in our study was found to be 81.19%. Some lower rates were reported by a study that was conducted in Bahrain (44.8%) and some higher rates were reported by studies that were conducted in Pakistan (76%) and Ain Shams University, Egypt (55%) [7-9]. A similar finding was reported in a study conducted in Qassim University, Saudi Arabia, which showed that 86.2% of the male university students had practiced self‑medication [10]. However, difficulties were encountered when comparing the prevalence of self‑medication among undergraduate university students in the national perspective due to lack of data in Saudi population. The results of the Slovenian study demonstrated that there were substantial disparities in the prevalence of self-medication practice between males and females (P = 0.066) [11]. It is intriguing that our research revealed substantial disparities (P < 0.001) in the prevalence of self-medication between male and female students, a finding that is consistent with the study conducted in Palestine [12].

During our research most students (55.84%) opted to stay in hostels or with friends, while a smaller percentage (35.61%) chose to stay with their family. A small minority of students (8.54%) were living alone. The prevalence of self-administered analgesic intake was highest among students living alone (83.33%) and lowest among those living with family (79.2%). However, the difference between these two groups was not determined to be statistically significant ($p>0.05$).

A survey conducted in Turkey found that 48% of university students utilized analgesics to alleviate headaches, while 28% used them for menstruation pain. Other reasons for analgesic use among students were joint/muscle pain (12%), tooth pain (9%), and back pain (7%). The differences in prevalence were found to be statistically significant ($p<0.01$) [18]. A cross-sectional survey in the USA revealed that 46% of college students utilized analgesics to alleviate headaches, while 29% used them for menstruation pain. Other reasons for analgesic use among college students were joint/muscle pain (11%), tooth pain (7%), and back pain (5%). The differences in utilization rates were statistically significant ($p<0.05$) [19].

In our study, the predominant reason for taking analgesics is headache, accounting for 44% of cases. This is followed by period pain, which accounts for 30.8% of cases, primarily due to a higher proportion of female participants. Joint and muscle pain account for 10% of cases, tooth pain for 8.6%, and back pain for 6.2%. Among the less common causes were exposure to cold temperatures, ear infection, discomfort in the jaw or neck, inflammation of the throat, desire to fall asleep more quickly, fever, and pain in the kidneys.

In Spain, 68% used acetaminophen, 20% ibuprofen, 8% mefenamic acid, 4% diclofenac, and 3% aspirin, with other analgesics like naproxen, ketoprofen, and tramadol each under 2%. The differences were statistically significant ($p<0.01$) [20]. In Brazil, 64% used acetaminophen, 18% ibuprofen, 7% mefenamic acid, 6% diclofenac, and 5% aspirin, with other analgesics like ketoprofen, naproxen, and opioids each under 3%. The usage patterns were significantly different ($p<0.05$), with acetaminophen being the most common in both countries [21]. In our study, most individuals who were using painkillers were using acetaminophen (65.6%), followed by ibuprofen (17%), mefenamic acid (7.1%), diclofenac (5.4%), and aspirin (5%).

In Turkey, 30% of individuals made a diagnosis based on their personal experience, 25% mentioned the availability of medication as a factor, 20% relied on advice from their family, 15% reported a lack of time for doctor appointments, 5% were influenced by their acquaintances, and 3% avoided seeking medical assistance due to the associated fees. Additional factors comprised the common cold and transient pain alleviation, with each accounting for less than 5% [22]. In India, 34% of individuals made a diagnosis on their own, 28% mentioned the lack of access to healthcare services as a reason, 19% relied on advice from their family members, 13% reported a lack of time as a barrier, 4% were influenced by their friends, and 2% chose not to seek medical consultation due to the associated costs. Additional factors comprised the common cold and transient pain alleviation, both accounting for less than 5% [23]. Self-diagnosis based on experience (32.4%), availability (27.9%), family guidance (18.4%), time shortage (14.1%), friend guidance (4.3%), and to reduce consulting expense (2.9%). These factors were found to be the most common causes of self-medication in our study. The common cold, distraction from studying, and short-term pain relief were among the infrequent causes.

Medical students were more accepting of self-medication than non-medical students were; 22% of them started off self-medicating, compared to 43% of non-medical students. This disparity results from their expertise. The two groups' 45.3% drug pamphlet reading rates were similar [24]. Compared to 40.7% who were against self-medication, more over half were marginally in support of it. Concerns included medicine combinations, self-diagnosing, and concealing serious illnesses, which were like research conducted in Bahrain and Egypt [25–26]. Self-medication was frequently done to reduce costs, save time, and make use of past knowledge. Research from Saudi Arabia and Iran has demonstrated that among the information sources were one's own self-awareness, chemists, and referrals from friends and relatives [27–28].

5. Conclusions

This study demonstrates a high prevalence of self-medication activities among university students at National University, Oman. Research has demonstrated a lack of understanding regarding self-medication and a generally favourable attitude towards it. The phenomenon of self-medication in the research sample pertains specifically to female students who are pursuing studies in the field of medical sciences and exhibit a significantly unfavourable attitude towards self-medication. Based on these findings, it is highly likely that university students will engage in reckless and inadequate self-medication due to their demonstrated lack of understanding. Hence, it is evident that the suggestion to enhance understanding of the detrimental consequences of over the counter (OTC) pharmaceuticals and to raise consciousness regarding the significance of educational initiatives in this domain is a clear-cut one, but not the exclusive one. To address this problem, it is necessary to implement various intervention measures. These measures should encompass not just improvements in knowledge levels and individual attitudes or behaviours, but also modifications to the extent and nature of support provided to national policies and regulations.

Ethical Approval

Reviewed and approved by Research and Ethics committee of College of Medicine and Health Sciences, National University of Science and Technology. NUST's Ethical and Biosafety Committee provided ethical clearance and was registered under NU/COMHS/ EBC0025/2021.

Conflict of Interests

None

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