

PATTERNS AND REASONS FOR ANALGESIC USE AMONG NORTHERN BORDER UNIVERSITY STUDENTS, SAUDI ARABIA

Mohamed M Abd El Mawgod*^{1,2}, Abdulaziz Mohammed Almalki³, Omar Mosab Alenzi³, Arwa Mosab Alenzi³, Rahaf khalid Al obidan³

¹Department of Family and Community Medicine, College of Medicine, Northern Border University, Arar, Saudi Arabia; ²Department of Public Health and Community Medicine, Faculty of Medicine, Al Azhar University, Assiut, Egypt; ³Medical student, College of Medicine, Northern Border University, Arar, Saudi Arabia

Abstract

Analgesics treat many medical ailments and are considered safe when used correctly. However, a lack of knowledge regarding proper use and harmful consequences poses health risks.

Study objectives: To explore the pattern and knowledge of analgesics uses among university students at Northern Border University, as well as to assess the awareness of analgesic side effects.

Subjects and methods: A cross-sectional survey was undertaken among university students at Northern Border University. A self-administered structured questionnaire was developed to recognize the assessment of the knowledge and practices around analgesic usage. A convenience sampling approach via Google Forms was employed for recruiting participants.

Results: a total of 420 participants were included in the study, with a mean age of 21.4±2. Most participants (75%; 315) who used analgesics did so regularly (93%; 293). The most widely used analgesic (67.9%; 214%) is paracetamol, A significant proportion knew that increasing analgesic doses have renal (82.6%; 374); gastric (74.5; 313); adverse effects, and physicians were most often stated source of information (31.1%; 98).

Conclusion: The survey found that the majority of Northern Border University's students took analgesics regularly. Paracetamol was the most reported painkiller, with headache being the most frequently indicated cause. Fortunately, many respondents were aware of the analgesic side effects, with physicians being the most prevalent information source.

Keywords: Analgesics, University students, awareness, Knowledge, Saudi Arabia

Introduction

The global usage of analgesics has grown during the previous three decades. Prescription medication misuse has risen considerably.(Althemery et al., 2025) Irrational use of over-the-counter analgesics has negative health consequences, and steps must be taken to discourage it and improve the rational use of analgesics, which can

Subjects and Methods

Study setting and design: A quantitative cross-sectional survey was undertaken among university students at Northern Border University from 1 December 2023 to 30 April 2024

Tool of the study: A self-administered structured questionnaire was developed following a thorough literature review to recognize the assessment of the knowledge and practices around analgesic usage. Four closely related publications were used in the tool development.(Al Masoudi, Al Dweik, & Al-Dweik, 2023; Asiri et al., 2020; Mahmoud, Raghad, Sultan, & Aljuhani, 2020; Siddig et al., 2020)

The tool included four sections. The first section included the participants' sociodemographic information, such as age, gender, college name, residence, and GPA. The second part involved questions about the patterns of analgesic use among the investigated participants, the third part examined the participants' awareness of analgesic side effects, and the last section assessed the source of information and analgesic accessibility among analgesic users.

Pilot study: To assess the tool's limitations and constraints, a pilot study was employed with 20 participants using the same criteria, settings, and data collection methodologies. Piloting participants found the instrument's items clear, complete, and relevant to the purpose. The time required to accomplish it ranged from 5 to 8 minutes.

Content validity: The tool was examined for content validity by three qualified experts. The distribution of the experts was as follows: Two family medicine consultants, and one community medicine staff at Northern Border University.

Sampling method: A convenience sampling approach via Google Forms was employed for recruiting participants from four colleges at Northern Border University, two theoretical (Business, and Education), and two scientific (Engineering, Science) colleges.

Sample size: The sample size was estimated using Epi Info software version 7.2.4.0 with the following parameters: 50% expected use, 0.05 margin of error, and 95% confidence level. Based on the inputs provided, the predicted sample size is 376. Using a 10% non-response rate (about 38), the total sample size is 414, then the sample had been completed at 420.

Inclusion criteria: University students from the selected colleges, both male and female, are ready to be involved.

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*Corresponding Author: Mohamed M Abd El Mawgod, Department of Family and Community Medicine, College of Medicine, Northern Border University, Arar, Saudi Arabia, and Department of Public Health and Community Medicine, Faculty of Medicine, Al Azhar University, Assiut Egypt

Tel. 00966501171525

Correo-e: : mossaa20072006@yahoo.com

be accomplished by raising individuals' awareness of rational medication use. (Khaled, 2025)

A study in Saudi Arabia found that 73% of the participants utilized analgesics, with headache being the most often given reason, and health professionals being the most common source of knowledge. (Elmorsy et al., 2024)

Analgesics are one of the most often used and misused drugs. Pain relievers such as paracetamol, aspirin, and non-steroidal anti-inflammatory medications are presently the primary methods of pain treatment. Unfortunately, these medications have serious side effects, especially when they are taken inappropriately and without regard for safety guidelines.(Siddig et al., 2020) University students frequently encounter special health hazards, such as stress, poor diet, inadequate sleep, drug abuse and mental health issues. (Mofatteh, 2020) Recognizing their behaviours and attitudes allows institutions to focus on possible risks and give resources to mitigate them effectively. (Kokabisaghi et al., 2024)

Analgesics are commonly used to treat a variety of medical ailments. However, inadequate information regarding proper usage and its side effects creates health problems.(Alwashali et al., 2024)

According to a Saudi Arabian study of university students, 23.2% obtained analgesics without a prescription, with headaches being the most common reason. (Alenzi, Bedaiwi, Hamayun, Alanazi, & Fawzy, 2024)

According to descriptive cross-sectional research conducted in Saudi Arabia, medical students consume analgesics at a rate of 92.7%.(Alharthi, Althomali, Alsufyani, Alsufyani, & Elnemr, 2019) Descriptive research conducted in Makkah, Saudi Arabia revealed that 45.8% and 27.5% of the respondents identified paracetamol as damaging to the kidney and liver, respectively. A Saudi Arabian study of females of reproductive age found that 76.2% used analgesics, with paracetamol being the most used drug. (Alali, Alhejji, & Younis, 2024)

Promoting awareness and offering educative initiatives for groups of students at high risk is necessary to encourage sensible medication use by emphasizing the importance of using medical services that are available on campus for free and discussing with health care specialists.(Alenzi et al., 2024)

Our study aimed to explore the pattern and knowledge of analgesic usage among university students at Northern Border University, and the awareness of analgesic side effects.

Table 1. Sociodemographic characteristics of the studied participants.

Items	No (420)	%	
Age	18-20	158	37.6
	20-22	126	30
	≥22	136	32.4
Gender	Male	201	47.9
	Female	219	52.1
College	Engineering	104	24.7
	Science	117	27.9
	Business	132	31.4
	Education	67	16
Residence	Urban	410	97.6
	Rural	10	2.4
Academic year	First	85	20.2
	Second	98	23.3
	Third	97	23.1
	Fourth	88	21
	Fifth	52	12.4
GPA	4-5	278	66.2
	3-4	108	25.7
	2-3	27	6.4
	less than 2	7	1.7

Age: Mean±SD=21.4±2

Table 2. Patterns of analgesic use among the studied participants.

	No	%
Do you use analgesics?		
Yes	138	32.9
Sometimes	177	42.1
No	105	25
When to use analgesics? *		
On needed	22	7
Regular	293	93
What type of analgesics do you use mostly?		
Paracetamol	214	67.9
Ibuprofen	50	15.9
Asprin	16	5.1
Other	35	11.1
Do you use analgesics more during an examination?		
Yes	83	26.3
No	136	43.2
Sometimes	96	30.5
What is the reason for analgesic use?		
Headache	159	50.5
Relive the Pain	125	39.7
Other causes	31	9.8
What do you do if there is no response?		
Consult physician	122	38.7
Consult pharmacist	40	12.7
Increase the dose	93	29.5
Use other analgesics	60	19.1
Number of sleeping hours per day		
Less than 6 hours	68	21.6
from 6-8 hours	165	52.4
From 8 to 10	56	17.8
More than 10	26	8.2
How many hours do you spend on mobile?		
1 to 3	48	15.2
4-6	123	39
7-10	79	25.2
More than 10	65	20.6
Are you smoker		
Yes	67	21.2
No	248	78.8

*No (315)

Exclusion criteria: University students who are not affiliated with recognized colleges, and those who declined to participate.

Ethical clearance: The current research was accepted and approved by the local bioethical committee at Northern Border University (HAP-09-A-043) on November 28, 2023, with decision no. (102-23-H).

Results

The socioeconomic characteristics of the research participants are shown in **Table 1**. In all, 420 people were involved in the research; their mean age was 21.4±4.2 years, they were mostly from urban areas, over one-third were between the ages of 18 and 20, and slightly over half were female. Around two-thirds of their GPA ranged between 4-5; business college students made up slightly over 30%, science students slightly over 25%, engineering students roughly 25%, and education students less than 20%. Concerning the distribution of college students, less than 25% belong to the third year, and less than 15% come from the fifth.

Table 2 displays the study subjects' patterns of analgesic use. Most participants (75%; 315) who used analgesics did so regularly (93%; 293). The most widely used analgesic (67.9%; 214%) is paracetamol, which is more frequently taken during exams (65.8%; 179). The primary reason for using analgesics was headache (50.5%; 159). About one-third proposed raising the dose, and slightly more than fifty percent said they would see a physician or pharmacist if there was no improvement. About half of analgesic users sleep six to eight hours a day, fewer than forty percent use their phones for four to six hours a day, and less than twenty percent are smokers.

Table 3 demonstrates participants' knowledge of analgesic side effects. A significant proportion knew that increasing analgesic doses have renal (82.6%; 374); gastric (74.5; 313); adverse effects; and (70.8%; 297) concurred that analgesics have contraindications.

Table 3. Participants' awareness of analgesic side effects.

Items	No	%
In your opinion, the increasing analgesic dose has a renal side effect		
Yes	347	82.6
No	18	4.3
I do not know	55	13.1
In your opinion increasing the dose has gastric side effects		
Yes	313	74.5
No	40	9.5
I do not Know	67	16.0
In your opinion analgesic has contraindications		
Yes	297	70.8
No	30	7.1
I do not Know	93	22.1

Table 4. Source of information and analgesic accessibility among analgesic users.

	No (315)	%
What is your source of information for analgesic use?		
Pharmacist	94	29.8
Physician	98	31.1
Television or internet	17	5.4
Parents	49	15.4
Friends	15	4.8
Personal knowledge	42	13.3
From where you get analgesics		
Pharmacy	226	71.7
Parents	27	8.6
Friends	5	1.6
Primary care	57	18.1
What do you do if you are suffering from analgesic side effects?		
Consult a physician	143	45.4
decrease the dose	19	6
Stop the drug	96	30.5
Continue the same drug	6	1.9
Use another analgesic	51	16.2

Table 4 lists the analgesic users' information sources and analgesic accessibility. In terms of information sources, physicians were most often stated (31.1%; 98), then pharmacists (29.8%; 94), parents (15.4%; 49), personal knowledge (18.1; 57), and friends (1.6%; 6). The majority (71.7; 226) said they obtained their analgesics from the pharmacy, whereas less than half of users indicated they would consult a physician if they experienced analgesic side effects.

Discussion

Regarding analgesic use, the study reveals that three-quarters of the participants use analgesics regularly or occasionally. Paracetamol is the most often used analgesic, and headache is the most reported reason, slightly more than fifty percent claimed to seek advice from a physician or pharmacist if there is no improvement.

Align with research done among Taif University students in Saudi Arabia, indicated that paracetamol was the most often used analgesic (77.3%), generally used on necessity (95.7%), and 70.9% consulted physicians or pharmacists if there were no changes. (Siddig et al., 2020) El ghazaly et al. reported that 89.6% of medical students in Qassim province utilized non-opioid analgesics, with headaches being the most common cause (66.8%). (Elghazaly et al., 2023), Comparable research done among medical students at King Abdulaziz University in Jeddah, Saudi Arabia, indicated that analgesics were the most often used medication (55.4%).(Ibrahim, Alamoudi, Baamer, & Al-Raddadi, 2015), According to a Saudi Arabian study of university students, 23.2% received analgesics without a prescription, with headaches accounting for the majority of cases (59%).(Alenzi et al., 2024) In Jordan, Al Masoudi et al. in comparable research revealed that 31.3% of the students utilized analgesic medicines over the preceding month from data collection.(Al Masoudi et al., 2023).

Community-based research in northern Saudi Arabia reported that 78.7% of participants utilized analgesic drugs as prescribed, with paracetamol most often used (50%).(Elmorsy et al., 2024) A study done among the adult population in Taif Saudi Arabia, indicated that 65.1% were using analgesics, mostly for pain relief(30.9%) and headache(19.1%), and 9.7% claimed they took it regularly.(Asiri et al., 2020) In a survey among the adult population in the Qassim region, Saudi Arabia Al-Abbasi et al. mentioned that 74.75% used analgesics without prescription, with paracetamol the most frequently used 43.5%. (Al-Abbasi & Sekhar, 2020), A survey of the general population in Hail, Saudi Arabia indicated that paracetamol was the most often used medication (71%), 21.6% used more than one analgesic, headache was the most frequent reason(33.3%), and 41.1% sought advice from physicians or pharmacists. (Mahmoud et al., 2020) Community-based research in Jordan found that more than one-third (37.1%) of the participants used analgesics, with paracetamol being the most widely used, headache being the second most 2nd prevalent reason, and thirty percent getting advice from a physician or pharmacist. (Alkilani et al., 2019), Community-based research in Albania indicated that paracetamol was the most frequently utilized analgesic medication (36.1%). (Roshi et al., 2017) Furthermore, a Croatian study found that headache is the most prevalent analgesic commonly used among dental medicine students. (Šimunović, Špiljak, Bašić, & Šutej, 2024)

An Iranian community-based survey reported that more than one of the respondents mentioned received analgesic usage guidance from a physician or pharmacist(56.7%) (Amirimoghadam et al., 2017), A Malaysian community-based study found that more than one-fifth of participants agreed to take many analgesic drugs at the same time if there is no response for pain alleviation, and slightly less than 20% agreed to raise the analgesic dose for pain relief. (Paramalingam et al., 2021)

Concerning participants' perception of analgesic side effects, most of them reported renal and gastric side effects. In agreement with a comparable study done at Taif University in Saudi Arabia revealed that 47.2% of the participants were aware that paracetamol causes adverse effects. (Siddig et al., 2020),

Mahmoud et al., in Hail, Saudi Arabia showed that 45% and 31.5% of respondents noted stomach and renal adverse effects for analgesic use. (Mahmoud et al., 2020) also, in the same region, Altahini et al. discovered that 50% and more than 75% of subjects were aware of analgesic gastrointestinal and renal side effects. (Altahini et al., 2024), A study of university students in Hafr Albatin, Saudi Arabia, found that more than half of them had a strong understanding of analgesics' uses, and the majority of them claimed that analgesic medicines induce liver impairment. (Ismail et al., 2024), a Jordanian survey among university students indicated that 88.9% and 77.8% recognized that analgesics had a detrimental impact on the kidney and the stomach respectively. (Al Masoudi et al., 2023)

Descriptive research done in the Makkah region, Saudi Arabia, indicated that 45.8% and 27.5% of the subjects recognized paracetamol as harmful to the kidney and liver, respectively.(Alwashali et al., 2024) According to a Malaysia community-based survey, around 40% of respondents mentioned that analgesic has hepatic and kidney side effects, and approximately one-third

(30.9%) agreed that frequent analgesic usage is associated with significant serious consequences.(Paramalingam et al., 2021) Furthermore, in Albania, Roshi et al. found that 31.2% and 27.1% of the participants reported that analgesics have gastric and renal side effects.(Roshi et al., 2017)

Regarding participants' information sources of analgesic use, physicians were the most often reported information sources, followed by pharmacists, parents, and personal knowledge. The majority indicated that they get analgesics from their community pharmacy, and fewer than half said they see a doctor if there are any side effects. In line with a similar study among Taif University students, in Saudi Arabia, Siddig et al. found that the most prevalent information source for analgesic usage is a pharmacist or physician (68.1%). (Siddig et al., 2020) In Qassim province, Saudi Arabia, half of the participants were aware of analgesic usage, with the pharmacist being the most prevalent and trusted source of knowledge (51.5%). (Elghazaly et al., 2023), in the same area, Al-Abbasi1 et al., in Qassim region, Saudi Arabia reported that they depend on their personal experience for analgesic use. (Al-Abbasi & Sekhar, 2020)

According to Mahmoud et al., research among the public in Saudi Arabia found that physicians (49.5%) and pharmacists (29%) were the most frequent sources of information on analgesic use.(Mahmoud et al., 2020) additionally, El morsy et al. reported that health professionals are the primary source of information(50%). (Elmorsy et al., 2024)

In Jordan, physicians and pharmacists were the sources of information for 21% and 57.4% of participants, respectively. (Altahini et al., 2024) In Libya, 38.5% of university students cited pharmacists as a source of self-medication with analgesics. (Omar et al., 2024)

Limitations

The descriptive nature of the study failed to identify the cause-effect relationship. The results didn't reflect all university students at Northern Border University. Another limitation was that it depended on self-reporting, which was prone to recall bias.

Conclusion

The study demonstrated that most of the studied students at Northern Border University used analgesics regularly. The most widely cited analgesic was paracetamol, and headache was the most often mentioned reason. Fortunately, many respondents were aware of the analgesic side effects, and physicians were reported as the most common source of information. We advocate conducting a health education campaign on analgesic uses.

Conflict of interest

Nil

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Author Contributions:

Mohamed M. Abd El Mawgod. The research's principal investigator. Conceptualization, Abdulaziz Mohammed Almalki, Omar Mosab Alenzi, Arwa Mosab Alenzi, and Rahaf Khalid Al Obidan collected and coded data. Mohamed M. Abd El Mawgod. Data input, cleansing, and analysis. Abdulaziz Mohammed Almalki, Omar Mosab Alenzi, and Arwa Mosab Alenzi wrote the original draft. The final version of the work was reviewed and approved by all authors.

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