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ORIGINAL ARTICLE

# Knowledge, attitude, and practices on over the counter oral analgesics among female students of Jazan University

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## ABSTRACT

**Background:** Analgesics are drugs that relieve pain. They are widely used and are generally safe, but some people consume excessive quantities that cause side effects. Ibuprofen has side effects on kidney functions, while an overdose of paracetamol causes severe liver damage. This study aimed to estimate the knowledge, attitude, and practice of female students on over the counter (OTC) oral analgesics.

**Methodology:** An observational cross-sectional study was conducted in Jazan University (Faculty of Medicine, Faculty of Computer Science, and Faculty of Art) on 440 female students. Students were selected by stratified randomized sampling. The sample was distributed proportionally between medical and non-medical colleges.

**Results:** OTC oral analgesics use was high among all students at 77.0% and we found that the menstrual pain was the first cause (38.2%), followed by a headache with 25.9%. Knowledge level was generally poor since awareness about the toxic dose and adverse effects of ibuprofen were low and only 11.8% of participants knew the toxicity of the dose. Similarly, knowledge about the toxic dose and adverse effects of paracetamol was low since only 12.3% were knowledgeable about this.

**Conclusion:** The usage of OTC oral analgesics was high among all students. Subjects from the Faculty of Arts had the highest prevalence, while the Faculty of Medicine subjects were with the lowest prevalence. The menstrual pain was the most frequent cause for OTC oral analgesics usage followed by a headache.

**Keywords:** Knowledge, attitude, practices, OTC, oral analgesics, ibuprofen, paracetamol, Jazan, Saudi Arabia.

## Introduction

Analgesic medicines are commonly used to treat pain due to arthritis, surgery, injury, toothache, headache, menstrual cramps, sore muscles, or other causes [1,2]. There are two classes of oral analgesics in general: Non-opioid and opioid analgesics. Non-opioid analgesics (non-narcotics) include paracetamol and non-steroid anti-inflammatory drugs (NSAIDs) like paracetamol and ibuprofen. Opioid analgesics (narcotics) are further classified into two categories: mild and potent opioids. Mild opioid analgesics include codeine and tramadol. Strong opioid analgesics include morphine and methadone [2]. The analgesics have general side effects such as constipation, diarrhea, itching, dizziness, and skin rashes. Some of them have serious side effects, for instance; daily use of NSAIDs lead to renal dysfunctions [3], and paracetamol overdose can result in severe liver damage [4]. A cross-sectional study conducted in a British University in 2008 [5] explored the patterns of mild analgesic usage, beliefs about risk and its effect on their usage, and the necessity of taking mild analgesics. Almost all of the participants reported symptoms in the previous month, with over two-thirds treating with mild analgesics and one-sixth exceeding the maximum dose. Only 17% indicated that there were short-term risks of using mild analgesics. Perceptions of risks were not generally associated with self-reports of analgesic usage.

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Rather, respondents who thought analgesics were more necessary were more likely to report taking analgesics, reported taking more analgesics, and reported exceeding the maximum dose [5].

Another cross-sectional study was conducted in the United States in 2005 to assess prevalence rates in correlation with the use of opioid analgesics without medical prescription among U.S. college students. The lifetime prevalence of nonmedical prescription opioid use was found to be 12% and the previous year prevalence was 7% [6]. A community survey in Nigeria (2004) collected data about the extent of analgesic use. Analgesics regularly consumed were found to be paracetamol in 58.1%, analgesic mixtures in 28.9%, and NSAIDS in 13%. Common indications for the use of these drugs were musculoskeletal pains, headache, fever, and stress. Analgesic abuse was present in 22.6% of the respondents [7]. A similar study done in Iran (2012) to assess self-medication with analgesics and its pattern among different groups of Iranian University Students found that 76.6% of the students used self-medication. The extent of analgesic use in the study period was once in 19.2% of the participants, twice in 22.2%, three times in 16.3%, and more than three times in 35.5% of the participants [8]. Headache was the most common problem in 49.8% of all participants, followed by dysmenorrhea, stomach ache, bone, and joint pains. Advice from friends and family was the most common source of information for self-medication with analgesics which was 54.7%, previously prescribed medications (30.1%), their medical knowledge (13.3%), and recommendation of a pharmacist (1.9%) [8]. A cross-sectional study was done in Riyadh (2014) to examine the extent of usage of over the counter (OTC) medicines among students during exams in Riyadh City, Kingdom of Saudi Arabia [9]. Overall, 80.0% of the respondents disclosed the use of OTC non-steroidal anti-inflammatory drugs for a headache and pain relief [9], and the use of OTC medication during exams was more among high school and university students [9]. The current study aimed to identify the extent of usage of OTC oral analgesics among female students at Jazan University and to detect their reasons for using them. Also, to determine the awareness of students about the side effects of analgesics and how it could affect their usage. The results were compared between medical and non-medical students and between different years of female medical students.

## Subjects and Methods

An observational cross-sectional study was conducted in Jazan University (Faculty of Medicine, Faculty of Computer Science, and Faculty of Art) on 440 female students. Students were selected by stratified randomized sampling. The sample was distributed proportionally between medical and non-medical colleges. Data were collected using a self-administered questionnaire. The questionnaire consisted of 23 close-ended questions. The questionnaire consists of three sections; demographic data, the pattern of OTC analgesics use, and the last section was about participants' awareness level about the toxic dose and side effects of paracetamol and ibuprofen. Two questions were about the attitude of the students toward the use of OTC analgesics which were also included. A pilot study was done on a sample of 20 students from the third-year students at the Faculty of Medicine to assess the components, the understanding of the respondents to the questions, and the time needed to fill it. Data were cleaned and entered by the research team and analyzed using SPSS program version 18.

## Results

The studied population of female university students was mostly in the age group of 20–22 years old (65.7%), from urban residence (71.1%), and single (79.5%). The complete details of the demographic characteristics of the sample are shown in Table 1.

The overall prevalence of OTC analgesic use was high (76.5%), with the highest usage among students of the Faculty of Arts 84.4%, followed by the Faculty of Computer Sciences at 77.6%, while the Faculty of Medicine reported the lowest prevalence at 64.4%. At

***Table 1.*** *Demographic characteristics of the study population (n = 440).*

| Demographic data | No. | % |
|---|---|---|
| Female student age in years | | |
| 17–19 | 79 | 18.0 |
| 20–22 | 289 | 65.7 |
| 23+ | 68 | 15.5 |
| Residence | | |
| Urban | 313 | 71.1 |
| Rural | 123 | 28.0 |
| Marital status | | |
| Single | 350 | 79.5 |
| Married | 85 | 19.3 |
| Divorced | 5 | 1.1 |
| Father education level | | |
| High | 204 | 46.4 |
| Secondary | 88 | 20.0 |
| Intermediate | 72 | 16.4 |
| Elementary | 52 | 11.8 |
| None | 23 | 5.2 |
| Mother education level | | |
| High | 111 | 25.2 |
| Secondary | 50 | 11.4 |
| Intermediate | 82 | 18.6 |
| Elementary | 118 | 26.8 |
| None | 78 | 17.7 |

***Table 2.*** *Prevalence of OTC analgesic usage among female students (n = 440).*

| Characteristics | | Prevalence of usage | | | | 95% CI |
|---|---|---|---|---|---|---|
| | | Yes | | No | | |
| | | No. | % | No. | % | |
| Faculty | Medicine | 89 | 67.4 | 42 | 31.8 | (59%–74.8%) |
| | Computer Sciences | 125 | 77.6 | 35 | 21.7 | (70.5%–83.3%) |
| | Arts | 124 | 84.4 | 23 | 15.6 | (77.5%–89.3%) |
| Years of Medicine | 2 | 20 | 22.5 | 12 | 27.9 | |
| | 3 | 21 | 23.6 | 12 | 27.9 | |
| | 4 | 14 | 15.7 | 7 | 16.3 | |
| | 5 | 20 | 22.5 | 3 | 7.0 | |
| | 6 | 14 | 15.7 | 9 | 20.9 | |
| Overall prevalence among students | | 339 | 77.0 | 101 | 23.0 | (72.9%, 80.8%) |

the Faculty of Medicine, the prevalence was the highest among the third-year students (23.6%) and the lowest (15.7%) was among the fourth and sixth-year students. Table 2 shows the details of the prevalence of OTC analgesics use by faculty type and among different levels at the Faculty of Medicine.

The most common cause for OTC analgesics use was dysmenorrhea by 38.2%, followed by a headache (25.9%). Less common causes include toothache, muscle pain, and others. Figure 1 shows the different causes for OTC analgesics use among the students participated in the current study.

The most common type of analgesic used was paracetamol (62%), while ibuprofen was used by about 10% and other types like aspirin (acetylsalicylic acid) and diclofenac were used at much lower levels. The overall knowledge of the students about common side effect and the toxic dose of ibuprofen and paracetamol were generally poor. Only 11.8% and 12.3% had adequate knowledge about ibuprofen and paracetamol, respectively. Medical students had higher awareness level about ibuprofen and paracetamol than students from the other faculties. Table 3 shows the awareness levels of female students about side effects and a toxic dose of ibuprofen and paracetamol.

When comparing the knowledge level of the students about OTC analgesics and their side effects and toxicity with their pattern of use, students who had better knowledge showed less use of analgesics; since only 12.1% of them use ibuprofen or paracetamol. The value of Pearson Chi-square of paracetamol was 0.044, confirming a strong association between the awareness level and usage of OTC analgesics, as shown in Table 4.

***Table 3.*** *Knowledge levels of female students about side effects and the toxic dose of ibuprofen and paracetamol (n = 440).*

| Characteristics No. | | Ibuprofen knowledge | | Paracetamol knowledge | |
|---|---|---|---|---|---|
| | | No. | % | No. | % |
| Faculty | Medicine | 30 | 22.7 | 49 | 37.1 |
| | Computer Sciences | 11 | 6.8 | 4 | 2.5 |
| | Arts | 11 | 7.5 | 1 | 0.7 |
| Years of Medicine | 2 | 1 | 3.3 | 0 | 0 |
| | 3 | 6 | 20.0 | 10 | 20.4 |
| | 4 | 7 | 23.3 | 9 | 18.4 |
| | 5 | 5 | 16.7 | 17 | 34.7 |
| | 6 | 11 | 36.7 | 13 | 26.5 |

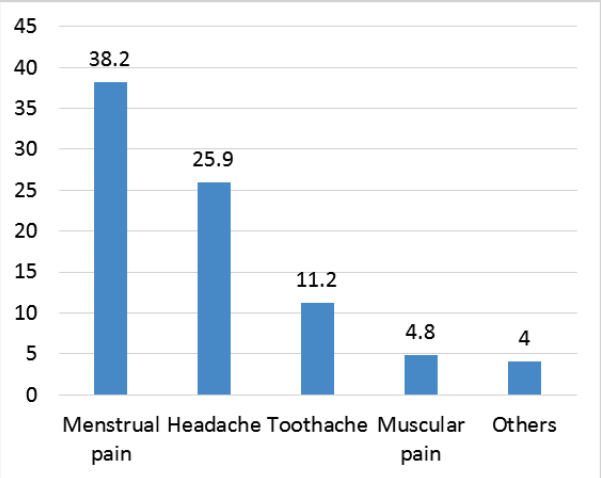


***Figure 1.*** *Causes for use of OTC analgesics.*

Only 26% of the study sample reported that they always read the instructions sheet of the drug purchased, whereas 11.6% never read the instructions. By comparing different faculties at the same university, 31% of medical students, 22.4% of computer sciences students, and 25.9% of art students always read the instructions. About one-third of the students were willing to use alternatives to oral analgesics (36.1%), while 21.1% depended completely on them. By comparing different faculties, 52% of medical students, 28% of Computer Sciences, and 30% of Arts students were willing to use non-medical alternatives.

## Discussion

In this study, the use of OTC analgesics was found to be highly prevalent among all students at 77.0%. This result is in agreement with an Iranian study that showed a high prevalence of OTC analgesics use among 76.6% of students [8]. In the current study, we found that dysmenorrhea (menstrual pain) was the most frequent

***Table 4.*** *Relation between knowledge level and usage of paracetamol and ibuprofen (N = 440).*

| Knowledge | | Analgesics usage Yes | Analgesics usage No | Total | *p* value |
|---|---|---|---|---|---|
| Ibuprofen | No. | 41 | 11 | 52 | 0.108 |
| | % | 12.1 | 10.9 | 23 | |
| Paracetamol | No. | 41 | 13 | 54 | 0.044 |
| | % | 12.1 | 12.9 | 25 | |
| Total of sample | | 440 | | | |

cause reported by 38.2%, then headache by 25.9%. This result was in agreement with a study conducted in Riyadh which pointed out that 80.0% of the respondents use OTC analgesics for a headache [9]. This study also found that the paracetamol was the most frequent analgesic type used by 60%, which is in agreement with a study conducted in Nigeria that found paracetamol was the common analgesic regularly consumed by 58.1% of respondents [7]. Awareness level was generally poor, and this is in line with a study conducted in Bahrain (2006) where knowledge about self-medication was also poor [10].

Awareness about toxic dose and adverse effects of paracetamol and ibuprofen were generally very poor. These results of awareness about paracetamol toxicity and the adverse reaction were considered very low when compared with the study conducted in USA and UK (1996) that found the knowledge among the study population was more than 75% of the respondents [11]. Only 26% of students reported they always read the drug instructions sheet and 36.1% of all students reported they might use other alternative methods. This attitude was higher among medical students where 31% of medical students always read the instructions and 52% can use alternatives; this is probably because it is closely related to their field of study. For Computer science students, 22.4% (always read) and 28% (can use alternatives) while 25.9% (always read) and 30% (can use alternatives) of art students.

The strength of the study is that this is the first to be conducted among female students at Jazan University. The study results would remain essential as baseline information when implementing efforts to improve the awareness level of students about the use of OTC analgesics.

## Conclusion

The use of OTC oral analgesics was high among all students. Faculty of Arts students showed the highest prevalence, while the Faculty of Medicine had the lowest prevalence. Menstrual pain (Dysmenorrhea) was the most frequent cause for the use of OTC oral analgesics followed by a headache. Paracetamol was the most frequently used analgesic type. Awareness level was generally poor and medical students had a higher knowledge level compared to others. The positive attitude toward the rational use of analgesics and reading drug information was more common among medical students.

### List of Abbreviations

NSAIDs Non-steroid anti-inflammatory drugs
OTC Over the counter

### Declaration of conflicting interests

None.

### Funding

None.

### Consent for publication

Informed consent was obtained from the participants.

### Ethical approval

The study was approved by the institutional review board at Jazan Hospital, Ministry of Health, Saudi Arabia ref, 1851, dated 17 December 2018.

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