

## Self-prescription of Paracetamol by Medical and Science Students at a Public University in Riyadh, Saudi Arabia

Khalid A Bin Abdulrahman<sup>1\*</sup>, Shahad Hameed AlShammari<sup>2</sup>, Wejdan Abdullah Alshakarah<sup>2</sup>, Hanan Rafat A Bukhari<sup>2</sup>, Ahad Marei Alenazi<sup>2</sup>, Norah Saud Al Towaim<sup>2</sup>

<sup>1</sup>Department of medical education, College of Medicine, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia

<sup>2</sup>Collage of medicine, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia

### ABSTRACT

**Background:** Paracetamol is a pharmacological drug and is one of the most commonly used drugs in self-prescribing situations frequently practiced among university students worldwide. Inappropriate self-medication may lead to harm. Thus, this study aimed to measure the prevalence of self-prescription of paracetamol consumption among undergraduate medical and science students at Imam Mohammad Ibn Saud Islamic University (IMSIU) in Riyadh, Saudi Arabia, 2020.

**Method:** A cross-sectional study was conducted among students of science and medical colleges of IMSIU located in the city of Riyadh, the capital of Saudi Arabia. It was designed in the form of an online self-administered questionnaire (survey) via google form about the self-prescription of Paracetamol. The duration of the study was three months, i.e., September 2020-November 2020.

**Results:** Three hundred twenty-three (323) students have completed the survey. The majority of them were female. The responses were 141 from medical students and 182 from science students. The prevalence of self-prescription of Paracetamol is seen among 58.8% of the participated students. The study showed that the prevalence of self-prescribed paracetamol was high among medical students (63.1%) compared with science students (55.5%).

**Conclusion:** Self-prescription of paracetamol by medical and science students at IMSIU is high, especially among medical students. Although the students exhibited some awareness of self-medication, the findings in this study highlight the need for intervention programs to reduce the consumption of paracetamol and bring awareness to self-medication.

**Key words:** Awareness, Over-the-counter drugs, Overuse, Prevalence, Self-medication

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**Corresponding author:** Khalid A Bin Abdulrahman

**e-mail**✉: kab@imamu.edu.sa

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### INTRODUCTION

Paracetamol is a pharmacological drug used for a wide range of reasons such as agony, distress, pain, and febrility.<sup>1</sup> Even though it has a large percentage of helpful relieving effects, it can counteract some drugs resulting in some blood disorders which were reported by some users of paracetamol.<sup>1</sup> It was shown that paracetamol is one of the major commonly used drugs in self-prescribing situations frequently practiced among

university students worldwide [1-3].

The World Health Organization (WHO, 1998) and the International Pharmaceutical Federation (FIP, 1999) define self-medication as “a practice by which an individual selects and uses medicines to treat symptoms or minor health problems, recognized as such by themselves” [4]. If self-medication is practiced appropriately, in situations managed by over-the-counter (OTC) products, it may be beneficial for individuals, as it is cost-efficient and excludes the need to go through the hassle of booking a consultation appointment with a large fee when they do not need medical attention or their illness is not severe enough to seek medical attention. However, inappropriate self-medication may lead to harm; as mentioned previously drug-drug interactions with paracetamol lead to blood disorders. In addition, a high dose of paracetamol can lead to liver damage or renal tubular necrosis [1,2,5,6]. Thus, people

should seek information on the OTC drugs they may be using. They discovered, in both the cross-sectional studies done in Aseer [7] as well as the public sector university in Dammam [6], that pharmacists are mostly sought for information when it comes to OTC drugs.

Despite the significant prevalence of paracetamol use among university students worldwide, it has continued to be misused [6,7]. There is also a lack of published articles describing the prevalence of self-prescription in Saudi society. Some studies have been published to assess the prevalence of self-prescription among students. Some of those studies ranged from 2013-to 2018 with only one or two articles published within each year, each of them in different cities. The high prevalence of self-prescription was proved using many articles [3,8-10]. This study aimed to measure the prevalence of self-prescription of paracetamol consumption among undergraduate medical and science students at IMSIU in Riyadh, Saudi Arabia. Therefore, this study will help to take a step towards regulating self-prescribed paracetamol consumption to avoid the side effects.

**METHOD**

This is cross-sectional study was performed among students of science and medical colleges of IMSIU located in Riyadh, the capital of Saudi Arabia, between September to November 2020.

**Participants and eligibility criteria**

The study included students of medical and science undergraduates. This segment was identified as the target population of the study. 6 Students from other colleges were excluded.

**Sample size and sampling procedure**

The survey was distributed among consenting students through email, text messages, and social media to fill. It was sent repeatedly on consecutive weeks to remind those who did not have time to answer the first time around. The sample size was calculated by the formula:

$$\text{Sample size} = Z^2 p(1-p)/d^2$$

Where “Z” is a constant of 1.96 with a confidence level set at 95%, “d” is an alpha margin of error kept at 5%, and “p” is the prevalence of self-medication which was assumed to be 0.73%. 3 The sample size was then found to be 303.

**Research instrument**

A questionnaire was designed by reviewing four of the available research literature [1,11-13]. It was conveniently designed in both Arabic and English languages for all individual preferences. The questionnaire was divided into two sections of close-ended questions. Section one is demographic information including gender, major, and academic year, in addition to self-prescription of paracetamol in the same section. Regarding the answer to the last question, section two is different, where a response of “no” has a section with only one question

concerning the reason behind their choice. On the other hand, a response of “I don’t remember” ends the questionnaire for them. Finally, an answer of “yes” takes them to section two, an important section consisting of questions related to students’ beliefs about self-medication practice, the type of pain they prescribe paracetamol to themselves for, checking the bottle before using it, knowing the correct dose, hazards of overdosing, drug-interactions knowledge, and sharing the drug with friends. As well as an additional question concerning medical students only, feeling confident enough to diagnose their underlying condition.

**Data analysis**

The responses were analyzed using SPSS software version 24 for frequency counts and calculations of prevalence which were reported in terms of a 95% confidence level.

**Ethical consideration**

The study was approved by the IMSIU research ethics committee (project number 115-2020; approval date, 08 Dec 2020). All writing is done in accordance with the ethical principles of the declaration of Helsinki. A brief description of the study was included with the survey link, with a full explanation on the survey’s front page. Participants were told consent was given by filling out the survey. Throughout the study, consent of all participants and data were gathered in complete confidence.

**RESULTS**

The total number of participants was 331 students. Eight of them were ineligible and the particular reason for this circumstance is that they were from other majors. Three hundred twenty-three (323) participants underwent the analysis. Two hundred forty-nine (77.1%) of them were females. All of the participants are from either Medicine or Science College at IMSIU. The number of medical students was 141 (44%). The participants were from the first to the fifth academic year Table 1.

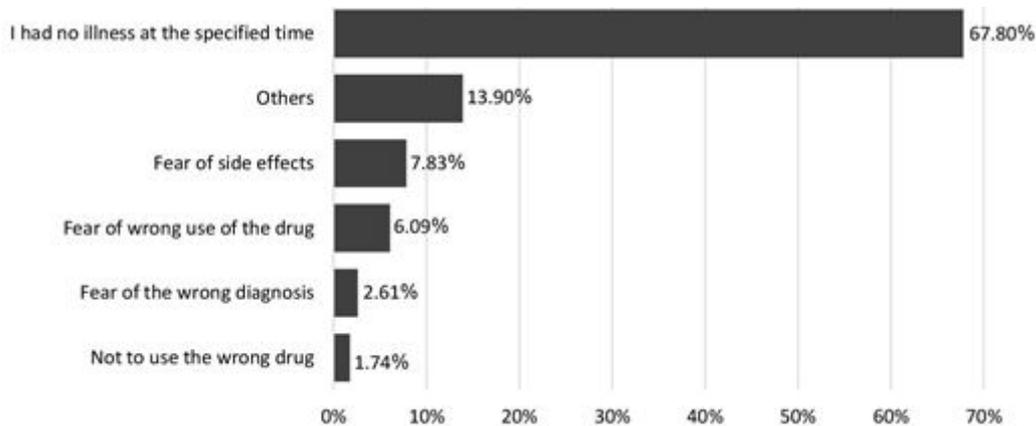
After the statistical validation of the data collected from the respondents, it indicated that (58.8%) of the students practiced self-prescription paracetamol consumption in the last month. The prevalence was more among females

**Table 1: Characteristics of Study Participants (N= 323).**

Characteristic	N (%)
Gender	Male 74 (22.9%)
	Female 249 (77.1%)
Major	Medicine 141 (43.7%)
	Sciences 182 (56.3%)
Academic year	1st 36 (11.1%)
	2nd 91 (28.2%)
	3rd 81 (25.1%)
	4th 64 (19.8%)
	5th 51 (15.8%)
Have you taken self-prescribed Paracetamol in the last month?	no 115 (35.6%)
	yes 190 (58.8%)
	I don't remember 18 (5.6%)

**Table 2: Comparison of self-prescribed paracetamol among gender and major groups.**

Variable	Have you taken self-prescribed Paracetamol in the last month? N (%)			P-value
	No	Yes	I don't remember	
Gender	Male	29 (9%)	44 (13.7%)	0.18
	Female	86 (27%)	146 (45%)	
Major	Medicine	43 (30.5%)	89 (63.1%)	0.23
	Science	72 (39.6%)	101 (55.5%)	



**Figure 1: Reasons for not taking self-prescribed paracetamol in the last month.**

**Table 3: Responses to reasons and problems for self-prescribing paracetamol (N=190).**

Reason	Multiple Answers	
	Reason	N (%)
Reason	Doctor/clinic far from home	5 (2.6%)
	I have already had the symptoms, and I know what to take	97 (51.1%)
	There is no need to see a doctor because of a simple disease	104 (54.7%)
	Quick-relief	78 (41.1%)
	Others	13 (6.8%)
	Save time	45 (23.7%)
	Save money	11 (5.8%)
	High doctor fees	17 (8.9%)
	I have an old prescription	21 (11.1%)
	The physician will prescribe me the same medication	64 (33.7%)
	Pharmacist advice	14 (7.4%)
Problem	Headache	151 (79.5%)
	Migraine	49 (25.8%)
	Dental Pain	40 (21.1%)
	Ear Pain	19 (10%)
	Menstrual problems	105 (55.3%)
	Muscle Pain	19 (10%)
	Fever	37 (19.5%)
	Cough	5 (2.6%)
Others	15 (7.9%)	

(45.8%). The results showed that the prevalence of self-prescription paracetamol consumption was high among medical students (63.1%) compared with science students (55.5%) Table 2.

Figure 1 showed the reasons for not taking the paracetamol without a prescription. Most students (67.80%) did not have any disease in the last month that required medicine, 13.90% of students had other reasons for not taking paracetamol. In addition, 7.83% were afraid of the side effects of the medicine. Six percent of the students abstain from taking the medication without a prescription because they are afraid of the wrong use

of the drug. A very small percentage of the participants were afraid of the wrong diagnosis or medication for their symptoms. Table 3 illustrated the reasons for taking paracetamol without a prescription; one hundred four (55%) participants agreed that there was no need to see a doctor due to a minor illness. Given that the students experienced previous symptoms and have experience on how to take the medication indicated a percentage of 51.1%. Reasons which are quick pain relief, time-saving, and expected to receive the same medication from doctors, formed average percentages among students (41.1% - 23.7% -33.7%). The clinic location does not cause a problem for students; therefore, it showed

**Table 4: Responses to the questions related to awareness of self-prescribed paracetamol and attitude toward self-medication.**

Question	N (%)	
Do you check the prescribing information before self-medicating?	No, never	36 (18.9%)
	Yes, always	44 (23.2%)
	Yes, sometimes	110 (57.9%)
If yes, How much did you understand from the instructions of prescribing information?	Not at all	0
	Partially understood	70 (45.5%)
	Fully understood	84 (54.5%)
Do you know the correct dose of Paracetamol?	No	41 (21.6%)
	Yes	149 (78.4%)
Do you know about the hazards of the over-dosage of Paracetamol?	No	45 (23.7%)
	Yes	145 (76.3%)
Do you know about paracetamol drug interactions?	No	116 (61.1%)
	Yes	74 (38.9%)
Do you think self-prescription of Paracetamol may harm your health?	No	81 (42.6%)
	Yes	109 (57.4%)
Do you share drugs with family members, friends, neighbors, etc.?	No	52 (27.4%)
	Yes	138 (72.6%)
Would you tell us your attitude towards self-medication practice?	Disagree	16 (8.4%)
	No comment	4 (2.1%)
	Depends on the type of disease to be treated and the drug to be used	163 (85.8%)
For medical students only: As a medical student, do you feel confident enough to diagnose the underlying condition you may be suffering?	Agree	7 (3.7%)
	No	50 (50.2%)
	Yes	39 (43.8%)

the lowest percentage, which was 2.6% of responses. Most of the participants agreed that the diseases that prompted students to use paracetamol were headaches, migraines, toothache, and fever. Menstrual pain was one of the highest rates, as it was (55.3 %) for female students. Most of the students (81.1%) checked the information on medications before self-medicating, and none of them mentioned that they did not understand the information at all. The knowledge of the correct dose was mentioned by 78.4% of students. More than 76% of students knew the dangers of paracetamol overdose; however, 61% had no idea about paracetamol drug interactions. Over one-half of the students (57.4%) thought that paracetamol may harm a person's health. A high percentage of students (72.6 %) shared drugs with others. Predominantly, students self-medicating drugs relied on the type of disease to be treated and the drug to be used. Out of the 89 medical students who answered the last question, 50% of medical students did not feel confident to practice self-diagnosis Table 4.

## DISCUSSION

This study was carried out among students of science and medical colleges at IMSIU in Riyadh, Saudi Arabia. The prevalence of self-prescribed paracetamol consumption in the last month of both medical and science colleges, combined, was reported at 58.8%. Which is higher than the percentage found in the previous study done in Dammam, 26%.6 On the contrary, it is a slightly lower result compared to the studies done in Jeddah, Aseer, and Madinah [3,7,13]. Furthermore, the prevalence of self-prescribed paracetamol in the college of science alone was reported at 55.5%. This represents the science field's self-prescription of paracetamol in Saudi

Arabia since there was a lack of data in previous studies for their population. However, a study conducted in Peradeniya on the science population at a percentage of 77% of self-prescription, a considerably higher rate than our current study [10].

The results showed that the prevalence of self-prescription paracetamol consumption was high among medical students at 63.1%. Previous studies recorded a range of 66% to 87% of medical students in Saudi Arabia [3,8,9,13-17]. This study is slightly lower than the range of those many former studies. The difference in prevalence between science and medical colleges within universities correlates to the confidence level of medical students to self-prescribe the drug. Which is mostly coming from their knowledge of indulging in prescriptions to other patients in the future? Another reason could be the feasibility to access community pharmacies and obtaining paracetamol from the pharmacist without needing an actual prescription [6,13,17]. Further research is needed to establish the reasoning. In this study, a considerable percentage has shown that in instances of quick pain relief, time-saving, as well as the same expectation to receive the same medication from a doctor is further shown in multiple previous studies [3,6,8,10]. A study in the University Peradeniya also has shown self-prescribing due to previous experiences at 66%, along with a study in the University of Jazan [8,10].

The results showed that 81.1% of students check the bottle before using it and 78.4% of students know the correct dose. Coupled previous studies in, Aseer, Saudi Arabia, have shown a similar percentage [7]. The study in BP Koirala institution states that 49.3% of the students mentioned the correct dose of paracetamol

[1]. The awareness of the toxic drug interactions in this study was admittedly higher than average albeit previous studies have admitted having low knowledge about the OTC analgesic side effects [1,2,5,11]. Previous studies respondents have agreed that self-medication could be harmful and is associated with adverse effects a notable percentage, in contrast, this study has shown a percentage of 85.8% of respondents concluding that self-medication depends on the underlying cause of use [6,8].

University students, especially medical and applied science students, are exposed to many psychological pressures accompanied by physical symptoms such as tension headaches, back pain, and other symptoms that make them resort to taking painkillers available in pharmacies and some commercial markets [17,18]. As for the female students, let's not forget about menstrual pain, which is why young women take painkillers such as paracetamol [19]. It is natural for medical students to be more careful to be aware of the side effects of chemical drugs compared to other students. This is because medical students take courses within the medical curriculum such as pharmacology, biochemistry, and pathology that contribute to the amount of impact on their daily behavior regarding medication intake and its side effects [20]. And even though paracetamol is a relatively safe analgesic, so we find it more common worldwide, awareness of its side effects and the drugs that interact and are affected by them are important things that people should be aware of [21]. It may not be surprising that many people do not read the drug information about the medicine leaflet and ignore it. Either because they used to take the drug in the past or because they took it on the advice of a trusted person, a friend, or a relative [22].

### CONCLUSION

The findings of this study indicate that the self-prescription of paracetamol is prevalent among undergraduates in the medical and science fields of IMSIU. Although the students exhibited some awareness of self-prescription, it is highly encouraged for the university faculty to intervene and advance through educational efforts to reduce consumption and bring awareness to self-medication. Further studies on the use of paracetamol or self-medication by using a larger population and a good sample design may be started.

### LIMITATIONS

The study has some limitations that deserve mentioning. A convenience sample was used; there was no randomization of the sample. Thus, the sample is not representative and the results cannot be generalized. Because of the lack of responses from male students. As well as, the questionnaire which was sent through social media may cause some bias. Therefore, further research is needed to investigate and replicate the findings of this study.

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### DISCLOSURE

The authors report no conflicts of interest in this work.

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