



## **Behavior of Medical Students toward Over-the-Counter Drugs in Comparison to Students from Other Faculties, Riyadh, Saudi Arabia**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. 'All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** Over-the-counter-drugs (OTC) are drugs that can be obtained by patients without a prescription from a physician. In Saudi Arabia, it has been reported that more than half of university students practiced self-medication and used OTC drugs.

**Methods:** An institutional-based cross-sectional study, among medical and non-medical students in Riyadh. The sample size was 421, by systemic random sampling. A pre-coded pre-tested online questionnaire was used. Data was analyzed using SPSS V 23. P-value  $\leq 0.05$  was considered significant.

**Results:** There was no significant relationship between what the participants were majoring in and the usage of OTC drugs (p value= 0.373). Gender also had no relation with the use of OTC (p value= 0.168). Panadol appeared as the most commonly used OTC drug 62.9% for the relief of the

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most commonly mentioned factor which is headache 50.12%.

**Conclusion:** Medical education didn't have much of an effect on the use of OTC drugs. Moreover, professional guidance or advice was not considered most of the time for taking OTC, but the majority of respondents portrayed good behavior towards usage of OTC.

*Keywords: OTC; drugs; students; Saudi Arabia; Medication.*

## 1. INTRODUCTION

Over-the-counter drugs (OTC) are drugs that can be obtained by patients for treatment of common diseases, without a prescription from a physician [1]. Examples of those medications in Saudi Arabia are cough medicines, antihistamines, and sore throat medicines. Over the world, the increase in the self-use of over-the-counter drugs has been reported as a problem that needs to be assessed and addressed [2-3]. Among educated youth, the self-medication distribution was found to be high, although most of them were aware of the side effects [4]. There is an increase in the use of OTC drugs in Saudi Arabia, and practicing self-medication using OTC drugs is frequent among university students in Saudi Arabia [5-6]. The prevalence of self-medication among those who are aged between 13-18 years old in the capital of Saudi Arabia was found to be 94.5% [7]. In a public university in the Eastern province of Saudi Arabia, the prevalence of using prescription and non-prescription drugs was higher among medical students 49.3 % when compared to students from the college of pharmacy 19.61% [8]. No association was found between risk awareness and educational status, as revealed by a previous study [9]. Analgesics, antipyretics, and antibiotics were found to be the most commonly used medications by university students, respectively [4]. Acetaminophen, cold/cough syrup, and ibuprofen were the most commonly used among the population of a study done in Saudi Arabia [10]. The highest prevalence of the use of Paracetamol was found among those aged between 18 to 25 years, as reported by Hakonsen et al. [9]. A study in the United Arab Emirates reported that the most common source of drugs and drugs recommendations were community pharmacies followed by parents [11]. Medical students utilize their textbooks and seniors or classmates as a source of information for using certain drugs [12]. In the United Arab of Emirates, a study found that the most common complaints leading to self-medication were headache and fever [11]. Headache was the commonest symptom in which makes medical and non-medical students practice self-medication, followed by flue and

fever [4]. Moderate illness, the experience of treating a similar disease, and the non-availability of health care services were the common reasons behind practicing self-medication based on the response of the population in western Nepal [13]. OTC drugs might have serious and fatal adverse effects. Improper self-diagnosis, inappropriate dosage, abuse, and drug interactions are all consequences of OTC drugs misuse [14]. In addition, combining NSAIDs with Aspirin may contribute to the risk of bleeding [15]. Increased risk for incident stroke is also associated with the use of OTC sleep medicines [16]. The majority of medical students in India didn't know the side effects of the medication that they take or advise others. This indicates the need for pointing out the potential risks of self-medication to the students [12]. A study reported that there was a big difference between both genders from medical students in practicing self-medication [17], and also women had higher risk awareness when using Paracetamol [9]. Easy accessibility of drugs and retrieving information from textbooks or seniors is a factor behind the high prevalence of self-medication among medical students [12]. Almost 90% of undergraduate medical students were reported to be practicing self-medication [18]. A significant number of medical students are unfamiliar with the side effects of the medications which they take or suggest to others [19]. To restrict and limit the practice of self-medication and the use of OTC drugs, strict policies need to be executed on the advertising and selling of medications [4]. It is recommended to have a plan for educating medical students regarding the advantages and disadvantages of self-medication [18]. Our study was done to detect the influence of medical knowledge on the behavior of medical students towards the consumption of OTC drugs in comparison to students from other faculties. To our knowledge, meager information is available regarding OTC drugs consumption among medical students in Saudi Arabia.

## 2. MATERIALS AND METHODS

This is a cross-sectional study, conducted in Riyadh, Saudi Arabia, the capital city with a

population of approximately 8,002,100. The data were collected in six months, between the 1st of January 2019 to the 1st of June year 2019. Medical students and students from other faculties from both genders, from AlMaarefa University, King Saud University, and AlFaisal University were included in the study. Students in their foundation year, those who were under 18 years of age, and medical interns were excluded. The sample size was 421 students, who were chosen through systemic random sampling. Data was collected using a pre-coded pre-tested online questionnaire that contains background questions (age, gender, and faculty) in addition to other close-ended questions that investigate behavior toward the use of OTCs.

**2.1 Collection Methods**

Interview administered; we used a questionnaire-based method which was distributed to the targeted population. The obtained data were analyzed using SPSS (V 23) and Microsoft Excel to generate tables and charts. A P-value of ≤ 0.05 was considered significant, according to the Chi-Square test.

**2.2 Definitions and Procedures**

**Categorization:** Behavior has been categorized into good and poor behavior. The score of 2 to 3

was considered as good behavior, and the score of 0 to 1 was considered as poor behavior.

**3. RESULTS**

Table 1 shows that majority of the study sample was from the age range of 20-21 years old (46.79%). Following in order, between the ages 22-23 (27.79%), above the age of 24 (12.83%), and the minority were between the age of 18-19 (12.59%). Females were slightly more in numbers than males in our study, (52.02%) and (47.98%) respectively. Medical students represented (46.79%) of the population, while non-medical students represented (53.21%).

Table 2 demonstrates the sources of information for using OTC drugs. The majority (30.9%) reported that pharmacists are their source of information. Following in order, other sources (20.7%), doctors (21.1%), relatives, and friends (19.2%). Social media is the source of information for the minority (8.1%).

In Table 3 Panadol appears to be the most commonly used OTC drug among our study population (62.9%). The rest of the drugs were close in percentage as following, cough and cold medications (9.5%), others (8.1%), vitamin supplements (7.1%), anti-histamine and allergy medications (5.0%), antacid (4.3%), and the least used was Ibuprofen (3.1%).

**Table 1. Personal Information**

| Demographic data        | Variables                  | Frequency | Percent |
|-------------------------|----------------------------|-----------|---------|
| Age                     | 18-19                      | 53        | 12.59%  |
|                         | 20-21                      | 197       | 46.79%  |
|                         | 22-23                      | 117       | 27.79%  |
|                         | 24+                        | 54        | 12.83%  |
| Gender                  | Male                       | 202       | 47.98%  |
|                         | Female                     | 219       | 52.02%  |
| faculty                 | Engineering & Architecture | 43        | 10.21%  |
|                         | Science                    | 22        | 5.23%   |
|                         | Business                   | 28        | 6.65%   |
|                         | Arts                       | 16        | 3.80%   |
|                         | Law                        | 33        | 7.89%   |
|                         | Computer Science & IT      | 13        | 3.09%   |
|                         | Religious Studies          | 2         | 0.48%   |
|                         | Media                      | 4         | 0.95%   |
|                         | Medicine                   | 197       | 46.79%  |
|                         | Dentistry                  | 5         | 1.19%   |
|                         | Pharmacy                   | 24        | 5.70%   |
| Applied Medical Science | 34                         | 8.08%     |         |

n=421

Table 4 reveals that headache was the major factor contributing to the use of OTC drugs (50.12%). Fever (12.35%), sore throat (9.03%), stomach ache (7.13%), and cough (1.66%). While (19.71%) mentioned that their reasons for using OTC drugs are other than the available options.

**Table 2. Sources of information for OTC self-medication**

|                   | Frequency | Percentage |
|-------------------|-----------|------------|
| Doctor            | 89        | 21.1%      |
| Pharmacist        | 130       | 30.9%      |
| Relatives/Friends | 81        | 19.2%      |
| Social media      | 34        | 8.1%       |
| Other             | 87        | 20.7%      |
| <i>n=421</i>      |           |            |

**Table 3. Most common used OTC drugs**

|                                    | Frequency | Percentage |
|------------------------------------|-----------|------------|
| Panadol                            | 265       | 62.9%      |
| Cough/Cold medicine                | 40        | 9.5%       |
| Antacid                            | 18        | 4.3%       |
| Anti-histamine/Allergy medications | 21        | 5.0%       |
| Ibuprofen                          | 13        | 3.1%       |
| Vitamin supplements                | 30        | 7.1%       |
| Other                              | 34        | 8.1%       |
| <i>n=421</i>                       |           |            |

**Table 4. Factors contributing to OTC drugs consumption**

|              | Frequency | Percentage |
|--------------|-----------|------------|
| Headache     | 211       | 50.12%     |
| Fever        | 52        | 12.35%     |
| Cough        | 7         | 1.66%      |
| Sore throat  | 38        | 9.03%      |
| Stomach-ache | 30        | 7.13%      |
| Other        | 83        | 19.71%     |
| <i>n=421</i> |           |            |

In Fig. 1 the majority (41.8%) stated that there is no need to visit a doctor for minor illnesses. (24.7%) are confident about their knowledge about medication. (20%) seek for quick relief of pain or symptoms. The last three motives were close in percentage, time-saving (5.9%), easy accessibility to OTC drugs (4.3%), and economical (3.3%).

Fig. 2 demonstrates the relationship between gender and the behavior regarding the use of OTC drugs. There was no statistically significant relation ( $p$  value= 0.168). (79.45%) of the females portrayed good behavior, while (20.54%) showed poor behavior. On the other hand, (73.76%) of the males portrayed good behavior, and the remaining (26.23%) showed poor behavior.

Fig. 3 revealed that there is no statistically significant relationship between major and the behavior regarding the use of OTC drugs ( $p$  value= 0.373). (78.68%) of medical students portrayed good behavior, while (21.31%) showed poor behavior. On the other hand, (75%) of non-medical students portrayed good behavior, while (25%) showed poor behavior.

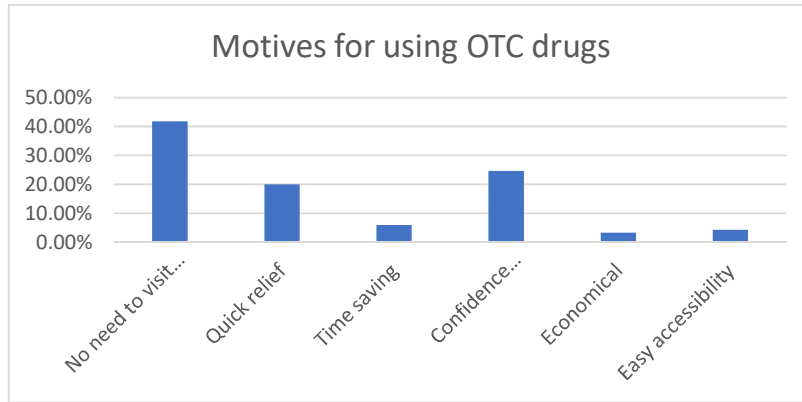
#### 4. DISCUSSION

Our study revealed that the majority of participants practiced self-medication using OTC drugs. A study done in India, 2014 have also disclosed that the majority of the study sample practiced self-medication [18]. We have also found that the main source of information for OTC drug use is pharmacists. This result goes along with the result of a study done in the United Arab Emirates which has also reported community pharmacists to be the most common source of drugs and drugs recommendations [11]. Panadol is the most commonly used drug among our study population. Two other studies done in India and Nepal have also reported the same results, as Panadol to be the most used OTC drug [12] [13]. The most common factor leading to OTC drugs use is headache, which goes in line with three different studies done in different countries and different periods [4] [17] [20]. No need to visit a doctor for a minor illness is the commonest motive behind the use of OTC drugs found in our study. This goes in concomitant with the finding of a previous study that has reported moderate illness is a common reason behind practicing self-medication [13].

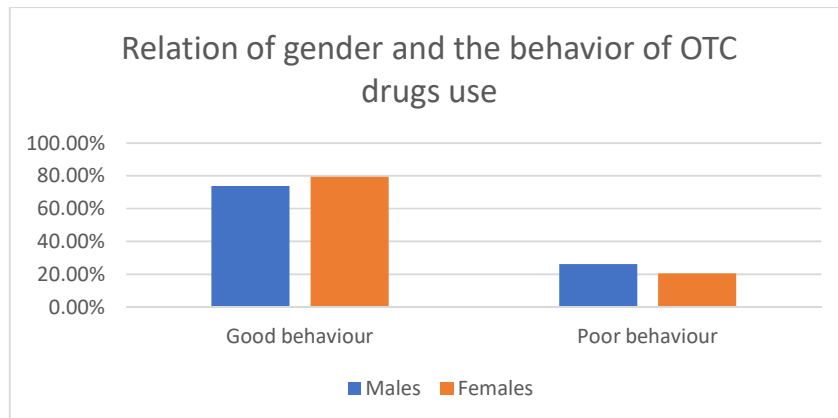
We found no relationship between gender and the behavior regarding the use of OTC drugs. A study done in Riyadh, 2014 reported that there was a high use of OTC drugs among female students in comparison to male students [21]. This difference in the results from the two studies might be attributed to the difference in study population and study settings, as the previous study included both high school and university students during the period of their final

examinations. Another study conveyed that female high school students used OTC NSAIDs more than males [22]. This difference is probably attributed to the difference in age and targeted groups. There was no relation between the major

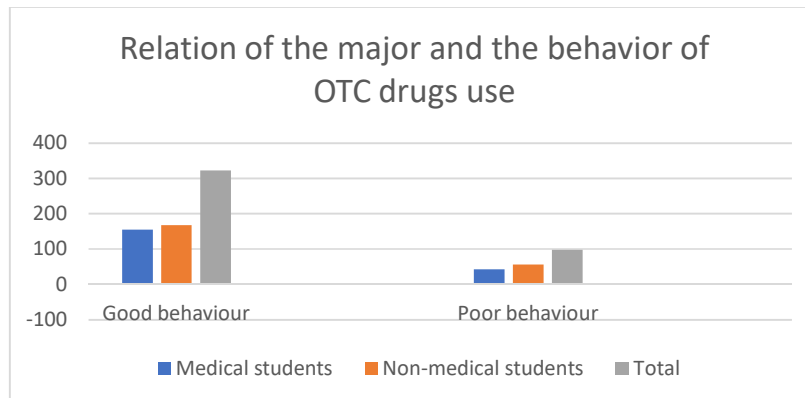
and the use of OTC drugs, and between medical and non-medical students. In Jordan, a study also reported that there was no difference in OTC drugs use between medical and non-medical students [23].



**Fig. 1. Motives for using OTC drugs**  
n=421



**Fig. 2. Relation of gender and the behavior of OTC drugs use**  
P value=0.169



**Fig. 3. Relation of the major and the behavior of OTC drugs use**  
P value=0.373

We recommend researchers to work on larger similar studies covering different regions and populations of Saudi Arabia, aiming to assess the need for national awareness programs regarding the use of OTC drugs and to educate the population about whom to approach when medications are needed. We also recommend researchers conduct studies highlighting the differences between males and females in terms of factors leading to the use of OTC drugs. We recommend further studies in Saudi Arabia that assess the process of approaching primary health care facilities.

## 5. CONCLUSION

Our study results revealed that there was no relation between major and the behavior regarding the use of OTC drugs, which indicates that medical education among medical students didn't play a big role in their use of OTC drugs. Results showed that the majority of participants have practiced self-medication, without professional guidance or advice, irrespective of the major. A positive outcome of our study is that the majority of participants have good behavior regarding the use of OTC drugs.

## DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

## CONSENT AND ETHICAL APPROVAL

The study was approved by the IRB of AlMaarefa University, Riyadh, Saudi Arabia, (Ethical approval code (3/203)). Consent was obtained from participants before data collection, emphasizing confidentiality and the right of participants to withdraw from the study at any point in time.

## DATA AND MATERIALS AVAILABILITY

All data associated with this study are present in the paper.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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