Determinants of Self-medication among Undergraduate Students at King Saud University: Knowledge, Attitude and Practice

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Abstract

Background and Objectives: In Saudi Arabia, most drugs can be obtained from pharmacies without a professional prescription, and despite the prevalence of self-medication, few comprehensive studies were conducted to assess this practice. This study was performed to evaluate self-medication and its pattern among different groups of King Saud University students.

Materials and Methods: A quantitative cross-sectional study was carried out from November 2014 to April 2015. The targeted population of the study was 477 out of 35,810 undergraduate medical and non-medical students at King Saud University. Data were analysed using SPSS (21.0), and descriptive statistics was used to describe the categorical study and outcome variables. Chi-square test was used to compare the distribution of proportions.

Results: The prevalence of self-medication within the study period was 50.9% of the respondents (45.18% male and 54.02% female). Cold and flu symptoms were the most common indication among medical (74%) and non-medical students (88.2%). Bacterial and viral infections ($P = 0.001$) were a common indication among the medical students (19.4%). Analgesics ($P = 0.333$) was the most common drug used in self-medication among medical (89.7%) and non-medical students (85.3%). Aspirin ($P = 0.013$) and herbals ($P = 0.0001$) were reported to be predominantly used by the non-medical students.

Conclusion: Half of the respondents practice self-medication; which demonstrates the need to raise public awareness, becoming more conscious during drug utilisation and the pharmacists’ advisory role. In addition, further studies should be conducted to assess the herbals’ practice in our community as their use was reported to be high in the results.

Keywords: Analgesics, antibiotics, attitude, King Saud University, pharmacists, self-medication

Introduction

Self-medication is a human behaviour, in which a person takes drugs without professional advice to treat self-diagnosed symptoms or illness.¹ According to the World Health Organization (WHO), self-medication is when individuals treat anonymously diagnosed diseases by selecting medications by themselves.²

Self-medication practice could be divided into two distinct groups: Responsible practice and irresponsible or irrational practice. Responsible self-medication practice is the use of non-prescribed drugs available legally without a physician’s prescription; what is known as over-the-counter (OTC) drugs according to the Saudi Food and Drug Authority (FDA), which is known to be safe and effective for such use based on previous knowledge or professional advice.³⁻⁵ The use of prescribed drugs that are not available legally to be sold without a physician’s recommendation is the irresponsible practice of self-medication, which is considered a major global issue.⁶⁻⁷

Several studies showed that self-medication practice is influenced by several factors such as sociodemographic factors, level and field of education, advertisements, advice from relatives or friends, availability of pharmacies, mobile applications, self-knowledge and previous prescriptions by the individual.⁸⁻¹⁰

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Self-medication is widely practiced in most developed and developing countries to solve common and minor health problems such as fever, headache, pains and infections. The most common drug groups usually taken for self-medication are antibiotics, analgesics, vitamins and antipyretics.

It is believed worldwide that self-medication could result in serious health hazards if practised without a good basis on medical and pharmacological aspects of drugs. It may result in severe adverse effects, severe interactions with other components, incorrect self-diagnosis or doses of therapy, masking of a serious underlying cause, delay in seeking medical advice, toxicity risk, dependence and abuse, and increased resistance of pathogens to certain antibiotics.

The brighter side of self-medication is that it is not always harmful. Some individuals are willing to take responsibility for their health problems by treating themselves and seeking help only when needed. This in turn will save money and lives, and will reduce the time needed to take an appointment available for others who may have more severe symptoms and require immediate treatment. Moreover, it prevents the leakage of resources, increases self-confidence on managing minor illness and reducing absenteeism because of them.

According to the WHO, participation of consumers in health regulation is important for controlling the process of drug regulation based on what is seen in many developed countries such as the USA and Canada. Despite the prevalence of self-medication practice among individuals in Saudi Arabia, few comprehensive studies were conducted to assess this practice. From what we observed, in Saudi Arabia, a lot of drugs can be obtained from pharmacies without a professional prescription. Studies of such nature will provide an illuminating view to this practice, which in turn might help the drug policy regulators to control the process of drug regulations and help plan appropriate interventions.

Those studies will also give an idea about the public’s attitude towards self-medication practice, which helps in establishing some educational programmes on acceptable self-medication practice and its limitations. This study was undertaken with the general aim of determining the knowledge, attitudes and practices of undergraduate students at King Saud University with regard to self-medication in the last three months.

**MATERIALS AND METHODS**

A quantitative cross-sectional study was carried out among the undergraduate students of King Saud University, the largest university in Saudi Arabia, from November 2014 to April 2015. A pilot study on fifty students of the targeted population was conducted to test the suitability of data collection tools, to get a feedback on the questionnaire as well as to estimate the time needed to complete the questionnaire. The sample size was estimated to be 377 students using the following formula: \( N = \frac{pqL^2}{Z^2} \), where: \( N \) = the minimum sample size, \( P \) = estimate of the true conversion rate in the population (70% or 0.7), \( q \) = precision (1 - \( p \) or 0.3), \( L \) = margin of error (0.05) and \( Z \) = constant (1.96 for 95% confidence level); assuming the prevalence of self-medication as 70% with precision level of 5% at alpha with 0.05 and assuming a non-response rate of 25%. A convenient sample of 477 students from medical and non-medical colleges in King Saud University participated in this study. Medicine, nursing, dentistry, pharmacy and applied medical science are designated as medical colleges, while other colleges are designated as non-medical colleges. There were no exclusion criteria.

An anonymous self-administered Google online questionnaire that consisted of closed-ended questions developed in English and then translated into Arabic was used for this study. All respondents were native Arabic speakers. The questionnaire was designed to move automatically between the sections and its questions according to the respondent’s answer to some questions. There was a total of 26 questions on demographics, participants’ knowledge on self-medication, prevalence of self-medication in the last three months, indications and the drugs, determinants of self-medication including factors, sources of information and advantages and attitudes towards self-medication practice. Self-medication practice was considered as any event of using prescribed drugs and non-prescribed drugs without seeking medical consultation.

The questionnaire’s link was distributed to the targeted population through E-mail and social media applications such as: Twitter, WhatsApp and Path, since these three applications are most popular in Saudi Arabia. Prior to conducting the study, Ethics Committee’s approval was obtained from the Institutional Ethics Committee of King Saud University, Riyadh, Saudi Arabia, and a letter of consent was given.

Data were analysed using Statistical Package of Social Science (SPSS version 21.0). Descriptive statistics (frequencies and percentages) were used to describe the categorical study and outcome variables. Chi-square test was used to compare the distribution of proportions between two groups. \( P < 0.05 \) and 95% confidence interval (CI) were used to report the statistical significance of the results.

**RESULTS**

A total of 477 undergraduate university students agreed to participate in our cross-sectional study and filled the online questionnaire, giving the response rate of 100%. Table 1 shows the demographic characteristics of participants, 65.2% of whom were females (\( n = 311 \)). Of the participants, 74.2% were studying in medical colleges (medicine, pharmacy, dentistry, nursing and applied science) and 25.8% were in different fields of non-medical colleges. Most of the participants (97.1%) were unmarried.

The prevalence of self-medication within the study period was 50.9% (95% CI: 46.41, 55.39) of the respondents; 49.44% of medical and 55.28% of non-medical students. There was no significant difference in neither the male and
female students \( (P = 0.066) \), nor the medical and non-medical students \( (P = 0.264) \) [Table 1].

As shown in Table 2, cold and flu symptoms \( (P = 0.022) \) were the most common indications for self-medication among medical and non-medical students. Bacterial and viral infections \( (P = 0.001) \) were common indications for medical students (19.4%) compared to non-medical students (2.9%). The other indications were not significant [Table 2].

The conditions that might lead the participants to use self-medication were bacterial and viral infections (33.9% of medical and 8.3% of non-medical) and to increase body weight (81% of medical and 25% of non-medical), which showed highly significant differences between medical and non-medical students \( (P = 0.005) \) and \( (P = 0.021) \), respectively.

Analgesics \( (P = 0.333) \) was the most common drug used for self-medication among medical and non-medical students (89.7% and 85.3%, respectively). It is followed by flu medications \( (P = 0.231) \). Aspirin \( (P = 0.013) \) and herbas \( (P = 0.0001) \) were reported to be highly used by non-medical students. On the other hand, antispasmodics \( (P = 0.008) \) were reported to be highly used by medical students (12.6%) compared with non-medical students (1.5%). The others were not significant [Table 3].

Of the participants, 46.8% of the medical students have used antibiotics previously without a prescription while only 19.4% of the non-medical students \( (P = 0.007) \) did. Antispasmodics have been used previously without a prescription by 32.3% of the medical students and only 8.3% by the non-medical students \( (P = 0.007) \).

As shown in Table 4, analgesics \( (P = 0.055) \) were thought to be safely used for self-medication by a high percentage of respondents (94.1% of the medical and 98.4% of the non-medical students). Flu medications \( (P = 0.028) \) and antipyretics \( (P = 0.003) \) relatively have similar percentages. Antacids \( (P = 0.008) \) and antispasmodics \( (P = 0.001) \) were thought to be safely used by a high percentage of medical students. Herbas \( (P = 0.0001) \) and aspirin \( (P = 0.003) \) were thought to be safely used by a high percentage of non-medical students [Table 4].

As shown in Table 5, several attitudes towards self-medication were significantly different between medical and non-medical undergraduate students [Table 5].

Of the factors that led the respondents to self-medication; they were ranked from the most common to the lowest: Previous experience to manage the same symptoms \( (P < 0.0001) \), saving time \( (P < 0.0001) \), saving money \( (P = 0.0001) \), availability of the drugs \( (P < 0.0001) \), unfriendly medical staff \( (P < 0.0001) \), availability of drug stores \( (P < 0.0001) \) and non-availability of nearby medical centre \( (P < 0.0001) \).

Of the advantages that led the respondents to self-medicate, the most common was saving time \( (P < 0.0001) \). Decreasing the overload on the medical centres \( (P < 0.0001) \) and saving lives in acute cases \( (P < 0.0001) \) were not an advantage for around 90.3% of the respondents. Saving money \( (P = 0.315) \) and increasing self-confidence in managing minor illness \( (P = 0.927) \) were not significant.

The most common sources for obtaining information by respondents were previous experience with the same symptoms (76.23%) and self-knowledge (63.93%), and all are highly significant \( (P < 0.0001 \) and \( P = 0.003 \), respectively).
Advertisements, social media and mobile apps were almost ignored by the respondents [Figure 1].

As reported by the respondents, the potential risks of self-medication were incorrect self-diagnosis (66.81%), drug-drug interaction (49.79%), masking of a serious disease (47.27%), incorrect therapy dose (46.64%), decreased efficacy of some drugs (23.74%) and increased pathogen resistance (36.55%).

**Table 4: Safety beliefs on drugs used in self-medication**

| Drug Category                      | Medical, *n* = 354 (%) | Non-medical, *n* = 123 (%) | *χ²* | *P*  |
|-----------------------------------|------------------------|----------------------------|------|------|
| Analgesics                        | 333 (94.1)             | 121 (98.4)                 | 3.688| 0.055|
| Antibiotics                       | 31 (8.8)               | 14 (11.4)                  | 0.736| 0.391|
| Flu treatment                     | 297 (83.9)             | 113 (91.9)                 | 4.805| 0.028|
| Antipyretics                      | 309 (87.3)             | 119 (96.7)                 | 8.862| 0.003|
| Allergies treatment               | 147 (41.5)             | 43 (35.0)                  | 1.642| 0.200|
| Antacids                          | 167 (47.2)             | 41 (33.3)                  | 7.112| 0.008|
| Anti-nausea/vomiting medicines    | 131 (37.0)             | 38 (30.9)                  | 1.490| 0.222|
| Antidiarrhoeal                    | 118 (33.3)             | 40 (32.5)                  | 0.027| 0.869|
| Anti-colic                        | 114 (32.2)             | 39 (31.7)                  | 2.644| 0.104|
| Antispasmodic                     | 98 (27.7)              | 15 (12.2)                  | 12.113| 0.001|
| Aspirin                           | 122 (34.5)             | 61 (49.6)                  | 8.837| 0.003|
| Applied creams                    | 242 (68.4)             | 82 (66.7)                  | 0.120| 0.729|
| Oral contraceptives pills         | 78 (22.0)              | 23 (18.7)                  | 0.608| 0.435|
| Vitamins                          | 234 (66.1)             | 86 (69.9)                  | 0.602| 0.438|
| Herbals                           | 145 (41.0)             | 82 (66.7)                  | 24.185| 0.0001|

**Table 5: Attitudes towards self-medication**

| Attitude                                                                 | Medical, *n* = 354 (%) | Non-medical, *n* = 123 (%) | *χ²* | *P*  |
|-------------------------------------------------------------------------|------------------------|----------------------------|------|------|
| If you are not sure about the self-prescribed drug, you have to check with the doctor |                        |                            |      |      |
| Agree                                                                   | 344 (97.2)             | 107 (87.0)                 | 18.910| 0.0001|
| Disagree                                                                | 3 (0.8)                | 3 (2.4)                    |      |      |
| I do not know                                                           | 7 (2.0)                | 13 (10.6)                  |      |      |
| It is acceptable to use non-prescribed drugs for a short period of time |                        |                            |      |      |
| Agree                                                                   | 193 (54.5)             | 74 (60.2)                  | 7.250| 0.027|
| Disagree                                                                | 108 (30.5)             | 23 (18.7)                  |      |      |
| I do not know                                                           | 53 (15.0)              | 26 (21.1)                  |      |      |
| It is safe to use several drugs at the same time if each one was prescribed for a different symptom |                        |                            |      |      |
| Agree                                                                   | 57 (16.1)              | 26 (21.1)                  | 23.399| 0.0001|
| Disagree                                                                | 253 (71.5)             | 61 (49.6)                  |      |      |
| I do not know                                                           | 44 (12.4)              | 36 (29.3)                  |      |      |
| It is acceptable to self-medicate to treat chronic illness, for example, diabetes and hypertension |                        |                            |      |      |
| Agree                                                                   | 24 (6.8)               | 16 (13.0)                  | 21.508| 0.0001|
| Disagree                                                                | 310 (87.6)             | 86 (69.9)                  |      |      |
| I do not know                                                           | 20 (5.6)               | 21 (17.1)                  |      |      |
| It is acceptable to use previously prescribed drugs to treat the recurrent attacks of chronic illness such as allergy or rheumatoid arthritis |                        |                            |      |      |
| Agree                                                                   | 136 (38.4)             | 56 (45.5)                  | 24.395| 0.0001|
| Disagree                                                                | 169 (47.7)             | 31 (25.2)                  |      |      |
| I do not know                                                           | 49 (13.8)              | 36 (29.3)                  |      |      |

**Discussion**

This study was conducted to evaluate the knowledge, attitude and practice of self-medication among undergraduate university students. The prevalence of self-medication in our study was found to be 50.9%. Some lower rates were reported by a study that was conducted in Bahrain (44.8%) [23] and some higher rates were reported by studies that were conducted in Pakistan [24] (76%) and Ain Shams University, Egypt (55%). [25] 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. 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. There were no significant differences in the prevalence of self-medication practice among females and males ($P = 0.066$) as shown in the results of the study that was conducted in Slovenia.

Interestingly, our study showed no significant differences in the prevalence of self-medication among medical and non-medical students, unlike the study conducted in Palestine that showed significant differences.

In our study, cough and flu were the most common morbidities which prompted the students to practice self-medication, and it was more prevalent among non-medical than medical students ($P = 0.022$). On the other hand, bacterial and viral infections were more prevalent among medical than non-medical students ($P = 0.001$). In a study conducted among medical students in Bahrain, headache was the most common indication followed by cough/cold. Other studies conducted in India and Ethiopia reported that fever was the most common indication for self-medication.

The drugs that are commonly used for self-medication in our study were analgesics (88.5%) followed by flu treatment, antipyretics, applied creams and vitamins. The study showed that herbs and vitamins were more prevalent among non-medical than medical students. This finding was in contrast to the study conducted in Slovenia. This could be due to differences in the study design since their study reported self-medication practice during a 1-year period which tends to recall bias while ours was during a 3-month period. Similar to our study, earlier studies reported that analgesics was the most commonly used group of drugs.

Antibiotics had been used previously by 36.1% of the study participants without prescription. This result was similar to other results reported by studies conducted in Karachi and India. In addition, studies from Nigeria and Egypt have reported a higher percentage in antibiotics as self-medication. However, this could be due to the lack of enforcement of regulatory policies regarding prescription and OTC sale of antibiotics.

Incorrect self-diagnosis, drug-drug interaction and masking of a serious disease were the most common concerns about self-medication found in our study. These findings were similar to observations made in Bahrain and Egypt.

Based on our knowledge in the field as medical professionals, we found that the attitude of medical students towards self-medication was better than that of non-medical students. This claim was demonstrated as 24% of the medical students would self-medicate first without seeking medical consultation, and the percentage was 17% higher in non-medical students. That could be referred to the knowledge factor of the medical students. Another observation made in our study regarding attitude showed that 45.3% of the students would always read the leaflet before using the drug, with no significant differences between medical and non-medical students. Moreover, our study showed that 40.7% of the respondents were against encouraging self-medication practice, while nearly more than half of the respondents were in agreement to this, to some extent.

Regarding factors that increase the students’ tendency to self-medicate, previous experience to manage the same symptoms was the most common one in our study. This can lead to serious health hazards as a result of misdiagnosed diseases and incorrect treatment. It is considered to be one of the serious implications as a consequence of improper self-medication practice. Saving time to see the doctor and saving money were other factors reported by the respondents to our study. These reasons for self-medication were frequently reported in other studies. In another study conducted in Saudi Arabia, minor illness followed by saving time were the most common reasons to practice self-medication.

The previous experience with the same symptoms was the main source of information regarding self-medication, followed by self-knowledge, pharmacist and advices from families and friends. A study conducted in Iran showed that advices from friends and families were the most common source of information. This was also compatible with other studies.

**Limitations**

The study was about self-medication in the past three months of the study period; therefore, there might be a recall bias. Because it is a cross-sectional study, it illuminates the current situation; winter time, which may be different in other seasons. In addition, the participants were mostly from the medical fields, because it was easier to reach them since we are in a medical school. We cannot generalise the results among other universities; by the reason of studying only one university in Saudi Arabia.

**Conclusion/Recommendations**

The results of our study which was conducted among undergraduate students at King Saud University provide evidence that half of the respondents practice self-medication. The findings in this study revealed that indications and drugs used for self-medication, attitudes towards self-medication, factors and advantages that led the respondents to self-medicate, sources for obtaining information and potential risks for self-medication as reported by the respondents all showed some highly significant results.

This study demonstrates the need to raise public awareness regarding the right way to self-medicate, becoming more conscious during any drug utilisation and the advisory role of pharmacists.
Saudi FDA is one of the main controlling tools as it aims to introduce a national regulatory system to protect public health and ensure safety, quality, efficacy and accessibility of drugs and products, and to provide accurate and scientific-based information to the specialists and public. 

Saudi FDA listed currently around 6700 drugs between prescribed and OTC, 1465 herbal products and 274 vitamins on its website. However, through this study, we found that medications in Saudi Arabia are easily accessed by the public. On that account, we highly suggest that the marketing process of OTC and prescribed drugs should be monitored and followed-up by the Ministry of Health and Saudi FDA to control the illegal marketing methods and to enhance the public’s pharmaceutical education.

In addition, we highly suggest further research conduction in regards to the practice of self-medication with traditional medicine as herbs were remarkably used in our community and our results drew our attention to this point. Future research regarding the prevalence of self-medication among larger samples in different cities of Saudi Arabia is also recommended.

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Conflicts of interest

There are no conflicts of interest.

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