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**ISSN No: 2319-5886**

**International Journal of Medical Research & Health Sciences, 2019, 8(2): 79-85**

# Self-Medication in Saudi Arabia-A Cross Sectional Study

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**ABSTRACT**

***Background:*** *Self-medication is a global phenomenon that is common in developing countries where people can buy prescription medicines without a physician's advice. Irresponsible self-medication may have an effect at the individual level as well as the community level. At the individual level, self-medication may cause potential health risks including wrong diagnosis, incorrect medication prescriptions, adverse events, failure to recognize pharmaceutical risks and contraindications, and prolonged use of drugs resulting in potential physical harm. At the community level, self-medication may promote drug-induced diseases, leading to wasteful public expenditure.* ***Methodology:*** *A substantial sample size of 2979 patients was collated from August 2016. The questionnaire was promulgated through electronic means to patients from all over Saudi Arabia. Informed consent was taken from all patients prior to the questions within the questionnaire. The privacy of the respondents was respected, and all data were analyzed anonymously.* ***Results:*** *The majority of participants (74.4%) were young adults between the ages of 21-40 years. Total 81.4% of respondents had used a prescription drug without first obtaining a physician's advice. The drugs used without prescription were analgesics (84.1%), antipyretics (70.9%), and antitussive syrups (46.9%).* ***Conclusions:*** *The frequency of self-medication in KSA is alarmingly high, where the most common type of drugs used without a prescription is analgesics. There is a need for larger studies to evaluate the cause and outcome of self-medication in KSA so that proper legislation and policies can be implemented to provide a better and safer healthcare system that is easy for every Saudi individual to access.*

**Keywords:** Self-medication, Self-care, Saudi Arabia

## INTRODUCTION

Self-medication refers to obtaining medicines without a prescription, purchasing drugs based on a previous prescription, or sharing medicines with relatives [1]. It may include the practice of using leftover medicines at home to treat self-diagnosed symptoms or diseases. The World Health Organization (WHO) defines self-medication as "the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms" [2]. Although self-care and self-medication are an important component of healthcare provision, self-medication may nevertheless be safe or unsafe. The US Food and Drug Authority (FDA) defines OTC medicines as "drugs that are safe and effective for use by the general public without seeking treatment by a health professional" [3]. Globally, the use of OTC drugs without a prescription is an acceptable practice [4]. Using OTC drugs without a prescription is regarded as responsible self-medication; however, use of prescription drugs without a prescription is regarded as unsafe self-medication, as these drugs may lead to dangerous outcomes [4]. Although OTC drugs reduce the number of visits to clinicians, decrease the cost, and save time, misuse of these drugs may result in side effects, drug-drug reactions and overdosing, affecting the individuals adversely [5]. Moreover, the popularity of OTC drugs increases the potential for these drugs to be abused.

Although self-medication is a global phenomenon, it is common in developing countries where people can buy prescription medicines without a physician's advice. The reasons why self-care and self-medication are increasing in developing countries is that the drugs are costlier and not easily available. Other reasons include lack of health services, ignorance, misbeliefs and extensive advertising of the drugs. Moreover, prescription drugs are OTC drugs

in many developing countries. Hence, self-medication becomes a relatively easy choice for the population [6]. It has been reported that more than 35% of prescription drugs dispensed OTC in the Kingdom of Saudi Arabia (KSA) [4]. A study reported that 44.8% of medical students self-medicate [7]. According to one estimate, about 75% of the youth population in developing countries uses medicines without prescription within a period of one year [8]. Similarly, in Kuwait, 92% of young adolescents self-medicate [9]. It has also been reported that the use of OTC drugs increases with income and education [10]. In KSA, 84.8% of analgesics are used as OTC drugs [11].

Self-care and self-medication have advantages and disadvantages. Gains from responsible self-medication can be achieved at the individual level as well as the community level. At the individual level, self-medication keeps the individual active in order to maintain his/her healthcare. It enables self-reliance in the management of minor medical conditions or ill health. The individuals enjoy the convenience of OTC drugs while enjoying the economic benefits, as they do not need to visit or wait for clinicians. At the community level, self-medication saves scarce medical resources, lowers the costs of community healthcare services, reduces absenteeism due to minor symptoms, reduces pressure on healthcare facilities, and increases the chances for rural or remote areas to obtain medicines at lower costs. In this context, countries are encouraging responsible self-care, including self-medication, in order to offer easy access to the healthcare system. According to an estimate, self-care can reduce visits to physicians by 10%, saving $5.2 billion on an annual basis in the United States [12].

Irresponsible self-medication may have an effect at the individual level as well as the community level. At the individual level, self-medication may cause potential health risks including wrong diagnosis, failure to reach an appropriate health facility, wrong medications for the medical conditions, adverse events, failure to recognize pharmaceutical risks and contraindications, prolonged use of drugs, potential physical harm due to incorrect administration of drugs, inadequate dosage, and incorrect handling of medicines. Moreover, individuals may fail to report adverse effects of the drugs that could help save others from such side effects. At the community level, self-medication may promote drug-induced diseases, leading to wasteful public expenditure. All of these adverse events, may be caused by self-medication, call for proper monitoring of OTC drugs. The most common OTC drugs worldwide are analgesics, antimicrobials, and drugs for GIT problems and coughs [13]. These most common OTC drugs may produce serious, even life-threatening, adverse effects.

In KSA, self-medication is considered high [14]. Moreover, unsafe self-medication is common in KSA due to lack of knowledge about drugs, both OTC and prescription medicines. Therefore, the population of KSA is at risk of problems generated by OTC drugs. This study was designed to determine the frequency and types of self-medication in KSA. The results of the study may help produce guidelines on OTC drugs and self-medication in order to offer better healthcare services to the population of KSA.

## METHODOLOGY

This topic was chosen for in-depth research to fulfill the aim of assessing the practice of self-medication in Saudi Arabia. To the best of the authors' knowledge, no such research has been conducted on this scale within Saudi Arabia so far. A comprehensive search was conducted till May 2016 on the PubMed, OVID Embase, OVID Medline, and Cochrane databases with the following search terms: 'self-medication', 'self-prescription' and 'Saudi Arabia'. The authors could identify articles with a primary focus on self-medication in Saudi Arabia. However, the sample size achieved by these studies was smaller, and some of the studies were scoped to antibiotics in particular. To meet the primary objective of assessing the practice of self-medication in Saudi Arabia, the authors designed and disseminated a questionnaire. This qualitative assessment was conducted in August 2016 and consisted of 15 targeted questions.

Using the 'Raosoft sample size calculator', we determined that a study population of 367 would be adequately powered, with a 5% margin of error as well as a 95% confidence interval. A substantial sample size of 2979 patients was recruited since August 2016 through convenience sampling. The questionnaire was promulgated through electronic means to patients from all over Saudi Arabia. Inclusion and exclusion criteria were adhered to strictly by the authors to ensure the integrity of the sample size, as well as the credibility of the data collected.

### Inclusion Criteria

Inclusion criteria were as follows-patients living in Saudi Arabia, a history of self-medication for at least 3 times in the preceding 1 year, both male and female genders, all ages and the provision of informed consent.

**Exclusion Criteria**

The exclusion criteria were as follows-formally diagnosed chronic medical condition requiring routinely prescribed medications, current hospitalization, recent hospitalization in the preceding 6 months, recent surgery in the preceding 6 months, and minors who failed to provide legal guardian consent to filling out the questionnaire.

Ethical approval for this study was obtained from the Dean of the College of Medicine as well as the relevant ethics and research boards of the hospitals involved in the study.

The questionnaire designed by the authors took into account the primary objective of the study to obtain concise and quantifiable data for analysis. The questionnaire is original and designed by the authors. It was not based on any previous studies or existing questionnaires for the purpose of exploring themes of self-medication. Self-medication was defined as the administration or ingestion of a non-prescribed medication by an individual. One of the limitations of this study is that the questionnaire was not pre-tested or validated. The questionnaire was delivered in Arabic through electronic media. There were 2 main advantages of the electronic means of dissemination. Firstly, the authors believed that the privacy of the home facilitated honest and thoughtful answering of the questions, which would intuitively improve the reliability of the data. Secondly, the electronic means of delivering and receiving the data precluded the need for the patients to invest time and financial resources to travel to a central headquarters for data collation. Informed consent was taken from all patients prior to the questions within the questionnaire. The privacy of the respondents was respected, and all data were analyzed anonymously. Indeed, the authors were blinded to the identities of the patients and were only permitted access to data which was stripped of patient identifiers. This measure was enacted to achieve complete patient confidentiality.

The questionnaire formulated by the authors consisted of 15 questions spanning the following domains: basic demographic data, educational background, self-medicating behavior, and reasons driving said behavior. The questionnaire may be found appended to this paper as Annex A-Self-Medication Questionnaire. The authors collected this data electronically and the data were analyzed independently and was manually extracted. The responses were manually entered into Microsoft Excel for quantitative analysis.

## RESULTS

Of the 2979 patients recruited for this study, a majority (74.4%) of them were young adults between the ages of 21-40 years. Majority of the respondents (72.4%) had a college education or higher, with 96.9% of all respondents having a high school education or higher. About 95% of the patients were Saudi-Arabian, and females (60.3%) outnumbered the males (39.7%). Further demographic details outlining the marital status or residential region of the respondents can be perused in Table 1 below.

**Table 1 Demographic details of respondents (n=2979)**

| Parameters | | Frequency | Percent |
|---|---|---|---|
| Age Category (Years) | 0-20 | 652 | 21.9% |
| | 21-30 | 1812 | 60.8% |
| | 31-40 | 404 | 13.6% |
| | 41-50 | 96 | 3.2% |
| | >50 | 15 | 0.5% |
| Nationality | Saudi | 2831 | 95.0% |
| | Foreigner | 148 | 5.0% |
| Gender | Female | 1797 | 60.3% |
| | Male | 1182 | 39.7% |
| Educational Level | Primary school | 29 | 1.0% |
| | Middle school | 63 | 2.1% |
| | High school | 731 | 24.5% |
| | College | 2005 | 67.3% |
| | Higher education | 151 | 5.1% |
| Marital status | Married | 727 | 24.4% |
| | Single | 2204 | 74.0% |
| | Widow | 7 | 0.2% |
| | Divorced | 41 | 1.4% |

| | | | |
|---|---|---|---|
| Residential region | Central region | 1538 | 51.6% |
| | Eastern region | 368 | 12.4% |
| | Western region | 607 | 20.4% |
| | Northern region | 194 | 6.5% |
| | Southern region | 272 | 9.1% |
| Number of kids | 1 | 211 | 36.4% |
| | 2 | 116 | 20.0% |
| | >2 | 253 | 43.6% |

The questionnaire sought to establish the self-medication behavior of the Saudi Arabian population first. OTC medication that was prescribed by pharmacists or doctors was not considered to be self-medication. To that end, 81.4% of respondents reported that they have used a prescription drug without first obtaining a physician's advice. This can be referenced in Figure 1.

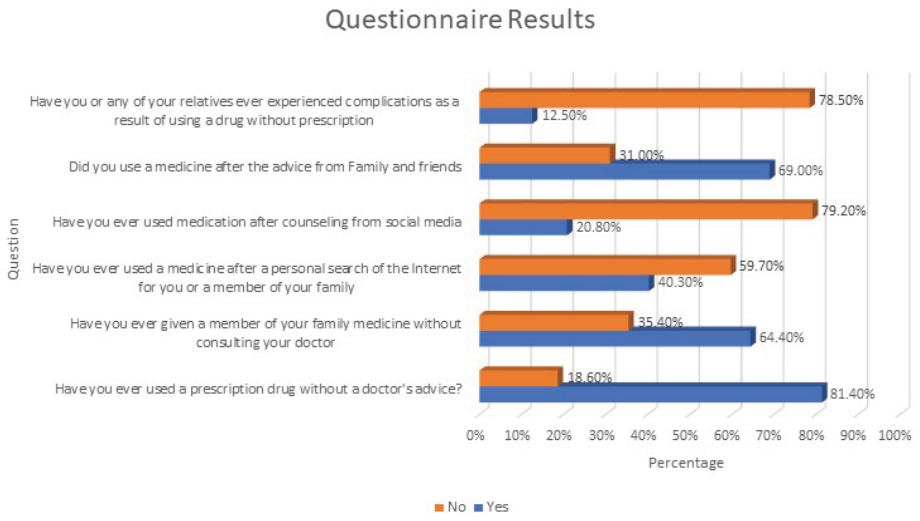


**Figure 1 Questionnaire results of respondents**

An analysis of these drugs was performed, and the results are as follows. The top 4 classes of self-medicated drugs in this population surveyed, are analgesics (84.1%), antipyretics (70.9%), anti-tussive syrups (46.9%) and antibiotics (37.3%). These results can be referenced in Figure 2.

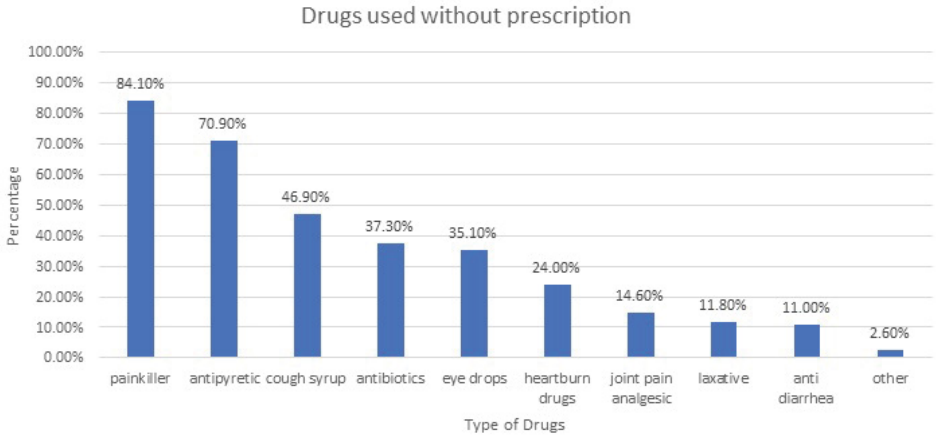


**Figure 2 Type of drugs used without a prescription**

Further to this, the authors also made an attempt to understand the reasons for driving self-medicating behavior. Crucially, the authors found the top 4 reasons to be, difficulty of access to hospitals (45.6%), lack of effectiveness of primary healthcare centres (44.8%), and a lack of medical insurance (22.1%) or a failure of existing medical insurance in covering the total cost (21.1%). These results can be referenced in Figure 3.

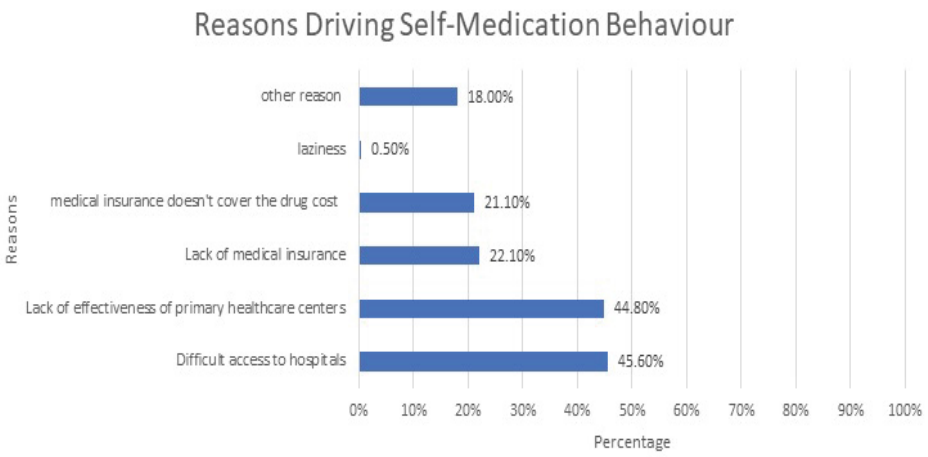


**Figure 3 Reasons driving self-medication behaviour**

Other elements of the questionnaire were designed to explore various facets of self-medication behavior in the surveyed population. For example, two questions took into account the accessibility of information in the technological era and explored if they could be related to self-medication. About 40.3% of respondents reported that they have either self-medicated after using an internet search engine or prescribed a drug to another family member. Fewer respondents (20.8%) reported that they have been self-medicated after seeking advice on social media platforms. These results can be referenced in Figure 1. Contrasting the results from these 2 questions which incorporate technologically augmented sources of information, 69% of respondents reported that they have self-medicated after seeking personal advice from family members or friends. These results suggest that the self-medicating behavior of the respondents may be driven largely by word-of-mouth from trusted sources, rather than the collective advice from social media or internet sources.

The authors also wanted to account for reasons which might drive against self-medication behavior. After all, 18.6% of the respondents reported that they had never used a prescription drug without a physician's advice. About 12.5% of respondents had claimed that they themselves, or their relatives had experienced complications as a result of using a drug without a prescription. Taking both of these results into account, one could infer that complications of self-medication could be a strong reason to abstain from self-medication.

## DISCUSSION

Being a global phenomenon, self-medication is common in KSA. Most of the respondents were single or residents of the central region of KSA. In the present study, 81.4% of respondents claimed to be self-medicated without a prescription from the clinician. The most common types of drugs used as self-medication were analgesics, antipyretics, antitussive syrups, and antibiotics. Most of the respondents claimed that they self-medicated after seeking personal advice from family members or friends. The most common reasons for self-medicating were difficulty in accessing hospitals, lack of effectiveness of primary healthcare centers, and a lack of medical insurance or failure of existing medical insurance in covering the total cost. A few respondents claimed that they or their relatives experienced adverse effects after self-medicating.

KSA is considered a country with a high prevalence of self-medication [15]. Analgesics are the most common drugs used in KSA, followed by antibiotics, proton pump inhibitors (PPIs), antidiabetics and antihyperlipidemics [16]. In the present study, a large number of participants (81.4%) responded positively to self-medication. A study conducted by Babakor and Alghamdi, which included 400 patients attending primary healthcare centers in Jeddah, KSA, to determine knowledge and attitude towards the side effects of OTC analgesics, reported an alarming prevalence of self-medication with OTC analgesics, without awareness of the risks [11]. They reported self-medication with OTC analgesics in 84.4% of patients on a weekly basis, and most were using twice weekly (59.3%). They also reported Acetaminophen (86.1%) as the most common OTC analgesic, followed by Ibuprofen (25.1%) and Diclofenac (14.7%) used for symptoms such as a headache, arthralgia, and toothache. Importantly, this study supports the results of the present study in terms of frequency of use of OTC drugs by Saudi residents. Alhomoud, et al., reviewed 22 studies on the prevalence, causes, and outcomes of self-medication with antibiotics in the Middle East [1]. They

reported a 19-82% prevalence of self-medication with antibiotics, with penicillin the most common antibiotic used for self-medication. Age, gender, education, and economic status were the main determinants of this self-medication. Recently, Alghadeer, et al., conducted a cross-sectional study that included 1264 respondents, using an online survey and the snowball technique to determine the prevalence of self-medication with antibiotics in KSA [17]. They reported that 34.4% of respondents used self-medication with antibiotics, while 51.6% of respondents never used antibiotics without a prescription. However, the results may vary from the actual prevalence of self-medication with antibiotics due to the online survey, which enabled a higher level of dishonesty by respondents.

Self-medication may arise for various reasons and may vary from region to region, depending on a number of factors. In the present study, we identified difficulty in accessing hospitals, lack of effectiveness of primary healthcare centers, and lack of medical insurance as major reasons for self-medication. In this regard, difficulty in accessing primary healthcare centers raises a question on the strong economy of KSA. Babakor and Alghamdi also evaluated the reasons for self-medication with OTC analgesics and found that minor health problems, previous experience with the medicine, and lack of time were the most common reasons [11]. Similarly, Alhomoud, et al., reported that the reasons for self-medication with antibiotics included socio-cultural, economic and regulatory factors [1].

Although the cost of self-medication is low, saves time and covers a large region, it may result in negative or harmful outcomes. Negative outcomes may include allergies, severe drug reactions, and even organ failure. Babakor and Alghamdi reported side effects of OTC analgesics in 7.1% of the study population [11]. Alhomoud, et al., reported outcomes in only 3 out of 22 studies, while 2 out of 3 studies reported negative outcomes in the form of allergies, side effects, persistent illnesses, and drug-drug interactions [1]. In the present study, 12.5% of respondents claimed that they or their relatives had experienced complications because of self-medication.

## CONCLUSION

The frequency of self-medication in KSA is alarmingly high, and the most common type of drug being used without a prescription is analgesics. The most common reasons for self-medication in KSA are difficulty in accessing healthcare facilities, ineffective healthcare centers, and lack of insurance. However, self-medication resulted in fewer negative outcomes. In this context, difficulty in accessing medical facilities by the people of KSA could indicate poor healthcare management. However, this study might not have produced an accurate frequency of self-medication and the side effects due to questionnaire bias. Therefore, there is a need for larger studies to evaluate the cause and outcome of self-medication in KSA, so that proper legislation and policies can be implemented to provide a better and safer healthcare system that every Saudi individual can easily access.

**What is Already Known on this Topic**

Include a maximum of 3 points of what is already known on this topic (in bullet points):

- More than 35% of prescription drugs are dispensed over-the-counter (OTC) in Saudi Arabia. Of these, analgesics, antimicrobials and symptomatic medications for GIT and respiratory symptoms predominate. This leads to the self-medicating behavior amongst the Saudi Arabian population
- Self-medication may reduce visits to the physician by as much as 10%. It has been shown to save the United States at least $5.2 billion annually
- However, self-medication is not without its disadvantages. Individually, it may confer additional health risks by means of misdiagnosis, adverse events or side-effects, abuse of medications, and inadequate dosage or improper administration

**What this Study Adds**

Include a maximum of 03 points of what your study adds (in bullet points)

- The reasons for self-medication in Saudi Arabia were explored. Of these, the most common reason given by participants was the difficulty in accessing hospitals in Saudi Arabia, followed by a lack of effectiveness of primary healthcare centers
- Self-medicating behavior amongst Saudi Arabians may be largely driven by word of mouth or trusted sources, as opposed to social media or internet-derived sources

- Abstinence from self-medication amongst Saudi Arabians may be influenced by previous negative experiences owing to complications arising from it

## DECLARATIONS

### Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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