

ORIGINAL ARTICLE

# The prevalence and detriments of self-medication; a school-related experience in Makkah city, Saudi Arabia

Abdulrahman M. Alharthi<sup>1\*</sup>, Salah M. Bakry<sup>1</sup>, Nasser M. Al Shanbari<sup>1</sup>,  
Suhail S. Alfaifi<sup>1</sup>, Ayoub S. Alzahrani<sup>1</sup>, Ahmed S. Alsubhi<sup>1</sup>,  
Mohammed G. Fintyana<sup>1</sup>, Sara A. Baghdadi<sup>1</sup>, Renad Bukhari<sup>2</sup>,  
Anas M. Alghumuy<sup>2</sup>, Mohamed A. Elhefny<sup>3,4</sup>

## ABSTRACT

**Objective:** This study aimed to investigate the prevalence and detriments of self-medication among school students and teachers in Makkah city, Saudi Arabia.

**Methods:** This was a cross-sectional study conducted through an online previously validated self-administered questionnaire, which was distributed to school teachers and students in Makkah city from August 2022 to November 2022.

**Results:** The study included 399 participants, and more than half of them had frequent use of self-medication ( $n = 211$ , 52.88%). Medications used by the participants mostly were analgesics ( $n = 168$ , 42.1%), followed by eye drops ( $n = 45$ , 11.3%)

**Conclusion:** Investigating the level of knowledge about self-medication is strongly recommended. In addition to raising awareness of self-medication by establishing numerous programs and campaigns.

**Keywords:** Medication, Makkah, risk, school students, prevalence.

## Introduction

Self-care is something that plenty of people do to stay healthy and deal with minor ailments. Self-medication is described by the World Health Organization as ‘the choice and use of medications by individuals to address self-recognized illnesses or symptoms’ [1,2]. Over the counter (OTC) medications are those that are “safe and beneficial for use by the general population without seeking treatment from a health professional,” according to the US Food and Drug Authority [1,3]. OTC self-medication is referred to as responsible self-medication and is accepted globally [1,2]. However, purchasing drugs without a doctor’s prescription is risky and is considered unsafe self-medication [1,2].

According to reports, consumers in developing nations frequently self-medicate, and it is possible to get prescription drugs without even a prescription [1,4,5]. According to a recent survey, 35% of Saudi Arabian patients who visit primary care facilities had used self-medication at some point [1,6].

Self-medication among students at school age has the potential to have negative impacts on both teenagers and the entire community [7]. Parents and children in school-age groups might not know enough about the substances they use, which could cause significant issues and complications [7,8]. Most are not aware of inaccurate self-diagnosis, appropriate dose, route of administration, potential dangers and adverse outcomes, drug interactions, inappropriate way to use, and risk of dependence and misuse, which could result in fatal complications [7].

**Correspondence to:** Abdulrahman M. Alharthi

\*Medical Student, Faculty of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia.

**Email:** AbdulazizAldhilan@gmail.com

*Full list of author information is available at the end of this article.*

**Received:** 28 November 2022 | **Accepted:** 7 December 2022



Self-medication among students of school age has the potential to have negative impacts on both teenagers and the entire community [7]. Parents and children in school-age groups may not know enough about the substances they use, which can cause significant issues and complications [7,8]. Most are not aware of inaccurate self-diagnosis, appropriate dose, route of administration, potential dangers and adverse outcomes, drug interactions, inappropriate way to use, and risk of dependence and misuse, which could result in fatal complications [7].

Self-medication was evaluated in an international cross-sectional survey of 123,227 school students in three age groups including 11, 13, and 15 years. In all 28 countries included in the study, analgesic use was higher in girls than boys, and the use of analgesics for headaches increased with age [9]. Data from the United States revealed that analgesic use was higher among female students than among males, while medications for sleeplessness or nervousness were used by 10% or less among both genders [10]. Because earlier research primarily looked at the problem of self-medication among the adult population, there is a need to understand this issue better among school students in Makkah city, Saudi Arabia. Thus, this study aimed to investigate the prevalence and detriments of self-medication among school students and teachers in Makkah city, Saudi Arabia.

## Subjects and Methods

A cross-sectional study was carried out among the teachers and students in Makkah city, from August to November 2022. Any resident in Makkah, who was a teacher or a student at the time of data collection and agreed to participate in the study, both sexes, any nationality, could read, and had a social media account were included in the study.

The sample size was calculated using the epi info program based on a 95% confidence interval, a 5% margin of error, and the total population. The estimated sample size was 384 and the response was 399. The study was conducted using an online self-administered questionnaire via Google Forms. A validated questionnaire was based on previously published studies [9]. The questionnaire's link was randomly shared on social media platforms. The aim of the study was displayed on the first page of the questionnaire. The questionnaire contained sociodemographic characteristics of the participants such as age group, sex, occupation, nationality, and family income. The questionnaire also included questions about the type of used medication in self-medication, medication duration, and action to take in case of ineffective medication.

This questionnaire was tested in a pilot study over a 20-participant sample, and the results were not included in the study. A few modifications were performed accordingly to assure clarity and a full understanding of the questions.

A convenient non-probability sampling technique was employed to collect the data from the participants.

Data were coded, entered, and analyzed using the Statistical Package for the Social Science version 23. Qualitative data were expressed in the form of numbers and percentages (*N* & %). Chi-square test was used to examine qualitative data between the two groups.

## Results

This electronic survey-based study enrolled 399 participants with a mean age of 21.88 [standard deviation (SD) = 10.68] from Makkah city schools. Most participants were 18 years old or less (*n* = 281, 70.4%), while females represented the majority of responses (*n* = 259, 64.9%). Additionally, student participants have the predominant responses compared with teachers (*n* = 332, 83.2%), while Saudi participants showed the majority of responses (*n* = 367, 92%). Furthermore, most participants' family income was more than 10,000 (SAR) (*n* = 154, 38.6%). Most of the participants had no previous chronic disease. Participants with diabetes represent 4%, followed by asthma at 1.8%, and cardiac disease at 0.8% (Table 1).

Regarding the prevalence of frequent self-medication use among participants, most participants had frequently used self-medication (*n* = 211, 52.88%) (Figure 1).

The majority of participants were frequently using analgesics as self-medication, followed by eye drops [(*n* = 168, 42.1%) and (*n* = 45, 11.3%), respectively]. Regarding self-medication duration, most participants had no particular duration (43.1%). When participants were asked about the appropriate action to take in case of ineffective medication use, most participants corresponded toward "go to hospital" (*n* = 297, 74.4%) (Table 2).

No statistically significant association was found between the prevalence of frequent use of self-medication and participants' demography (Table 3).

However, analgesics medication corresponded significantly with participants with frequent self-medication use (*p*-value > 0.001). Respectively, participants with less than 3 months of self-medication use corresponded significantly with frequent use of self-medication (*p*-value > 0.001) (Table 4).

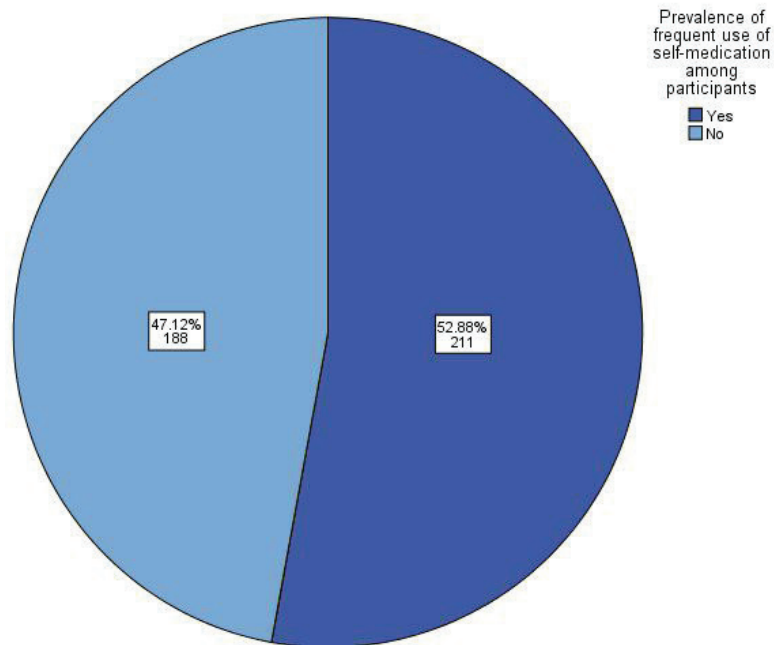
Participants' occupation shows insignificant association with the type of medication and action to take in case of ineffective medication (*p*-value 0.220 and 0.103, respectively). Moreover, student participants corresponded significantly with no particular duration of self-medication use (*p*-value 0.002), unlike teachers, which corresponded with less than 3 months as the duration in using medication (*p*-value 0.002) (Table 5).

## Discussion

Self-medication has been related to major health problems such as antibiotic resistance, adverse reaction, and prolonged suffering [10]. A published systematic literature review in 2017 has demonstrated that the

**Table 1.** Participants' demographical data.

Categories		N	%
Age groups	18 or less	281	70.4
	More than 18	118	29.6
Gender	Male	140	35.1
	Female	259	64.9
Occupation	Students	332	83.2
	Teacher	67	16.8
Nationality	Saudi	367	92.0
	Non-Saudi	32	8.0
Family income (SAR)	Less than 5,000	104	26.1
	Between 5,000 and 10,000	141	35.3
	More than 10,000	154	38.6
Previous chronic diseases	None	322	80.7
	Diabetes	16	4.0
	Asthma	7	1.8
	Cardiac disease	3	0.8
	Other	51	12.8
Age (mean) (SD)	Age mean = 21.88 (SD = 10.68)		



**Figure 1.** Prevalence of self-medication.

prevalence of self-medication misuse in Middle East countries was very high, with much-unexplored research, and a lack of information [11].

This study found that analgesics were the most frequently used medications accounting for 42.1% of the total medication types. A school-based cross-sectional study

conducted in Jordan coincides with the current findings that analgesics were the most commonly used medications but with a much higher percentage (76.1%) [7]. Another study conducted in Kuwait stated a percentage of 65% of participants used analgesics [12].

## Self-medication prevalence & detriments

**Table 2.** Information about self-medication among participants.

Categories		N	%
Type of using medication	Analgesics	168	42.1
	Eye drops	45	11.3
	Nose drops	27	6.8
	Vitamins	58	14.5
	Antibiotics	9	2.3
	Antihistamines	9	2.3
	Hormones	2	0.5
	Antidiarrheal	2	0.5
	Laxative	2	0.5
Other	77	19.3	
Duration of medication	No certain duration	172	43.1
	Less than 3 months	165	41.4
	3 months	23	5.8
	More than 3 months	39	9.8
Action to take in case of ineffective medication	Internet using	32	8.0
	Asking friends or relatives	18	4.5
	Go to pharmacy	36	9.0
	Go to hospital	297	74.4
	Continue taking the same medication	16	4.0

**Table 3.** The association between prevalence of frequent use of self-medication and participants' demography.

Categories	Prevalence of frequent use of self-medication		p-value	
	Yes	No		
Age groups	18 or less	142	139	0.147
	More than 18	69	49	
Gender	Male	71	69	0.524
	Female	140	119	
Occupation	Students	169	163	0.078
	Teacher	42	25	
Nationality	Saudi	197	170	0.281
	Non-Saudi	14	18	
Family income (SAR)	Less than 5,000	61	43	0.236
	Between 5,000 and 10,000	76	65	
	More than 10,000	74	80	
Previous chronic diseases	None	173	149	0.916
	Diabetes	8	8	
	Asthma	3	4	
	Cardiac disease	1	2	
	Other	26	25	

## Self-medication prevalence & detriments

**Table 4.** The association between prevalence of frequent use of self-medication and related information on self-medication use.

Categories		Prevalence of frequent use of self-medication		p-value
		Yes	No	
Type of using medication	Analgesics	106	62	>0.001*
	Eye drops	26	19	
	Nose drops	12	15	
	Vitamins	36	22	
	Antibiotics	6	3	
	Antihistamines	6	3	
	Hormones	2	0	
	Antidiarrheal	2	0	
	Laxative	2	0	
	Other	13	64	
Duration of medication	No certain duration	57	115	>0.001*
	Less than 3 months	111	54	
	3 months	16	7	
	More than 3 months	27	12	
Action to take in case of ineffective medication	Internet using	21	11	0.083
	Asking friends or relatives	12	6	
	Go to pharmacy	24	12	
	Go to hospital	145	152	
	Continue taking the same medication	9	7	

**Table 5.** The association between participants' occupation and self-medication-related information.

Categories		Occupation		p-value
		Students	Teachers	
Type of using medication	Analgesics	134	34	0.220
	Eye drops	41	4	
	Nose drops	22	5	
	Vitamins	47	11	
	Antibiotics	8	1	
	Antihistamines	9	0	
	Hormones	1	1	
	Antidiarrheal	1	1	
	Laxative	1	1	
	Other	68	9	
Duration of medication	No certain duration	156	16	0.002*
	Less than 3 months	132	33	
	3 months	16	7	
	More than 3 months	28	11	
Action to take in case of ineffective medication	Internet using	28	4	0.103
	Asking friends or relatives	18	0	
	Go to pharmacy	33	3	
	Go to hospital	239	58	
	Continue taking the same medication	14	2	

Antibiotics use recorded a lower rate among other self-prescribed medications which is 2.3%, this was different a few years back before the strict regulation of antibiotics prescription by the Saudi government. A published study in 2018 showed 34% of participants have used non-prescribed antibiotics [13], and 30.5% in another study [14], conducted in Saudi Arabia.

Most of the participants went to the hospital if the medication was ineffective in treating them, this approach is stimulated mainly by advice from family or friends (68.6% of cases), which is similar to another study [15].

In another study, there was a higher prevalence of antibiotic use among individuals older than 20 years, especially those who were single [15], and because the majority of the current participants were less than 18 years, very few participants reported antibiotic use among them, this might be due to easy accessibility and transportation for the older individual. Therefore, further measures to ensure the application of instructions regarding antibiotic use are highly recommended.

There were some limitations in this study. Recollection bias is possible since this study is based on an online self-reported questionnaire. Moreover, the results of this article could be more considerable if it was generalized to a larger population.

## Conclusion

It was found that more than half of the total participants had frequent use of self-medication, mostly analgesics and eye drops. Therefore, there is an increasing need for further studies investigating the level of knowledge about self-medication and its harm among both adults and teenagers. Additionally, establishing multiple programs and campaigns to raise awareness of self-medication and its consequences on different age groups of the community is highly recommended.

## Acknowledgment

The authors would like to thank all the participants who participated in this study.

## List of Abbreviation

OTC Over the counter

## Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

## Funding

None.

## Consent to participate

Written informed consent was obtained from all the participants.

## Ethical approval

An ethical approval was obtained from biomedical ethics committee of Umm Al Qura University, Makkah city.

Approval number (HAPO-02-K-012-2022-11-1276). Dated: 24/11/2022.

## Author details

Abdulrahman M. Alharthi<sup>1</sup>, Salah M. Bakry<sup>1</sup>, Nasser M. Al Shanbari<sup>1</sup>, Suhail S. Alfaifi<sup>1</sup>, Ayoub S. Alzahrani<sup>1</sup>, Ahmed S. Alsubhi<sup>1</sup>, Mohammed G. Fintyana<sup>1</sup>, Sara A. Baghdadi<sup>1</sup>, Renad Bukhari<sup>2</sup>, Anas M. Alghumuy<sup>2</sup>, Mohamed A. Elhefny<sup>3,4</sup>

1. Medical Student, Faculty of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia
2. Pharmacy Student, Faculty of Pharmacy, Umm Al-Qura University, Makkah, Saudi Arabia
3. Assistance Professor of Medical Genetics, Medical Genetics Department, Faculty of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia
4. Department of Cancer and Molecular Biology, National Cancer Institute, Cairo University, Cairo, Egypt

## References

1. Aljadhey H, Assiri GA, Mahmoud MA, Al-Aqeel S, Murray M. Self-medication in central Saudi Arabia: community pharmacy consumers' perspectives. *Saudi Med J*. 2015;36(3):328. <https://doi.org/10.15537/smj.2015.3.10523>
2. World Health Organization. The role of the pharmacist in self-care and self-medication: report of the 4th WHO Consultative Group on the Role of the Pharmacist, The Hague, The Netherlands, 26-28 August 1998. Geneva, Switzerland: World Health Organization; 1998.
3. U.S. Food and Drug Administration. Drug applications for over-the-counter (OTC) drugs [cited 2014 Dec 28]. Available from: <https://www.fda.gov/drugs/types-applications/drug-application-process-nonprescription-drugs>
4. Kagashe GA, Francis L. Dispensing of drugs with and without a prescription from private pharmacies in Dar es Salaam. *Tanz Med J*. 2004;19(1):36–9. <https://doi.org/10.4314/tmj.v19i1.39199>
5. Bawazir SA. Prescribing patterns at community pharmacies in Saudi Arabia. *Int Pharm J*. 1992 [cited 2022 Oct 22];6:222–4. Available from: [https://www.scirp.org/\(S\(i43dyn45teexjx455qlt3d2q\)\)/reference/ReferencesPapers.aspx?ReferenceID=1548872](https://www.scirp.org/(S(i43dyn45teexjx455qlt3d2q))/reference/ReferencesPapers.aspx?ReferenceID=1548872)
6. Alghanim SA. Self-medication practice among patients in a public health care system. *Eastern Mediterr Health J*. 2011;17(5):409–16. Available from: <https://pubmed.ncbi.nlm.nih.gov/21796954/>; <https://doi.org/10.26719/2011.17.5.409>
7. ALBashtawy M, Batiha AM, Tawalbeh L, Tubaishat A, AlAzzam M. Self-medication among school students. *J Sch Nurs*. 2015;31(2):110–6. <https://doi.org/10.1177/1059840514554837>
8. Buck M. Self-medication by adolescents. *J Pediatr Pharm*. 2007;13:1–4.
9. Albatti TH, Alawwad S, Aldueb R, Alhoqail R, Almutairi R. The self medication use among adolescents aged between 13-18 years old; prevalence and behavior, Riyadh-Kingdom of Saudi Arabia, from 2014-2015. *Int J Pediatr Adolesc Med*. 2017;4(1):19–25. <https://doi.org/10.1016/j.ijpam.2016.05.001>

## Self-medication prevalence & detriments

10. Bennadi, D. Self-medication: a current challenge. *J Basic Clin Pharm.* 2013;5(1):19–23. <https://doi.org/10.4103/0976-0105.128253>
11. Khalifeh MM, Moore ND, Salameh PR. Self-medication misuse in the Middle East: a systematic literature review. *Pharmacol Res Perspect.* 2017;5(4):e00323. <https://doi.org/10.1002/prp2.323>
12. Abahussain E, Matowe LK, Nicholls PJ. Self-reported medication use among adolescents in Kuwait. *Med Princ Pract.* 2005;14(3):161–4. <https://doi.org/10.1159/000084633>
13. Alghadeer S, Aljuaydi K, Babelghaith S, Alhammad A, Alarifi MN. Self-medication with antibiotics in Saudi Arabia. *Saudi Pharma J.* 2018;26(5):719–24. <https://doi.org/10.1016/j.jsps.2018.02.018>
14. Al-Hazmi AM, Arafa A, Sheerah H, Alshehri KS, Alekrish KA, Aleisa KA, et al. Prevalence of and risk factors for nonprescription antibiotic use among individuals presenting to one hospital in Saudi Arabia after the 2018 executive regulations of health practice law: a cross-sectional study. *Antibiotics.* 2021;10(8):923. <https://doi.org/10.3390/antibiotics10080923>
15. Al-Ghamdi S, Alfauri TM, Alharbi MA, Alsaihati MM, Alshaykh MM, Alharbi AA, et al. Current self-medication practices in the Kingdom of Saudi Arabia: an observational study. *Pan Afr Med J.* 2020;37:51. <https://doi.org/10.11604/pamj.2020.37.51.24098>