

Self-Medication Among King Khalid University Students, Saudi Arabia

This article was published in the following Dove Press journal:
Risk Management and Healthcare Policy

Sultan M Alshahrani ¹
Sirajudeen Shaik Alavudeen ¹
Khaled M Alakhali^{1,2}
Yaser Mohammed Al-Worafi ³
Ahmed K Bahamdan¹
Easwaran Vigneshwaran ¹

¹Clinical Pharmacy Department, College of Pharmacy, King Khalid University, Abha, Saudi Arabia; ²Clinical Pharmacy Department, College of Pharmacy, USCI University, Kuala Lumpur, Malaysia; ³Clinical Pharmacy Department, College Of Pharmacy, University of Science and Technology of Fujairah, Fujairah, UAE

Purpose: This study objective was to explore the pattern of self-medications among King Khalid University students, Saudi Arabia.

Patients and methods: A cross-sectional study was conducted over five months among King Khalid University students, Abha, Saudi Arabia.

Results: Among all the study participants, nearly 98.7% were practicing self-medication. Headache (75.9%), cough and cold (52.5%), and fever (35.6%) and body pain (24.6%) were the most reported symptoms. Use of painkillers (91.6%) was significantly predominant among the medical students, whereas non-medical students used antibiotics (35.4%). Time saving (64.2%), mild symptom (51.7%) and quick relief (36.9%) were the reasons behind seeking self-medication in this study.

Conclusion: Self-medications was common in King Khalid University. Educational programs are highly recommended.

Keywords: self-medication, students, medical, nonmedical, King Khalid University, Saudi Arabia

Introduction

The World Health Organization (WHO) refers the self-medication practice to “use of over-the-counter medication (OTC) to treat self-diagnosed symptoms or disorders, or for the continuous and re-use of prescribed medications for recurrent diseases”.¹ The United States Food and Drug Administration (FDA) delineates the OTC medications as the medications where the people can buy it with without prescriptions from prescribers.² Self-medication practice is also referred to the consumption of either drugs or herbs based on self-initiative or other people’s advice including friends, family, pharmacists, and popular magazines and newspapers.³ Self-medication practice is a global health-care problem especially in developing countries, which is led by economic and social motivations.⁴⁻⁷ The appropriate practicing of self-medication may reduce the burden on governments and health-care systems by reducing the waiting time at the hospital for getting treated by physicians and reduce the overall cost of health care services.^{8,9} However, the misuse of self-medication, herbal products and over the counter (OTC) drugs may result in significant health-related problems and consequences.¹⁰⁻¹²

In Saudi Arabia, as well as developing countries and as a result of this malpractice among pharmacy dispensers, people and students can buy what they need easily from the community pharmacies.^{4,7,13-15} The literature reported that the self-medication among university students was high.^{4-6,9,16} Although the comparison of self-medication practice

Correspondence: Yaser Mohammed Al-Worafi
College of Pharmacy, University of Science And Technology of Fujairah, Fujairah, UAE
Tel +971543041178
Email yworafi@yahoo.com

among medical versus non-medical university students was conducted in some other Arabic countries like Jordan and Egypt, there is no similar study -to our knowledge- has been conducted in Saudi Arabia.^{9,17} Besides, there is a lack of data about the self-medication in King Khalid University students. Therefore, the main aim of this study was to explore the pattern of self-medication among King Khalid University students, Saudi Arabia.

Materials And Methods

Study Design

This is a cross-sectional survey-based study that was conducted over five months between October 2018 and February 2019 among King Khalid University students, Abha, Saudi Arabia.

Sample Size And Sampling Technique

This study was conducted at King Khalid University in Abha city. From a previous study conducted on Saudi university students, the prevalence of self-medication among university students was found to be 86.9%.⁴ The total number of students enrolled at King Khalid University is about 60,000 students (59,495). The α -level was set at 5% and the confidence interval was set at 95% with 5% precision. Based on that assumption, the number of subjects was 502 students including male and female students from medical and nonmedical colleges. The total number of returned surveys was 528 out of 600 surveys distributed with a response rate ~ 88%.

Study Instrument And Data Collection

A self-administered questionnaire was adapted from the literature.^{4,5,16} Three lecturers from the clinical pharmacy department revised the survey for validation of the contents. Survey reliability was done by a pilot study by administering the survey to 10 faculties and 20 students and repeating these studies one week later. Cronbach's alpha coefficient was 0.73 which indicated that the survey could be used in this study. The validated survey was translated into the Arabic language from an independent agency. The participants were approached by pharmacy students (data collectors), and the purpose of the study was clarified, and the procedures of filling the survey were explained. The participation of the participants in the research was voluntary. Then, the participants were asked to read and sign the written consent form. Sufficient time was given to the participants to complete the survey forms. Sufficient time was given to the participants to complete the survey forms.

Ethical Considerations

Ethical approval was granted from the Ethical Regional Committee in Aseer Region and the College of Medicine at King Khalid University (REC#2018-03-65), and all participants were asked for their consent to participate in the study before being given the survey. The responses were anonymous and confidential, and the participants were informed that before start answering the questionnaire.

Statistical Analysis

The data received from the completed forms were entered into the Excel sheet and exported to statistical package for social sciences (SPSS), version 22.0 for Windows for statistical analysis. Both descriptive and inferential statistics were used for data analysis. The comparison between medical and nonmedical students was performed by using independent Student's *t*-test for continuous variables and ² test for categorical data. P value was considered significant if < 0.05 .

Results

Participant characteristics are listed in [Table 1](#).

The findings of this study show that there was a significant difference between medical and other students in terms of self-medication practice. The majority of non-medical students considered the self-medication is safe and does not prefer to read the leaflet before using it. Moreover, we observe nearly as twice as the medical students, the non-medical students prefer to obtain antibiotics as self-medication ([Table 2](#)).

Self-medication was reported by 98.7% of students. We observed a significant difference in the pattern of self-medication among these two groups of students ([Table 3](#)). The most commonly used drug classes as self-medication by all students in the past 6 months were pain killers (81.4%), cold and flu preparations (29.4), antibiotics (28.2%), eye/nasal drops (26.7%), cough syrups (25.8%) and antipyretics (20.8%). Use of some of the drug classes were significantly higher among medical students such as painkillers (91.6% vs 70.5%, $p=0.000$) and antihistamines (17.2 vs 9.8%, $p=0.014$), whereas, the use of antibiotics (35.4 vs 21.5%, $p=0.000$), antipyretics (25.6 vs 16.4%, $p=0.010$) and appetizers (4.3 vs 0.7%, $p=0.008$) were higher with non-medical students.

Headache (75.9%), cold (52.5.3%), fever (35.6%), body pain (24.6%) and tooth pain (22%) were answered by the participants. ([Table 3](#)).

Table 1 Sociodemographic Profile Of The Participants

Variables	Total (528), N (%)	Medical (274), N (%)	Non-Medical (254), N (%)	P value
Gender[†]				
Male	237 (44.9)	104 (38)	133 (52.4)	0.001*
Female	291 (55.1)	170 (62)	121 (47.6)	
Age in years ^{††}	22.4±4.3	22.35±2.46	22.48±5.67	
Area of living[†]				
Urban	415 (78.6)	228 (83.2)	187 (73.6)	0.008*
Rural	113 (21.4)	46 (16.8)	67 (26.4)	
Level of study[†]				
First Year	41 (7.8)	18 (6.6)	23 (9.1)	0.12
Second Year	70 (13.3)	30 (10.9)	40 (15.7)	
Third Year	84 (15.9)	46 (16.8)	38 (15)	
Fourth Year	151 (28.6)	72 (26.3)	79 (31.1)	
Fifth Year	120 (22.7)	71 (25.9)	49 (19.3)	
Intern Year	62 (11.7)	37 (13.5)	25 (9.8)	
Nearness to the hospital[†]				
5–25 min	405 (76.7)	208 (75.9)	197 (77.6)	0.502
25–60 min	96 (18.2)	54 (19.7)	42 (16.5)	
>60 min	27 (5.1)	12 (4.4)	15 (5.9)	
Medical history[†]				
Positive	44 (8.3)	22 (8)	22 (8.7)	0.875
Negative	484 (91.7)	252 (92)	232 (91.3)	
History of self-medication practice (period of six months)[†]				
Never	6 (1.3)	2 (0.7)	4 (1)	0.000*
Once	214 (40.5)	112 (40.9)	102 (40.2)	
Twice	131 (24.8)	73 (26.6)	58 (22.8)	
3 times	79 (15)	38 (13.9)	41 (16.1)	
4 times	31 (5.9)	11 (4)	20 (7.9)	
5 times	6 (1.1)	4 (1.5)	2 (0.8)	
> 5 Times	65 (12.3)	35 (12.8)	30 (11.8)	

Notes: *P value <0.05, statistically significant, [†] χ^2 test, ^{††}independent Student's t-test

Table 4 lists out the sources of information about self-medication. The primary source of information for taking self-medication among all the students was personal knowledge (51%), relatives (30%), pharmacists (26%) followed by friends (20%)

Table 5 represents the factors that influenced the study participants toward self-medication. A major portion of the students (64.2%) considered self-medication as time saving. Another 51.7% of students go for self-medication if they think the condition is not worth seeing doctors. Other reasons such as quick relief (36.9%), cost of treatment (26.7%) and previous experience also play important reasons that drive the students towards self-medication.

Discussion

98.7% were practicing self-medication in this study, which is higher than a study conducted by Saeed MS, et al 2014 reported that 86.6% of male students at Qassim University, Saudi Arabia practiced self medications.⁴ The findings of our study is similar to the studies conducted in Jordan¹⁷ and Bangladesh.¹⁸ Anyhow, this result is much higher than other studies conducted in various developing countries such as 43.2% in Ethiopia,¹⁹ 51% in Slovenia,²⁰ 55.3% in Pakistan,²¹ 55% in Egypt,²² 56.9% in Nigeria.²³

Prevalence of self-medication could be different from one study to another and could be affected by many factors such as study design, age of participants,

Table 2 Knowledge, Attitude And Practice (KAP) Of Participants Towards Self-Medication

Questions		Total Response (528), N(%)	Medical Students' Response (274), N(%)	Non-Medical Students' Response (254), N(%)	P value [†]
Do you know the medicines you consumed need prescription or not?	Yes	270(51.1)	108(39.4)	162(63.8)	0.000*
	No	258(48.9)	112(40.9)	146(57.5)	
Do you know the potential adverse drug reactions of the drug by which you self-medicated?	Yes	340(64.4)	199(72.6)	141(55.5)	0.000*
	No	188(35.6)	75(27.4)	113(44.5)	
Do you think self-medication is safe	Yes	160(30.3)	68(24.8)	92(36.2)	0.005*
	No	368(69.7)	206(75.2)	162(63.8)	
When you treat yourself with a medication, do you read the leaflet of the medication before using it?	Yes	377(71.4)	203(74.1)	174(68.5)	0.177
	No	151(28.6)	71(25.9)	80(31.5)	
Did you prefer antibiotic obtained as self-medication?	Yes	158(29.9)	56(20.4)	102(40.2)	0.000*
	No	370(69.5)	217(79.2)	150(59.1)	

Notes: *P value <0.05, statistically significant, [†] χ^2 test

People in Saudi Arabia can buy OTC medications as well as prescribed medications as a result of that pharmacies not adhere to the pharmacy law in Saudi Arabia.²⁴ This is common practice in many Arabic countries as well as developing countries,^{7,14,15,25} and this could affect the high prevalence of self-medication in this study. The findings of this study shows that medical students practiced self-medication more than non-medical students and this is partially explained by some of the variables such as the medical knowledge and exposure of the students, area of residence, availability of hospital facilities in their vicinity and their surroundings. Nearly 40% of the medical students and 64% of non-medical students did not know that if the medicines self-prescribed by them need prescription or not. Regarding the side effects, nearly 35% of the students did not know the potential side effects of the self-prescribed medicines. This study shows that the participants' knowledge toward self-medications was poor and on the other hand their attitude was positive and this is similar to the previous study in the central Saudi Arabia.¹³

The students participated in this study frequently used various classes of drugs to treat different illnesses (Table 3) and the study discipline had an influence on the practice of self-medication.

This study shows that there was a significant between medical students and others in terms of medications used. Medical students used painkillers, topical agents, herbs, nutritional supplements and antihistamines

drugs more than non-medical student did. Possibly, the medical or pharmaceutical knowledge gained in college might have given them the confidence to make decisions of self-medication²⁶ & type of medications used. Additionally, easy accessibility or availability of drugs and consultants and their colleagues' advice may also be the influencing factors. Previous knowledge & experience, pharmacists, physicians, friends & relatives recommendations were reported as the sources of self-medications in this study and this is similar to what reported in the literature.²⁷⁻³¹

The most common justification among the study population to indulge in self-medication was 'time saving' and 'conditions not worth seeing doctor'. This finding was harmonious with previous literature reported from Madinah, Saudi Arabia.³² Considering the health problem as a "mild illness" is an another commonly found justification(35.2%) for self medication among our study participants, which is inline with a study (34.2%) conducted by Abbas et al.³³ Contrarily, nearly two-third of students (69.7%) registered their attitude that self-medication practice is not safe. This was a precious finding as previous studies conducted among the same population reported that most of the students of Jazan University (52.6%) and Taibah University (87%) appeared totally against the practice.^{32,34}

Moreover, students' academic stress may be considered as one of the driving force of students towards self-medication. Even though the present study's objective is not of that context,³⁵ their academic responsibilities can

Table 3 Self-Medication Pattern Of Participants

Factor	Total Response (528), N (%)	Medical Students' Response (274), N (%)	Non-medical Students' Response (254), N (%)	P value
Which of the following drugs have you taken without prescription for the last 6 months?[‡]				
Pain killers	430(81.4)	251(91.6)	179(70.5)	0.000*
Antibiotics	149(28.2)	59(21.5)	90(35.4)	0.000*
Drugs for fever (antipyretics)	110(20.8)	45(16.4)	65(25.6)	0.010*
Antihistamines(anti-allergy)	72(13.6)	47(17.2)	25(9.8)	0.014*
Cough syrups	136(25.8)	71(25.9)	65(25.6)	0.933
Cold and flu preparations	155(29.4)	84(30.7)	71(28)	0.495
Anti-ulcer/acidity drugs	62(11.7)	28(10.2)	34(13.4)	0.259
Drugs for constipation	42(8)	18(6.6)	24(9.4)	0.222
Drugs for diarrhea	26(4.9)	13(4.8)	11(4.3)	0.820
Oral contraceptives	13 (2.5)	6(2.2)	7(2.8)	0.675
Anti-emetics	17(3.2)	9(3.3)	8(3.1)	0.930
Appetizers	13(2.5)	2(0.7)	11(4.3)	0.008*
Nasal/Ear/Eye drops	141(26.7)	75(27.4)	66(26)	0.719
Topical agents(skin treatment agents)	68(12.9)	44(16.1)	24(9.5)	0.27
Nutritional/energy supplements/vitamins	97(18.4)	51(18.6)	46(18.1)	0.911
Herbs	73(13.8)	40(14.6)	33(13)	0.616
For which of the following indications have you taken medications without prescription for the last 6 months?[‡]				
I do not take self medication	6(1.3)	2(0.7)	4(1.6)	0.360
Head ache	401(75.9)	202(73.7)	199(78.3)	0.214
Cough & common cold	277(52.5)	136(49.6)	141(55.5)	0.177
Fever	193(35.6)	102(37.2)	91(35.8)	0.739
Infection	28(5.3)	16(5.8)	12(4.7)	0.568
Heart burn/Ulcer	42(8)	14(5.1)	28(11)	0.012*
Allergy	58(11)	30(10.9)	28(11)	0.978
Disorder of digestive system (diarrhea, vomiting, constipation, etc)	73(13.8)	27(9.9)	46(18.4)	0.006*
Body pain	130(24.6)	69(25.2)	61(24)	0.756
Tooth pain	116(22)	62(22.6)	54(21.3)	0.704
Acne/skin diseases	54(10.2)	29(10.6)	25(9.8)	0.779
Menstrual problems	38(7.2)	25(9.1)	13(5.1)	0.075
Contraception	9(1.7)	4(1.5)	5(1.9)	0.652
Insomnia	45(8.5)	21(7.7)	24(9.4)	0.463
Hemorrhoids	12(2.3)	4(1.5)	8(3.1)	0.300

Notes: [‡]Number and percentage of positive responses,*p value <0.05, statistically significant, [†] χ^2 test

Table 4 Sources Of Information About Self-Medication

Source	Total Response (528), N (%)	Medical Students' Response (274), N (%)	Non-Medical Students' Response (254), N (%)	P value
Relatives	157 (29.7)	55(20.1)	102(40.2)	0.021*
Friends	104(19.7)	52(19)	52(20.5)	0.600
Personal knowledge	269(50.9)	172(62.8)	97 (38.2)	0.004*
Mass media	56(10.6)	28(10.2)	28(11)	0.715
Advised by Doctors but without prescription	95(18)	66(24.1)	29(11.4)	0.000*
Pharmacists or those working in the pharmacy	136(25.8)	83(30.3)	53(20.9)	0.018*

Notes: *P value <0.05, statistically significant

Table 5 Reasons For Self-Medication

Reason	Total Response (528), N (%)	Medical Students' Response (274), N (%)	Non-Medical Students' Response (254), N (%)	P value
Economical	141 (26.7)	74 (27)	67 (26.4)	0.870
Time saving	339 (64.2)	176 (64.2)	163 (64.2)	0.988
Privacy	55 (10.4)	20 (7.3)	35 (13.8)	0.015*
Quick relief	195 (36.9)	108 (39.4)	87 (34.3)	0.219
No hospital nearby	49 (9.3)	21 (4.9)	28 (11)	0.184
Conditions not worth seeing doctor	273 (51.7)	140 (51.1)	133 (52.4)	0.771
Previous experience	105 (19.9)	46 (16.8)	59 (23.2)	0.064
Health problem is not serious	186 (35.2)	89 (32.5)	97 (38.2)	0.170
Embarrassed of discussing own symptoms	16 (3)	9 (3.3)	7 (2.8)	0.723

Notes: *P value <0.05, statistically significant

hinder them from getting professional advice. It can be substantiated from the finding that students at King Khalid University understand the limits of self-medication.

Conclusion

Self-medication is high among medical and non-medical students at King Khalid University. Although the prevalence is similar among medical and nonmedical students, some differences with respect to medical indications and the type of drugs utilized were observed between students. Health professional colleges have to improve students' awareness about the consumption of prescription-only drugs such as antibiotics and its health consequences. The dispensing of medicine has to be controlled by Saudi health authorities through developing effective preventative and interventional strategies; thus, appropriate use of medications will be achieved.

Acknowledgments

We would like to thank all the participants in this study.

Author Contributions

All authors contributed to data analysis, drafting or revising the article, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

References

- World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in self-medication. WHO/EDM/QSM/00.1, 2000.

- FDA drug applications for Over-the-Counter (OTC) drugs. Available from: <https://www.fda.gov/drugs/types-applications/drug-applications-over-counter-otc-drugs>. Accessed October 29, 2019.
- Bennadi D. Self-medication: a current challenge. *J Basic Clin Pharm.* 2013;5(1):19. doi:10.4103/0976-0105.128253
- Saeed MS, Alkhoshaiban AS, Al-Worafi YM, Long CM. Perception of self-medication among university students in Saudi Arabia. *Arch Pharm Pract.* 2014;5(4):149.2.
- Albusalih FA, Naqvi AA, Ahmad R, Ahmad N. Prevalence of self-medication among students of pharmacy and medicine colleges of a public sector university in Dammam City, Saudi Arabia. *Pharmacy (Basel).* 2017;5(3):51. doi:10.3390/pharmacy503005
- Gualano MR, Bert F, Passi S, MichelaStillo V, Galis L, Siliquini R. Use of self-medication among adolescents: a systematic review and meta-analysis. *Eur J Public Health.* 2015;25(3):444–450. doi:10.1093/eurpub/cku207
- Al-Worafi YM. Pharmacy practice and its challenges in Yemen. *Australas Med J.* 2014;7(1):17. doi:10.4066/AMJ.2014.1890
- World Health Organization. Quality assurance and safety of medicines team). Safety of medicines: a guide to detecting and reporting adverse drug reactions: why health professionals need to take action. World Health Organization. 2002 Available from: <http://www.who.int/iris/handle/10665/67378>. Accessed October 29, 2019.
- Helal RM, Abou-Elwafa HS. Self-medication in university students from the city of Mansoura, Egypt. *J Environ Public Health.* 2017;2017:9145193. doi:10.1155/2017/9145193
- Morgan DJ, Okeke IN, Laxminarayan R, Perencevich EN, Weisenberg S. Non-prescription antimicrobial use worldwide: a systematic review. *Lancet Infect Dis.* 2011;11(9):692–701. doi:10.1016/S1473-3099(11)70054-8. Epub 2011 Jun 12.
- Alhomoud F, Aljamea Z, Almahasnah R, et al. Self-medication and self-prescription with antibiotics in the Middle East—do they really happen? A systematic review of the prevalence, possible reasons, and outcomes. *Int J Infect Dis.* 2017;57:3–12. doi:10.1016/j.ijid.2017.01.014
- Qato DM, Alexander GC, Conti RM, Johnson M, Schumm P, Lindau ST. Use of prescription and over-the-counter medications and dietary supplements among older adults in the United States. *JAMA.* 2008;300(24):2867–2878. doi:10.1001/jama.2008.892
- 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):328–334. doi:10.15537/smj.2015.3.10523
- Al-Worafi YM. Pharmacy practice in Yemen. In: Fathelrahman, A., Ibrahim, M. and Wertheimer, A., 2016. Pharmacy practice in developing countries: achievements and challenges. Academic Press.; 2016 Jan 1:267–287.

15. Fathelrahman A, Ibrahim M, Wertheimer A. *Pharmacy Practice in Developing Countries: Achievements and Challenges*. Academic Press; 2016 Feb 13.
16. Al Essa M, Alshehri A, Alzahrani M, et al. Practices, awareness and attitudes toward self-medication of analgesics among health sciences students in Riyadh, Saudi Arabia. *Saudi Pharm J*. 2019;27(2):235–239. doi:10.1016/j.jsps.2018.11.004
17. Alshogran OY, Alzoubi KH, Khabour OF, Farah S. Patterns of self-medication among medical and nonmedical University students in Jordan. *Risk Manag Health Policy*. 2018; 169–176. Published 2018. doi:10.2147/RMHP.S170181.
18. Seam MOR, Bhatta R, Saha BL, et al. Assessing the perceptions and practice of self-medication among Bangladeshi undergraduate pharmacy students. *Pharmacy (Basel)*. 2018;6(1):6. doi:10.3390/pharmacy6010006
19. Gutema GB, Gadisa DA, Kidanemariam ZA, et al. Self-medication practices among health sciences students: the case of Mekelle University. *J Appl Pharmaceutical Sci*. 2011;01(10):183–189.
20. Smogavec M, Softič N, Kersnik J, Klemenc-Ketiš Z. An overview of self-treatment and selfmedication practices among Slovenian citizens. *Slovenian Med J*. 2010;79::757–763.
21. Zafar SN, Syed R, Waqar S, Irani FA, Saleem S. Prescription of medicines by medical students of Karachi, Pakistan: a cross-sectional study. *BMC Public Health*. 2008;19:162. doi:10.1186/1471-2458-8-162
22. El Ezz NF, Ez-Elarab HS. Knowledge, attitude and practice of medical students towards self-medication at Ain Shams University. *Egypt J Prev Med Hyg*. 2011;52(4):196–200.
23. Fadare JO, Tamuno I. Antibiotic self-medication among university medical undergraduates in Northern Nigeria. *J Public Health Epidemiol*. 2011;3(5):217–220.
24. Al-Mohamadi A, Badr A, Mahfouz LB, Samargandi D, Al Ahdal A. Dispensing medications without prescription at Saudi community pharmacy: extent and perception. *Saudi Pharm J*. 2013;21(1):13–18. doi:10.1016/j.jsps.2011.11.003
25. Hasan S, Al-Omar MJ, AlZubaidy H, Al-Worafi YM. Use of medications in Arab Countries. In: Laher I, editor. *Handbook of Healthcare in the Arab World*. Cham: Springer; 2019.1-42.
26. Alkhatatbeh MJ, Alefan Q, Alqudah MA. High prevalence of self-medication practices among medical and pharmacy students: a study from Jordan. *Int J Clin Pharmacol Ther*. 2016;54(5):390–398.
27. Mehta RK, Sharma S. Knowledge, attitude and perception of self-medication among medical students. *IOSR J Nurs Health Sci*. 2015;4:89–96.
28. Kumar N, Kanchan T, Unnikrishnan B, et al. Perceptions and practices of self-medication among medical students in coastal South India. *PLoS One*. 2013;8:e72247. doi:10.1371/journal.pone.0072247
29. Eissa A. Knowledge, attitudes and practices towards medication use among health care students in King Saud University. *Int J Med Stud*. 2013;1:66–69.
30. Adnan S, Tanwir S, Abbas A, et al. Perception of physicians regarding patient counselling by pharmacist: a blend of quantitative and qualitative insight. *Int J Pharm Ther*. 2014;5:117–121.
31. Bhattarai N, Basyal D, Bhattarai N. Self medication practice among undergraduate pharmacy students in Kathmandu Valley, Nepal. *Int J Pharm Sci Res*. 2014;5(11):737–746.
32. Aljaouni ME, Hafiz AA, Alalawi HH, Alahmadi GA, AlKhawaja I. Self-medication practice among medical and non-medical students at Taibah University, Madinah, Saudi Arabia. *Int J Acad Sci Res*. 2015;3:54–65.
33. Naqvi AA, Ahmad R, Qadeer O, Khan MH, Nadir MN, Alim M. The prevalence of self medication and the factors influencing its practice in pharmacy students of Karachi, Pakistan: a mix mode study. *J Young Pharm*. 2016;8:230–238. doi:10.5530/jyp.2016.3.11
34. Albashier OB, Mahfouz MS, Masmali BM, et al. Self-medication practice among undergraduate medical students of a Saudi tertiary institution. *Trop J Pharm Res*. 2016;15:2253–2259. doi:10.4314/tjpr.v15i10.26
35. Al-Shagawi MA, Ahmad R, Naqvi AA, Ahmad N. Determinants of academic stress and stress-related self-medication practice among undergraduate male pharmacy and medical students of a tertiary educational institution in Saudi Arabia. *Trop J Pharm Res*. 2017;16:2997–3003. doi:10.4314/tjpr.v16i12.26

Risk Management and Healthcare Policy

Dovepress

Publish your work in this journal

Risk Management and Healthcare Policy is an international, peer-reviewed, open access journal focusing on all aspects of public health, policy, and preventative measures to promote good health and improve morbidity and mortality in the population. The journal welcomes submitted papers covering original research, basic science, clinical & epidemiological studies, reviews and evaluations,

guidelines, expert opinion and commentary, case reports and extended reports. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/risk-management-and-healthcare-policy-journal>