

A Cross-Sectional Survey Among Medical and Pharmacy Students Regarding Knowledge, Attitudes, and Practices of Toward Self-Medication in Qassim University, Buraydah, Saudi Arabia.

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Research Article

Keywords: knowledge, Self-medication, Medical Student, Qassim university

Posted Date: August 5th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-745381/v1>

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Abstract

Background: Self-Medication (SM) is common practice worldwide in both developed and developing countries. SM is referred as self consuming of medication without consulting a physician for either diagnosis or treatment. This study aims to assess the knowledge, attitudes and practices toward SM among medical and pharmacy students.

Methods: This cross-sectional study was conducted among medical and pharmacy students in Qassim university, Buraydah, Saudi Arabia, during the period 2020-2021.

Multistage random sampling technique was used to recruit students. The data were collected through questionnaire.

Results: Three hundred and sixteen of 342 students were recruited. This study showed that the majority (94.6%) of students had good knowledge of self-medication. Additionally, the following characteristics were significantly associated with good knowledge: being female, and Pharmacy students. Overall mean score for the attitudes towards self-medication shows that 58.4% of the total sample had high agreements towards the questions of the attitudes toward self-medication. More than half (63.9%) of the students reported that they practice self- medication in the last 6 months. Pain killers was the most common medication used for self- medication by the majority of the students (88.29%). The majority (77.8%) of respondents reported that they feel confident about the use of self-medication.

Conclusions: In conclusion, students' knowledge of self-medication appears to be good and significantly high among pharmacy students in comparison to medical students. Therefore, medical and pharmacy students should be viewed as important contributors to the public health care system, and future health professionals should be properly educated on good pharmacy practice and responsible self-medication.

Trial registration: Not applicable

Background

Self-Medication (SM) is common practice worldwide in both developed and developing countries. SM is referred as self consuming of medication without consulting a physician for either diagnosis or treatment. The World Health Organization (WHO) refers the SM practice to “use of over-the-counter medication (OTC) to treat self-diagnosed symptoms or disorders, or for the continuous and reuse of prescribed medications for recurrent diseases”¹. SM has various forms which include taking the medication without physicians' prescription, using the previous prescription in a similar condition, using drugs obtainable at home without getting physician's advice.

Studies revealed that the reasons for raising the SM practice in Saudi Arabia and the world including previous experience of the disease, insufficient information about the disease, economic problems or insufficient time for visiting, and easy access to drug^{2,3}. SM can be a serious issue that can lead to

several problems such as pharmaceutical reactions, possible increase of antimicrobial resistance, and waste of resources ⁴.

There are several worldwide surveys have investigated the SM practices among university students which found a high SM prevalence in Bangladesh (88%),⁵ Jordan (86.7%),⁶ and Egypt (52.7%).⁷ Likewise, in Gadjah Mada University, Indonesia⁸ and Jiangsu University, China⁹ revealed that SM with antibiotics was practiced by 49% and 47.9% of the respondents, respectively. In Ethiopia, the prevalence of SM among university students across studies has been 32.7–70.8%.^{10–12}

in Saudi Arabia, few published health studies have been conducted to find out the prevalence of SM practice among university students. Which show a varying prevalence of SM ^{3,13–16}. Two of these studies were carried out at Al-Qassim University ^{13,16}.

Medical and pharmacy students are generally different from other university students as they are exposed to knowledge about diseases and drugs which makes SM easy to practice. Therefore, pharmacists and physicians have an important role in providing useful recommendations on the proper and safe use of a pharmaceutical drug. To the best of our knowledge, no study has been focused on investigate knowledge, attitude, and practice of medical and pharmacy students toward SM in Al-Qassim regain. Therefore, our objective is to assess the knowledge, attitude, and practice of medical and pharmacy students toward SM in Qassim University. and to examine the association between the students' demographic characteristics and their knowledge and attitudes.

Methods

Study setting

A cross-sectional study was conducted using questionnaire among medical and pharmacy students in Qassim university, Buraydah, Saudi Arabia, during the period 2020–2021.

A multistage random sampling technique was followed in this study to choose the respective number of student. Medical and pharmacy college, as well as each entry-year, will be considered as stratums, and within the stratums, students will be simple random selected. All medical and pharmacy students from year one to year five will be included. Medical and pharmacy students who were not available during the study period and who were not volunteers to participate will be excluded.

Sample size

The sample size was calculated using a standard sample size equation " $n = z^2p(1-p)/e^2$ " and an assumed proportion of 50% (proportion of students who had good knowledge and attitude toward self-medication). Using a 95% confidence interval and a 5% margin of error, the sample size was estimated to be 285 and was adjusted to 342 to compensate for the non-response rate.

Participants and survey instrument

The questionnaire was developed by the principal investigator based on the study objectives and after a literature review of similar studies. A panel of 3 physicians, all of whom provide clinical care for patients familiar with the survey's development, assessed the questionnaire for appropriateness, accuracy, and relevance and were asked to critique the questionnaire's content. To ensure the face validity of the questionnaire, it was presented to a sample of 20 students in a pilot study and then finalized. The results of the piloted questionnaires were not included in the analysis.

As the research was conducted during the COVID-19 pandemic, students were asked to join a Zoom meeting conducted by the investigators for research keeping the value of social distancing in mind. The aims of the study were explained to the students and they were asked for consent. A standard pretested questionnaire was prepared using Google forms, was emailed to 349 students After receiving their consent. Two reminder emails were sent at an interval of 1 month.

The questionnaire is divided into four sections with a total of 33 questions. The first section pertains to demographic characteristics, including age, gender, level of education, and nationality.

The second section assesses the students' knowledge regarding SM. The response choices for knowledge items include "yes", "no" and "do not know". Correct answers were scored as 1, while incorrect answers and "do not know" were scored as 0. The total knowledge score ranges from 0 to 7 (7items). Total score ranged between 0 to 7; Since poor level considered for the total score (0, 1, 2, 3 and 4) out of (7) and good level considered for the total score (5, 6 and 7) out of (7)

The third section assesses the attitudes of students towards SM. Five-point Likert scale items were used; strongly agree responses were scored as 5, agree as 4, uncertain as 3, disagree as 2, and strongly disagree as 1.

Data management and analysis plan

The data collected through google form were recoded and entered using the Statistical Package Statistical Package of (SPSS v.26) were used to describe the basic features of the data in the study, through frequencies, percentages. Spearman's rho test used to test the relation between the knowledge and attitudes toward self-medication; since both are tested using its ordinal values. Chi-squared test (χ^2) were used to find the association between the level of knowledge (poor- good) and socio-demographic variables. Finally, ANOVA test used to find the differences in mean score of attitude with its 5-Likert scale according to socio-demographic variables.

Ethical considerations

Approval for the study was obtained from the Institutional Review Board, College of Medicine, Qassim University (no. 20-07-03), Qassim, Saudi Arabia. Each participant received the questionnaire and was informed about the objective of the present study. All participants provided an informed google consent form. The Institutional Review Board has agreed that completing the questionnaire will imply consent.

Results

Demographic information

Three hundred and sixteen of 342 students completed the questionnaires (response rate of 92%).

Table 1 shows that the total sample size was (316), 54.4% were female while 45.6% were male, the highest age group was (21-23) with 68.7% of the total sample, 83.5% were living in Urban and 16.5% living in Rural. About Specialty, 50.3% found for Medicine and 49.7% for Pharmacy. About education level, the highest percent were 34.5% for the first year. 86.1% hadn't health insurance; since 88.3% hadn't any medical illness.

Table 1. Demographic information of students (n=316)

	Groups	n	%
Gender	Male	144	45.6
	Female	172	54.4
Age	18–20	60	19.0
	21–23	217	68.7
	24–27	39	12.3
Area of living	Urban	264	83.5
	Rural	52	16.5
Specialty	Medicine	159	50.3
	Pharmacy	157	49.7
Education level	First year	109	34.5
	Second year	52	16.5
	Third year	83	26.3
	Fourth year	72	22.8
Do you have health insurance?	Yes	44	13.9
	No	272	86.1
Do you have any medical illness?	Yes	37	11.7
	No	279	88.3

Knowledge of self-medication

More than half (81.6%) of students had adequate knowledge that SM is defined as self-consuming of medication without getting advice from a physician. Moreover, the majority (94.3%) of students knew that all medications (prescription, OTC and herbal) have adverse effects. Most of them (94.9%) recognized the importance of seeking physician help in case of drug adverse effects. A total of 308 (97.5%) students were aware that using medications with unknown substances in patients with liver and kidney disease is dangerous, and approximately all students realized that increasing or decreasing medication dose without a doctor consultation can be dangerous. More than half (88.3%) of students knew that SM can mask signs and symptoms of some disease (Table 2)

Total score knowledge ranged between 0 to 7; Since poor level considered for the total score (0, 1, 2, 3 and 4) out of (7) and good level considered for the total score (5, 6 and 7) out of (7). Results shows that 17 students out of 316 which represent 5.4% of the total sample had poor knowledge of SM with total score less than 5, while 299 ss, which represent 94.6% had good knowledge of SM with total score (5 and above).

Table 3 demonstrates a statistically significant association ($P < .05$) between good knowledge and the following student characteristics: being female, and Pharmacy students.

Table 2. Practitioners' knowledge of self-medication (n=316)

Question		n	%
1- Self-medication is defined as self-consuming of medication without getting advice from a physician.	Yes*	258	81.6
	No	32	10.1
	I don't know	26	8.2
2- Self-medication is safe?	Yes	72	22.8
	No*	197	62.3
	I don't know	47	14.9
3- All medications (prescription, OTC and herbal) have adverse effects?	Yes*	298	94.3
	No	13	4.1
	I don't know	5	1.6
4- Increasing or decreasing medication dose without a doctor consultation can be dangerous?	Yes*	307	97.2
	No	5	1.6
	I don't know	4	1.3
5- In case of adverse effects, physician help must be sought.	Yes*	300	94.9
	No	1	0.3
	I don't know	15	4.7
6- Using medications with unknown substances in patients with liver and kidney disease is dangerous.	Yes*	308	97.5
	No	3	0.9
	I don't know	5	1.6
7- Self-medication can mask signs and symptoms of some disease?	Yes*	279	88.3
	No	7	2.2
	I don't know	30	9.5
<i>Poor knowledge</i>		17	5.4
<i>Good knowledge</i>		299	94.6

*: Correct answer which consider a good knowledge

Table 3. Association between knowledge and demographic variables (n=316)

		Knowledge Level		Chi-Square	p-value
		Poor	Good		
Gender	Male	8.3%	91.7%	4.534	0.033*
	Female	2.9%	97.1%		
Age	18–20	5.0%	95.0%	.468	0.791
	21–23	5.1%	94.9%		
	24–27	7.7%	92.3%		
Area of living	Urban	6.1%	93.9%	1.461	0.227
	Rural	1.9%	98.1%		
What is your specialty?	Medicine	9.4%	90.6%	10.334	0.001**
	Pharmacy	1.3%	98.7%		
Education level	First year	8.3%	91.7%	7.069	0.070
	Second year	1.9%	98.1%		
	Third year	1.2%	98.8%		
	Fourth year	8.3%	91.7%		
Do you have health insurance?	Yes	9.1%	90.9%	1.383	0.240
	No	4.8%	95.2%		
Do you have any medical illness?	Yes	2.7%	97.3%	.590	0.442
	No	5.7%	94.3%		

*significant at $p < .05$

Students' attitudes towards self-medication

Table 4 shows the student's responds to the seven questions of the attitudes towards self-medication. The highest mean score was 3.49 out of 5 point scale for (The availability of OTC medicines and the belief on its safety leading me to use self-medication), followed by mean score 3.29 for (Easy access to healthcare information and facilities, the main cause that medical and pharmacy student use self-medication). While the least mean score of agreements was 1.98 out of 5 scale for (No need for training to use self-medication?). Overall mean score for the attitudes towards SM was 2.92 out of 5 scale, with Std. Deviation of 0.692 which represent about 58.4% of the total sample had high agreements towards the questions of the attitudes toward SM in Qassim university, Saudi Arabia.

Table 5 demonstrates a statistically significant ($P < .05$) in the mean score of the attitude and the following student characteristics: being male, being 21-23 years' old, and being pharmacy students.

Table 4. Practitioners' attitudes towards toward self-medication (n=316)

	N	Minimum	Maximum	Mean	Std. Deviation
1- Self-medication part of self care.	316	1	5	3.10	1.309
2- No need for training to use self-medication?	316	1	5	1.98	1.238
3- Medical and pharmacy students are able to diagnosing different diseases.	316	1	5	3.12	1.176
4- Medical and pharmacy students are able to treat different diseases.	316	1	5	2.98	1.268
5- Do you recommend self medication to others?	316	1	5	2.48	1.268
6- Easy access to healthcare information and facilities, the main cause that medical and pharmacy student use self- medication.	316	1	5	3.29	1.183
7- The availability of OTC medicines and the belief on its safety leading me to use self-medication.	316	1	5	3.49	1.256
Attitude	316	1	5	2.92	0.691

Table 5. Association between attitudes score and socio-demographic data (n=316)

	Groups	N	Mean	Std. Deviation	F-ANOVA	Sig.
Gender	Male ^a	144	3.07937	0.721498	14.687	0.000**
	Female	172	2.78654	0.636349		
Age	18–20	60	2.65238	0.604587	6.355	0.002**
	21–23 ^a	217	3.00263	0.728427		
	24–27	39	2.87179	0.469013		
Area of living	Urban	264	2.90260	0.704235	1.016	0.314
	Rural	52	3.00824	0.618129		
Specialty	Medicine	159	2.66577	0.624322	50.060	0.000**
	Pharmacy ^a	157	3.17743	0.660899		
Education level	First year	109	2.83355	0.614917	2.404	0.067
	Second year	52	2.96429	0.782397		
	Third year	83	3.07573	0.694979		
	Fourth year	72	2.83929	0.705555		
Do you have health insurance ?	Yes	44	2.85714	0.705259	0.422	0.516
	No	272	2.93015	0.689445		
Do you have any medical illness?	Yes	37	2.69884	0.527889	4.338	0.038*
	No ^a	279	2.94931	0.705385		

*a: Higher attitude, *: Significante at 0.05 leve. **: Significante at 0.01 level*

Table 6 demonstrates a statistically significant negative relation between knowledge and self-medication part of self care ($r = -0.152$, $p < 0.05$). The higher the good knowledge of SM the less believing that self-medication part of self care. In addition, there is a statistically significant negative relation between knowledge and recommendation self medication to others ($r = -0.143$, $p < 0.05$). The higher the good knowledge of SM the less recommendation self medication to others.

Table 6. Association between knowledge score and attitudes score (n=316)

	Spearman's rho	P-value	Significant	
1- Self-medication part of self care.	-0.152	0.007	<0.001	S
2- No need for training to use self- medication?	-0.087	0.123	>0.05	N.S.
3- Medical and pharmacy students are able to diagnosing different diseases.	-0.063	0.264	>0.05	N.S.
4- Medical and pharmacy students are able to to treat different diseases.	-0.089	0.115	>0.05	N.S.
5- Do you recommend self medication to others?	-0.134	0.017	< 0.05	S
6- Easy access to healthcare information and facilities, the main cause that medical and pharmacy student use self-medication.	0.129	0.022	< 0.05	S
7- The availability of OTC medicines and the belief on its safety leading me to use self-medication.	0.082	0.148	>0.05	N.S.
Attitude	-0.093	0.097	<0.10	S

Students' practices towards self-medication

The students' practice toward the statements about SM have been illustrated in Table 7. More than half (63.9%) of the students reported that they practice self- medication in the last 6 months. The majority (79.1%) of respondents knew the medication classification of OTC & prescription drugs. Pain killers was the most common medication used for self- medication by the majority of the students (88.29%), followed by antipyretics (49.68%). It was also observed that (36.71%) of the students reported to have self-medicated with Antihistamine, others are listed in Table 7.

More than half (64.56%) of respondents reported that most frequent causes of practice SM were headache followed by cough & common cold (34.8%). Others like fever, Acne, menstrual problems, body pain and allergy with respective episodes of (31%, 28.48%, 24.68%, 20.89%, and 14.87%). More than half (64.87%) of respondents reported that their personal knowledge was the major source of information for the practice of self- medication. Approximately two-thirds (69.3%) of respondents knew the potential adverse reactions of the drug. The majority (94.3%) of respondents reported that they obtained SM from Pharmacy, (12%) used SM from Herbal store.

More than half (67%) of respondents reported that has self-medicated because of non-seriousness of the illness followed by quick relief (63.61%). Approximately one-thirds (22.5%) of respondents reported that they have experienced a negative side effect after self-medication. approximately 69% of them reported side effect from the drug. The majority (77.8%) of respondents reported that they feel confident about the use of self-medication.

Discussion

To our knowledge, this study was the first to assess the knowledge, attitudes and practices of medical and pharmacy students regarding SM in Qassim university. It has demonstrated essential findings. First, this study showed that the majority (94.6%) of the students had good knowledge scores. Second, more than half (58.4%) of students had agreement attitudes towards SM. Third, the majority of the students had low practice scores.

SM for minor diseases and non-serious health conditions appears to be a common practice among students. In Saudi Arabia and other countries, the prevalence of SM practice varies widely throughout all demographic groups.

A study by Alshahrani, reported the highest prevalence of SM practice in Saudi Arabia, whereas Makeen et al. reported the lowest frequency (98.7%, and 11.4%, respectively)^{3,17}. This finding is similar to another study conducted in Saudi Arabia, which found that 64.8 % of medical students practice self-medication.¹⁴ Variations in study sample demographics, research methodology, data collection methodologies, and variation in response rates across studies may have resulted in a wide range of prevalence across different regions.

SM appears to be more prevalent among students than in the general population. One study on Ethiopian medical and pharmacy students found a 38.5 % prevalence.¹⁸ SM was also reported by 44.8 % of Bahraini medical students,¹⁹ 78.6 % of Indian medical students,²⁰ and 55.2 % of Egyptian medical students.²¹ SM was reported by 98 % of Palestinian students in another survey.²² Two European studies, one on Slovenian students and the other on Serbian students, found a frequency of 92.3% and 79.9%, respectively.²³⁻²⁴ This could be attributable to a variety of factors, including students' greater pharmacological and clinical education, as well as their better Internet access.

Regarding knowledge, 94.6% of our students had good knowledge. The ratio of pharmacy students who had good knowledge on this issue was significantly higher in comparison with medical students ($P < 0.05$). This observation is most likely due to differences in educational courses and curriculums in these fields. Furthermore, female students had significantly higher knowledge than male ($P = 0.05$). This finding is similar to a study conducted among pharmacy students in Iran.²⁵

With regard to the practice of self-medication, our results showed that 63.9 % of the pharmacy and medical students of Qassim University who participated in the study had at least one episode of SM during the past 6 months. Adequate knowledge, and the non-acute nature of the condition were identified to be the most important reasons for self-medication. Likewise to two studies conducted in China and Brazil, they concluded that the most common reason for SM was a non-serious or transient disease (45%, and 46%, respectively) .²⁶⁻²⁷ In a Rwandan study, not having a serious disease was the most common reason for SM among university students.²⁸ Financial and insurance issues have been reported as other reasons for self-medication.²⁹

Another study found that bad behavior of health care providers, being too far away from the clinic, and low efficacy of prescribed drugs were all used as justifications for university students to self-medicate.³⁰

The most widely utilized medications for SM among our students were painkillers and antipyretics (60%). Similarly, our findings were in line with the findings of the majority of similar studies. Painkillers (60%) and antipyretics were the most commonly used drugs for SM among our students. Likewise, our results were consistent with the findings of most similar studies^{21,31,32}. In other studies, NSAIDs^{27,33}, antibiotics^{27,28,30}, pain killers^{30,33} drugs were reported as the most common drugs used for self-medication. In a study conducted in Pakistan, OTC drugs were found to be the most commonly used pharmaceuticals (98.3%) by medical undergraduate students³⁴. The primary reason for using analgesics and antipyretics for SM is that they do not require a medical prescription and are easily and quickly available in pharmacies and other general stores nearby. Our study also revealed that very few students anticipated adverse drug reactions, indicating that all students, regardless of study level, have at least basic knowledge of the drugs used for self-medication.

Students' attitudes toward SM revealed that a large number of students agreed that SM is an important part of self-care. As a result, students should be aware of the dangers of improper medication use, which can lead to drug resistance, toxicity, and increased adverse effects. Despite the fact that the majority of students use self-medication, they do not recommend it to others. This attitude explains why most students' perceptions of SM changed as they gained knowledge during their studies.

A limitation of this study is the use of a survey tool that has not undergone prior reliability and validity testing. In addition, the result of this study cannot be generalised to other populations in the country because KAP might be greatly influenced by socio-demographic factors of the population. More studies on the SM need to be performed, especially with the raising SM practice in the region.

Conclusions

In conclusion, students' knowledge of SM appears to be good and significantly high among pharmacy students in comparison to medical students.

Therefore, medical and pharmacy students should be viewed as important contributors to the public health care system, and future health professionals should be properly educated on good pharmacy practice and responsible self-medication.

Abbreviations

SM: Self-Medication

KAP: Knowledge, attitude, and practice.

Declarations

Ethics approval and consent to participate

The study was approved by the Institutional Review Board, College of Medicine, Qassim University (no. E-18-0488), Qassim, Saudi Arabia. Each participant was informed in detail, and his/her consent was obtained before the data collection.

All methods were carried out in accordance with relevant guidelines and regulations, notably the Declaration of Helsinki.

Consent for publication

All participants provided an informed google consent form to publish this study.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors have declared no competing interests.

Funding

There was no funding for this study.

Authors' contributions

RD and WT were responsible for the conception of the research idea and the study design, data collection, analysis, interpretation, and drafting of the manuscript. All authors read and approved the final manuscript.

Acknowledgements

We would like to thank all medical and pharmacy students of Qassim university for their volunteering to participate in the study.

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Tables

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