

Original paper

Knowledge and Practice towards Self-Medication among University of Kerbala Students

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Abstract

Background: The use of medicines; in general, is divided into prescription-only medicines and over-the-counter drugs. The former requires a medical prescription; the latter are available for self-medication of common minor and easily treated illnesses. However, in the developing countries, prescription-only medicines can easily be purchased without a prescription, resulting in potential misuse and unnecessary risk for individuals.

Objectives: To evaluate the knowledge and practice among University of Kerbala students of about self-medication.

Subjects and Methods: A cross-sectional study has been implemented in the University of Kerbala among seven colleges included both medical and non-medical colleges selected by a multistage cluster sampling technique while the students were chosen by simple random sampling technique. Data were collected through questionnaire papers in Arabic during April and May 2019.

Results: The selected sample have a low mean knowledge score (4.83 ± 2.16) about the proper use of medications and drug safety. Especially regarding appropriate antibiotic use, with a correctness rate of 25.4. Two thirds of the sample (62.1%) practiced self-medication with no significant difference between medical and non-medical students.

Conclusion: This study showed that selected sample from the University of Kerbala has low level of knowledge about the proper use of medications and drug safety. About two-thirds of selected sample practiced self-medication for both over the counter and prescription-only medications. There is an irrational use of antibiotics, which needs attention by health institutions in Iraq.

Keywords: Self-medication, prescription-only medicines, over-the-counter medicines, University of Kerbala, knowledge and practice.

Introduction

Self-medication (SM) is defined as the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms⁽¹⁾. However, SM practice could be responsible and irresponsible or irrational practice⁽²⁾.

Nowadays responsible SM is regarded as an important aspect that is gradually being as a component of self-care particularly when based on a certain level of knowledge by the user^(3, 4). That means responsible SM has been used drugs mostly called 'nonprescription' or over-the-counter (OTC) medicines that are existing legally without a prescription through pharmacies^(2, 5). On the contrary, irresponsible SM means the use of drugs that are not available legally to be sold without a physician's prescription⁽⁵⁾. The use of prescription only medicines (POM) by hand is common in the countries, which do not have strict regulations on the sale of pharmaceuticals^(6, 7).

If SM has been appropriately used, it becomes an important shareholder to the health care system⁽⁵⁾. It is a convenient, rapid, and cheap solution, it could save time and save medical services⁽⁸⁾. In contrast, irrational SM practice may increase health hazards and can cause waste of resources^(3, 8). These health risks such as wrong diagnosis, antibiotics resistant infections, wrong dosage or route, drug dependence and drug interactions^(9, 10, and 11).

Self-medication is affected by various socioeconomic factors; lifestyle, access to medicines, lack of health care facilities, and inadequate implementation of drug laws^(3, 11).

The prevalence of SM has become quite common in developed and much higher in developing countries which might be attributed to the availability of medicines from informal sectors this result in using OTC drugs as well as POM, in SM, without health surveillance^(11, 12 and 13).

In Iraq, medication as well as health services are open and free, that need regulating the practices of SM. Health awareness of the community, especially the university students who represent a large proportion of the community so the results of this study are considered useful to assess data in a part of Iraqi communities^(14, 15).

This current study is carried out to assess the knowledge and practice of SM among University of Kerbala students.

Subjects and Methods

An analytic cross-sectional study was carried out among the undergraduate students of the University of Kerbala (the holy city in the middle of Iraq) through April and May 2019.

The university students' population is about 25000 during 2019 distributed through 16 colleges between medical and non-medical colleges. The colleges in the sample were chosen by multistage cluster sampling technique to select three medical colleges (Medicine, Dentistry, Nursing) out of five medical colleges and four non-medical colleges (Engineering; Sciences; Tourism and Hotel Management Section; and Education for Human Sciences) out of eleven non-medical colleges. Students' sample was selected by simple random sampling technique, they were approached with survey during their scheduled elective course classes. Most of participants responded at the time of distributing the questionnaire, while some of them responded later and handed the questionnaire back to the researcher in the following days. The average time needed to complete the questionnaire paper was about 10-15 minutes.

A pilot study on thirty students was conducted to test the suitability of the data collection tools, to get feedback on the questionnaire and to estimate the time needed to complete it.

The sample size was considered based on Steven K. Thompson equation⁽¹⁶⁾.

$$n = N \times P(1-P) / [(N-1) \times (d^2 \div z^2)] + P(1-P)$$

n: Sample size

N: Population size=25000

P: Probability =50%

d: Margin of error =0.05

z: 1.96 (for 95% confidence level)

The sample size was calculated based on the confidence level of 95% and 5% of margin error.

The result from equation was 379 that was multiplied by the design effect (1.5), so the

required sample size was 568.5. There were about 771 distributed questionnaires, 680(88.19%) students completed questionnaires; 58(7.5%) non-responders; 33(4.28%) non-completed questionnaires.

All students from selected colleges of University of Kerbala were included in the study even if they had chronic disease or pregnancy or students in evening stages, without exclusion criteria.

A self-filled questionnaire was used to get the data from all participants in this study. The researcher explained the aim of the study and the way of answering the questionnaire before data collection.

The questionnaire used in this study developed based on the previous literature^(4, 17, 18). The questionnaire included three parts.

Socio-demographic and personal information; the first part was used to obtain information like age, gender, academic grade, residence, student smoker or non-smoker, education level.

Knowledge questions; the second part contained ten questions (true/false/I do not know) were used for evaluating students' knowledge level of drug safety regarding the following: (1) antibiotic use, (2) nonprescription drug with overdose, (3) and (4) antacid use, (5) vitamins use, (6) anti-hypertensive drugs and regimens, (7) and (8) medication storage, (9) nonprescription cough syrup dose and (10), changing the effect of medicines with meal.

Practice questions; the third part, students were asked to report SM use or not during the previous year (2018). If the student practiced self-medication, they would continue answering questions covered duration of use, types of SM used and their sources, reasons for SM. Those who did not use SM in previous year, they would answer only the last two questions about reasons against SM and reasons for seeking medical consultation. The questionnaire was translated into Arabic language. The evaluation was done by two specialists (clinical pharmacology specialist and family medicine specialist), and suggested corrections performed.

The scientific committee of family medicine in the Arab board committee in Baghdad approved the protocol of the study. Approval for this study was obtained from the Research and Ethical Clearance Committee of Kerbala University. The consent forms were obtained from all the participants before including them in the study.

A serial identification was allocated for each questionnaire. The data were analyzed using the Statistical Package for Social Science program

(SPSS, software version-22). The Quantitative data were presented as mean, standard deviation (SD), while qualitative data were presented as frequency and percentage. The chi-squared test was used to assess the statistical relations between defined dependent and independent variables. The association was considered to be statistically significant when the p-value of <0.05 with a confidence Interval of 95 %.

The statistical difference was determined by chi-square test for all knowledge questions (K1-K10) as explained in the following:

Knowledge Questions (True/False/I don't know)

K1: You can discontinue the use of antibiotics by yourself when the symptoms of fever or sore throat are relieved.

K2: Overuse of Panadol (Acetaminophen) will cause liver toxicity.

K3: Antacids should be chewed before swallowing to achieve a better effect.

K4: Antacids should be added into all prescriptions to avoid GI upset.

K5: Vitamins are healthy food, so overusing it will not cause negative effects to the human body.

K6: Antihypertensive drugs could be discontinued when blood pressure returns to a normal range.

K7: Storing ointment or gel in the refrigerator could extend the expiration date.

K8: Storing syrup in the refrigerator could extend the expiration date.

K9: Dosage of cough syrup is one bottle per use.

K10: Taking the medicine with food, drink, tea or alcohol will interfere with the effect of the medicine.

Results

Out of 771 questionnaire forms distributed; 680 questionnaire forms were completed, giving a response rate of 88.19%: 58(7.5%) were non-responders; and 33(4.28%) did not complete the questionnaires. The socio-demographic characteristics of the participants showed that two thirds of the participants 441(64.9%) were females. Their mean age was 20.97±2.4 year, with more than one half of the respondents (51.2%) within 17-20 years of age (table 1).

Table 1. The socio-demographics characteristics undergraduate students in self-medication survey in the University of Kerbala (Frequency; (Percentage), n=680)

Variable	Group	Self- medication		Total
		Yes	No	
Gender	Male	153(64.0%)	239(35.1%)	86 (36 .0%)
	Female	269(61%)	441(64.9%)	172(39.0%)
Age group/ years	17-20	215(61.8%)	348(51.2%)	133(38.2%)
	21-24	183(62.0%)	295(43.4%)	112(38.0%)
	≥ 25	24(64.9%)	37(5.4%)	13(35.1%)
Smoking	Smoker	36(53.7%)	67(9.9%)	31(46.3%)
	Non smoker	376(62.7%)	600(88.2%)	224(37.3%)
	Ex-smoker	10(76.9%)	13(1.9%)	3(23.1%)
Residence	Urban	373(64.3%)	580	207(35.7%)
	Rural	49(49.0%)	100	51(51.0%)

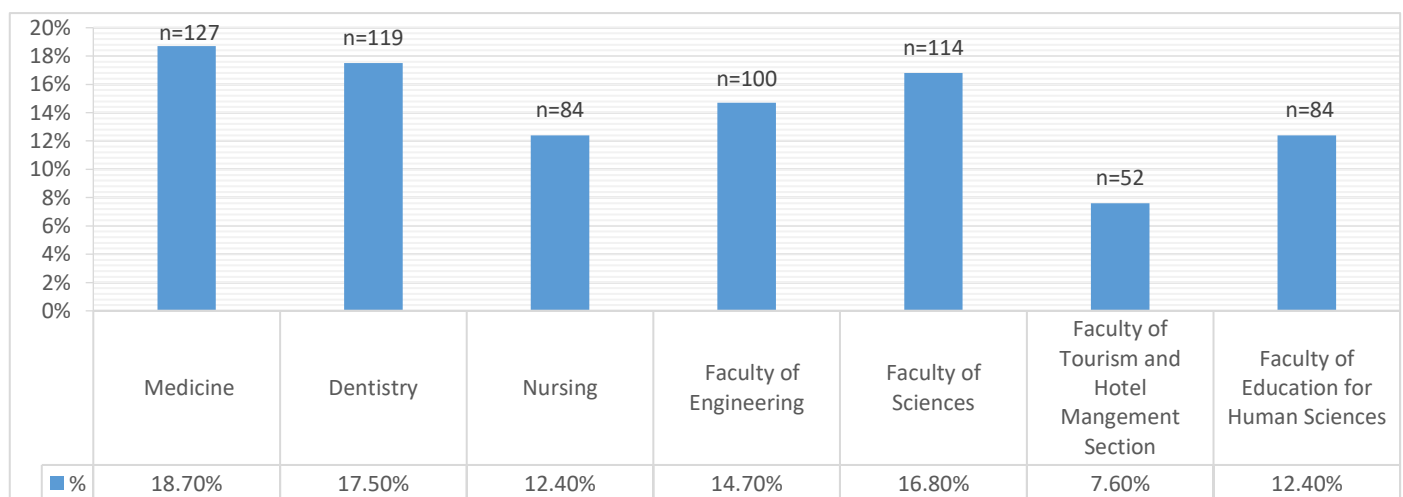


Figure 1. The distribution of the participants among different colleges in the University of Kerbala (n=680)

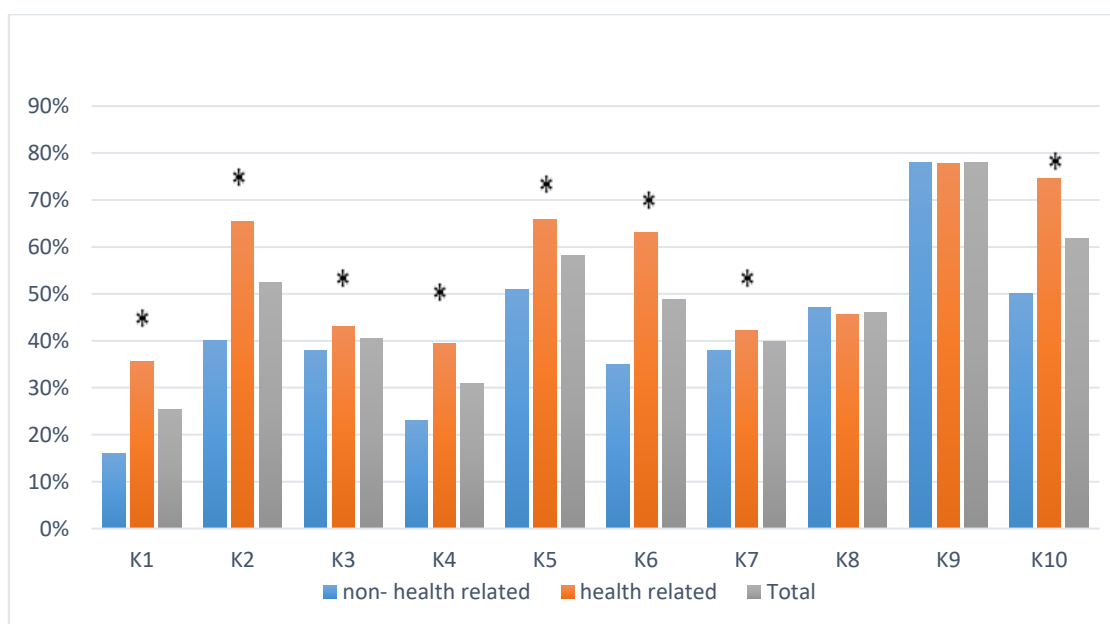
The distribution of the sampled students among the different colleges in the University of Kerbala showed that 18.7% were in the college Medicine, 7.6% in the college of Tourism and Hotel Management (figure 1).

The total mean of knowledge score for all students in the sample was (4.83 ± 2.16). The mean knowledge score for medical students was (5.53 ± 2.09), while the mean knowledge score for non-medical students was (4.17 ± 2.01) with very highly significant difference (p value = 0.0001, figure 2). The proportion of correct answers for all knowledge items were extremely diverse, ranging from 25.4% to 77.9% for all participants in the sample. Figure -2 shows knowledge relating to appropriate antibiotics use had the lowest number of correct responses, while the knowledge about

cough syrup intake had been the highest number of correct responses among the 10 items for students in both health-related and non-health-related colleges (figure 3). Health-related college students gave a significantly higher proportion of correct responses than non-health related college students in 8 out of 10 areas including anti-hypertensive medication use, antibiotics use, Acetaminophen (paracetamol) tables and vitamin supplement tables overdose, indications for antacid use, and medication storage for ointments, gels, and changing the effect of medication. The practice of SM within 2018 was 422(62.1%) of the respondents; 208(63%) of health and 214 (61.1%) of non-health students. There was no significant difference in the practice between health and non-health students (table 2).



Figure 2. The mean score of the knowledge questions for all participants, health-related and non-health-related students in the University of Kerbala (n=680)



* p value < 0.05

Figure 3. The proportion of correct answers of knowledge questions for undergraduate students in the University of Kerbala (n=680)

Table 2. The practice of self-medication within the last year between health-related and non-health-related colleges in the University of Kerbala (n=680)

Variable	Group	Categories		Total	p-value
		Health-related colleges n=330	Non-health-related colleges n=350		
Did you use self-medication in the past year?	Yes	208 (63%)	214 (61.1%)	422 (62.1%)	0.600
	No	122 (37%)	136 (38.9%)	258 (37.9%)	

The most common reasons (symptoms) for SM among selected sample from University of Kerbala students were headache 81.3%, cold/flu 62.6%, running nose 48.1%, fever 42.9% and abdominal pain 42.2% (table 3). The most frequented drugs used for SM were: Acetaminophen (paracetamol) tables 80.6%, and Amoxicillin capsule 41.5 % (table 4).

Discussion

Generally, people desire to take responsibility for their health care management. Many do so by SM trend which is now widely spread; for being considered as a part of self-care^(5, 19).

Among the 680 undergraduate students' sample in this study at the University of Kerbala, the mean age was 20.97±2.4 years, this is similar to a study

in Jordan, 2018⁽²⁰⁾; and a study in Tehran, 2017⁽¹⁷⁾.

The current study shows females were two-thirds of the participants (64.9%) and this was consistent with the study done by Al Raddadi in Saudi Arabia in 2017⁽²⁾. As female numbers exceeds male number in Iraqi colleges.

The majority (85.3%) of students were urban residence, which is similar to a study done at Taibah University in Saudi Arabia, 2015⁽²¹⁾.

About one half of the participants, 330 (48.5%) were studying in health-related colleges and 350 (51.5 %) were studying in non-health-related colleges. This is similar to a study in a university in South India, 2015, where healthcare group were 314 and non-healthcare group were 310⁽²²⁾.

Table 3. Reasons for self-medication in the past year among undergraduate students in the University of Kerbala (n=422)

Symptoms	Frequency	Percentage
Headache	343	81.3
Dizziness	114	27.0
Cold / Flu	264	62.6
Fever	181	42.9
Running nose	203	48.1
Eye redness	60	14.2
Toothache	149	35.3
Cough	171	40.5
Sore throat or enlarged tonsil	147	34.8
Hearing problem or ear pain	52	12.3
Anxiety or depression	105	24.9
Sleep problem / Insomnia	55	13.0
Difficulty in swallowing	62	14.7
Loss of appetite	107	25.4
Nausea	102	24.2
Vomiting	115	27.3
Abdominal pain	178	42.2
Acidity	103	24.4
Diarrhea	139	32.9
Constipation	63	14.9
Bloating	74	17.5
Weight gain or weight loss	81	19.2
Back pain	96	22.7
Pain in joints	122	28.9
Muscle spasm	124	29.4
Skin disease or hair fall	135	32.0
Genital infection or dysuria	86	20.3
Menstrual difficulties	107	25.4

Note: Total differs as multiple answers were allowed

Table 4. Drugs used for self-medication in the past year among undergraduate students in the University of Kerbala (n=422)

Drug	Frequency	Percentage
Paracetamol	340	80.6
Aspirin	28	6.6
Mefenamic acid (Ponstan)	84	19.9
Ibuprofen tables	84	19.9
Diclofenac (Voltaren)	58	13.7
Ranitidine (Zantac) tables	55	13
Omperazol tables	56	13.3
Chlorpheniramine (Allermine) tables	84	19.9
Loratadine tables	47	11.1
Amoxicillin capsule	175	41.5
Metronidazole (Flagyl) tables	97	23
Trimethoprim Sulfamethoxazole tables	34	8.1
Diazepam (Valium) tables	71	16.8
Codeine containing cough syrup (Toseram)	56	13.3
Bromhexin (Solvodin) syrup	82	19.4
Dexamethazone (Dexon) tablet	46	10.9
Gentamycin (Genidin) ampoule	42	10
Nystatin, Garmicidi, Neomycin, Triamcinolone Actonide (Nystacort) cream	42	10
Corticosteroidused (Betasone) cream	105	24.9
Omega3	94	22.3
Vitamin D3	88	20.9

Note: numbers do not add to 100% because a single participant may have more than one drug used for self-medication.

Regarding smoking status 9.9% was in the current smoking in the present study; this result is similar to what was reported in the study was done at Kuwait university, 2018⁽⁷⁾; while in Jordan, 2018, smoking status was higher about 18.1 %⁽²⁰⁾. It could be related to high female percentage in Iraqi university who smoke less than males for cultural reasons.

Regarding the overall knowledge about drug safety for the participants, the current study shows that the mean score was 4.83 ± 2.16 for all students which is considered lower than the study had been using the same knowledge questions among university students in Taiwan, 2006, that shows the mean score was 6.6 ± 2.3 ⁽¹⁸⁾. That means; the most University of Kerbala students have low level of knowledge score for safe practices in medication use.

The current study also showed the mean score of knowledge \pm SD were 5.53 ± 2.09 and 4.17 ± 2.01 for health-related and non-health-related colleges respectively with very highly significant difference in comparison with the same study in Taiwan, 2006, mean scores were 7.0 ± 2.0 and 6.5 ± 2.3 respectively, and were significantly different⁽¹⁸⁾. This was expected since health-related students had taken courses regarding pharmacology.

The students in the health colleges showed better scores from those in non-health colleges, but 64.5% from those students of health colleges answered it correct to discontinue antibiotics when the symptoms of fever or sore throat were

relieved; while this misunderstanding about antibiotics use was only 19.7% among students from health colleges in a study in Saudi Arabia,2013⁽²³⁾. At Debre Markos University, Northwest Ethiopia,2017 this misunderstanding about antibiotics use was 28% among health science students⁽²⁴⁾; another study in Northwest Ethiopia this misunderstanding was 44.9% among students of the University of Gondar in May 2007⁽²⁵⁾; and it was 45.8% among university students in Taiwan, 2006⁽¹⁸⁾. From all above, this misconception was the highest between students from health colleges of University of Kerbala.

The self-medication prevalence among undergraduate students of University of Kerbala in this study was found to be 62.1%. Interestingly, there was no significant difference in the practice between health and non-health students. It is expected that the prevalence of SM would be higher in health students as they have the knowledge about drugs and diseases. However, the results of this study showed no significant differences and do not support this. In similar study in Saudi Arabia, 2017, without significant difference between health and non-health students⁽²⁾. A study in university of south India, 2015, self-medication with higher prevalence was 76.3% with statistically significant between the health 84.4% and non-health 68.1% students⁽²²⁾. In Jordan, higher rates were reported by 96.8% of the participants, and this was without significant difference between health 97.2% and non-health

students 96.5% ⁽²⁰⁾; a study in Kuwait university, 2018, 70.4% of students used self-medication, but unexpected the prevalence was significantly higher among students of non-health 35.9% compared with those of health students 25.9% ⁽⁷⁾. Higher rates were registered by a study that was implemented in Anbar and Fallujah Universities, Iraq (72.8%) ⁽¹⁵⁾; Baghdad, Iraq (92.4%) ⁽¹⁴⁾; Tehran, Iran, 2017 (80.7%) ⁽¹⁷⁾; and Kermanshah, Iran, 2018 (89.6 %) ⁽¹⁰⁾. Some lower rate was reported by a study in Dammam, Saudi Arabia, 2017 (55.1%) ⁽⁶⁾.

Comparing the results of this study with those of other studies carried out in other countries seems difficult because of differences in cultures, health care systems and the roles of their pharmacies.

In the current study, most symptoms for which SM were practiced headache (81.3%), cold/ flu (62.6%), this result was similar to observations reported in studies from Jordan, 2018 ⁽²⁰⁾. Similar results were found in studies was done in Kuwait, 2018 ⁽⁷⁾; and Tehran, 2017⁽¹⁷⁾. This practice for SM is considered safe and accepted. Hence, headache is the most common cause of SM that can be explained by that headache is a common symptom exists in different diseases.

In Anbar and Fallujah Universities students selected sneezing and headache by 72% and 67% respectively ⁽¹⁵⁾.

In contrast, common cold was 74.8% and the headache was 58.8% in study was conducted among health sciences students in Kermanshah, 2018 ⁽¹⁰⁾; also in a study in Kerman, Iran 2016 the common cold was 95.4% ⁽²⁶⁾. In Saudi Arabia, 2017, cough and flu were the most common conditions which made the students to practice SM ⁽²⁾. In addition to study was reported in Thailand, 2009, SM was most obtained for fever/pain 80.5% ⁽²⁷⁾; also in North India, SM was taken for cold, cough, sore throat (54%), fever(30.5%) and headache (29.5%) ⁽²⁸⁾.

The first important SM drug was used by students in this study was paracetamol (80.6%), similar observations were found as in Kermanshah, 2018⁽¹⁰⁾. Acetaminophen is considered good choice for SM.

In the current study, the second frequented drugs used for SM was: amoxicillin 41.5 %; that was similar to results were found in Baghdad, Iraq, 2017, students selected antipyretics (69.6%), followed by antibiotics (46.1%) and analgesics(40.1%)⁽¹⁴⁾. In Iraq, people can easily purchase antibiotics from pharmacies without prescriptions that led to a big question about bacterial resistance.

Also, in Kermanshah 2018, amoxicillin capsule was used by 43.6%⁽¹⁰⁾. There were higher results found among medical students in Coastal South India, 2013 that the Beta-lactam group (59.6%) as the most antibiotic was self-medicated ⁽²⁹⁾. In developing countries and in the Middle East region, one of these countries is Iraq, there is no control on the OTC drugs and POM, medicines are available in pharmacies and stores, and they are easily accessed by the users without any medical consultation ⁽¹⁴⁾.

Other studies were showed analgesics as the common drugs used in SM in a study at Kuwait University, 2018 ⁽⁷⁾; in Jordan, 2018 ⁽²⁰⁾; and in Saudi Arabia, 2017 ⁽²⁾.

Conclusions

This study showed that most students in Karbala University have low level of knowledge about the using of drugs and drug safety.

Self-medication is practiced in large proportion between health and non-health university students for OTC drugs or POM medicines; that is similar among health and non-health students.

Students primarily self-medicate headache and flu symptoms, but there is a misuse of antibiotics irrationally.

This study is recommended to develop legal regulations and encourage community pharmacies to adhere to laws and policies regarding the rational use of medicine.

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