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Prevalence and pattern of self-medication among undergraduate students: A comparative study between medical and pharmacy students

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Abstract

Background: Self-medication is quite a prevalent public health problem. It can cause serious harm to the person, like adverse drug reactions, toxicity, drug resistance, incomplete cure, drug dependence, etc. Self-medication is associated with incorrect self-diagnosis and inadequate treatment, which can result in disease progression and complications. The primary purpose of this study was to assess the knowledge, attitude, and pattern of self-medication practice among undergraduate medical and pharmacy students.

Methodology: A questionnaire-based cross-sectional study was conducted in the College of Medicine and College of Pharmacy. The pre-tested, structured questionnaire was used. All medical and pharmacy students were invited to participate in the study by filling in an online study questionnaire. The study questionnaire consists of three parts. The first part includes personal and health status. The second part is related to the past year's most frequent conditions participants had self-medication. Participants were also asked about their self-medication knowledge and perception. An electronic survey link was sent out via email. Statistical analysis was performed in SPSS 25 software.

Results: Self-Medication is more prevalent among medical students (70.59 %) than among pharmacy students (62.3%). The most important condition was a cough, 83% among medical students and 67% of pharmacy students, and a sore throat, 47.1% of medical students and 44.2% of pharmacy students. The most frequent medication used among medical and pharmacy students was analgesic (paracetamol and NSAIDS). Antibiotics (41% medical and 33% pharmacy students) and Vitamin supplements were next utilized. Pharmacy students used more supplements than medical Students (33.8 percent pharmacy versus 13% medical)

Conclusion: Self-medication has been found to be very common among medical and pharmacy students in Oman. The student-ts need to be educated about the harms of self-medication and the responsible use of medicine.

Keywords: Self-medication; Medical students; Pharmacy students; Undergraduate students

1 Introduction

The topic of self-medication affects public health rather frequently throughout the world. It can seriously injure the person through various effects, including adverse drug reactions, toxicity, drug resistance, inadequate healing, and drug

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dependence. [1-2] Medical students have A unique opportunity for widespread self-medication practice. Self-medication is linked to several issues, such as inaccurate self-diagnosis and ineffective disease treatment, which can lead to disease progression and complications [3–4]. According to the World Health Organization, "Self-medication is the choice and use of medications by individuals to treat self-recognized illnesses or symptoms." Self-medication requires responsible behavior even though it is a kind of self-care [4-5]. Treating one's conditions and afflictions with approved and readily available medications constitutes responsible self-medication [6-7]. The majority of medicines have considerable side effects. Serious clinical consequences with potentially fatal complications could result from this. As a result, the doctor's diagnosis is crucial for the right course of treatment [8].

Most over-the-counter (OTC) drugs are readily available in pharmacies, which might make self-medication easier. Prescription-only medications (POM) also include medicines that must be purchased with a valid prescription from a doctor. The general public frequently takes OTC or POM medications on the recommendation of family members or other people or consumes unused drugs at home [9–10]. Studies need to be conducted to evaluate herbals' knowledge, attitude, and behaviors due to the extensive usage and accessibility of herbal drugs and supplements available in pharmacies and supermarkets. Medical students do not have the legal authority to administer medications, but they engage in self-medication while learning about during study.

Studies need to be conducted to evaluate herbals' knowledge, attitude, and behaviors due to the extensive usage and accessibility of herbal drugs and supplements in pharmacies and supermarkets. Although they lack legal authority, medical students practice self-medication as they learn about various medications and how to utilize them properly. According to a study from Oman[11–12], self-medication for acute illnesses is widespread. With this context, it is suggested that the current research calculate the prevalence of self-medication and determine the current knowledge, attitude, and self-medication practice pattern among undergraduate medical and pharmacy students.

2 Material and methods

A questionnaire-based cross-sectional study was conducted in the College of Medicine and College of Pharmacy to assess knowledge, attitude, and self-medication practice pattern among undergraduate medical and pharmacy students. Study participants were selected on the basis of a convenient nonprobability sampling technique. An online questionnaire was used to minimize face-to-face interactions and facilitate participation. The administrative time for the filling was about 30 minutes.

The study questionnaire consists of three parts. The first part includes personal and health status. The second part is related to the past year’s most frequent conditions participants had self-medication. Participants were also asked about their self-medication knowledge and perception. Ratings were made on a series of 5-point Likert-type scales from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate agreement with the statement.

The face and content validity of each item has been checked. In order to understand whether the questions in this questionnaire all reliably measure the same latent variable (self-medication), a Cronbach's alpha be run on a sample size of 15 students. A favorable ethical opinion was obtained from the National University Science and Technology Research Ethics Board before the commencement of the study. Written informed consent was obtained from the study participants. Prior to conducting the survey, the study's purpose was explained at the beginning of the electronic survey. The respondents were given the opportunity to ask questions via a dedicated email address for the survey. All information about you the students, collected during the course of the study was kept strictly confidential, and secure was accessible only to the research team members. All data was anonymized as much as possible, and students were not identifiable from any of the data collected from them.

2.1 Data Analysis

Statistical analysis was performed using SPSS, version 20.0 (IBM Corp, Armonk, NY). Data were expressed in frequencies for questionnaire responses for all variables in numbers and percentages. Cross-tabulation was performed to determine if there is a relationship between subgroups. Chi-square tests are used for comparative analysis.

3 Results

A total of 145 students participated, of which 68 were medical, and 77 were pharmacy students. More than half (53%) of the participants were aged 21-23, and 86% were female. Most (95%) currently had good health, and 78% cared about their health and well-being (Table 1). No significant association was observed ($p > 0.5$) between medical and pharmacy students except for age ($p<0.001$).

Table 1 Self-Medication Knowledge and Practices among Medical and Pharmacy Students

	Medical Student	**Pharmacy Student**	**P-Value**
Age			**<0.001**
18-20	0	30 (38)	
21-23	45 (66.2)	33 (41.8)	
>24	23 (33.8)	16 (20.3)	
Gender			0.72
Male	10 (14.7)	10 (12.7)	
Female	58 (85.3)	69 (87.3)	
Current health condition			0.75
Excellent	32 (47.1)	35 (44.3)	
Good	32 (47.1)	41 (51.9)	
Poor	4 (5.9)	3 (3.8)	
Degree of care about your health			0.09
Careful	57 (83.8)	57 (72.2)	
Careless	11 (16.2)	22 (27.8)	
Do you have Drug storage at home?			0.06
Yes	45 (66.2)	63 (79.7)	
No	23 (33.8)	16 (20.3)	
How many times you fell sick in the last Year			0.062
1-2 time	33 (48.5)	36 (45.6)	
3-4 times	18 (26.5)	33 (41.8)	
>4 times	17 (25)	10 (12.7)	
Did self-medicated drugs solve the symptom			0.65
No	7 (10.3)	10 (12.7)	
Yes	61 (89.7)	69 (87.3)	

Study participants were asked multiple questions about their previous year's illness. Their answers were coded as yes, and no. Cold and flu (75%), sore throat (46%), cough (40%), and headache (57%) were the most prevalent symptoms among study participants. Cold and flu were significantly (p-0.04) higher in pharmacy than in medical students. No significant association was observed ($p > 0.5$) among study participants and other symptoms (Table 2).

Table 2 During the past year, the most frequent conditions you had for self-medication/ Indications for Self-Medication

	Medical Student	**Pharmacy Student**	**P-Value**
Cold and flu			**0.04**
Yes	46 (67.6)	65 (82.3)	
No	22 (32.4)	14 (17.7)	
Sore throat			0.86
Yes	32 (47.1)	36 (45.6)	

No	36 (52.9)	43 (54.4)	
Cough			0.27
Yes	24 (35.3)	35 (44.3)	
No	44 (64.7)	44 (55.7)	
Intestinal colic			0.55
Yes	4 (5.9)	3 (3.8)	
No	64 (94.1)	76 (96.2)	
Diarrhea			0.56
Yes	9 (13.2)	8 (10.1)	
No	59 (86.8)	71 (89.9)	
Constipation			0.83
Yes	7 (10.3)	9 (11.4)	
No	61 (89.7)	70 (88.6)	
Heartburn			0.96
Yes	5 (7.4)	6 (7.6)	
No	63 (92.6)	73 (92.4)	
Vomiting			0.96
Yes	5 (7.4)	6 (7.6)	
No	63 (92.6)	73 (92.4)	
Poor digestion			0.85
Yes	3 (4.4)	3 (3.8)	
No	65 (95.6)	76 (96.2)	
Cramps/dysmenorrhea			0.52
Yes	14 (20.6)	13 (16.5)	
No	54 (79.4)	66 (83.5)	
Toothache			0.804
Yes	11 (16.2)	14 (17.7)	
No	57 (83.8)	65 (82.3)	
Muscle pain			0.09
Yes	9 (13.2)	19 (24.1)	
No	59 (86.8)	60 (75.9*)	
Earache			0.85
Yes	3 (4.4)	3 (3.8)	
No	65 (95.6)	76 (96.2)	
Headache			0.53
Yes	37 (54.4)	47 (59.5)	
No	31 (45.6)	32 (40.5)	
Sleep disorders			0.24

Yes	6 (8.8)	12 (15.2)	
No	62 (91.2)	67 (84.8)	
Anxiety			0.79
Yes	6 (8.8)	8 (10.1)	
No	62 (91.2)	71 (89.9)	
Tiredness			0.96
Yes	5 (7.4)	6 (7.6)	
No	63 (92.6)	73 (92.4)	
Allergy			0.69
Yes	8 (11.8)	11 (13.9)	
No	60 (88.2)	68 (86.1)	
Fever			0.56
Yes	21 (30.9)	28 (35.4)	
No	47 (69.1)	51 (64.6)	
Urinary tract infection			0.88
Yes	2 (2.9)	2 (2.5)	
No	66 (97.1)	77 (97.5)	
Weight loss			0.85
Yes	3 (4.4)	3 (3.8)	
No	65 (95.6)	76 (96.2)	
Skin rash			0.405
Yes	5 (7.4)	9 (11.4)	
No	63 (92.6)	70 (88.6)	

Students' self-medication knowledge, perception, and attitude are shown in Table 3. Their answers were coded on a series of 5-point Likert-type scales from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate agreement with the statement. Overall, no significant association was observed ($p > 0.05$) among study participants' responses regarding sources for self-medication knowledge and their attitude towards self-medication. At the same time, a significant association was observed ($p < 0.05$) among study participants' responses regarding knowledge about self-medication.

Table 3 Self-Medication Knowledge, Perception, and Attitude

	Medical Student	**Pharmacy Student**	**P-Value**
Sources for self-medication Knowledge			
Pharmacy	3.84±0.91	4.37±0.95	0.001
Neighbors & family	2.81±1.08	2.99±1.24	0.36
Friends /senior / classroom colleagues	3.26±0.96	3.1±21.15	0.35
Old prescription	2.9±1.05	2.9±1.29	0.99
My decision	3.66±0.91	3.72±0.88	0.67
Internet	3.01±1.01	3.23±1.22	0.25

Books & magazine	3.07±1.08	3.08±1.15	0.99
Social media advertisement	2.28±0.99	2.34±1.15	0.72
Knowledge about Self Medication			
Definition of self-medication is clear to me.	4.18±0.54	4.39±0.61	0.025
Change in time and frequency of antibiotics affects therapeutic effectiveness.	4.29±0.96	4.61±0.67	0.026
Fewer frequencies and doses of antibiotics cause a loss of effectiveness	3.54±1.07	3.76±1.07	0.23
An increase in the dose of antibiotics leads to toxicity.	3.79±0.89	4.41±0.84	0.02
I know the main adverse reactions of various classes of antibiotics.	3.6±0.92	3.89±0.80	0.05
I am aware of the Importance of completing the dosage schedule of the antibiotic regimen.	4.53±0.70	4.49±0.75	0.77
Change timing and dose of antibiotic cause drug resistance.	4.35±0.73	4.22±0.81	0.28
Change timing and dose of antibiotic cause toxicity	3.43±0.90	3.63±1.00	0.19
Attitude towards self-medication			
Reading the package leaflet of self-medicated drugs is a good source.	4.15±0.83	4.44±0.76	0.026
I discourage myself/ friends, and family from self-medicating; it is harmful.	3.47±0.84	3.25±1.18	0.19
I can diagnose and treat myself.	3.38±0.91	3.23±1.02	0.34
A pharmacist is an excellent source to get medication.	3.57±0.98	4.30±0.82	<0.001
It is acceptable to use non-prescribed drugs for a short period.	3.15±1.04	3.42±1.17	0.14
It is acceptable to self-medicate to treat chronic illness.	2.21±1.11	2.20±1.20	0.98
It is acceptable to use previously prescribed drugs to treat the recurrent attacks of chronic illnesses such as allergies.	3.25±1.12	2.71±1.23	0.006
A medical license is essential to prescribe the drug.	4.24±0.81	4.47±0.71	0.066

Students were asked about self-medication reasons, practices, and barriers. Their answers were coded on a series of 5-point Likert-type scales from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate agreement with the statement. No significant association was observed ($p > 0.05$) among study participants' responses regarding reasons for the use and non-utilization of self-medication. Similarly, overall no significant association was observed ($p > 0.05$) among study participants' responses regarding the pattern of their practice. (Table 4).

Table 4 Self-Medication Reasons, Practices, and Barriers

	Medical Student	**Pharmacy Student**	**P-Value**
Reasons for Self-Medication in You			
No need to visit the doctor for a minor disease, and the urgency	3.46±0.97	3.68±1.08	0.18
Knowledge from previous experience/ I am confident.	3.66±0.76	3.76±0.96	0.502
The doctor will prescribe me the same drug.	3.54±0.78	3.34±1.12	0.201
Time and money are saved.	3.47±0.92	3.39±1.18	0.65
Fast relief	3.53±0.94	3.38±.98	0.35
Chance to have experience	3.12±1.11	3.05±1.13	0.72
Absence of trust in health services	2.54±1.04	2.48±1.15	073

Unavailability of health service	2.53±1.06	2.44±1.02	0.62
Reasons for not self-medicating			
Fear of adverse/ side effects	3.87±0.81	3.72±1.10	0.36
Lack of knowledge & experience	3.72±0.93	3.76±1.04	0.82
Lack of confidence	3.25±0.98	3.33±1.19	0.66
It is injurious to the health.	3.47±0.89	3.46±1.02	0.93
Prior bad experience with self-medication	2.79±1.07	2.99±1.14	0.29
Academic effect on self-medication			
Knowledge gained in college makes students safer for self-medication.	3.63±0.84	3.85±1.03	0.17
Changes are observed in self-medication as the students acquire more academic knowledge.	3.57±0.76	4.01±0.87	0.002
More confident self-medicating	3.49±0.85	3.87±0.98	0.01
No change	2.91±0.84	2.85±095	0.67
I would instead use a prescription.	3.75±0.74	3.52±0.96	0.102
Pattern of practice			
Do you reuse the prescription or use the old prescribed drugs when experiencing similar symptoms?	3.34±1.4	2.82±1.22	0.007
Do you discontinue the prescribed medicines by yourself once symptoms are relieved?	2.79±1.10	2.63±1.20	0.40
Do you increase the drug dose on yourself when symptoms are not relieved?	2.25±1.03	2.13±1.19	0.51
Do you experience adverse reactions during self-medication?	2.34±1.03	2.75±1.07	0.12
Are you habituated to any drug due to self-medication?	2.46±1.7	2.62±1.07	0.35
Do you advise self-medicating with the same medications prescribed to you when someone has symptoms similar to yours?	2.62±1.16	2.39±1.21	0.25

4 Discussion

Self-medication is a common issue in the community. Patients are taking medications without any prescription or using the drugs used by other family members. It is also common among University and College students of different countries [13-14]. In this study, most participants are female with good health status; however, nearly half of the study participants fell sick in the last year. Most students stated that taking medications resolved their symptoms (Table 1). As reported in the literature, students want quick relief from acute illnesses like colds, flu, and headache. [15-16]. The same finding is observed in our study. At the same time, enquiring regarding the top 4 indications are cold flu and sore throat, headache, and dysmenorrhea in both groups (Table 2). In various studies, these are the most common reasons for self-medication [17-18].

General knowledge regarding self-medication in our study is the same in medical and pharmacy students; however, when asked about the attitude, there is a significant difference in the statement that a pharmacist is an excellent source to get medication and it is acceptable to use the drug already prescribed for recurrent illness. The same is also reported in the literature. Gupta et al. said pain-suppressing medications were the most commonly used, and pharmacies were the most standard source of knowledge [19-20].

Yasmin et al. have the same findings; the most commonly utilized medications were paracetamol and multivitamins. The reasons reported for using these medications included cold/flu and fever [21-22]. In a study conducted by Al Raddadi et al. to evaluate self-medication among undergraduate students at King Saud University, half of the respondents to a survey were found to be self-medicating. Similar studies conducted in other regions of the world also

revealed a significant percentage of participants using self-medication, highlighting the need for public awareness campaigns, for people to use drugs more carefully, and for pharmacists to play an advisory role. [23].

While comparing Self Medication among Medical and Pharmacy students in this study, we found that self-Medication is more prevalent among medical students (70.59 %) than pharmacy students (62.3%). Hashemzai et al. reported that male students were more likely to use self-medication Self- medication was used to treat colds the most frequently. At the same time, antibiotics were the most commonly used medication. The students' past prescriptions were their primary sources of knowledge. The level of drug knowledge among pharmacy students was higher. The likelihood of self-medication was statistically significantly correlated with the level of drug knowledge [24].

One study conducted in Oman reported self-medication, and because the symptoms were so moderate and many were younger female students, over-the-counter medications were often used. Headaches, colds, and fevers were typical illnesses that led students to self-medicate [25]. Rahim and colleagues published from Iran that using self-medication was common among students. Raising students' awareness and knowledge of the potential risks of self-medication activities is the most incredible way to minimize or completely eradicate self-medication. Cold medications and sedatives were the most frequently utilized medications for self-medication, used by 33% of the students. About 47% of students were admitted due to antibiotics utilization without a prescription. About 40% of students got their information on self-medication from the Internet and social media. Between medical and non-medical students, there was no discernible difference in the amount of self-medication [26-27].

5 Conclusion

Self-Medication is very common among medical and pharmacy students in Oman. The students must be educated about the harms of self-medication and the responsible use of medicines. The key to decreasing the use of self-medication remains the accessibility and availability of healthcare services. Strong regulations that forbid the provision of medications without a valid prescription should be implemented to stop the trend of self-medication. The study's conclusions cannot be generalized in and of itself because they are based on two colleges in Oman. More multicentric research must be conducted among medical and pharmacy students and the general community to comprehend the diverse facts.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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