Original Article

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Assessment of Pharmacy Students' Knowledge, Attitudes and Practices on Self Medication

Eczacılık Öğrencilerinin Kendi Kendine İlaç Kullanımı Konusunda Bilgi, Tutum ve Uygulamalarının Değerlendirilmesi

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ABSTRACT

Objective: This study aimed to evaluate the knowledge, attitudes and practices of Süleyman Demirel University Faculty of Pharmacy students about self-medication in Turkey.

Methods: This cross-sectional online survey study was conducted to investigate the knowledge, attitudes, and practices of Süleyman Demirel University Faculty of Pharmacy students regarding self-medication between 22 September and 22 October 2022.

Results: The questionnaires were answered by 336 students (76%). Most of the students (79.2%) correctly defined self-medication and 9.5% of students declared that self-medication was a part of self-care. Only 4.2% of students reported that they recommended self-medication to others. Female students had better knowledge and more negative attitudes about self-medication than male students ($p<0.05$). Approximately 79% of the students stated that they used self-medication in the last 6 months. About half of the participants (54.4%) stated that they had taken painkillers without a prescription in the last 6 months. The students declared that they had used drugs without a prescription for headache (36.3%), common cold (14.8%) and menstrual problems (10.4%) in the last 6 months, respectively.

Conclusion: Most of the students had good knowledge about self-medication, but the majority of them had negative attitudes. The study also showed that self-medication was common among these students. Pharmacists make an important contribution to the public health system. Pharmacy students should continue to be educated about responsible self-medication as future pharmacists.

Keywords: Knowledge, attitude, practice, pharmacy students, self-medication

ÖZ

Amaç: Bu çalışma, Türkiye'de Süleyman Demirel Üniversitesi Eczacılık Fakültesi öğrencilerinin kendi kendine ilaç kullanımı konusundaki bilgi, tutum ve uygulamalarını değerlendirmeyi amaçlamaktadır.

Yöntemler: Bu kesitsel çevrimiçi anket çalışması, 22 Eylül-22 Ekim 2022 tarihleri arasında Süleyman Demirel Üniversitesi Eczacılık Fakültesi öğrencilerinin kendi kendine ilaç kullanımlarına ilişkin bilgi, tutum ve uygulamalarını araştırma amacıyla yapılmıştır.

Bulgular: Anketler 336 öğrenci (%76) tarafından cevaplanmıştır. Öğrencilerin çoğu (%79,2) kendi kendine ilaç kullanımını doğru tanımlamıştır. Öğrencilerin %9,5'i kendi kendine ilaç kullanımının kişisel bakımın bir parçası olduğunu belirtmiştir. Öğrencilerin sadece %4,2'si kendi kendine ilaç kullanımını başkalarına tavsiye ettiğini bildirmiştir. Kız öğrencilerin kendi kendine ilaç kullanımı konusunda erkek öğrencilere göre daha iyi bilgi düzeyine ve daha fazla olumsuz tutuma sahip oldukları görülmüştür ($p<0,05$). Öğrencilerin yaklaşık %79'u son 6 ayda kendi kendine ilaç kullandığını belirtmiştir. Katılımcıların yaklaşık yarısı (%54,4) son 6 ayda reçetesiz ağrı kesici aldığını belirtmiştir. Öğrenciler son 6 ayda sırasıyla baş ağrısı (%36,3), soğuk algınlığı (%14,8) ve adet sorunları (%10,4) için reçetesiz ilaç kullandıklarını beyan etmişlerdir.

Sonuç: Öğrencilerin çoğu kendi kendine ilaç kullanımı hakkında iyi bilgiye sahiptir, ancak çoğunluğunun olumsuz tutumları vardır. Ayrıca kendi kendine ilaç tedavisi bu öğrenciler arasında yaygındır. Eczacılar halk sağlığı sistemine önemli katkılarda bulunurlar. Eczacılık öğrencileri, geleceğin eczacıları olarak sorumlu "kendi kendine ilaç kullanımı" konusunda eğitim almaya devam etmelidir.

Anahtar Sözcükler: Bilgi, tutum, uygulama, eczacılık öğrencileri, kendi-kendine ilaç kullanımı

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Introduction

Self-medication is prevalent around the world. The World Health Organization defines self-medication as individuals' choice and use of drugs to treat self-recognized diseases or symptoms (1). Taking medication without a doctor's prescription and using a prescription for recurring symptoms are examples of self-medication (2). Having no time to go to the physician, urgency, mild illness, the distance of hospitals from home, and easy access to over-the-counter (OTC) medicines from markets are the causes of self-medication (3,4). Convenient access to medicine and illness information, especially on the internet, encourages patients to self-medicate (5). Painkillers, antibiotics, cold syrups and nutritional supplements are frequently used in self-medication (6). Herbal preparations are generally considered to be safe. However, like medicines, herbal medicines also cause adverse reactions (7).

Responsible self-medication comprises the use of approved OTC drugs. When they are used to treat self-diagnosed disorders or symptoms, they are considered comparatively safe and effective drugs. Self-medication may prevent mild illness and decrease the financial costs of health care (8). Therefore, responsible self-medication encourages the rational use of drugs (9). Responsible self-medication has advantages such as reduced doctor visits, reduced burden on the health system, and access to effective treatment (10). Conversely, irresponsible self-medication leads to misdiagnosis, adverse drug reactions and drug-drug interactions (11).

According to studies, self-medication rates in Turkey changes between 58.9% and 83.1%. The studies were carried out in medical faculty students, university students, the general population and pharmacists (12-15).

As pharmacy students will be the pharmacists of the future and the counsellors and drug suppliers to patients, it is important to determine their knowledge, attitudes and practices in this regard (1). It is also important because self-medication is more common in developing countries (16). As far as we know, there is no study conducted on this subject among pharmacy students in Turkey. For this reason, the study aimed to evaluate the knowledge, attitudes and practices of Süleyman Demirel University Faculty of Pharmacy students about self-medication.

Methods

Study Area and Study Design

This cross-sectional online survey study was conducted to investigate the knowledge, attitudes, and practices of Süleyman Demirel University Faculty of Pharmacy undergraduate students regarding self-medication between 22 September and 22 October 2022. This study was approved by the Süleyman Demirel University Clinical Research Ethics Committee (approval number: 246/20.09.2022). A faculty administration permission was also obtained.

Data Collection

The survey was created via Google form. The survey link was distributed to the students via the WhatsApp. On the first page of the questionnaire, it was stated that the participation of the students was on a voluntary basis and the data would be kept confidential. Each student gave consent before answering the questionnaire.

The questionnaire was created by revising a previous study (3). The survey was translated into Turkish. Expert opinion was obtained from 2 pharmacologists. Some questions were removed. The questionnaire was tested on 30 students for clarity and readability. These students were selected from different academic years. Some questions were minor revised to make it more understandable to create the final version of the questionnaire.

The survey included 26 questions. The first 4 questions were about demographic information, questions between 5 and 10 were about knowledge, questions between 11 and 15 were about attitude, and questions between 16 and 26 were about practice.

Sample Size

The sample size was calculated by 206 with Raosoft sample size calculator with 5% of margin of error and 95% of confidence interval, 50% of response rate (17).

Statistical Analysis

Data were analyzed by using the SPSS version 20.0. Quantitative and qualitative variables were defined as median-interquartile range (IQR), mean ± standard deviation (SD) and percentage, respectively. Quantitative variables were compared with the Mann-Whitney U test if they were not normally distributed (for two-group comparison). The chi-square test was performed to compare categorical variables. P value <0.05 was considered statistically significant.

For the knowledge questions, a 3-point Likert scale was used. The answers to the knowledge questions consisted of "Yes", "No" and "Don't know." Correct answers were scored as 1, wrong answers and "Don't know" answers were scored as 0. The maximum knowledge score was 6, as there were 6 questions. More than >50% of the total score was considered good knowledge, and ≤50% was considered poor knowledge. A 5-point Likert scale was used for attitude questions. Attitude responses were calculated as 5 points for "Strongly disagree" answer, 4 for "Disagree" answer, 3 for "Uncertain" answer, 2 for "Agree" answer and 1 for "Strongly agree" answer. Attitude questions consisted of 5 questions and the maximum score was 25. Since we gave high scores to items such as "strongly disagree" and "Disagree" on a 5-point Likert scale, high scores indicated a negative attitude. More than ≥50% of the total score was associated with a negative attitude, and less than <50% was associated with a positive attitude.

In order to evaluate the practical level of the students, questions such as what type of drugs that the students used for self-medication, for which condition they used them, and whether they had any side effects or not were asked.

Results

Internal consistency of the study was calculated with the Cronbach's alpha score. Cronbach's alpha scores were 0.77 for knowledge and 0.52 for attitude and were acceptable (18).

The questionnaire was sent to all students studying in the faculty of pharmacy, but it was answered by 336 students (76%). Of the students participating in the study 243 (72.3%) were female and 93 (27.7%) were male and median age was 21 (IQR: 20-22). The 1st and 4th grades had the highest participation (21.7%) in the survey. Only 11% of the students had a chronic disease. Demographic characteristics are shown in Table 1.

Knowledge

The mean ± SD knowledge level of the students was 5.21±0.924. Most of the students (79.2%) correctly defined self-medication. More than half of the students (59.2%) knew that all drugs could have side effects. The majority of the students (97.3%) were aware that they should contact the doctor or pharmacist in the condition of adverse effects, and the majority (97.9%) of them knew that the use of drugs with unidentified substances was unsafe in patients with liver or kidney disease. Most of the students (89%) knew that self-medication could mask the signs and symptoms of certain diseases. In addition, students (97%) knew that increasing or decreasing the dose of the drug without consulting a doctor or pharmacist could be dangerous. Table 2 shows students' knowledge about self-medication. Students who were female had better knowledge level than male students ($p<0.05$) (Table 3).

Attitude

The mean ± SD attitude level of the students was 15.84±2.8. Figure 1 shows the attitudes of pharmacy students toward the self-medication. Only 9.5% of students declared that self-medication was a part of self-care. The majority of the students (82.5%) believed that there was a need for education about self-medication. Only 4.2% of students reported that they recommended self-medication to others.

Students who were female had more negative attitudes than the male students ($p<0.05$) (Table 3).

Practices

Table 4 shows the practice of pharmacy students in self-medication. Approximately 79% of the students stated that they used self-medication in the last 6 months. The rates of self-medication were 22.8% in 4th grade students, 21.6% in 3rd grade students, 20.5% in 2nd grade students, 17.9% in 5th grade students and 17.2% in 1st grade students. Students who had chronic disease in the last 6 months used more self-medication than the students who did not have. There was a statistically significant difference between different classes in terms of using self-medication ($p<0.05$), and there was no difference between genders in terms of using self-medication ($p>0.05$). About half of the participants (54.4%) stated that they had taken painkillers without a prescription in the last 6 months. The students declared that they had used drugs without a prescription for headache (36.3%), common cold (14.8%) and menstrual problems (10.4%) in the last 6 months, respectively. 80.1% of the students knew whether the drugs they used required a prescription or not. More than half of the students stated that pharmacists (59.2%) and doctors (18.5%) were the sources of information about self-medication. Most of the students (68%) knew about the possible side effects of the drugs they self-medicated. Awareness of the side effects of self-medication was highest in the 5th grade students (23.4%), and this was followed by 3rd grade students

Table 1. Demographic characteristics of respondents

Variables	n (%)
Gender	
Female	243 (72.3)
Male	93 (27.7)
Age median (IQR)	21 (20-22)
Year of study	
First year	73 (21.7)
Second year	64 (19)
Third year	66 (19.6)
Fourth year	73 (21.7)
Fifth year	60 (17.9)
Do you have any chronic disease?	
Yes	37 (11)
No	299 (89)

IQR: Interquartile range

Table 2. Knowledge of pharmacy students on self-medication

Questions	Item	n (%)
Self-medication is defined as self-consumption of medicine without advice of a physcian.	Yes[a]	266 (79.2)
	No	41 (12.2)
	Don't know	29 (8.6)
Do all drugs (prescription/non-prescription) have adverse effects?	Yes[a]	199 (59.2)
	No	59 (17.6)
	Don't know	76 (22.6)
Do you think it is dangerous to increase or decrease the dose of the drug without consulting the doctor or pharmacist?	Yes[a]	326 (97)
	No	4 (1.2)
	Don't know	6 (1.8)
In case of adverse effects, the doctor or pharmacist should be contacted.	Yes[a]	327 (97.3)
	No	-
	Don't know	9 (2.7)
It is dangerous to use drugs with unknown substances in patients with liver and kidney disease	Yes[a]	329 (97.9)
	No	2 (0.6)
	Don't know	5 (1.5)
Self-medication can mask the signs and symptoms of some diseases.	Yes[a]	299 (89)
	No	10 (3)
	Don't know	27 (8)

[a]: Correct answer

(22.9%), 4th grade students (21.2%), 2nd grade students (19.9%), and 1st grade students (12.6%). The students mostly stated that the most important causes for self-medication were that the health problem was not serious (36.9%) and it was a time-saving method (19.9%). A few of the students (11.1%) stated that they experienced adverse effects of self-medication.

Discussion

To the best of our knowledge, this is the first study to evaluate the knowledge, attitudes, and practices of pharmacy students in self-medication in Turkey. Our study presents the perspective of a pharmacy faculty in Turkey on this issue.

In our study, most of the students (95.5%) had good knowledge of self-medication, but the attitude level of most of them (88.4%) was negative. In the last 6 months, 79.2% of the students practiced self-medication.

In some of the studies on self-medication, the level of knowledge of the students was good (19-21) as in our study, but it was found to be poor in some studies (22-24). In our study, as in the

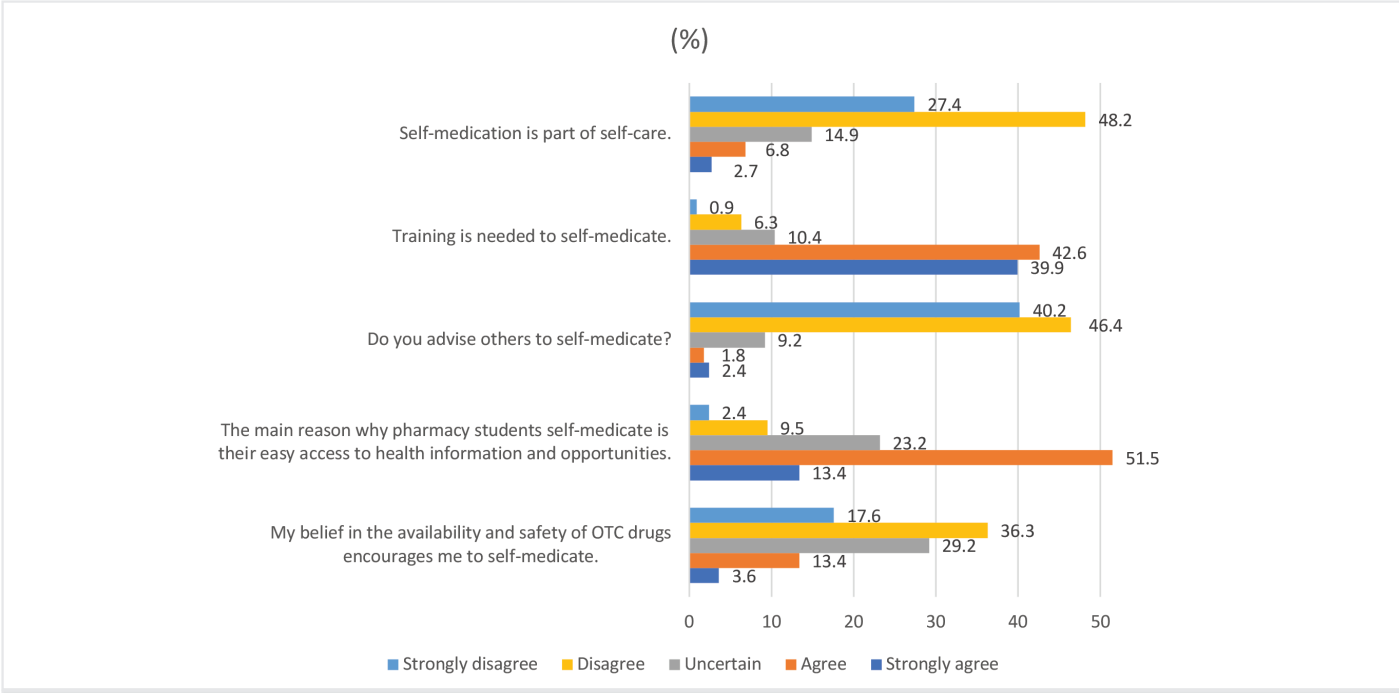

Figure 1. Percentage of pharmacy students' attitudes towards self-medication

Table 3. The relationship between the demographic characteristics of pharmacy students and their knowledge and attitude about self-medication

Variables	Knowledge level			Attitude level		
	Poor, n (%)	Good, n (%)	p	Negative, n (%)	Positive, n (%)	p
Gender						
Male	8 (8.6)	85 (91.4)	0.035	73 (78.5)	20 (21.5)	0.001
Female	7 (2.9)	236 (97.1)		224 (92.2)	19 (7.8)	
Age, years (median-IQR)	20 (19-22)	21 (20-22)	0.081	21 (20-22)	21 (20-22)	0.392
Year of study						
First year	5 (6.8)	68 (93.2)	0.28	65 (89)	8 (11)	0.851
Second year	3 (4.7)	61 (95.3)		58 (90.6)	6 (9.4)	
Third year	2 (3)	64 (97)		58 (87.9)	8 (12.1)	
Fourth year	5 (6.8)	68 (93.2)		62 (84.9)	11 (15.1)	
Fifth year	0 (0)	60 (100)		54 (90)	6 (10)	
Chronic disease						
Yes	2 (5.4)	35 (94.6)	0.675	30 (81.1)	7 (18.9)	0.169
No	13 (4.3)	286 (95.7)		267 (89.3)	32 (10.7)	

IQR: Interquartile-range. The cut-off score for the knowledge section is 3 and for attitude it is 12.5

Table 4. Practices of pharmacy students on self-medication

Questions	Item	n (%)
Have you self-medicate in the last 6 months?	Yes	255 (79.2)
	No	70 (20.8)
How frequently did you visit the pharmacy to purchase drugs without a prescription for yourself in the last 6 months?	1	168 (50)
	2	61 (18.2)
	≥3	37 (11)
Which of the following drug did you take without a prescription in the last 6 months?	Painkillers	183 (54.4)
	Antibiotics	7 (2.1)
	Antipyretics	4 (1.2)
	Antihistamines	10 (3)
	Cold and flu preparations	33 (9.8)
	Antiacid drugs	3 (0.9)
	Others	26 (7.7)
	None	70 (20.8)
For which of the following indication did you take medications without prescription during the last 6 months?	Headache	122 (36.3)
	Common cold	50 (14.8)
	Fever	7 (2.1)
	Allergy	9 (2.7)
	Digestive system disorder	7 (2.1)
	Acne/skin diseases	10 (3)
	Menstrual problems	35 (10.4)
	Other	26 (7.7)
	None	70 (20.8)
Do you know if the drugs you use require a prescription?	Yes	269 (80.1)
	No	30 (8.9)
	Don't know	37 (11)
What is your source of information about self-medication?	Relatives	20 (6)
	Friends	11 (3.3)
	Internet	42 (12.5)
	Television	2 (0.6)
	Advised by doctors but sold without prescription	62 (18.5)
	Pharmacist	199 (59.2)
Do you know the potential adverse reactions of the drug with which you have self-medicated?	Yes	231 (68.8)
	No	67 (19.9)
	Don't know	38 (11.3)
Where do you get the medicine when you are going to self-medicate?	Pharmacy	326 (97)
	Street market	3 (0.9)
	Herbal store	1 (0.3)
	Friend	6 (1.8)
What is the most important reason for you to self-medicate?	To save money	4 (1.2)
	To save time	67 (19.9)
	Privacy	5 (1.5)
	Urgency	130 (38.7)
	No healthcare facility nearby	5 (1.5)
	Health problem not serious	124 (36.9)
	Embarrassed of discussing own symptoms	1 (0.3)
Have you ever experienced the negative side effects of self-medication?	Yes	39 (11.6)
	No	297 (88.3)
If yes which was it?	Drug side effects	24 (7.1)
	Disease recurrence	8 (2.4)
	Development of drug resistance	4 (1.2)
	Drug-drug interactions	3 (0.9)

study of Alves et al. (23), female students' knowledge level was better than male students. In our study, similar to other studies, the definition of self-medication was correctly defined by most students (79.2%) (3,24). The vast majority of students (97.9% and 89%, respectively) believed that it was dangerous to use drugs containing unknown substances in patients with liver or kidney disease, and that self-medication could mask the symptoms of some diseases. Although these rates were higher than the study of Siraj et al. (25) (65.1% and 57.1%, respectively), they were similar to the results of the study of Alduraibi and Altowayan (3) (97.5% and 88.3%, respectively).

The attitudes of the students in our study were mostly negative. This shows that students may be careful about self-medication because their knowledge level is good. However, despite this negative attitude, this situation contradicts the results of high practice (79.2%). This negative attitude may result from their ignorance of the concepts of responsible self-medication and irresponsible self-medication. In addition, since there were few questions about attitude, we might not measure the real attitude level of the students. Contrary to our study, the attitude level was positive in most of the studies (19,24,25). Only 9.5% of the students agreed that self-medication was a part of self-care, and only 4.2% stated that they recommended self-medication to others. In the study by Siraj et al. (25), this rate was 35.3% and 46.2%, respectively.

Self-medication rates vary between studies. While it was 57.1% in a study conducted among pharmacy and medical students in Iran (8), it was 63.9% in a study conducted in Saudi Arabia (3) and 38.5% in Ethiopia (26). In addition, in studies conducted among medical school students in India (27), Egypt (28) and Bahrain (29), the rates of self-medication use were found as 78.6%, 55% and 44.8%, respectively. In studies conducted in European countries in medical students in Serbia (30) and in Slovenia (31) in health care and non-health care students, the rates of self-medication were found to be 81.3% and 92.3%, respectively. These differences may result from the methods of studies, data collection methods, welfare levels of countries, and access to health services. In a study conducted with medical school students in Turkey, self-medication use was 83.1% (13) and 63.4% among university students (12). The reason for the high rate of self-medication among health department students and health professionals may be the well-known knowledge of medicine and pharmacology and the ease of access to this information (32). In our study, students who had chronic disease in the last 6 months used more self-medication than the students who did not have. There was a statistically significant difference between different classes in terms of using self-medication, and there was no difference between genders in terms of using self-medication. In some studies, the male gender was found to use more self-medication (8), while in some others the female gender was found to use more self-medication (26). In our study, the use of self-medication in the 4th and 3rd grades was higher than in the other classes, and this situation may be related to the higher level of drug and pharmacology knowledge than 1st and 2nd grades. In addition, there may be an increase in stress-related headaches and an increase in the use of painkillers depending on these headaches, as these are the two most difficult courses in the faculty of pharmacy (33).

In our study, the most commonly used drugs for self-medication among students were painkillers (54.4%). This situation was similar to many studies (3,26,28,34,35). In Turkey, analgesics such as paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) can only be sold in pharmacies with or without a prescription (36). Opioid-derived analgesics are only sold in pharmacies with a red prescription (37). In many countries in Europe, analgesics such as paracetamol and NSAIDs can be sold non-pharmacy outlet in Denmark, Ireland, Slovenia, Czech Republic, United Kingdom, Hungary, and Poland (38). In the United States, there are two groups of non-prescription drugs: restricted and unrestricted unrestricted OTC drugs can be sold outside the pharmacy without pharmacist supervision (39). While there are some risks to self-medication, there are advantages such as reduced government health expenditures, reduced unnecessary physician consultations, and greater patient involvement. Community pharmacists have an important role in providing accurate information and counseling to patients about OTC drugs. As the pharmacists of the future, pharmacy students should also be conscious of this issue (40). For example, overuse of OTC painkillers can lead to medication overuse headache. Pharmacy students should be informed about the harms of excessive use of analgesics (41). Self-medication with antibiotics was also found to be high in some studies (8,42,43). This situation is very dangerous as it can lead to antibiotic resistance (44). In our study, antibiotic use was 2.1%. This might result from the student did not have knowledge about antibiotic drugs and thought another drug was an antibiotic. Also it can be due to using leftover antibiotics at home.

In our study, students mostly used self-medication for headache (36.3%), common cold (14.8%), and menstrual problems (10.4%). Headache and cold were also indications for self-medication in most other studies (20,34,43,45).

In our study, the most important cause for self-medication was that the health problem was not serious (36.9%). This was in line with the results of most studies (20,26,35,46).

Study Limitations

There were some limitations in our study. 1st and 2nd-year students were unacquainted with some terminology and may have had difficulty with some questions. In our study, the Cronbach's alpha score for the attitude section was low. This might be due to the low number of questions and we may not have measured the actual knowledge and attitude levels. In addition, the generalizability of our study was limited as it was conducted in a single center.

Conclusion

According to the results of this study, most of the students had good knowledge of self-medication, but the majority of them

had negative attitudes. It also showed that self-medication was prevalent among these students. Pharmacists make an important contribution to the public health system. Although the students' knowledge level was good in our study, pharmacy students should continue to receive training in responsible self-medication as future pharmacists.

Ethics

Ethics Committee Approval: This study was approved by the Süleyman Demirel University Clinical Research Ethics Committee (approval number: 246/20.09.2022).

Informed Consent: Each student gave consent before answering the questionnaire.

Peer-review: Externally peer-reviewed.

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