International Journal of Epidemiologic Research
doi:10.34172/ijer.2020.30 2020 Autumn;7(4):167-172 http://ijer.skums.ac.ir

Original Article

Self-medication Among Students in Southern Iran: Prevalence, Risk Factors, and Attitudes

Hamed Delam[1], Omid Soufi[2], Ahmadreza Eidi[3], Mohammad-Rafi Bazrafshan[4*]

[1]MSc of Epidemiology, Student Research Committee, Larestan University of Medical Sciences, Larestan, Iran
[2]Student of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran
[3]BSc Student, Student Research Committee, Larestan University of Medical Sciences, Larestan, Iran
[4]Associate Professor, Department of Nursing, School of Nursing, Larestan University of Medical Sciences, Larestan, Iran

*Corresponding Author:
Mohammad-Rafi Bazrafshan,
Tel: 071-52247110,
Fax: 071-52247111,
Email: seeder2007@gmail.com

Abstract

Background and aims: Self-medication, as the most common method of self-care, is one of the major problems in treatment in many countries in the world. The present study was designed to determine the prevalence of self-medication and identify the factors associated with casual medication use among students of Larestan University of Medical Sciences in Iran in 2020.

Methods: This is a cross-sectional descriptive-analytical study conducted in 2020. The study was conducted at Larestan University of Medical Sciences and 147 students entered the study through convenience sampling. The data collection tool was a researcher-made self-treatment questionnaire. After collecting the data, the SPSS software version 25.0 was used to analyze the data. Fisher's exact test, independent *t* test, and chi-square test were used to investigate the relationship between the variables. A *P* value of less than 0.05 was considered statistically significant.

Results: The prevalence of self-medication was 62.5%. The most common sources of self-medication were pharmacies and previous prescriptions. The most common illnesses treated with over-the-counter medications include colds, headaches, and digestive problems. The most important over-the-counter medications include painkillers, anti-colds, antibiotics, iron pills, calcium supplements, and antihistamines. A comparison of students' attitudes towards medication showed that attitudes "I feel my problem has been treated with over-the-counter medications" and "I feel I have enough information about diseases and how to treat them" (the group who did have self-medication and the group who did not have self-medication) had a significant difference between the two groups ($P<0.05$).

Conclusion: The results of the present study showed a high prevalence of self-medication among students. We recommend holding special training classes for the communities in order to provide information about the irreparable effects of self-medication and create new policies for prescribing and delivering medicine.

Keywords: Self-medication, Prescription, Self-care, Prevalence, Pharmacy

Received: 9 Sep. 2020
Accepted: 22 Sep. 2020
ePublished: 30 Dec. 2020

Introduction

Today, access to a variety of medications has been made possible via significant scientific and industrial advances in pharmacy and medicine. Medical experts believe that proper and rational use of medication in many cases helps to cure the disease.[1,2] Generally, the users are concerned only with the safety and healing aspects of the medicine, while the medical texts have likened the medicine to a double-edged sword, one edge of which is related to pathogens and the other edge is related to its threat to humans due to lack of knowledge about the proper use of medications.[3,4] The World Health Organization has defined self-medication as the use of medication without prescription of a physician and based on the patient's own diagnosis to treat his or her illness.[5,6] Self-medication, as the most common method of self-care,[3,7] is one of the major problems in the field of treatment in Iran and many countries in the world.[8,9] Self-medication can be achieved through the use of previously prescribed medications,[3] as well as extra medications left at home,[10] and it is accompanied by the onset of dangerous side effects, including bacterial resistance to antibiotics, complete lack of treatment, and unwanted poisoning.[11] According to the World Health Organization, about 40% of the world's treatment costs are spent on medicine each year, and its misuse is a global problem.[12] On the other hand, according to a report of the Ministry of Health, Treatment, and Medical Education of Iran, in 2009 more than 26 billion and 478 million drugs were sold, that is, according to the country's population at the time, each Iranian consumed an average of 683 medications. It is also estimated that about 83.3% of Iranians use medication arbitrarily.[3,10] Medication use in Iran lacks the correct

pattern, and the pharmaceutical system continues to face the problem of medication overdoses. Students are among the most important and influential groups in society. This group can play a key role in changing the lifestyle of society, and they are also role models for other people in the family and society. On the other hand, it seems that students studying in medical universities are at greater risk of taking over-the-counter drugs due to their presence in health care settings and the availability of medicines. Therefore, recognizing the reasons for self-medication and providing appropriate strategies to reduce it are of particular importance, so the present study was designed to determine the prevalence of self-medication, identify the factors associated with arbitrary use of medication, and provide effective strategies to reduce the side effect of medications among students of Larestan University of Medical Sciences in Iran.

Materials and Methods

Study Design and Setting

This is a cross-sectional descriptive-analytical study conducted in 2020. The setting of the study was Larestan University of Medical Sciences and the research population consisted of the students studying at this University.

Sample Size and Sampling

To measure the sample size, we used a similar study.[13] With a prevalence of 92%, a confidence level of 99%, and an error of 0.05, the sample size was estimated to be 147. Convenience sampling method was used in this study. The criteria for entering the study included willingness to participate in the study and being a student at Larestan University of Medical Sciences, and participants with incomplete questionnaires were excluded from the study.

Data Collection and Statistical Analysis

The data collection tool was a researcher-made self-treatment questionnaire that was designed after studying similar articles and extracting the factors related to self-medication as well as consulting with pharmacology experts. The content validity of the above-mentioned questionnaire was confirmed by 5 faculty members at Larestan University of Medical Sciences and the reliability of the questionnaire was calculated to be 87% by Cronbach's alpha method. The present questionnaire was designed and prepared in 4 dimensions of demographic characteristics (age, gender, marital status, place), clinical information, causes of self-medication, and attitude questions (For example, I prefer foreign medications to Iranian types, before using the medication, I read the brochure, etc). A 5-point Likert scale was used to measure the attitude. The questions included 5 options: I am very opposed, I disagree, I have no opinion, I agree, and I strongly agree, which were scored 1-5, respectively. Four questionnaires were used to collect the data. Before presenting the questionnaires to the students, they signed the consent forms. Then, the questionnaires were distributed among the students and they were asked to read all the questions carefully and answer them. After collecting the data, the SPSS software version 25.0 was used to analyze the data. To report the qualitative data, we used frequency (percentage) and for reporting quantitative data, the mean index and standard deviation were used. Fisher exact test, independent *t* test, and chi-square test were also used to measure the relationship between the variables. A *P* value of less than 0.05 was considered statistically significant.

Results

Of the 147 students who filled out the questionnaire, 92 (62.5%) reported the use of at least one over-the-counter medication in the past year. The mean age of those who had self-medication was 21.25±1.85 years, which was not significantly different from that of those who did not have self-medication (P = 0.894). Self-medication was more prevalent among male students than among female students, but this difference was not statistically significant (P = 0.259) (Table 1). According to the results of this table, no significant difference was observed in the variables between the group that had self-treatment and the one with no self-treatment (P > 0.05). In the self-medication group, the most common sources of over-the-counter medications were drugstores and medication left over from previous prescriptions at home (Figure 1). The students who took the over-the-counter medications also reported that they had obtained information about the medication by asking the family (25 out of 92), social media (23 out of 92), and reading related books and articles (21 out of 92), respectively. Only 9 out of 92 students who had tried self-medication had used the medication brochures to obtain the necessary information about it and how to use it (Figure 2). Table 2 lists the most important reasons for the use of over-the-counter medications in a self-medication group. According to the results of this table, obtaining the desired result from the previous use of the medication, obtaining the ideal result from taking the medication without its previous prescription, the availability of the required medication at home, and the idea about the safety of the medication were the most common reasons for self-medication. A comparison of students' attitudes towards

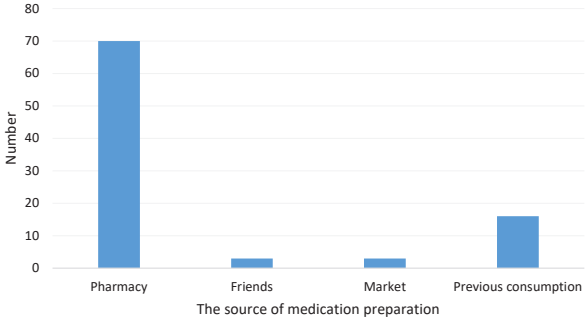

Figure 1. The Source of Medication Preparation.

Table 1. Demographic Characteristics of the Students Participated in the Study

Variables	Self-medication		*P* Value
	Yes (n=92)	No (n=55)	
Age (year), Mean±SD*	21.25±1.85	21.29±1.75	0.894[a]
Gender, n (%)			0.259[b]
Male	23 (54.8)	19 (45.2)	
Female	69 (52.2)	36 (47.8)	
Marital status, n (%)			0.348[b]
Single	80 (64.5)	44 (35.5)	
Married	12 (52.2)	11 (47.8)	
Place, n (%)			0.492[b]
Urban	76 (61.3)	48 (38.3)	
Rural	16 (69.6)	7 (30.4)	
College, n (%)			0.999[b]
Nursing	38 (62.3)	23 (37.7)	
Health	54 (62.8)	32 (37.2)	
Field, n (%)			0.634[c]
Nursing	31 (66.0)	16 (34.0)	
Surgical technology	7 (50.0)	7 (50.0)	
Public health	30 (62.5)	18 (37.5)	
Occupational health	14 (73.7)	5 (26.3)	
Nutrition sciences	7 (58.3)	5 (41.7)	
Environmental health	3 (42.9)	4 (57.1)	
Ethnicity, n (%)			0.387[c]
Fars	64 (61.0)	41 (39.0)	
Kurd	5 (55.6)	4 (44.4)	
Turk	17 (81.0)	4 (19.0)	
Lor	4 (50.0)	4 (50.0)	
Others	2 (50.0)	2 (50.0)	
Insurance status, n (%)			0.803[b]
Yes	84 (63.6)	48 (36.4)	
No	8 (53.3)	7 (46.7)	
Supplementary insurance, n (%)			0.705[b]
Yes	27 (65.9)	14 (34.1)	
No	65 (61.3)	41 (38.7)	
Family doctor status, n (%)			0.079[b]
Yes	74 (66.7)	37 (33.3)	
No	18 (50.0)	18 (50.0)	

* Standard Deviation, [a] Results of the *t* test, [b] Results of the Fisher exact test, [c] Results of the χ^2 test.

medication showed that attitudes "I feel my problem has been treated with over-the-counter medications" and "I feel I have enough information about diseases and how to treat them" between the group who self-medicated and those who did not were different, so the subjects in the groups without self-medication were significantly opposed to these attitudes ($P < 0.05$) (Table 3). The most common illnesses treated with over-the-counter medications include colds, headaches, and digestive problems (Figure 3). The most important over-the-counter medications include painkillers, anti-colds, antibiotics, iron pills, calcium supplements, and antihistamines (Figure 4). In terms of medication form, the pills were the most common form of over-the-counter medication, accounting for more than 92% of all forms of medication used.

Discussion

Today, despite the application of various policies regarding the use of medication, especially the arbitrary use of medication, the use of over-the-counter medications is considered as one of the important health problems that can have negative social and economic effects on the individual and society.[14] The prevalence of self-medication in the present study was 62.5%. A study on students in Pakistan found that the prevalence of self-medication was 76%.[15] Another study in Saudi Arabia found that the prevalence of self-medication was 78.8%.[16] According to a

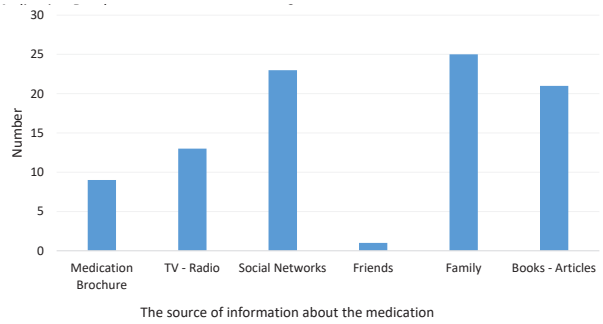

Figure 2. The Source of Information about the Medication.

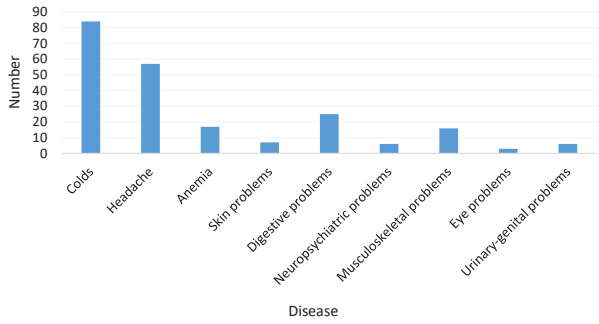

Figure 3. The Most Common Illnesses Treated With Over-the-Counter Medications.

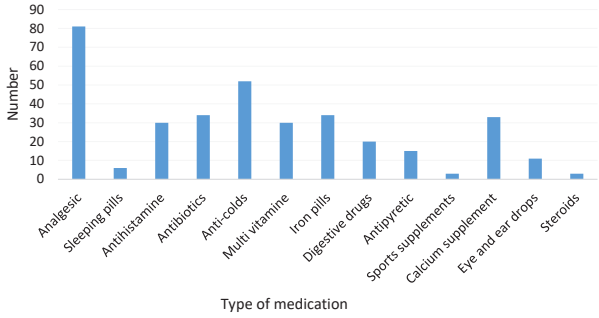

Figure 4. The Most Important Over-the-Counter Medications.

Table 2. Reasons for Taking Medications Without a Physician's Prescription

Reasons for self-medication	Response	
	Yes	No
Getting the desired result from the previous consumption	69 (75.0)	23 (25.0)
Not feeling the need for a doctor's opinion	54 (58.7)	38 (41.3)
Lack of medical booklet	7 (7.6)	85 (92.4)
Lack of need to see a doctor at the time of diagnosis	55 (59.8)	37 (40.2)
Optimal results from previous self-medication	63 (68.5)	29 (31.5)
Having an acute illness	13 (14.1)	79 (85.9)
Restrictions on seeing a doctor due to living in a dormitory	38 (41.3)	54 (58.7)
Having medication at home	62 (67.4)	30 (32.6)
Lack of time and opportunity to see a doctor	41 (44.6)	51 (55.4)
Lack of medications prescribed by some doctors	24 (26.1)	68 (73.9)
The safety of the medication	58 (63.0)	34 (37.0)
Delivery of medication by pharmacies without a doctor's prescription	44 (47.8)	48 (52.2)
Easy access to medication in the market and shops	34 (37.0)	58 (63.0)
Getting advice from friends and relatives based on their experience	40 (43.5)	52 (56.5)
Lack of belief in medical treatment	10 (10.9)	82 (89.1)
Not having money to see a doctor	14 (15.2)	78 (84.8)
Awareness of the side effects of medications	44 (47.8)	48 (52.2)

Table 3. Students' Attitudes Towards Medication Use

Attitude Questions	Self-medication		*P* Value
	Yes	No	
I prefer foreign medications to Iranian types.	3.66±0.94	3.51±0.94	0.339
I believe that herbal and traditional medication can cure my illness.	3.68±0.88	3.45±0.97	0.156
I feel that my illness has been cured by taking medications without prescription.	3.42±0.78	2.24±0.74	<0.001
If the cost of a doctor's visit decreases, I will take my medication as prescribed by my doctor.	3.20±1.16	3.51±0.79	0.082
I feel that I have enough information about diseases and how to treat them.	3.21±0.91	2.87±0.94	0.036
The pharmacy easily gives medication without prescription by doctors.	3.26±.098	3.04±0.98	0.182
Before using the medication, I read the brochure.	3.73±1.08	3.93±0.85	0.248

study by Klemenc-Ketis et al in Slovenia, the prevalence of self-medication in students was estimated to be 92.3%.[13] Additionally, another study in western Iran showed that the prevalence of self-medication among health science students was 89.6%, which was higher than the results of the present study.[17] However, a study by Martins et al in Portugal found that the prevalence of self-medication was 26.2%, which is much lower than that in the present study.[18] In a study, Ateshim et al found that the prevalence of self-medication with antibiotics was 45.1%, and majority of them used antibiotics approximately once or twice in the past 12 months.[5] A systematic review and meta-analysis study in Iran in 2018 showed that the prevalence of self-medication in pregnant women was 32%.[19] Differences in the prevalence rates reported in different studies could be due to differences in the sample size, demographic characteristics of the participants, different research methods, and the studied samples. In the present study, it was found that there was no significant relationship between the students' demographic variables and the prevalence of self-medication, which was similar to the reports of a study by Abdi et al in Iran.[17] Shehnaz et al also found that there was no significant relationship between the prevalence of self-medication and age, gender, ethnicity, and the level of education of parents.[20] However, a study found that the prevalence of self-medication was significantly higher in the age group of 10-49 years than other age groups.[18] Another study conducted on students in Tehran found that self-medication prevalence in women, single individuals, and students in medical universities was significantly higher compared to other participants in the study.[21] In the present study, it was shown that the most common sources of over-the-counter medications were pharmacies and medications left over from the previous use at home, respectively. According to a study by Okumura in Vietnam in 2002, self-medication was more common when the medication was kept at home and there were no adequate rules and efficient policies for

controlling self-medication.[22]

The results of the present study showed that the most common sources of information about the medication were family and relatives, social networks, and related books and articles, respectively, and a small number of students who tried self-medication used medication brochures to learn about it and how to use it. A study in Iran showed that most students received their medication information from a pharmacist and online resources.[17] A study in Iraq found that students who lived with their families had more self-medication.[23] Another study found that consulting with friends and proximity to the pharmacy were the most important predictors of self-medication.[16] It seems that easy access to social networks, as well as the influence of the family, has caused students to obtain their information about medicine from social networks and families. The present study found that the most common problems treated with over-the-counter medications included colds, headaches, and digestive problems. A meta-analysis study in Ethiopia found that problems such as fever, headache, gastrointestinal diseases, and respiratory illnesses were the most common over-the-counter medications used by participants to treat their problems.[24] Another study found that people used self-medication to treat headaches, menstrual problems, and colds.[21] Another study in Iran revealed that the most important group of diseases for which the participants used self-medication were respiratory diseases.[25] In another study, self-medication was used to treat headaches, allergies, and fever.[26] The findings of the present study indicated that painkillers, anti-colds, antibiotics, iron tablets, calcium supplements, and antihistamines were the most common over-the-counter medications. The results of a meta-analysis study by Nakhaee and Vatankhah in Iran also showed that the most common medication used in self-medication were painkillers and sedatives.[27] Another study found an increased prevalence of self-medication in the use of antibiotics and sedatives.[20] In a study by Lukovic et al, the most commonly self-prescribed -medications were analgesics.[28] In the present study, it was shown that achieving the desired result from previous use of the medication, availability of the required medication at home, and the idea that the medication is safe were the most common reasons for self-medication. In a study by Jafari et al, the most common causes of self-medication included safety, previous experience of medication use, busy offices of doctors, non-seriousness of the disease, and previous experience of the disease.[29] A systematic review study has reported that the most important reasons for self-medication include having a minor illness, lack of time to see a doctor, the cost of health care, previous experience of using medication, and the long waiting time to see a qualified doctor.[30]

The present study had some limitations. If a larger sample size had been considered, it would have been possible to see a significant relationship between demographic variables and the prevalence of self-medication. On the other hand, the prevalence of self-medication can vary from season to season or from one time to another time. Another limitation of the present study is the lack of generalizability of the results to the whole community as they can only be generalized to students of medical universities.

Conclusion

The results of the present study showed a high prevalence of self-medication among students. The most important reasons for self-medication in these participants were getting the desired result from the previous use of the medication, the availability of the medication needed at home, and the safety of the medication. In addition, the most common sources of over-the-counter medications were pharmacies and medications left over from their previous use at home. Holding special training programs for the students and members of the community to provide information about the irreparable effects of self-medication and developing new pharmaceutical and medical policies regarding the type and number of medication prescribed, as well as a ban on the delivery of over-the-counter medications, can greatly reduce self-medication and the side effects associated with these medications.

Competing Interests

The authors declare that they have no conflicts of interest.

Ethics Approval

This study was approved by the Ethics Committee of Larestan University of Medical Sciences (IR.LARUMS.REC.1398.026). The students were informed about the aim of the study and were assured of confidentiality, and informed consent was obtained from all participants before data collection. The Ethics Committee approved the informed consent verbally.

Authors' Contributions

All authors read and approved the final manuscript. Study concept and design: HD and MRB, analysis and interpretation of data: HD and ArE and critical revision of the manuscript for important intellectual content: OS.

Acknowledgements

The present study is the result of a research project with the code number of 1398-30 which was conducted at Larestan University of Medical Sciences. The authors would like to thank and appreciate the Larestan University of Medical Sciences for financial support of the project. Additionally, we would like to thank all the participants who have contributed to the study.

Funding

The present study is the result of a research project with

the code number of 1398-30 which was conducted at Larestan University of Medical Sciences.

References

1. Jalilian F, Hazavehei SM, Vahidinia AA, Moghimbeigi A, Zinat Motlagh F, Mirzaei Alavijeh M. Study of causes of self-medication among Hamadan province pharmacies visitors. Avicenna J Clin Med. 2013;20(2):160-6. [Persian].
2. Tavakooli R. Effect of important variables; economic, social and cultural on self-medication. Daneshvar Med. 2001;8(34):9-12. [Persian].
3. Ershadpour R, Zare Marzouni H, Kalani N. Review survey of the reasons of the prevalence of self-medication among the people of Iran. Navid No. 2015;18(60):16-23. doi: 10.22038/nnj.2015.6324. [Persian].
4. Moghaddam Nia A. Self medication in cold among population above 15 years of age in Babol. J Babol Univ Med Sci. 2007;2(1):26-32. [Persian].
5. Ateshim Y, Bereket B, Major F, Emun Y, Woldai B, Pasha I, et al. Prevalence of self-medication with antibiotics and associated factors in the community of Asmara, Eritrea: a descriptive cross sectional survey. BMC Public Health. 2019;19(1):726. doi: 10.1186/s12889-019-7020-x.
6. World Health Organization (WHO). The Role of the Pharmacist in Self-Care and Self-Medication: Report of the 4th WHO Consultative Group on the Role of the Pharmacist, The Hague, The Netherlands, 26-28 August 1998. Geneva: WHO; 1998.
7. Neafsey PJ, Jarrín O, Coffman M, Luciano S. Self-medication practices of Spanish-speaking older adults in Hartford, Connecticut. Hisp Health Care Int. 2007;5(4):169-79. doi: 10.1891/154041507783095795.
8. Kharqany Moghadam M, Shojaeizadeh D, Mahmoudi M, Shojaeizadeh A, Farhand H, Khalili S. Investigation the effect of education based on health belief model to prevent selfmedication in women referred to health centers in Sabzevar. Journal of Health System Research, Special Health Training. 2013;18:76-88. [Persian].
9. Margdari Nejad M, Kazemi S, kord F, Khosravi M, Sanagoo A, Jouybari L. The prevalence of non-prescription drugs and related factors in students of medical sciences in 1392. Iran Journal of Nursing. 2017;29(104):66-74. doi: 10.29252/ijn.29.104.66. [Persian].
10. Baghianimoghadam MH, Ehrampoush MH. Evaluation of attitude and practice of students of Yazd University of Medical Sciences to self-medication. Zahedan J Res Med Sci. 2006;8(2):111-9. [Persian].
11. Amani F, Mohammadi S, Shaker A, Shahbazzadegan S. Study of arbitrary drug use among students in universities of Ardabil city in 2010. J Ardabil Univ Med Sci. 2011;11(3):201-7. [Persian].
12. Almasdy D, Sharrif A. Self-medication practice with nonprescription medication among university students: a review of the literature. Arch Pharm Pract. 2011;2(3):95-100.
13. Klemenc-Ketis Z, Hladnik Z, Kersnik J. Self-medication among healthcare and non-healthcare students at University of Ljubljana, Slovenia. Med Princ Pract. 2010;19(5):395-401. doi: 10.1159/000316380.
14. Jalilian F, Hazavehei SM, Vahidinia AA, Jalilian M, Moghimbeigi A. Prevalence and related factors for choosing self-medication among pharmacies visitors based on health belief model in Hamadan province, west of Iran. J Res Health Sci. 2013;13(1):81-5.
15. Zafar SN, Syed R, Waqar S, Zubairi AJ, Vaqar T, Shaikh M, et al. Self-medication amongst university students of Karachi: prevalence, knowledge and attitudes. J Pak Med Assoc. 2008;58(4):214-7.
16. Al Rasheed A, Yagoub U, Alkhashan H, Abdelhay O, Alawwad A, Al Aboud A, et al. Prevalence and predictors of self-medication with antibiotics in Al Wazarat health center, Riyadh city, KSA. Biomed Res Int. 2016;2016:3916874. doi: 10.1155/2016/3916874.
17. Abdi A, Faraji A, Dehghan F, Khatony A. Prevalence of self-medication practice among health sciences students in Kermanshah, Iran. BMC Pharmacol Toxicol. 2018;19(1):36. doi: 10.1186/s40360-018-0231-4.
18. Martins AP, Miranda Ada C, Mendes Z, Soares MA, Ferreira P, Nogueira A. Self-medication in a Portuguese urban population: a prevalence study. Pharmacoepidemiol Drug Saf. 2002;11(5):409-14. doi: 10.1002/pds.711.
19. Mohseni M, Azami-Aghdash S, Gareh Sheyklo S, Moosavi A, Nakhaee M, Pournaghi-Azar F, et al. Prevalence and reasons of self-medication in pregnant women: a systematic review and meta-analysis. Int J Community Based Nurs Midwifery. 2018;6(4):272-84.
20. Shehnaz SI, Khan N, Sreedharan J, Issa KJ, Arifulla M. Self-medication and related health complaints among expatriate high school students in the United Arab Emirates. Pharm Pract (Granada). 2013;11(4):211-8. doi: 10.4321/s1886-36552013000400006.
21. Latifi A, Ramezankhani A, Rezaei Z, Ashtarian H, Salmani B, Yousefi MR, et al. Prevalence and associated factors of self-medication among the college students in Tehran. J Appl Pharm Sci. 2017;7(7):128-32. doi: 10.7324/japs.2017.70720.
22. Okumura J, Wakai S, Umenai T. Drug utilisation and self-medication in rural communities in Vietnam. Soc Sci Med. 2002;54(12):1875-86. doi: 10.1016/s0277-9536(01)00155-1.
23. Al-Ameri RJ, Abd Al-Badri HJ, Lafta RK. Prevalence of self-medication among university students in Baghdad: a cross-sectional study from Iraq. East Mediterr Health J. 2017;23(2):87-93. doi: 10.26719/2017.23.2.87.
24. Ayalew MB. Self-medication practice in Ethiopia: a systematic review. Patient Prefer Adherence. 2017;11:401-13. doi: 10.2147/ppa.s131496.
25. Azami-Aghdash S, Mohseni M, Etemadi M, Royani S, Moosavi A, Nakhaee M. Prevalence and cause of self-medication in Iran: a systematic review and meta-analysis article. Iran J Public Health. 2015;44(12):1580-93.
26. Shehnaz SI, Agarwal AK, Khan N. A systematic review of self-medication practices among adolescents. J Adolesc Health. 2014;55(4):467-83. doi: 10.1016/j.jadohealth.2014.07.001.
27. Nakhaee M, Vatankhah S. Prevalence and cause of self-medication in Iran: a systematic review and meta-analysis on health center based studies. J Biochem Tech. 2019(2):90-105.
28. Lukovic JA, Miletic V, Pekmezovic T, Trajkovic G, Ratkovic N, Aleksic D, et al. Self-medication practices and risk factors for self-medication among medical students in Belgrade, Serbia. PLoS One. 2014;9(12):e114644. doi: 10.1371/journal.pone.0114644.
29. Jafari F, Khatony A, Rahmani E. Prevalence of self-medication among the elderly in Kermanshah-Iran. Glob J Health Sci. 2015;7(2):360-5. doi: 10.5539/gjhs.v7n2p360.
30. Shaghaghi A, Asadi M, Allahverdipour H. Predictors of self-medication behavior: a systematic review. Iran J Public Health. 2014;43(2):136-46.