

Prevalence and associated factors of self-medication among the college students in Tehran

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ABSTRACT

Background: Self-Medication is medicine consumption without prescription regardless of the cause, amount, and duration of use. This study was conducted to determine the prevalence of self-medication and associated factors among a sample of students of Tehran in 2016.

Methods: This is a cross sectional descriptive study was conducted with participation of 1269 students from three universities in Tehran, Iran. The samples were selected by cluster sampling method. Data collection tool in this study was a researcher made questionnaire including 62 questions. Validity of questionnaire was approved by CVI and CVR approaches. Data were analyzed with SPSS version 19 and using the central indices, t-test, chi-square, Pearson correlation coefficient and logistic regression.

Results: mean age of students was 21.13±1.19 years. 80.7% of participants had a history of self-medication in the past six months. The highest rate of self-medication in both genders was belonged to headache 65.4%, colds 41.9%, cough and sore throat 27.2%,. Results showed that there was a statistically significant differences between self-medication with gender, university, and level of knowledge ($p < 0.05$).

Conclusion: Our study and other studies have shown high levels of Self-medication in this group of society. In our study self-medicate was associated with being male, lower awareness and non-medical student. It seems that it is necessary to implement strict rules and regulations to prevent access to drugs without prescription in order to reducing the self-medication. As well as conducting education about the negative effects of drugs for students and other community groups is essential.

INTRODUCTION

Self-Medication is the provision and consumption of drugs for the treatment of ailments and diagnosed symptoms by people (Fresle and Wolfheim, 1997). Any medication without earlier medical advice regardless of the cause, amount, and duration of use is considered as Self-Medication (WHO, 2001). Today, self-medication is one of the greatest social, economic and public health problems in many countries such as Iran

(Bennadi, 2014). This occurs through the consumption of an industrial or home-made drug, providing the medicines without prescription, use of previously prescribed drugs in similar cases, use of residual or additional drugs at home, or refusing to take a prescribed drug currently (WHO Guidelines, 2000). It also includes the use of alternative therapies such as herbal remedies, dietary supplements, drugs that are traditionally made at home, use of medications prescribed for a person to treat other family members; especially in treatment children and the elderly (WHO Drug Information, 2000). Evidence suggests that there is no the correct pattern of drug consumption in Iran and medicinal system is faced with the some problem such as of excessive, inappropriate

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and arbitrary drug consumption (Tavakoli, 2001). Among the causes of high drug consumption in Iran compared to the average and standard in the world, can be pointed to self-medication without a prescription, and common false culture of drug use (Davati *et al.*, 2008). Incorrect use of medicines is a global problem and has been reported in European countries about 68% (Bretagne *et al.*, 2006) and in America about 42% (Combest *et al.*, 2005). Previous studies also have shown that the prevalence of self-medication among students is high, so that have been reported as follow: 65.2% in medical student of Bangladesh (Alam *et al.*, 2015), 88.18% in Karnataka, India (Patil *et al.*, 2014), 76% in Karachi (Zafar *et al.*, 2008). Studies also have shown that the prevalence of self-medication in Iranian students have ranged between 35 and 83% (Purreza *et al.*, 2013; Khaksar *et al.*, 2006; Baghiani and Ehrampoush, 2006). From the most important causes influencing this behavior can be pointed to economic problems, lack of access to doctors, not enough time for medical consultation and availability of drugs (Khaksar *et al.*, 2006), busy doctors' offices, incomplete delivery or similar delivery of drugs by pharmacies, previous use of some drug and healing, similar symptoms (Heidari *et al.*, 2000) waste of time and the possibility of dismissal from work (Asefzadeh *et al.*, 2002). Now self-medication has led to increased bacterial resistance, failure in optimal treatment, unintentional and intentional poisonings, drug market disruption, financial loss, and \ increasing per capita of drugs consumption in the community (Hughes *et al.*, 2001). Arbitrary medication can also lead to delays and disruption in disease diagnosis, heightening a disease, impaired treatments, increasing the side-effects, and even life endangerment (WHO Global strategy for Containment, 2001). Due to the continuous expansion of self-medication phenomenon in the community and individual direct role in the selection and use of drugs, this study was conducted to determine the prevalence of self-medication and its associated factors among students in Tehran.

METHODS

This was a cross sectional descriptive study which was conducted in 2016. The population of this research was students studying in universities in Tehran. These universities include: University of Tehran, Shahid Beheshti University, and Islamic Azad University. The samples were selected by cluster sampling method. In this process; one third of the total colleges from each university were selected randomly as a cluster and within the each cluster, samples were recruited through convenient sampling method. The total number of clusters was 89 schools and out of which we selected 30 colleges (one-third) considering the number of faculties at each university. To determine the number of samples, maximum prevalence were considered ($P = 0.5$), and with confidence of 95% ($\alpha = 0.05$) and the amount of acceptable error ($d = 0.03$), the sample size was calculated 1067 people. Considering the Cluster Effect equal to 2.1, the volume was increased to 1300 people. The number of samples in each of the universities was calculated according to the number of students

and considering the sex ratio of students (60% female and 40% male). Students were enrolled who were willing to cooperate in the study, had no any diagnosed chronic diseases, or were not treated during the study period. Data collection tool in this study was a researcher made questionnaire, based on previous national and foreign studies. The questionnaire was composed of 5 sections including questions related to demographic data (7 questions), questions related to knowledge (10 questions), questions related to situations where self-medication is carried out (14 questions), questions about types of drugs used (16 questions), and questions about the causes of self-medication (15 items). To determine the validity of questionnaire, the content validity ratio (CVR) was calculated using the comments of a panel of experts, as well as by referring to the table of Lawsche in which the items were considered as important and necessary items if they had a calculated ratio greater than 0.62 and an acceptable level of statistical significance ($p < 0.05$). To calculate the content validity index (CVI), experts were asked to rate the question based on simplicity, clarity and relevance using 4-part Likert scale. The items with CVI score higher than 0.79, between 0.7 to 0.79, and less than 0.7 were considered as appropriate, questionable, and unacceptable respectively and finally unacceptable items were excluded. The final version of the questionnaire was offered to 30 students and 10 days later again those same people completed the questionnaires. Spearman–Brown correlation coefficient to determine the Test-retest reliability and Cronbach's alpha for the internal consistency of items were 0.74, and was 0.78 respectively.

To collect the data, the researchers went to college and gave questionnaires the students. After explaining the purpose of study and ensuring participants from the confidentiality of information, Informed consent form on the front page of the questionnaire was obtained from participants and then they completed questionnaires about 30 minutes. Data were analyzed with SPSS version 19 and using the central indices, t-test, chi-square, Pearson correlation coefficient and logistic regression.

RESULTS

From 1,300 selected sample size, 1269 people responded to the questionnaire with a mean age of 21.13 ± 1.19 years (response rate=97.6%). 766 of the responders were woman (60.35%) and 503 of them were man (39.65%). other demographic information regarding research subjects shows in Table 1.

Table 1: Demographic characteristics of participants.

Variable	Categories	Frequency (%)
Gender	male	503 (39.65)
	female	766 (60.35)
Marital status	single	1157 (91.17)
	married	112 (8.83)
Housing status	Dormitory	499 (39.32)
	House	770 (60.68)
insurance status	Yes	945 (74.4)
	No	324 (25.6)
University	Medical	637 (50.2)
	Non-Medical	632 (49.8)
Age	Mean±SD	21.13 ± 1.9

The results showed that the rate self-medication in the past six months in subjects was 80.7%. The highest rate of self-medication was related to headache 65.4%, colds 41.9%, menstrual difficulties in women 49.3%, and cough or sore throat 27.2%, respectively (Table 2). Also the most frequented drugs used for self-medication were: Analgesic 65.2%, cold tablets 53.1%, and antibiotics 42%, respectively (Table 3).

Table 2: Frequency of conditions and situations leads to self-medication.

Variable	Frequency	percent
Headache	830	65.4
Cold	532	41.9
Menstrual difficulties *	378	49.3
Cough and sore throat	345	27.2
Gastrointestinal diseases	230	18.1
Neurological disorders and stress	218	17.2
Sleep problems	158	12.5
Toothache	127	10.1
Weight gain or weight loss	110	8.6
Anemia	100	7.9
Sensitivity	74	5.8
Skin diseases	51	4.2
Joint and muscle pain	50	4
Prevention of osteoporosis.	13	1.1

* Exclusively in 766 women

Table 3: Frequency of drugs used for self-medication in the past 6 months.

Variable	Frequency	percent
Analgesics	828	65.2
Cold tablets	674	53.1
Antibiotics	533	42
Cold svrup	400	31.5
Tranquilizers	391	30.8
Antihistamines and anti-allergies	352	27.7
Multivitamins	341	26.8
Antacids	192	15.1
Sleeping pills	167	13.1
Herbal Medicines	134	10.5
Iron tablets	127	10
Folic acid	115	9
Anti-Fever pills	27	2.1
Antiemetic	7	.55
Antihypertensive drugs	0	0

The most important reasons for the self-medication given with subjects were: simplification of the disease (64.6%), having previous experience of the disease and its treatment (40%), a positive result of earlier self-medication, and lack of belief to the doctors both with 30%. On the other hand lack of access to a doctor, restrictions on physical or mental condition, and belief about safety of medications had the lowest frequency (Table 4).

Table 4: Reasons for the self-medication in perspective of student.

Variable	Frequency	percent
Simplification of disease	820	64.6
previous experience of the disease and its treatment	508	40
positive result of Previous self-medication	381	30
Not believed to doctor	381	30
Recommendation of relatives	245	19.3
Lack of insurance	226	17.8
Availability of drugs	132	10.4
Inability to afford the visit fees of doctors	116	9.1
Providing medication from a pharmacy without a prescription	115	9
Not enough time to see a doctor	67	5.2
Distrust to the treatment without medication	21	1.6

Lack of access to physicians	6	.47
Adverse physical or mental condition to see a doctor	5	.39
Believing that the drug has no side effects	4	.31

In this study gender, type of college, insurance status, and marital status were evaluated to assess the possible relationship with self-medication. Results showed that there was a statistically significant differences between self-medication with gender, university, and level of knowledge ($p < 0.05$). So that non-medical students are more likely to do self-medication (OR = 3.42) and those with poor knowledge compared to students with good knowledge are more likely to performed self-medication (OR = 9.2). There were not significant differences between having/not having health insurance, and marital status with self-medication (Table 5).

Table 5: Factors affecting self-medication at the past 6 months.

Variable	Categories	OR	CI	P-value
Gender	male	0.8	0.67-1.11	<0/.031
	female	reference		
Marital status	married	0.94	0.7-1.7	NS
	single	reference		
University	Medical	3.42	2.41-4.8	<0.01
	Non-Medical	reference		
Insurance status	Yes	1.27	0.9-1.8	NS
	No	reference		
Awareness	weak	9.2	4.8-11.6	<0.01
	Moderate	5.4		
	Good	reference		

DISCUSSION

In this study, 80.7 percent of respondents cited the history of self-medication in the past six months. A review study in Iran has estimated the overall rate of self-medication in the general population about 53%, among students 67%, in housewives 36%, and in the elderly 68% (Azami-Aghdash *et al.*, 2015). Studies in other countries have reported a high prevalence of self-medication in students, for example 92.3% in Slovenia, (Klemenc-Ketis *et al.*, 2010) 76% in Karachi (Zafar *et al.*, 2008), and 98% in Palestine (Sawalha, 2008). Some other studies have reported the self-medication in the students lower than the mentioned rates above, for example in students of Islamabad, Pakistan 42% (Hussain and Khanum, 2008) as well as in Nigerian students 56.9% (Olayemi *et al.*, 2010).

In our study, headaches, colds, menstrual problems, cough, and sore throat were most cases conducive to self-treatment. These findings are consistent with results of other studies (Pandya *et al.*, 2013; Kasulkar and Gupta, 2013; Zafar *et al.*, 2008; Sawalha, 2008). In the most mentioned studies, headache is the most common cause of self-medication which can be explained that headache is a common symptom and exists in most diseases; therefore patients have to take medicine to relieve headaches. On the other hand in the general population of Iran, the highest rate of self-medication is performed on respiratory diseases (Azami-Aghdash *et al.*, 2015). Also in our study, most drugs used for self-medication were: Analgesic, cold tablets, and antibiotics,

respectively. According to most diseases and conditions conducive to self-medication, (headaches, colds, menstrual issues and cough and sore throat), it is logical that people are taking such drugs for self-medication. Studies in the general population also show that analgesics and antibiotics were the most drugs used for self-medication (Sahebi *et al.*, 2009; Seyam, 2003). Also, 79.4 percent of those who had treatment for cold had consumed antibiotics (Moghadamnia and Ghadimi, 2001). In studies conducted in other countries, similar results have been obtained (Lukovic *et al.*, 2014; Pandya *et al.*, 2013; Kasulkar and Gupta, 2013).

As the results of this study showed, the arbitrary use of antibiotics is high (42% of all people). In the study of Sarahroodi, 42.3 percent of medical students and 48% of non-medical students had self-medication with antibiotics, of which 73.3 percent had used for respiratory problems such as sore throat and colds (Sarahroodi and Arzi, 2014). Patil and colleagues reported that antibiotics among undergraduate medical students were the most commonly self-medicated and reported by 248 (63.91%) students, out of which only 92 (37.1%) students completed the full course of antibiotic regimen (Patil *et al.*, 2014). Also, in many studies, arbitrary use of antibiotics with more than 30 percent was one of the five leading drugs in self-medication (Pandya *et al.*, 2013; El Ezz and Ez-Elarab, 2011; Sawalha, 2008; Zafar *et al.*, 2008).

In our study, people had a self-medication because they had underestimated and simplified their disease, had previous experience of the disease and its treatment, and had a positive result of earlier self-medication. This finding confirms the results of other studies (Sawalha, 2015; Lukovic *et al.*, 2014; Zafar *et al.*, 2008). On the other hand in some studies, the main reasons for self-medication were reported the appropriate information about diseases and medicine (Khaksar *et al.*, 2006) and lack of time (Ali *et al.*, 2010) respectively.

In this study there was a significant difference between sex and self-medication and the self-medication in men was higher than women, in these terms the finding of this study are consistent with results of other studies (Lukovic *et al.*, 2014; Purreza *et al.*, 2013; Khaksar *et al.*, 2006), however in some studies, the self-medication have been reported in men higher than women (Sawalha, 2008). In addition, studies in the general population have shown that self-treatment in Iranian women is higher than men (Seyam, 2003). The results also showed that awareness and university had been correlated with the degree of self-medication in the past six months. Self-medication in people who had better knowledge and were students at the Medical Universities were lower than the other groups. This finding confirms the results of other studies (Lukovic *et al.*, 2014; Sawalha, 2008).

Limitations

Our study has some limitations. First, the study was cross-sectional, and each variable was measured only once; exposure and outcome were measured simultaneously, and this issue prevented the detection of the causal relationships. Second, the study was based on self-reported data and participants were asked about the period of the last 6 months, which may be some

wrong data were collected and analyzed in the study because recall bias.

CONCLUSION

Self-medication among students is very important. Our study and other studies have shown high levels of Self-medication in this group of society. In our study self-medicate was associated with being male, lower awareness and non-medical student. On the other hand reducing self-medication with antibiotics is required to adopt strict rules and regulations that people cannot afford these drugs without a prescription. As well as conducting education about the negative effects of drugs for students and other community groups is essential.

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