

Original Article

Self-Medication and Associated Factors in Sohag Governorate

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Abstract

Background: Self-medication is a common practice in both developed and developing countries especially in low-income communities. Major problems related to self-medication are resources wastage, and serious health hazards like adverse reactions, prolonged suffering and antibiotic resistance.

Objective(s): This study was conducted to describe the pattern of self-medication in Sohag governorate and identify its associated factors.

Methods: A cross-sectional study was conducted among 1052 outpatients attending primary health care centers in five randomly selected districts in Sohag governorate. An interviewing questionnaire was designed to gather data including socio-demographic characteristics, suffering from chronic diseases, health care services used and opinion about health care services, whether practicing self-medication or not, and the pattern of the reported self-medication practices. Univariate and multiple binary logistic regression analysis were used to determine predictor variables of self-medication.

Results: Self-medication was practiced by 41.4% of the participants. Out of them, 110 (25.2%) used drugs only, 97 (22.3%) used CAM and 229 (52.5%) used both drugs and CAM. Multiple binary logistic regression revealed that aging, rural residence, female gender, inconvenient perceived access to healthcare, presence of chronic diseases and income (1000-2000 pounds) per month were strong predictor variables of self-medication.

Conclusion: The study highlighted the wide practicing of self-medication using drugs and/or complementary and alternative medicine (CAM) among the participants. There are many cases that do not have a medical or psychological explanation for use of CAM. It is mandatory to increase the awareness about self-medication problem and implementing strict measures to prevent drug dispensing through community pharmacies and herbalists. More attention should be paid to CAM and legalization of its use.

Keywords: Self-medication, Complementary and alternative medicine, Sohag

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INTRODUCTION

Self-medication was defined as selecting and using medications to treat common cold, headache, digestive problems and muscle aches.⁽¹⁾ and may include the retention and re-use of prescription drugs or purchasing prescription-only drugs without doctor's input.⁽²⁾ It may include the use of a variety of complementary and alternative medicine (CAM) therapies such as herbal medicines (herbs or herbal preparations), nutritional supplements, traditional products, home remedies.⁽³⁾ and physical therapies (i.e. acupuncture).

The public health importance of self-medication increased in 1980s when the World Health Organization approved some drugs which were changed from prescription-only drugs to be sold without any prescription (over-the-counter) aiming at reducing the burden on health care professionals.^(2,4)

These drugs include: analgesics, antibiotics, cough syrups, and antimalarials.⁽⁵⁾

Worldwide, CAM has gained in popularity in recent years,⁽⁶⁾ and there is a tendency towards its increased use,⁽⁷⁾ especially among patients with chronic diseases who seek help from sources other than conventional medicine⁽⁸⁾ as chronic diseases cannot be cured completely and cause life-threatening acute and chronic complications. Studies conducted in various regions of the globe documented that individuals with arthritis, cancer, cardiovascular disease and chronic obstructive pulmonary disease were more likely to self-medicate using various CAM therapies.⁽⁹⁾

The practice of self-medication is common worldwide in both developed and developing countries. Internationally; self-medication has been reported as being on the rise.⁽¹⁰⁾ In low income

communities, most illnesses episodes are treated by self-medication.⁽¹¹⁾ In an Ethiopian study, the prevalence of self-medication is inconsistent ranging from 32.5 to 81.5%.⁽¹²⁾ The most common reasons for practicing self-medication are to avoid long waiting periods in hospitals for minor illness, to reduce cost and save money.⁽⁴⁾ Other reasons include the urge for self-care, sympathy for family members in sickness, lack of health services, poverty, ignorance, misbeliefs, excessive advertisements of drugs, and availability of drugs in establishments other than pharmacies.⁽¹²⁾

Additionally, CAM interventions and products are perceived to be as effective as conventional medicine, but more natural and economical, with fewer side effects and available without need of prescription.⁽¹³⁾

The known determinants of self-medication CAM use include sociodemographic and patient characteristics such as age, gender, education level, illness, and illness duration.⁽⁸⁾

There are a lot of serious health hazards as incorrect self-diagnosis, delay in seeking medical care, incorrect choice and incorrect dose, masking severe disease and dependence and abuse^{(14),(15)}

The present study was conducted to describe the pattern of self-medication in Sohag governorate and identify its factors.

METHODS

The current study was designed as a cross-sectional study conducted in primary health care (PHC) centers in Sohag governorate in the first half of 2017. Five districts (Elbalina, Gohina, Akhmeem, Sohag, Saquolta) were randomly selected from the 12 districts of Sohag governorate to be involved in the study. From each district, two (PHC) centers (rural and another urban) were randomly selected. Each center was visited once every ten days during the study period (6 months).

All outpatients attending the selected PHC centers for whatever reason were invited to participate in the study after explaining the purpose of the study. Those who accepted to participate in the study and who met the inclusion criteria were included after securing their informed consent with a total of 1052 participants at the end of the study. Inclusion criteria included outpatients >18 years old. Outpatients who cannot speak (mute) or listen (deaf) and those who refused to participate in the study were excluded.

An interviewing questionnaire was designed based on validated and structured questionnaires of previous studies^(3, 8, 16) to gather data including socio-demographic characteristics (age, gender, residence, occupation, income, education and marital status), suffering from chronic diseases, type of health care services used and opinion about health care services, whether the participant practiced self-medication or

not, types of used medications, sources of these medications, source of information about these medications, reasons for self-medications, the main complaints for which the participant practiced self-medication and the pattern (types of self-medication, following label instructions of uses drugs or not) of the reported self-medication practices.

Ethical considerations:

Approval of the Research Ethics Committee of Faculty of Medicine, Sohag University was obtained. Verbal informed consent was obtained from all the study participants after explanation of the aim and benefits of the study. Anonymity and confidentiality of data were assured and maintained.

Statistical analysis:

SPSS program version 20 was used for data entry and analysis. Qualitative data were presented as numbers and percentages. Univariate and multiple binary logistic regression were used to determine predictor variables of self-medication.

RESULTS

The present study included 1052 participants, of whom 316 (30 %) were in the age group from 40 to 60 years old, 218 participants (20.7%) were > 60 years old and 246 participants (23.4%) were younger than 20 years. Males represented 53.8% of the studied population. Rural residents were 547 (52%). Those whose monthly income < 1000 pounds were 491 (46.7%). Those suffering from different chronic diseases constituted 474 (45.1%) (Hypertension (11.3%), DM (8.4%), coronary heart disease (4.8%), chronic respiratory disease (5.3%), rheumatic diseases (7.9%), chronic renal disease (1%), viral hepatitis (B and C) (4.2%), and chronic GIT diseases (2.2%) and 54.9% had no chronic illnesses.

Those who reported regular use of primary healthcare services represented 53.5% of the participants. Only 428 (40.7%) were satisfied with primary healthcare services and 63.8% of the participants considered access to health care inconvenient.

Figure 1 shows that 436 (41.4%) of participants reported that they practiced self-medication. Table 1 shows that out of participants who reported practicing self-medication, 110 (25.2%) used drugs only, 97 (22.3%) used CAM and 229 (52.5%) used both drugs and CAM. Regarding the source of information about self-medication, 231 (53%) of those who practiced self-medication reported that they get their information about self-medication from family and friends. The table also shows that 138 (31.6%) and 162 (37.2%) of them mentioned that the source of drugs – CAM remedies they used for self-treatment were community pharmacies and herbalists respectively.

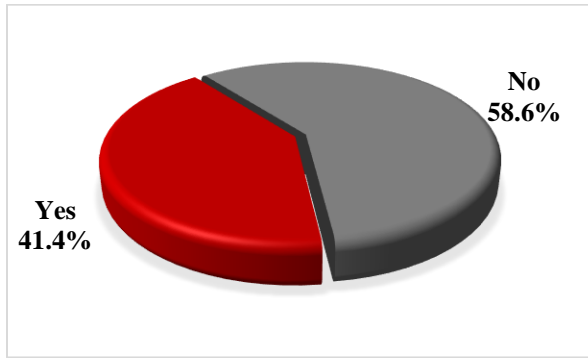


Figure (1): Distribution of primary health care consumers according to self-reported practices of self-medication in Sohag

Table (1): Type of self-medication, source of information about self-medication and sources of drugs and remedies used among PHC consumers in Sohag

Questions	PHC consumers (n=436) No. (%)
Type of self-medication used	
Drugs only	110 (25.2)
Complementary –alternative medicine only	97 (22.3)
Both	229 (52.5)
Source of information about self-medication	
Pharmacists	92 (21.1)
Previous prescription	54 (12.3)
Family/friends	231 (53.0)
Mass media	50 (11.5)
Internet	9 (2.1)
Sources of drugs – CAM remedies	
Community pharmacies	138 (31.6)
Herbalist	162 (37.2)
Leftover prescription medication	33 (7.6)
Family/friends	88 (20.2)
Online shopping/E-pharmacies	15 (3.4)

Table 2 describes the pattern of use of self-medication and reported reasons. Among those who reported self-medication with drugs, 102 (30.1%) reported that they used antibiotics, 76 (22.4%) and 34 (10%) said that they used cough and common cold medications, and analgesics for self-medication, respectively. Only 122 (36%) reported that they followed the label instructions. When asked about the reasons of self-treatment with drugs, 102 (30.1%) mentioned that they had a previous good experience with the drug, 84 (24.7%) used an old prescription and cost saving was the reason for 46 (13.6%) of those who reported self-medication with drugs.

The most frequent complaints for which they practiced self-medication with drugs were pain

(18.9%), flu, cough and common cold symptoms (18.3%) and skin wounds (17.4%) (Table 2). Near half 45 (44.1%) of the participants who used antibiotics for self-medication knew the dosage and course of antibiotics by consulting a pharmacist, 7 (6.9%) checked the package insert. The majority of them (83.3%) reported that they switched antibiotics during the self-medication course, and the most frequent reasons were that they thought that the former antibiotics did not work or the latter one was cheaper.

Table (2): Pattern of use of drugs for self-medication and reported reasons among PHC consumers in Sohag

Questions	PHC consumers (n=339) No. (%)
If drugs are used, mention the type	
Analgesics	34 (10.0)
Antibiotics	102 (30.1)
Vitamins and tonics	14 (4.1)
Topical skin preparations	8 (2.4)
Cough and common cold medications	76 (22.4)
GIT drugs	5 (1.5)
Antihistamines	12 (3.5)
Corticosteroids	13 (3.8)
Others	75 (22.2)
If drugs are used, did you follow the label instructions	
Yes	122 (36.0)
No	217 (64.0)
What was (were) your reason(s) of self-medication with drugs	
Cost saving	46 (13.6)
Lack of trust in prescribing doctor	5 (1.5)
Emergency condition /odd hours	12 (3.5)
Had an old prescription	84 (24.7)
Previous good experience with the drug	102 (30.1)
Illness was minor	27 (8.0)
Lack of time to attend health care facilities	12 (3.5)
No medical service was available	16 (4.7)
Cost of consultations with the doctor	29 (8.6)
Waiting time in health care facilities	6 (1.8)
For which of the following complaint(s) did you practice self-medication with drug	
Flu, cough and common cold symptoms	62 (18.3)
Fever	41 (12.1)
Aches and pains	64 (18.9)
Gastrointestinal problems	5 (1.5)
Skin wounds	59 (17.4)
Skin /hair problems	24 (7.1)
Infertility and sexual problems	14 (4.1)
Chronic non-communicable diseases	70 (20.6)

Participants who reported the use of CAM remedies were 326 of whom 130 (39.9%) used herbs, 103 (31.6%) used aromatherapy oils and 68 (20.9%) used cupping. Previous good experience with CAM, stronger effect of CAM remedies, and side-effects of

drugs were the most frequent reasons reported for using CAM remedies. More than one third of those participants (121 (37.1%)) used CAM for treating certain chronic diseases. Fever, flu, cough and common cold symptoms and skin problems were among the frequently reported complaints for which self-medication with CAM was practiced (Table 3)

Table (3): Pattern of use of complementary and alternative medicine remedies and reported reasons among PHC consumers in Sohag

Questions	PHC consumers (n=326) No. (%)
If complementary –alternative medicines are used, types are	
Herbs	130 (39.9)
Spiritual healing	18 (5.5)
Cupping	68 (20.9)
Acupuncture	1 (0.3)
Aromatherapy oils	103 (31.6)
Others	6 (1.8)
What was (were) your reason(s) of self-medication with CAM therapies/remedies	
Medications have side-effects	44 (13.5)
Previous good experience with CAM	52 (16.0)
Lack of trust in prescribing doctor	37 (11.3)
Religious reasons	14 (4.3)
Emergency condition	28 (8.6)
Illness was minor.	41 (12.6)
Stronger effect	49 (15)
Lack of time to attend health care facilities	33 (10.1)
Cost of consultations with the doctor	26 (8.0)
Waiting time in health care facilities	2 (0.6)
For which of the following complaint(s) did you practice self-medication with CAM	
Flu, cough and common cold symptoms	46 (14.1)
Fever	55 (16.9)
Aches and pains	48 (14.7)
Gastrointestinal problems	14 (4.3)
Skin and hair problems	27 (8.3)
Infertility and sexual problems	15 (4.6)
Chronic non-communicable diseases	121 (37.1)

Table 4 revealed that all the studied variables (age, gender, residence, occupation, monthly income, education, marital status, chronic diseases, and perceived access of healthcare) had a significant association with practicing self-medication. Remarkably, education was found to be inversely associated with practicing self-medication where illiterate participants were 6.5 times at more risk of practicing self-medication than those who had university education (p-value <0.001), and the practice was significantly higher among illiterate participants (odds ratio= 6.5, p-value <0.001) compared to participants who had primary education (odds ratio = 4.4, p-value <0.001) and participants who had

university education (odds ratio= 1.4, p-value = 0.075).

Table (4): Univariate binary logistic regression analysis for predictor variables of self-medication among PHC consumers in Sohag

Characteristics	OR (CI 95%)	P - value
Age		
< 20 years	1	
20-40 years	3.05 (1.9 – 4.8)	<0.001*
40-60 years	9.4 (6.05 – 14.6)	<0.001*
> 60 years	14.6 (9.1 – 23.5)	<0.001*
Gender		
Male	1	
Female	1.4 (1.06 – 1.7)	0.014*
Residence		
Urban	1	
Rural	2.6 (2.01 – 3.3)	<0.001*
Occupation		
Employed	1	
Worker	2.2 (1.4 – 3.6)	0.001*
Farmer	4.6 (2.8 – 7.7)	<0.001*
Housewife	3.2 (2.01 – 5.08)	<0.001*
Not working	1.5 (0.9 – 2.4)	0.077
Income		
< 1000 pounds	1.9 (1.3 – 2.7)	0.001*
1000-2000 pounds	2.6 (1.7 – 3.8)	<0.001*
> 3000 pounds	1	
Education		
Illiterate	6.5 (4.2 – 10.1)	<0.001*
Read & write	5.04 (3.2 – 7.9)	<0.001*
Primary	4.4 (2.7 – 7.1)	<0.001*
Preparatory	1.1 (0.6 – 1.9)	0.687
Secondary	1.4 (0.9 – 2.1)	0.075
University	1	
Marital status		
Single	1	
Married	5.5 (3.7-7.9)	<0.001*
Widow	13.2 (8.5 -20.7)	<0.001*
Divorced	8.9 (5.2 -15.4)	<0.001*
Chronic diseases		
No	1	
Yes	5.3 (4.03-6.9)	<0.001*
Perceived access of health care		
Convenient	1	
Inconvenient	1.4 (1.05 -1.8)	0.02*

* Statistically significant

Multiple logistic regression analysis identified that age, residence, gender, perceived access of healthcare, chronic diseases and income are strong predictor variables of self-medication. Regression analysis revealed that age had the highest odds ratio, which suggests that aging is most significantly linked to practicing self-medication (p<0.001), followed by rural residence, income (1000-2000 pounds) per month, female gender, presence of chronic diseases and inconvenient perceived access of healthcare. (Table 5)

Table (5): Multiple binary logistic regression analysis for predictor variables of self-medication among PHC consumers in Sohag

Characteristics	OR (CI 95%)	P – value
Age		
< 20 years	1	
20-40 years	2.9 (1.8 – 4.8)	<0.001*
40-60 years	9.1 (5.4 – 15.5)	<0.001*
> 60 years	13.8 (7.3 – 26.3)	<0.001*
Gender		
Male	1	
Female	1.9 (1.4 – 2.7)	<0.001*
Residence		
Urban	1	
Rural	2.8 (2.06 – 3.8)	<0.001*
Income/ month		
< 1000 pounds	1.5 (0.9 – 2.4)	0.001*
1000-2000 pounds	2.3 (1.5 – 3.7)	<0.001*
> 3000 pounds	1	
Chronic diseases		
No	1	
Yes	1.8 (1.2 -2.6)	0.003*
Perceived access of health care		
Convenient	1	
Inconvenient	1.7 (1.2 -2.3)	0.003*

* Statistically significant

DISCUSSION

In remote and rural areas of developing countries, where facilities providing health care services are mostly inaccessible and understaffed, self-medication may be the only way to relieve pain and treat some minor or emergency symptoms. ⁽¹⁷⁾ Self-medication may have a role in managing minor illnesses which is incomparable to the deleterious consequences of this practice. ⁽²⁾

The current study clarified that 41.4% of participants reported that they practiced self-medication, of whom 25.2% used drugs only, 22.3% used CAM and 52.5% used both drugs and CAM, which is much lower than the findings of a study conducted among adults in Alexandria, Egypt ⁽³⁾ which revealed that 86.4% of the participants practiced self-medication, of whom 77.5% used both drugs and CAM. Similarly, a study conducted among outpatients who attended primary health care clinics in Malaysia ⁽¹⁸⁾ showed that 80.2% reported using traditional and complementary medicines which is much higher than the findings of the present study. Another study conducted in Slovenia ⁽¹⁹⁾ showed that self-medication was reported by 80.9% of the participants and 80.6% of them practiced self-medication by herbal drugs. In a study conducted in Mangalore ⁽²⁰⁾, those who reported self-medication were 37.5% of whom only 6.7% used homemade remedies and this can be explained by the fact that the participants involved in this study were outpatients in the Ophthalmology outpatient clinic and they were afraid of the risk of side effects threatening their eyes as a result of using CAM remedies.

A study conducted among adults in Ethiopia found that 35.9% reported self-medication. ⁽¹²⁾ The findings of a study conducted among outpatients in Erbil, Iraq ⁽²⁾ revealed that self-medication prevalence among the studied outpatients was 52.6%. Another study conducted in rural area of Maharashtra, India showed that 51.63% of the participants claimed that they practiced self-medication. ⁽⁴⁾ These results are somewhat close to those of the current study.

According to the findings of the current study, 53% of those who practiced self-medication reported they get their information about self-medication from family and friends. Similarly, in a study performed in Northern India ⁽²¹⁾, the main information source was from family, friends and neighbors (33%). Another study ⁽¹⁹⁾ declared that friends (49.9%) and relatives (48%) were the most frequently reported sources of self-medication information, which indicates the crucial role of the family and friends in the attitude and practices of many patients.

In a study conducted in India ⁽²²⁾, the most frequent information sources about drugs used for self-medication were the local pharmacists (39%), quacks (13.6%) and advertisements (11.2%).

The current study showed that 31.6% and 37.2% of patients who practiced self-medication mentioned that the source of drugs – CAM remedies they used for self-medication were community pharmacies and herbalists respectively, which is in line with the findings of the study performed in Slovenia ⁽¹⁹⁾ where the main sources of medications used for self-medication were pharmacy, relatives and traditional healer respectively.

Regarding types of drugs used for self-medication, 30.1% used antibiotics without doctor's prescription, 22.4% and 10% used cough and common cold medications, and analgesics for self-treatment respectively. In agreement of these findings, the study conducted in Mangalore ⁽²⁰⁾ found that the most frequently used drug for self-medication is antibiotics (38.3%). In a study conducted by Mamo S., et al, ⁽²³⁾ analgesic / antipyretics (42.2%), respiratory drugs (31.1%) and gastrointestinal tract drugs (19.5%) were the most frequently reported drugs used for self-medication while antimicrobials were reported by only 3% of the participants. The study conducted by Patrick S., et al, ⁽²²⁾ revealed that analgesics (49.4%) and antibiotics (11.6%) were the most common drugs reported for self-medication.

According to the results of the present study, the most common reason for using drugs without doctor's prescription were having a previous good experience with the drug (30.1%), using an old prescription for a similar condition (24.7%) and cost saving was (13.6%). In the study conducted by Kassie AD., et al, ⁽¹²⁾ the most frequently reported reasons for self-medication with drugs were perceiving illness as mild

(50.2%), similarity of manifestations with past illness (13.9%) and inability to afford the health care cost (12.7%). In another study performed by Kumar C., et al, ⁽²⁴⁾ 27% considered the condition is mild, 23% had a previous good experience with the drug they used, and the high cost of treatment was the reason for 13%.

This study revealed that the most frequent complaints for which they practiced self-medication with drugs were pain (18.9%), flu, cough and common cold symptoms (18.3%) and skin wounds (17.4%).

Ahmad A., et al, ⁽¹⁶⁾ as well found that respiratory tract infections, skin wounds, cough and cold problems were mainly reported by patients as reasons for practicing self-medication. Fever, headache and abdominal pain were the most common symptoms urging the participants to self-medicate by drugs in a study conducted by Selvaraj K., et al ⁽²⁵⁾.

Near half (44.1%) of the participants who used antibiotics for self-medication knew the dosage and course by consulting a pharmacist, 6.9% checked the package insert. In agreement of these findings, ⁽²⁶⁾ Amin ET., et al revealed that the most frequently reported source of information about dosage was the seller and only 7.6% checked the drug leaflet. However, in a study conducted by Shamsudeen SM., et al, ⁽²⁷⁾ 35.1% of the participants determined the dose by checking instructions on the drug package. Most of those participants reported that they switched antibiotics during the self-treatment course, and the most frequent reasons were that they thought that the former antibiotics did not work or the latter one was cheaper and similarly, Rajendran A. et al, ⁽²⁸⁾ found that 24% of the respondents switched antibiotics during self-treatment. The most frequently reported reasons were that it did not work, the former antibiotic ran out, and using cheaper one.

Participants who reported the use of CAM remedies were 326 of whom 39.9% used herbs, 31.6% used aromatherapy oils and 20.9% used cupping. In line with these findings, the study conducted by El Nimr N., et al, ⁽³⁾ showed that herbs were the most common type used followed by spiritual healing and cupping. Additionally, Aliyu U., et al, ⁽²⁹⁾ and Ayele AA., et al ⁽⁹⁾ outlined that the most frequently used CAM treatments were herbs and spiritual healing.

Previous good experience with CAM, stronger effect of CAM remedies, and side-effects of drugs were the most frequent reasons reported for using CAM remedies. In a study conducted by Lulebo AM., et al, ⁽³⁰⁾ the most frequently mentioned reasons for using CAM were effectiveness and lower cost.

More than one third of participants in the present study (37.1%) used CAM for treating certain chronic diseases. Fever, flu, cough and common cold symptoms and skin problems were among the frequently reported complaints for which self-treatment with CAM was practiced. Consistently, in a

study conducted by Mollaoglu M., et al, ⁽³¹⁾ near one fourth of the participants used CAM for relieving chronic diseases symptoms. A study done by Jaiswal K., et al, ⁽³²⁾ showed that the most common condition for which patients used CAM was arthritis, followed by chronic pain and diabetes mellitus.

As indicated by the present study, multiple binary logistic regression analysis revealed that age, residence, gender, perceived access of healthcare, chronic diseases and income were strong predictor variables of self-medication. Age had the highest odds ratio, which suggests that aging is most significantly linked to practicing self-medication (p-value <0.001), followed by residence, income, gender, chronic diseases and perceived access of healthcare. In a study done in Nigeria, ⁽³³⁾ only education was significantly associated with practicing self-medication while age and sex were not. Gender was found to be a predictor of self-medication among participants of a study conducted by Van Ha T., et al. ⁽³⁴⁾ Jember E., et al, ⁽³⁵⁾ revealed that access to pharmacies and perceived quality of health care services were significant predictors of practicing self-medications while age, gender and income were not. In a study conducted in Sri Lanka, ⁽³⁶⁾ acceptability and regularity of medical service was significantly related to the practices of self-medication. On contrast, the study done by Kassie AD., et al, ⁽¹²⁾ outlined that none of these factors was associated with self-medication practice.

Limitations of the study

The cross-sectional nature of the data is considered a limitation in terms of interpreting causal association. The most important limitation is the reliance on self-reporting of the surveyed patients which may result in recall bias and under-estimation of the real problem size.

CONCLUSION AND RECOMMENDATIONS

This study highlighted that self-medication was practiced by a large proportion (41.4%) of the studied outpatients who reported that they used CAM remedies and/or drugs without doctor's prescription. Furthermore, implementing strict measures to prevent dispensing of drugs, especially antibiotics, without doctor's prescription is mandatory. The role of CAM cannot be denied, but the real problem lies in the presence of unlicensed places that provide such services and patients resort to them. There are many cases that do not have a medical or psychological explanation and require this type of treatment by CAM specialists. Therefore, more attention to CAM and legalization of its use after obtaining a license and ensuring the efficiency of the therapists and the use of all means of safety. Additionally, more attention should be paid for more research in this field and studying the importance and impact of CAM methods. Many of the studied variables (age, residence, gender,

perceived access of healthcare, chronic diseases, and income) were identified as strong predictor variables of self-medication in the current study.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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