Prevalence and factors influencing self-medication in Medina Al-Munawara, Saudi Arabia

Abdullah T. Allam[1]*, Soliman M. Amer[2,3]

[1]Saudi Board Community Medicine, Madinah, Saudi Arabia. [2]Department of Family and Community Medicine, College of Medicine, Taibah University, Madinah, Saudi Arabia. [3]Department of Public Health and Community Medicine, Damietta Faculty of Medicine, Al-Azhar University, Damietta, Egypt.

Abstract

Background: The exact definition of self-medication is "the selection and usage of certain medication by individuals to treat self-recognized disease and symptomatology. This practice might influence health care institutes toward this point. This behavior might have certain adverse effects like wastage of resourced and missing of hazardous diagnosis. **Objectives:** To assess the Prevalence, current knowledge, and attitude towards self -medication among the population attending primary health care centers in Medina city after MOH Ministerial Warns against Selling Antibiotics without prescription and to examine self -medication associated risk factors among the studied population. **Subjects and methods**: A community-based cross-sectional study was conducted in Medina City, Saudi Arabia during November 2019. A multistage, stratified random sampling procedure was used. The data was collected by a structured interview questionnaire. Data collection was done through interviews with the participated subjects by the researcher himself. **Results**: The response rate was 91.75 % (367/4000. The self-medication's prevalence among the studied population was 74.7%. The common complaints of self-medication were headache and body aches (47.1%), flu and cough (24.4%), and sore throat (9%). The most common type of drugs used as self-medication was antipyretics (55%), analgesic (51.2%), decongestants (20.7%) and antibiotics (15.3%), Regarding reasons of self-medication, minor illness (47.4%), saving time & money (15.3%), 31 avoid crowding at PHC (11 .3%), previous good experience with the drug (7.7%), high cost of consultations (5.5%) and emergency (4.4%) were the common Uses. **Conclusion**: There is a considerable high proportion of self-medication among the Saudi population in Medina city y. The most common self- medication used by the studied sample was the antipyretics. The study findings showed the effect of law that prohibits the purchase of antibiotics without prescription indicating the importance of generalization of the prohibition of all prescription drugs.

Keywords: self-medication, prevalence, risk factors, Saudi Arabia

INTRODUCTION

One of the most important responsibilities of Ministry of Health is planning, policy making, and investing in mental health [1, 2]. The purpose of pharmaceutical care is to provide patient-oriented care in an outcome-oriented manner [3]. As an important health factor, health promotion is of the responsibility of individuals and can lead them to higher levels of health [4]. The exact definition of self-medication is "the selection and usage of certain medication by individuals to treat self-recognized disease and symptomatology [5]. Such ailments may be fever, body pains, indigestion, diarrhea, etc. ln any case, several people, friends, relatives may advise the sick person on the type of medicine to take as a cure. The medicine may be an herb or a conventional drug which may be bought over the counter. This practice constitutes what is called self-medication [6]. Self-medication practice influences the health care seeking behavior of individuals. It leads to wastage of resources, delays in diagnosis of problems, and appropriate treatments. It can also lead to serious health hazards and adverse drug reactions [7, 8]. The studies in India showed that self-medication was 74% prevalent in students. The most

common medications were antipyretics, analgesics, and antibacterial medications [9]. Other studies investigating the same problem in students were seen in Serbia [10], Karnataka [11], South India [12] eastern China [13], in Brazil [14] West Bengal [15], and Mekele University, Ethiopia [16-18].

In a recent community-based survey in Alexandria, Egypt, the prevalence of self-medication was 86.4%; the most

Address for correspondence: Abdullah T. Allam, Saudi Board Community Medicine, Madinah, Saudi Arabia. Email: aboood_37 @ hotmail.com

commonly used drugs were analgesics (96.7%), and cough and cold preparations (81.9%), while antibiotics abuse was 53.9% [19].

Another recent Saudi study was conducted in Al Wazarat Health Center, Riyadh City, to determine the prevalence and predictors of prescription with antibiotics among the attending patients. Among the included 68 I patients, the prevalence of self-prescription with antibiotics was 78.7%. Amoxicillin was the most used self-prescribed antibiotic with a prevalence of (22.3%). Friend advice on self-prescription of antibiotics use and pharmacy near to the participants were the most common predictors for self-prescription with antibiotics [20]. Comparing these recent results with that reported in an old study conducted 1992 in the same city, Riyadh [21], where the reported prevalence was only 35%, indicating that lack of advice, easy accessibility to medications increase the risk of self-medication.

One of the commonest medicine in self-medication studies was the antibiotics causing an accelerated growth of microbial resistance towards the most effective antimicrobial agents, WHO established a program named "WHO Global Strategy for Containment of Antimicrobial Resistance" to confront this challenge Self-medication is a global phenomenon and its associated adverse consequence represents an emerging challenge to health care providers [22-24].

In Saudi Arabia, a study investigating the prevalence of the use of un-prescribed antibiotics was conducted using an online survey and snowball technique. About 34% of respondents have used antibiotics without a prescription, and 81.3% of them knew that it might be harmful to health. Regarding the reason for antibiotic use, tonsillitis was (76.7%) and the previous experience of using a particular antibiotic (52.1%) respectively. The previous medical prescription was the most source of knowledge (36.6 %).The study concluded that more serious steps should be implemented to forbid the sale of antibiotics without prescription [23].

On April 2018, The Saudi Ministry of Health (MOH) has applied a law prohibiting the selling of antibiotics without a prescription issued by a doctor with a license to practice in the Kingdom [24].

In Medina, the Saudi literature concerning self- medication prevalence and predictors was lacking and the recent study was based on special groups of population; medical students at Taibah University where 66% and 60.3% of the studied 326 students used self -medication & analgesic self-medication, respectively [25]. No community studies, however, were not found in the literature concerning the Medina region. To deal with this challenge in different Saudi regions, including Medina region, accurate epidemiologic data based on community basis are need to

beta understanding the problem and to develop sound intervention and control programs helping in alleviation the public health risks arising from improper practices of self-medication. The study aimed to assess the outcome of MOH against antibacterial prescription among the population in Madina City and the magnitude of self-medication with its risk factor. The study also assessed the prevalence, current knowledge, and attitude of the studied population towards self-medication.

MATERIALS AND METHODS
Study type, setting, and population
This was a cross-sectional study among the primary health care population in Madina city, Saudia Arabia to measure the presence of self-medication and risk factors. Medina is the second most important Islamic pilgrimage destination after Mecca, is an important regional capital of the western Saudi Arabian province of Al-Medina. The Saudi population of Al-Medina city was 1.1 million according to the 2010 Census [26, 27]. The basic health care system in Saudi Arabia includes primary, secondary, and tertiary health care services, primary health care centers are distributed all over the Kingdom to provide primary health care services to the population. There are 133 Primary health care centers across Al-Medina. Of these centers, 49 centers are belonging to MOH [28]. In this study, all populations above the age of 18 years attended the primary health care centers during November 20 19, were eligible to participate.

Sampling procedures
The random sampling technique was a multistage, stratified sampling. Medina city was divided into 4 regions (east, west, north, and south). From each region, 2 MOH primary health care centers were randomly chosen. Accordingly, the study included 8 MOH primary health care centers. The population above 18 years old attended the selected primary health care centers during November 2019 will be eligible to participate in the study.

The primary calculated sample of this study 378 subjects based on averages of self-medication prevalence in the previous mentioned Saudi studies (56%), with assumed precision of 5% and a confidence interval of 95%, the sample size leveled up to 400 subjects (50 subjects from each studied PHC).

Data collection
The data were collected by a structured valid interview questionnaire. The questionnaire was divided into 5 sections. The first section included socio-demographic and lifestyle data. The second section included data about the availability of a health care facility. The last three sections included data about self-medication use, knowledge, and attitude. Since there was no internationally valid questionnaire, the validity of our questionnaire was examined by two epidemiologists and a pharmacologist. Data collection was done through an interview with the participated subjects by the researcher himself [29].

Study variables

Self-medication was the studied dependent variable was assessed by the following questions: "Apart from treatment(s) prescribed by your general practitioner, do you sometimes take any other medication to treat yourself?" followed by, "What is the origin of medications'? including i) previously prescribed for "chronic diseases", ii) pharmacist recommendation, iii) friends or family member, vi) purchased by the subject over the counter at a pharmacy. Other included questions to assess this variable are "What are types of medications?", "For what?", and for whom?

The explanatory variables in this study included the following: i) Socio-demographic characteristics: age, sex, educational level, occupation, monthly family income residence; ii) lifestyle factors: smoking and exercise; and (iii) self-medication related factors: reasons of self-medication cost in terms of out-packets, and knowledge and attitude of the studied subjects Awards self-medication.

The knowledge variables were based on 12 closed questions including questions about concept and health hazards of self-medication. The knowledge examination as done by its categorization into good, fair, and poor according to each of its components does" was given score = I, and "no" and "do not know" was given 0 scores). Good knowledge was defined if the subject's correct answers more than 75°/c, fair knowledge between (50-75%), and finally poor knowledge if less than 50%. The study questionnaire also included 18 study items. Each item will be scored as follows: 1 = disagree; 2= neutral; 3= totally agree.

Statistical analysis

All data analyses were done by using the SPSS program, version 20. Descriptive statistics were used to estimate the Knowledge, Attitude, and Practices Of self -medication. The chi-square test was used to compare the self-medication of the studied subjects by their characteristics. The level of statistical significance was defined as P < 0.05. The logistic regression analyses were used to estimate odds ratios (OR) and their 95% confidence intervals (95% Cl) for the association of self-medication with the studied risk factors.

Ethical consideration

At the time of data collection, the interviewer read out the consent form and obtained informed written consent for each participant and no one will be obliged to fill the questionnaire.

RESULTS

To evaluate the prevalence and factors influencing self-medication, 367 subjects were studied. The following tables described the results.

Table 1 described the (age group, gender, marital status, education, occupation, family income, and residence, smoking, and physical activity). It showed that (48%) of the participants were less than 30 years, (37.6 %) of them were between 30 years and less than 40 years, (10.9 %) showed age between 40 years and less than 50 years and (3.5%) in age more than 50 years.

The females constituted (5 1 .5%) and males (48.5%). Most of the studied subjects were married (62.9%), (29.4%) were single, (4.9%) were divorced, and only (2.7%) were widows. (54.5%) had university and higher educational level, (34.9%) with secondary educational level, (7.9%) were intermediate educational level and only (2.7%) were illiterate. Regarding occupation, the majority were working (71 .9%). 38.4% reported monthly family income between 3,000 SR and 10,000 SR, (26.2%) less than 3,000 SR, (23.2%) between 10,000 SR and I 5,000 SR and only (1 2.3%) more than I 5,000 SR. (95.4%) of the subjects living in urban areas. (68.7%) of the studied subjects were nonsmoker, (22.9%) were smokers and only (8.4%) were ex-smoker. (53.1%) of the subject were not doing physical activity and (46.9%) were doing physical activity.

Table 2 reported Je self-medication use in I year among the studied participants, there were 274 subjects (74.7%) reported that they were used un-prescribed medication (self-medication). Out of that reported self-medication (n=274), 200 subjects (54.5%) have reported using the previously prescribed medication, 62 subjects (1 6.9%) were used self-medication from friends or family member recommendation, 41 subjects (1 I .2%) were used self-medication that Purchased over the counter at the pharmacy and 8 I subjects (22.1%) were used self-medication from pharmacist recommendation.

Out of that reported self-medication (n=274), 243 subjects (66.2%) were used self-medication for themselves, 23 subjects (6.3%) were used self-medication for their children, 6 subjects (1 .6%) were used self-medication for their wife's, 2 subjects (0.5%) were used self-medication for others. 173 self-medication users reported that they used self-medication to treat headache or body ache (47.1%), 67 from users used self- medication to treat flu/cough / cold (18.3%), 33 from users used self- medication for treat sore throat(9.0%), 32 from users used self- medication to treat fever (8.7%), 14 from users used self- medication to treat allergy and rashes (3.8%), 5 from users used self-medication for treat insomnia (1 .4%), only 2 from users used self- medication to treat diarrhea and only 2 from users used self- medication for the treatment of mouth ulcers (0.5%).The most common type of drugs used as self-medication from those who used (n= 274), 202 subjects were used Antipyretics (55%), 188 subjects were used Analgesic (5 1 .2%), 76 subjects were used Decongestants (20.7%), 56 subjects were used Antibiotics (15.3%), 29 subjects were used Tonics/Vitamins (7.9%), 28 subjects were used Antihistaminic (7.6%), 13 subjects were used Antidiarrheal (3.5%), only 7 subjects were used Antiemetic (1 .9%) and only 7 subjects were used Sedatives (1.9%).

Table 3. described the self-medication variables (Frequency, Reasons, outcome, side effects) among users (n=274), 92 subjects were used self-medication one time per year (33.8%), 62 subjects were used self-medication twice per year (22.6%), 53 subjects were used self- medication three times per year (19.3%), 47 subjects were used self-medication four times per year (17.1%) and 20 subjects were used self-medication five times or more per year (7.2%).

The following reasons explain why users used self-medication (n=274), 130 subjects were used self-medication because of minor illness (47.4%), 42 subjects were used self-medication because of saving time &money (15.3%), 31 subjects were used self-medication because of avoiding crowding at PHC (11 .3%), 21 subjects were used self-medication because of previous good experience with the drug (7.7%), 15 subjects were used self-medication because of the high cost of consultations (5.5%), 12 subjects were used self-medication because of emergency (4.4%), 9 subjects were used self-medication because of privacy (3.3%), 8 subjects were used self- medication because of sufficient pharmacological knowledge (2.9%) and only 6 subjects were used self-medication because PHC is too far (2.2%). 203 of the users reported that there are no side effects after taking self- medication (74.2%), 40 of users reported that they had a headache after taking self-medication (14.6%) 14 of the users reported that they had a cough after taking self- medication (5.1%), 9 of the users reported that they had allergies/rash after taking self-medication (3.3%) and only 8 of the users reported that they had diarrhea/ vomiting after taking self- medication (2.9%).

The outcome of the users before used self-medication, 150 subjects thought they will improve if take self- medication (54.7%), 90 subjects thought they have not cured and not improved if take self- medication (32.9%) and 34 subjects thought they will be referred to clinic or hospital after taken self- medication (12.4%).

Table 4 preyed on the distribution of the studied subjects by self-medication and their socio-demographic characters. There have statistically significant differences between the (age group and residence), However, the use of self-medication was higher among those aged from less than 30years (79°/c), those older (30 < years (68.1°/c). and the use of self-medication was higher among those live in urban (73.7°/c). There have not been statistically significant differences between the studied subjects according to the use of self-medication, however, the use of self- medication subject those were female (75.1°/c) and those were male (74.2°/c). Married and single (74.5°/c), (75.9°/c), university

and higher id secondary (74.0°/c) (77.3 professional workers (73.5°/c), low-income family 69.8°/c), the use of self-medication was also higher among nonsmoker subjects (7 I .8°/c) and the use of self-medication subject those were not doing physical activity(74.9°/c) and those were doing physical activity (74.4°/c).

Table 5 showed the distribution of the studied subjects by self-medication use and their knowledge about self-medication. Although not significant, the average level of good knowledge was low among users regarding the concept of self-medication (5 I .6°/c vs. 53.9°/c among non-user). The average level of good knowledge among users and non-users was comparable. The total average of good knowledge about self-medication was higher (24.3°/c) among users in comparison with that among non-users (18.9°/c), although not significant.

The most important source of knowledge among self-medication users was the mass media (9.1%), pharmacists (54.7%), previous consultation (21.5%), friends and relatives (23.0%), and health staff (8.7%). However, the pharmacist was the most common source of knowledge among non- users (54.7%) followed by the previous consultation (2 1.5%).

Table 6 showed the average of the general attitude of the studied subjects towards self-medication use. the average level of good attitude was high among subjects regarding the concept of self- medication (33.2%), the average level of low attitude among the subjects regarding the concept of self-medication (23.24%), however, the higher average level for those neutral to answer (43.74%)

Table 7 presented the risk factors associated with self-medication use among the studied 367 participants. The risk of self-medication was reduced significantly among subjects age more than 50 years (OR=0.30; 95Cl= 0.20-0.93), and the risk was found to increase three times among females compared to males, although not significant. However, the risk was reduced by 8°/c among married subjects (OR= 0.92), however, although not significant. The risk was increased significantly among the non-working subjects (OR= 1.25; 95% CI= 1 .05-2.85), the risk was highly increased by 30°/c among the monthly family income subjects with an (OR of 1.36), although it's not significant, the risk of self-medication was increased significantly among subjects residence rural (OR=5.70; 95%CI= 1.92-8.30).

Table 1. Socio-demographic characteristics of studied participants		
Characteristics*	**N= 367**	**n (%).**
Age in years		
< 30		176 (48.0)

30- < 40	138 (37.6)
40-< 50	40(10.9)
≥ 50	13 (3.5)
Sex Male	178 (48.5)
Female	189 (51.5)
Marital status	
Single	108 (29.4)
Married	231 (62.9)
Divorced	18 (4.9)
Widow	10 (2.7)
Education	
Illiterate	10 (2.7)
Intermediate	29 (7.9)
Secondary	128 (34.9)
University and higher	200 (54.5)
Occupation	
Do not work	103 (28.1)
working	264 (71.9)
Family income in SR/month	
< 3000	96(26.2)
3000-<10,000	141 (38.4)
10,000-< 15,000	85 (23.2)
≥ 15,000	45 (12.3)
Residence	
Urban	350 (95.4)
Rural	17 (4.6)
Smoking	
Non-smoker	252 (68.7)
Smoker	84 (22.9)
Ex-smoker	31 (8.4)
Physical activity	
Yes	172 (46.9)
No	195 (53.1)

Table 2. Self-medication use in 1 year among the studied participants

	N= 367
Use of self-medication	
Yes	274 (74.7)
No	93 (25.3)
Origin of self-medication*	
Previously prescribed	200 (54.5)
Friends or family member recommendation	62 (16.9)
Purchased by the patient over the counter at a pharmacy	41 (11.2)
Pharmacist recommendation	81 (22.1)
For whom self-medication was used*	
Participant's himself	243 (66.2)
Participants' children	23 (6.3)

Your wife	6 (1.6)
Others	2 (0.5)
The most common complaint about which self-medication was used*	
Headache/Body ache	173 (47.1)
Flu/Cough/Cold	67 (18.3)
Fever	32 (8.7)
Allergies/Rash	14 (3.8)
Sore throat	33 (9.0)
Diarrhea	2 (0.5)
Mouth ulcers	2 (0.5)
Insomnia	5 (1.4)
Type of used in self-medication drugs*	
Antipyretics	202 (55)
Decongestants	76 (20.7)
Analgesic	188 (51.2)
Antihistaminic	28 (7.6)
Antibiotics	56 (15.3)
Tonics/Vitamins	29 (7.9)
Antidiarrheal	13 (3.5)
Antiemetic	7 (1.9)
Sedatives	7 (1.9)

* The number and percent of subjects using self-medication appeared to be more or less than 274 depending on the response of subjects' to studied checklist items.

Table 3. Self-medication variables (Frequency, Reasons, outcome, side effects) among users

	N= 274
Frequency of self-medication in 1 year	
Once	92 (33.8)
Twice	62 (22.6)
Three times	53 (19.3)
Four times	47 (17.1)
Five times or more	20 (7.2)
Reasons for self Medication*	
Minor Illness	130 (47.4)
Sufficient pharmacological knowledge	8 (2.9)
Saving time &money	42 (15.3)
Avoid crowding at PHC	31 (11.3)
Privacy	9 (3.3)
Previous good experience with the drug	21 (7.7)
The high cost of consultations	15 (5.5)
Emergency use	12 (4.4)
PHC is too far	6 (2.2)
Side effects after taking self-medication	
Yes	71 (25.9)
No	203 (74.1)
Main Side effects after taking self-medication	
Headache	40 (14.6)
Cough	14 (5.1)

Allergies/Rash	9 (3.3)
Diarrhea/ vomiting	8 (2,9)

The outcome of prior self Medication use

Improved	150 (54.7)
Has not cured not improved	90 (32.9)
Referred to a clinic or hospital	34 (12.4)

Table 4. Distribution of self-medication among the studied subjects by their characteristics (n= 367)

Characteristics	Self-medication		P. value
	Yes N= 274	No N= 93	
	n (%)	n (%)	
Age in years			
< 30	139 (79)	37 (21.0)	
30- < 40	94 (68.1)	44 (31.9)	
40- < 50	34 (85.0)	6 (15.0)	0.01*
≥ 50	7 (53.8)	6 (46.2)	
Sex			
Male	132 (74.2)	46 (45.8)	
Female	142 (75.1)	47 (24.9)	0.46
Marital status			
Single	82 (75.9)	26 (24.1)	
Married	172 (74.5)	59 (25.5)	
Divorced	14 (77.8)	4 (22.2)	
Widow	6 (60.0)	4 (40.0)	0.72
Education			
Illiterate	7 (70.0)	3 (30.0)	
Intermediate	20 (69.0)	9 (31.0)	
Secondary	99 (77.3)	29 (22.7)	
University and higher	148 (74.0)	52 (26.0)	0.76
Occupation			
Do not work	80 (77.7)	23 (22.3)	
Working	194 (73.5)	70 (26.5)	0.24
Family income in SR/month			
< 3000	67 (69.8)	29 (30.2)	
3000-<10,000	107 (75.9)	34 (24.1)	
10,000-< 15,000	68 (80.0)	17 (20.0)	
≥ 15,000	32 (71.1)	13 (28.9)	0.40
Residence			
Urban	258 (73.7)	92 (26.3)	
Rural	16 (94.1)	1 (5.9)	0.04*
Smoking			
Non-smoker	181 (71.8)	71 (28.2)	
Smoker	66 (78.6)	18 (21.4)	
Ex-smoker	27 (87.1)	4 (12.9)	0.09
Physical activity			

Yes	128 (74.4)	44 (25.6)	0.50
No	146 (74.9)	49 (25.1)	

*Significantl

Table 5. Distribution of the studied subjects by self-medication use and their knowledge about self-medication (n= 367)

Knowledge about self-medication	Self-medication use N=274 n (%)	Not self-medication use N = 93 n (%)	P-value
Self-medication can be prevented by doctor communication			
Yes	139 (50.7)	56 (60.2)	
No	65 (23.8)	12 (12.9)	
Do not know	70 (25.5)	25 (26.9)	**0.10**
Misuse of antibiotics increase body resistant to it			
Yes	170 (62.0)	52 (55.9)	
No	58 (21.2)	22 (23.7)	**0.56**
Do not know	46 (16.8)	19 (20.4)	
The self-medication increases illness and death			
Yes	125 (45.6)	48 (51.6)	
No	62 (22.6)	14 (15.1)	
Do not know	87 (31.8)	31 (33.3)	**0.28**
The self-medication increases hospital admission			
Yes	122 (44.5)	44 (47.3)	
No	69 (25.2)	20 (21.5)	
Do not know	83 (30.3)	29 (31.2)	**0.76**
The self-medication interferes with treatment and early detection			
Yes	152 (55.5)	51 (54.8)	
No	54 (19.7)	20 (21.5)	
Do not know	68 (24.8)	22 23.7)	**0.92**
Sources of self-medication information*			
Pharmacist	150 (54.7)	45 (23.1)	
Previous consultation	59 (21.5)	10 (10.8)	
Friends-Relatives	63 (23.0)	14 (15.1)	
Mass media	25 (9.1)	3 (3.2)	
Health staff	24 (8.7)	13 (14.0)	**0.08**

*The number and percents of subjects using self-medication appeared to be more or less than 274 depending on the response of subjects' to studied checklist items.

Table 6. The general attitude of the studied subjects towards self-medication use

	N= 367
Self-medication is a quick alternative to consultation	
Agree	148 (40.3)
Neutral	158 (43.1)
Disagree	61 (16.6)
Self-medication reduce the load on doctors	
Agree	128 (34.9)
Neutral	168 (45.8)
Disagree	71 (19.3)
Self-medication leads to health problems	
Agree	142 (38.7)
Neutral	166 (45.2)
Disagree	59 (16.1)
Self-medication saves money and effort	
Agree	129 (35.1)
Neutral	154 (42.0)

Disagree	84 (22.9)
Self-medication prevented by health awareness	
Agree	183 (49.9)
Neutral	149 (40.6)
Disagree	35 (9.5)
Self-medication prevented by the legislation of regulation	
Agree	188 (51.2)
Neutral	142 (38.7)
Disagree	37 (10.1)
Self-medication prevented by the doctor-patient relationship	
Agree	104 (28.3)
Neutral	176 (48.0)
Disagree	87 (23.7)
Self-medication is safe	
Agree	77 (21.0)
Neutral	178 (48.5)
Disagree	112 (30.5)
Self-medication can cause addiction	
Agree	134 (36.5)
Neutral	164 (44.7)
Disagree	69 (18.8)
Self-medication interacts with other medications	
Agree	168 (45.8)
Neutral	150 (40.9)
Disagree	49 (13.4)

Table 7. Odds ratios and their 95% confidence intervals for the association of self-medication with some studied factors

Risk factors	Self-medication user N= 274	Not users N= 93	OR	95% CI
Age in years				
< 30	139	37	1.00	Ref.
30- < 40	94	44	0.56	0.75-2.83
40- < 50	34	6	1.50	0.70-2.51
≥ 50	7	6	0.30	0.20-0.93*
Sex				
Male	132	46	1.00	Ref.
Female	142	47	1.05	0.80-4.60
Marital status				
Single	82	26	1.00	Ref.
Married	172	59	0.92	0.30-4.80
Divorced	14	4	1.10	0.71-2.23
Widow	6	4	0.47	0.34-0.85
Education				
Illiterate	7	3	1.00	Ref.
Intermediate	20	9	0.92	0.12-2.78
Secondary	99	29	1.46	0.86-2.09
University and	148	52	1.21	0.58-3.60

higher				
Occupation				
Working	194	70	1.00	Ref.
Do not work	80	23	1.25	1.05-2.85*
Family income in SR/month				
< 3000	67	29	1.00	Ref.
3000-<10,000	107	34	1.36	0.20-3.25
10,000-< 15,000	68	17	1.73	0.35-5.21
≥ 15,000	32	13	1.06	0.74-9/85
Residence				
Urban	258	92	1.00	Ref.
Rural	16	1	5.70	1.92-8.30*
Smoking				
Non-smoker	181	71	1.00	Ref.
Smoker	66	18	1.48	1.10-3.21
Ex-smoker	27	4	2.64	1.43-7.41

DISCUSSION

Self-medication is a common phenomenon in the world and the unobserved use of drugs is a cause of concern. This study was conducted in Medina, Saudi Arabia to study the prevalence and factors influencing self-medication. The prevalence of self-medication use among the studied sample was 74.7%. Self-medication is common consumer practice in developing countries, and many prescriptions can be bought without a prescription [21, 30] A recent study in Saudi Arabia reported that up to 40% of patients attending primary care centers have "some" experience with self-medication [31]. Risk factors to self-medication were gender (male), below 50 years old, poor general condition, and dissatisfaction with health care [31]. A higher prevalence similar to that reported in our study was found in recent Saudi studies, where the reported prevalence of self-medication among the students at King Abdul-Aziz University was 75.2°/c [32], and among community pharmacy consumers in Central area was 5 I °/c [33].

The prevalence of self-medication was seen by up to 95% among adolescents [34]. In Bahrain, about 45% of medical students purchased antibiotics at least one time [35]. Minor illness time savings were the most common arguments. Self-medication in developing countries is more popular than other areas in the world as seen in Slovenia [36], Nigeria [37], Malaysia [38], and Egypt [39]. However, in developed countries, the main reason for self-medication is a high level of educational status [40]. In Saudia Arabia, it is common to purchase an OTC medication without a prescription. Self-medication prevalence was higher among those aged 40-<50 years old (85%) and among the rural population (94.1%) compared to (73.3%) among the urban population. The results also revealed that the prevalence was high among Divorced (77.8%) followed by a single (75.9%). A similar conclusion was seen in the Spanish study [41] showed that self-medication was more prevalent among persons lonely persons. Also, the high level of education was reported as a predictive factor reducing the risk of self-medication [40]. In contrast to the present results, the prevalence was higher among those have secondary education (77.3%) and University or more (74%). The most common drug category used by studied subjects were antipyretic (55.0%), analgesics (51.2%), and decongestants (20.7%). Headache and body aches (47.1%) and flu and cough (18.3%), were the most common indications for self-medication in our study as well as a recent study from India [42] and Ethiopia [40]. From the latter studies, fever was the commonest symptomatology associated with self-prescription. Nigerian study [37], reported diarrhea and gastrointestinal infections as the most common indication for self-medication and un-prescribed antibiotics use while common cold was the most common indication in Greece [43].

Although there was no significant difference among the studied subjects regarding the use of self-medication by their monthly family income levels, the higher rate (80°/c) was among those reported an income of 10,000-< I 5,000 SR per month. On the contrary, Awad et al. [44] found that the participants used pharmacies because they are of a lower cost compared to other health care facilities. This reflects that the problem of self-education among our subjects is not financial. The main reasons for self-medication among our subjects were minor illness (47.4%) and time-saving (15.3%). Also, studies from Brazil [45] and India [46] concluded that participants share the common sense of "time-saving" for using self-medication. This belief was seen also in studies from Bahrain [47]. This was similar to our findings where 31.5% of the studied subjects sought self-medication because of the high cost of the consultation. Although, there was no significant difference between the source of information and the use of self-medication. The

main sources of information among users in this study were the pharmacist (54.7%), friends, and relatives (23%). Where is, the results from a recent Saudi study [48], including university' students reported information gaining from physicians (50.6%), community pharmacists (15.7%), parents/adult relatives (7.2%), and internet (5.6%). Regarding the risk factors, the results of this study found a protective effect for the age among those having more than 50 years (OR=0.30; 95%CI= 0.20-0.93). It also showed that no significant difference in the risk of self-medication use and gender. On the other hand, however, the risk was increased among those having no work (OR 1 .25 95%Cl= 1.05 — 2.85). The risk was also increased among rural subjects (OR of 5.70 (95% CI= 1.92-8.30). Unlike this study, other similar studies did not calculate the risk of self-medication by these factors, but only reported a high proportion of self-medication among young and middle-aged persons, males, those who living alone and persons with low educational level[33, 39-43]. The present study has certain points of strength. The questionnaire addressed almost all items related to self-medication use. The questionnaire has been validated by two epidemiologists and a pharmacologist. Also, the interviewing questionnaire is superior to online surveys. However, this study has some limitations: being a cross-sectional study, its results should be re-enforced by more analytic studies like interventional studies. In conclusion, the results of this study revealed a considerable high proportion of self-medication among the Saudi population (74.7%) attending the primary health care centers in Medina city. The most common self-medication used by the studied sample was antipyretics. The study findings showed the effect of law that prohibits the purchasing of antibiotics without prescription indicating the importance of generalization of the prohibition of all drugs.

CONCLUSION

The results of this study revealed a considerable high proportion of self-medication among the Saudi population (74.7%) attending the primary health care centers in Medina city. The most common self-medication used by the studied sample was antipyretics. The study findings showed the effect of law that prohibits the purchasing of antibiotics without prescription indicating the importance of generalization of the prohibition of all drugs.

ACKNOWLEDGMENT

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

REFERENCES

1. Zahra NA. Low Back Pain, Disability and Quality of Life among Health Care Workers. Int. J. Pharm. Res. Allied Sci. 2020 Apr 1;9(2):34-44.
2. Baghini MS, Rabiei R, Aasdi F, Moghaddasi H, Sabahi A. National mental health information system: a review of data architecture in selected countries. J. Adv. Pharm. Educ. Res. Apr-Jun. 2020;10(S2):130-138.
3. Sundus A, Ismail NE, Gnanasan S. Exploration of healthcare practitioner's perception regarding pharmacist's role in cancer palliative care, malaysia. Pharmacophores. 2018 Jul 1;9(4):1-7.
4. Darkhor S, Estebsari F, Hosseini M, Charati JY, Vasli P. Effect of health promotion intervention on Nurses' healthy lifestyle and health-promoting behaviors: RCT study. J. Adv. Pharm. Educ. Res. Jan-Mar. 2018;8(1):108-114
5. World Health Organization. The role of pharmacists in self-care and self-medication. Report of the 4th WHO Consultative Group on the role of pharmacist. Geneva (CH): WHO; 1998.
6. Cuzzolin L and Benoni G. Safety of non-prescription medicines: knowledge and attitudes of Italian pharmacy customers. Pharm World Sci 2010; 32: 97-102.
7. WHO. Essential medicines in WHO regions. 2017
8. Ganguly NKAN, Chandy SJ, Fairoze MN, Gill JP, Gupta U, Hossain S, Joglekar S, Joshi PC, Kakkar M, Kotwani A, Rattan A, Sudarshan H, Thomas K, Wattal C, Easton A, Laxminarayan R, Global Antibiotic Resistance Partnership (GARP) -India Working Group. Rationalizing antibiotic use to limit antibiotic resistance in India. Indian J Med Res. 2011;134: 281–94
9. Kumar R, Goyal A, Padhy BM, Gupta YK. Self-medication practice and factors influencing it among medical and paramedical students in India: a two-period comparative cross-sectional study. Journal of natural science, biology, and medicine. 2016;7(2):143–8.
10. Lukovic JA, Miletic V, Pekmezovic T, Trajkovic G, Ratkovic N, et al. SelfMedication Practices and Risk Factors for SelfMedication among Medical Students in Belgrade, Serbia. PLoSONE. 2014;9(12):e114644. https://doi.org/ 10.1371/journal.pone.0114644
11. Johnson D, Sekhar HS, Alex T, Kumaraswamy M, Chopra RS. Self-medication practice among medical, pharmacy, and nursing students. Int J Pharm Pharm Sci. 2016;8(7). ISSN-0975-1491.
12. Kumar N, Kanchan T, Unnikrishnan B, Rekha T, Mithra P, et al. Perceptions and Practices of Self-Medication among Medical Students in Coastal South India. PLoSONE. 2013;8(8):e72247. https://doi.org/10.1371/journal.pone.0072247.
13. Zhu X, Pan H, Yang Z, Cui B, Zhang D, Ba-Thein W. Self-medication practices with antibiotics among Chinese university students: Elsevier Ltd; 2015.
14. Gama ASM, Secoli SR. Self-medication among nursing students in the state of Amazonas – Brazil. Rev GaúchaEnferm. 2017;38(1):e65111. http://dx.doi.org/10.1590/1983-1447.2017.01.65111.
15. Banerjee TB I. Self-medication practice among undergraduate medical students in a tertiary care medical college. West Bengal J Postgrad Med. 2012;58(2):127–31.
16. Gutema GB, Gadisa DA, Kidanemariam ZA, Berhe DF, Berhe AH, Hadera MG, Hailu GS, Gebresamuel N, Abrha NG, Yarlagadda R, Dagne AW. Self-medication practices among health sciences students: the case of Mekelle University. Journal of Applied Pharmaceutical Science. 2011; 01(10):183–9.
17. Ahmed NM. Self-medication practice among patients attending a sample of primary health care centers in Erbil City. Journal of Education and Practice.2016;7 (24):73–79.
18. Komal Raj MR, Bhat PK, Aruna CN. Self-medication practices for ORAL health problems among DENTAL patients in Bangalore: a cross-sectional study.IOSR Journal Of Pharmacy. 2015;5(10):68–75
19. El-Nimr NA, Wahdan IM, Wahdan AM, KotbRE.Self-medication with drugs and complementary and alternative medicines in Alexandria, Egypt: prevalence, patterns, and determinants. East Mediterr Health J 2015;21(4):256-265.
20. Al Rasheed A, Yagoub U, Alkhashan H. Prevalence and Predictors of Self-Medication with Antibiotics in Al Wazarat Health Center, Riyadh City, KSA. BioMed Research International 2016; 2016:1-8

21. Bawazir SA. Prescribing pattern at community pharmacies in Saudi Arabia. International Pharmacy Journal. 1992;6:5.

22. "WHO Global Strategy for Containment of Antimicrobial Resistance." World Health Organization. World Health Organization, August 16, 2016. https://www.who.int/drugresistance/WHO_Global_Strategy.htm/en/.

23. Sultan Alghadeer a, Khalid Aljuaydi b, SalmeenBabelghaith a, Abdullah Alhammad a, Mohammed N. Alarifi. A Self-medication with antibiotics in Saudi Arabia Saudi Pharmaceutical Journal 26 (2018) 719–724

24. " // ." MOH News - MOH Warns Against Selling Antibiotics without Prescription, n.d. https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/news-2018-04-17-004.aspx.

25. Aljaouni, Mona & Hafiz, Asmaa&Alalawi, Hadeel&Alahmadi, Ghaida& Al-Khawaja, Imad. (2015). Self-medication practice among medical and non-medical students at Taibah University, Madinah, Saudi Arabia. IJASR. 3. 54-65.

26. Statistical Yearbook: Central Department Of Statistics & Information. Statistical Yearbook 47; 2011. Retrieved November 3, 2013. http://www.cdsi.gov.sa/yb47/Pages/MixChapter2.htm

27. Health statistical yearbook 1432: Retrieved November 3, 2013. www.moh.gov.sa/Ministry/MediaCenter/News/Documents/healthybook.pdf.

28. Sakr. "دليل الخدمات." الهيئة العامة للإحصاء, February 26, 2018. https://www.stats.gov.sa/ar/825..

29. Dnyanesh Limaye1,2*, Vaidehi Limaye2, Gerard Krause3,4, Gerhard Fortwengel, A systematic review of the literature on survey questionnaires to assess self-medication practices Int J Community Med Public Health. 2017 Aug; 4(8):2620-2631.

30. Kagashe GA, Francis L. Dispensing of drugs with and without a prescription from private pharmacies in Dar es Salaam. Tanzania Medical Journal. 2004;19:1.

31. Alghanim SA. Self-medication practice among patients in a public healthcare system. East Mediterr Health J. 2011;17: 409-416.

32. Ibrahim N, Alamoudi BM, Baamer WO, Al-Raddadi RM. Self-medication with analgesics among medical students and interns at King Abdulaziz University, Jeddah, Saudi Arabia. Pak J Med Sci. 2015; 31(1): 14-18.

33. Aljadhey H, Assiri GA, Mahmoud MA, Al-Aqeel S, Murray M, Self-medication in Central Saudi Arabia: Community pharmacy consumers' perspectives. Saudi Med J. 2015; 36(3): 328–334.

34. Abahussain E, Matowe LK, Nicholls PJ. Self-reported medication use among adolescents in Kuwait. Med PrincPract. 2005;14:161–164.

35. James H, Handu SS, Al Khaja KA, Otoom S, Sequeira RP. Evaluation of the knowledge, attitude, and practice of self-medication among first-year medical students. Med Princ Pract.2006;15:270–275.

36. Smogavec M, Softič N, Kersnik J, Klemenc-Ketiš Z. An overview of self-treatment and self-medication practices among Slovenian citizens. Slovenian Med J 2010;79: 757–763

37. Fadare JO, Tamuno I. Antibiotic self-medication among university medical undergraduates in Northern Nigeria. J Public Health Epidemiol 2011; 3 (5) 217–220.

38. 11.Ali SE, Ibrahim MIM, Palaian S. Medication storage, and self-medication behavior amongst female students in Malaysia. Pharm Pract 2010; 8 (4) 226–232.

39. El Ezz NF, Ez-Elarab HS. Knowledge, attitude, and practice of medical students towards self-medication at Ain Shams University, Egypt. J Prev Med Hyg. 2011;52(4):196–200.

40. 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;11:409–414.

41. Figueiras A, Caamano F, Gestal-Otero JJ. Sociodemographic factors related to self-medication in Spain. Eur J Epidemiol. 2000;16(1):19–26.

42. Banerjee I, Bhadury T (2012) Self-medication practice among undergraduate medical students in a tertiary care medical college,. West Bengal J Postgrad Med 58 (2) 127–131.

43. Skliros E, Merkouris P, Papazafiropoulou A, Gikas A, Matzouranis G. Self-medication with antibiotics in rural population in Greece: a cross-sectional multicenter study. BMC FamPract 2010; 11: 58.

44. Awad AI, Eltayeb IB. Self-medication practices with antibiotics and antimalarials among Sudanese undergraduate university students. Ann Pharmacother. 2007;41(7):1249–1255.

45. Souza LA, da Silva CD, Ferraz GC, Sousa FA, Pereira LV. The prevalence and characterization of self-medication for obtaining pain relief among undergraduate nursing students. Rev Lat Am Enfermagem.2011; 19(2):245–251.

46. Pandya RN, Jhaveri KS, Vyas FI, Patel VJ. Prevalence, pattern, and perceptions of self-medication in medical students. Int J Basic ClinPharmacol. 2013; 2(3):275–280.

47. James H, Handu SS, Al Khaja KA, Otoom S, Sequeira RP. Evaluation of the knowledge, attitude, and practice of self-medication among first-year medical students. Med PrincPract. 2006;15: 270–275.

48. Eldalo AS, Yousif MA, Abdallah M. Saudi school students' knowledge, attitude, and practice toward medicines. Saudi Pharmaceutical Journal 2014; 22(3):213-218.