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Original Research Article

Knowledge, Attitude and Practice Regarding to Antibiotics use among Libyan Community

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Abstract

Background*:** Inappropriate use of antibiotics has become a global phenomenon. Inappropriate use of antibiotics is recognized as a leading cause of antibiotic resistance. ***Aim*:** To assess the knowledge, attitudes and practice regarding to antibiotic use among Libya population. ***Methods*:** A descriptive cross sectional study was done online through Google forms from April to December 2020. Questionnaire was sent to general population across Libya by sharing link through popular social media groups. ***Results*:** A total of 1600 responses were received from different cities across Libya. The average age of respondents were 30.53 years and 71.4% of respondents were female. The study revealed that only 68.7% (n = 1099) of the response had high knowledge; on the other hand, about 31.3% (n = 501) of the response had low knowledge about the antibiotics. This study showed that 57.6% (n= 922) of the response had correct practice using antibiotics, and 42.4% (n= 678) of the response had incorrect practice using antibiotics. Only 32.1% (n = 513) of the response was found to have a good attitude; in contrast, 67.9% (n = 1087) of the response had a bad attitude toward antibiotics used. The majority of the participants 68.7% consumed antibiotics during the past year, 35% of participants consumed antibiotics without a medical prescription. The most common reason for usage was the common cold. ***Conclusion: This study provides a baseline of the knowledge, attitude, and behavior regarding antibiotics among the Libya community. Our population has sufficiency level in their knowledge toward antibiotic uses; expressed poor attitudes, as well as many had bad practices of antibiotics use. This finding will be useful in designing effective and targeted interventions to decrease misconceptions about antibiotic use and to increase awareness about the risks of inappropriate use of antibiotics in the community.

Keywords: Knowledge, Practice, Attitude, Antibiotics, Libyan community.

INTRODUCTION

The emergence and spread of antibiotic resistant pathogens pose a big challenge to policy-makers, transformation of health systems that evolved to provide easy access to these drugs into ones that encourage appropriate use of antimicrobials, whilst reducing the risk of resistance [1]. Inappropriate use of antimicrobial agents and the consequences of spread of antimicrobial resistance is an increasing public health problem [2]. In recent years, resistance to antimicrobial agents that were previously effective has emerged or re-emerged in many regions causing a global health threat and economic consequences. Among many other factors, behaviors of community members and their limited knowledge associated with inappropriate antibiotics use [3, 4]. The World Health Organization (WHO) recognizes antibiotics resistance as a major global health problem that threatens our ability to treat diseases and requires urgent action [5]. The overuse, underuse, and misuse of antibiotics result in antimicrobial resistance problems worldwide [6].

The situation in developing countries is more critical because the use of antibiotics without medical guidance is largely facilitated by inadequate regulation of the distribution and sale of prescription drugs [7]. As well as, the majority were incorrectly indicated for viral or self-limiting conditions [8]. The rationale for

educating the public is that knowledge about antibiotic treatment and awareness of antibiotic resistance are thought to influence patient and parent demand for antibiotic prescribing [9].

Aim of the work

The aim of this study was to assess the knowledge, attitudes and practice regarding to antibiotic use among Libyan population.

METHODS

A descriptive cross sectional study was done online through Google forms from April to December 2020. Permission and Ethical Approval to conduct the study was granted from the College of Medical Technology, Derna, Libya.

Data were collected through questionnaire, which was derived from other published studies dealing with the same topic. [10]The questionnaire was contained four parts. Part 1 consisted of 5 demographic questions, while part 2, consisting of 18 statements, aimed at assessing the antibiotic knowledge of participants. Followed by Part 3 which consist of 9 statements for evaluation public attitudes toward antibiotic use. And finally Part 4which consist of 10 questions aiming assessing the practice of antibiotics use among participants.

The structured English form was first translated into Arabic by the authors and validated by a pilot study on 20 adults. This version was revised and translated back to English by another expert and compared with the original form to ascertain the precision of translation. An Arabic version of the questionnaire was used to collect the data. Questionnaire was sent to general population across Libya by sharing link through popular social media groups.

Data Analysis

Data analysis was analysis using SPSS software version 26 (IBM, Ottawa, Canada). Descriptive statistics, including percentage, mean, range, and standard deviations, were calculated for all variables. Proportions were compared using Chi- square tests and *P*-value less than 0.05 was considered statistically significant.

RESULTS

A total of 1600 questionnaires were received from different cities across Libya, the majority was female (71.4%). Their ages ranged from 16 to 65 with mean 30.53±9.54 years nearly 50% of them were aged from 21 to30 years, 32.7% were student and 19.4% were physician. More than half 65.9% have university degree level, and most were medium level of family income (91.6%) (Table 1).

Knowledge

Most of the respondents (68.7%) showed a high level of knowledge while 31.3% had a low level of knowledge about antibiotics (Figure 1). Statistically significant differences in knowledge levels were found between age groups, gender, occupation and education level.

On the other hand, the level of knowledge was not significantly associated (P = 0.510) with monthly family income (Table 2). The highest correct answer among the knowledge questions was 93.1% representing respondents who know there are beneficial bacteria in the human body and 83.9% who considered antibiotics as anti-bacterial agents.

On the other hand, the percentage of respondents who incorrectly regarded antibiotics as antiviral agents was 26.5%. Over two-thirds (72.6%) could correctly identify that paracetamol is not an antibiotic. Moreover, 85.4% realized that antibiotic misuse could cause antibiotic resistance and 77.4% believed that antibiotics have side effects. Though most often participants are aware that antibiotic resistance is a national problem (75.8%) (Table 3).

Attitude

However, the majority of the participants in this study 67.9% reported that have bad attitude and 32.1% have a good attitude about the use of antibiotics (Figure 2).

There was significance different between attitude score and age, gender, occupation and education level. However, monthly family income was not significantly associated with the attitude score (P=0.402) (Table 2).

The percentage of participants who said antibiotics are safe drugs, so they are most commonly used%76.4. Approximately 31.2% of the participants do not stop taking antibiotics when their symptoms improve. A considerable percentage (67.7%) believes that antibiotics can heal their common cold recovery, and 65.9% of these participants ask the pharmacist to prescribe antibiotics in such cases. Moreover, nearly two-thirds of the participants appear to stop the antibiotics when they feel better (68.5%). Nearly half of participants said antibiotics not cure all disease 49.3% and use the left overs for future illness (64.2%). Majority of the participants said that they would not take the remaining antibiotics, if they develop similar disease later (63.8%).

Alternatively, 72.6% do not give antibiotics to a sick family member and 69.7% usually read the

instructions on the label and 93.0% read the expiration date (Tables 5 and 4).

Practice

This study showed that 57.6% of participants had used good practices, and 42.4% had used incorrect practices of antibiotics used (Figure 3). And found there was no significant association different between age, family income and antibiotic used. However, there were statistically significant differences in antibiotic used and gender, occupation and education level (Table 2).

Sixty-five percent of participants reported that in an' 'average'' antibiotic consumption in last year they used antibiotics 1—3 times. Moreover, 22.4% reported no antibiotic consumption while 12.6% reported excessive antibiotic consumption of more than 4 times per year.

The answer for the question ''how do you get your antibiotics'' was ''by doctor's prescription'' (65.7%) followed by ''pharmacist's advice'' (12.1%). The percentage of people who answered that they choose to take an antibiotic without consultation was 19.1% and 3.1% non-medical person's advice.

Upon asking about the about the reasons for using antibiotics, 27.9% thought that the common cold was the reason. As for the time that when they stop taking antibiotics prescribed by a doctor, the most frequently reported answers were when the dose complete (60%) and (20.4%) reported advice from doctor or pharmacist.

Furthermore, 35.9% said that they directly stop take an antibiotic course once they get well while 64.1% would wait till the dose complete.

More than half of the participants (52.3%) take an antibiotic with water while the tiny (0.1%) answered that they take an antibiotic with coffee or tea. However, most of antibiotic used without a prescription was amoxicillin (Table 4).

Regarding the source of information, more than third of participants who receiving information said: we received information from WHO webpage, the other third receiving information from social media pages and 24.9% of the participants say they received information about antibiotics from health care professional. A further 19.6% of participants say they found out via TV programme and radio. Only 6.9%% of participants say they got information from family or friends.

Table 1: Socio-Demographic Characteristics of the Study Participants

Variables	Frequency	Percentage %
Age (years)		
≥20	158	9.9
21-30	786	49.1
31-40	423	26.4
41-50	161	10.1
≤51	72	4.5
Gender		
Female	1142	71.4
Male	458	28.6
Level of education		
Preparatory	4	0.3
Secondary	10	6.0
Diploma	63	3.9
Universal	1055	65.9
Postgraduate	468	29.3
Occupation		
Students	523	32.7
Physician	310	19.4
Lectures	232	14.5
Clerk	118	7.4
Teacher	89	5.6
Engineer	66	4.1
Housewife	30	1.9
Medical lab technician	92	5.8
Business	33	2.1
Pharmacist	59	3.7
Job Seekers	14	0.9
Others	34	2.1
Family Income		
Low (less than 1200 LD)	96	6.0
Medium (1210 & less than 2400 LD)	38	2.4
High (2400 LD & more)	1466	91.6
Total	1600	100

Table 3: Percentage of Libyan people having correct knowledge about the misuse of antibiotics

Question	Frequency	Percentage%
Do antibiotics kill bacteria?	1342	83.9
Do antibiotics kill viruses?	1176	73.5
Do antibiotics cure pain and inflammation?	254	15.9
Do antibiotics treat a high fever?	876	54.8
Do antibiotics treat diarrhea?	839	52.4
Is penicillin an antibiotic?	1314	82.1
Is aspirin an antibiotic?	1274	79.6
Is Paracetamol an antibiotic?	1161	72.6
Does using antibiotics cure cold flu?	1004	62.8
Do you treat chest infections with antibiotics?	681	42.6
Can antibiotics cause any side effects?	1239	77.4
Are there beneficial bacteria in the human body?	1490	93.1
Have you ever heard of the term "antibiotic resistance?"	1423	88.9
Does antibiotic resistance mean that if antibiotics are taken too much, the antibiotic will not work?	1339	83.7
Wrong use of antibiotics; Lead to bacterial resistance to antibiotics?	1366	85.4
Weak or no effect of treatment, caused by the development of antibiotic resistance?	1301	81.3
Antibiotic resistance has become a problem in Libya?	1213	75.8
What is the minimum time required to take the antibiotic?	190	11

Table 4: Percentage of Libyan people having correct Practice about the misuse of antibiotics

Question	Frequency	%
How do you get antibiotics?	1051	65.7
When to stop taking antibiotics prescribed by a doctor?	1286	80.4
Do you adhere to the dosage and instructions?	1488	93.0
Do you complete the dose prescribed by your doctor?	1367	78.8
If symptoms improve before completing the full course of antibiotics, can you stop taking them?	1025	64.1
Do you think it is important to complete the dose of the medicine, even if all symptoms disappear?	934	58.4
When do you take antibiotics?	990	61.9
Take an antibiotic with? Water, food, tea..etc.	1314	82.2
Are you undergoing an allergy test on luggers to take an antibiotic by injection?	1255	57.9
Do you use antibiotics as a preventative treatment?	1311	81.9

Table 5: Percentage of Libyan people having a correct attitude about the misuse of antibiotics

Question	No	%
Antibiotics are safe drugs, so they are most commonly used:	1223	76.4
When I get a cold, I take antibiotics to help me heal:	1083	67.7
I ask the pharmacist to prescribe an antibiotic if I have cold symptoms:	1055	65.9
I usually stop taking antibiotics if I feel better:	1096	68.5
Use the remaining antibiotics if you get the same disease again:	1020	63.8
I usually give my antibiotics to a sick family member	1110	72.6
I use leftover antibiotics if I get the same illness again	572	35.8
I usually check the expiration date on my antibiotic before using it	1102	68.9
Antibiotics cure all diseases	789	49.3

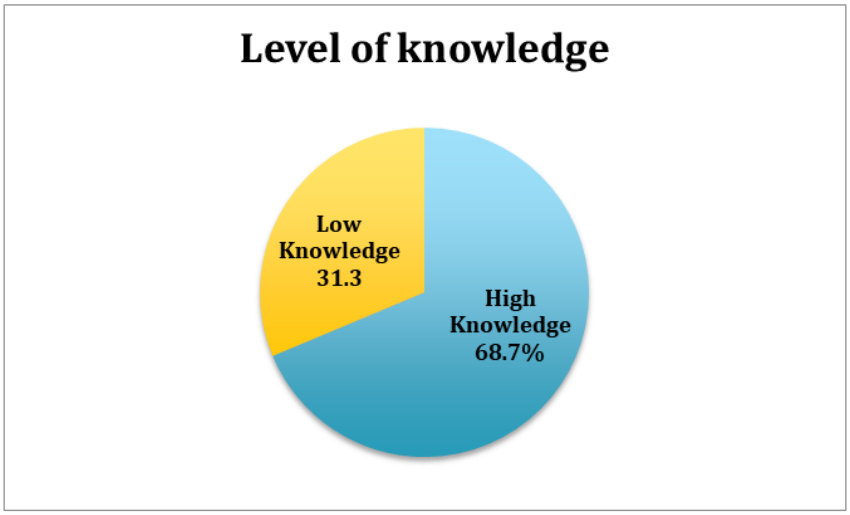

Figure 1: Percentage of knowledge among participants

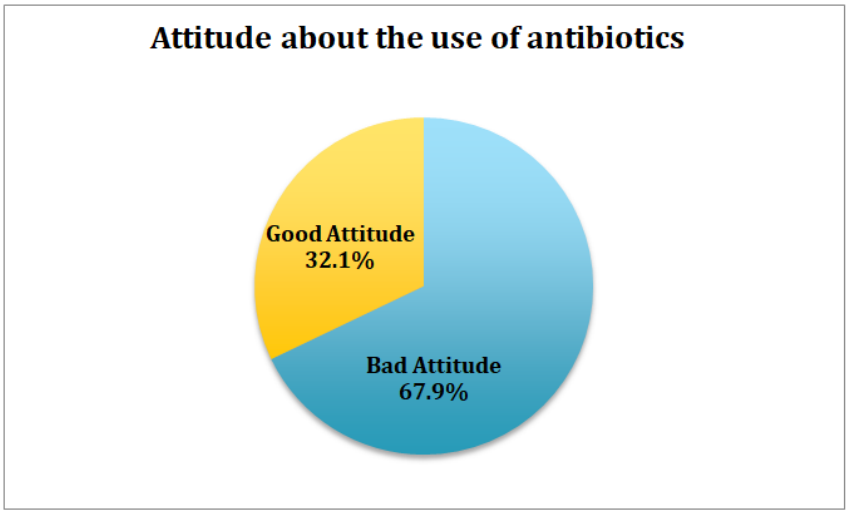

Figure 2: Percentage of attitude among participants

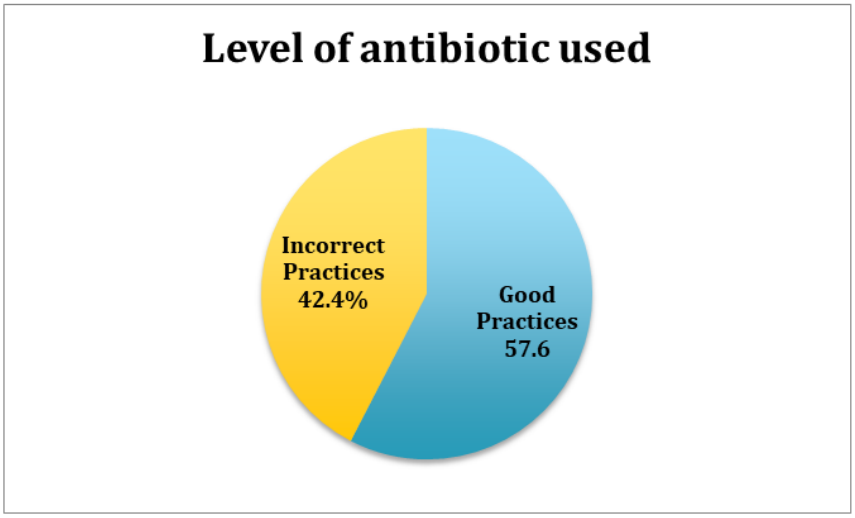

Figure 3: Percentage of practice among participants

	Knowledge				***Practice***				***Attitude***			
Variables	***High Knowledge N (%)***	***Low knowledge N (%)***	***X2***	***P-value***	***Good Practise N (%)***	***Bad practise N (%)***	***X2***	***P-value***	***N (%) Good attitude***	***Bad attitude N (%)***	***X^2***	***P-value***
Age												
≥20	70(6.4)	88(17.6)	61.766	0.001	88(9.5)	70(10.3)	6.713	0.152	42(8.2)	116(10.7)	13.991	0.007
21-30	553(50.3)	233(46.5)			478(51.8)	308(45.4)			286(55.8)	500(46.0)		
31-40	326(29.7)	97(19.4)			232(25.2)	191(28.2)			115(22.4)	308(28.3)		
41-50	100(9.1)	61(12.2)			86(9.3)	75(11.1)			48(9.4)	113(10.4)		
≤51	50(4.5)	22(4.4)			38(4.1)	34(5.0)			22(4.3)	50(4.6)		
Gender												
Male	296(26.9)	162(32.3)	4.915	0.027	(24.7)228	230(33.9)	16.166	0.001	124(24.2)	334(30.7)	7.330	0.007
Female	803 (73.1)	339(67.7)			(75.3)694	448(66.1)			389(75.8)	753(69.3)		
Preparatory		4 .8)0)										
Secondary	0(0.0)		64.361	0.001	2(0.2)	2(.3)	33.799	0.001	0(0.0)	4(0.4)	29.493	0.001
University	2(0.2)	8(1.6)			2(0.2)	8(1.2)			0(0.0)	10(0.9)		
degree	711(64.7)	344(68.7)			652(70.7)	403(59.4)			378(73.7)	357(32.8)		
Postgraduate	362(32.9)	106(21.2)			224(24.3)	244(36.0)			111(21.6)	677(62.3)		
Diploma	24(2.2)	39(7.8)			42(4.6)	21(3.1)			24(4.7)	39(3.6)		
Occupation												
Student	312(28.4)	211(42.1)	202.17	0.001	303(32.9)	220(32.4)	30.844	0.001	162(31.6)	361(33.2)	81.141	0.001
Physician	(26.6)292	18(3.6)			200(21.7)	110(16.2)			144(28.1)	166(15.3)		
Lecture	166(15.1)	66 (13.2)			118(12.8)	114(16.8)			58(11.3)	174(16.0)		
Teacher	41(3.7)	48 (9.6)			58(6.3)	31(4.6)			30(5.8)	59(5.4)		
Pharmacist	55(5.0)	4 (0.8)			32(3.5)	27(4.0)			12(2.3)	47(4.3)		
Medical Lab	74 (6.7)	18 (3.6)			40(4.3)	52(7.7)			8(1.6)	84(7.7)		
Technician	17 (1.5)	16 (3.2)			22(2.4)	11(1.6)			8(1.6)	25(2.3)		
Business	51(4.6)	67 (13.4)			57(6.2)	61(9.0)			28(5.5)	90(8.3)		
Clerk	39 (3.5)	27 (5.4)			40(4.3)	26(3.8)			27(5.3)	39(3.6)		
Engineer	18 (1.6)	12(2.4)			18(2.0)	12(1.8)			12(2.3)	18(1.7)		
Housewife	10 (0.9)	4(0.8)			8(0.9)	6(0.9)			4(0.8)	10(0.9)		
Job Seekers	24 (2.2)	10(2.0)			26(2.8)	8(1.2)			20(3.9)	14(1.3)		
Other												
Famliy												
income	(6.2)68	(5.6) 28	1.386	0.500	48(5.2)	48(7.1)	2.911	0.233	26(5.1)	70(6.4)	1.821	0.402
Low	(2.1)23	(3.0) 15			854(92.6)	612(90.3)			477(93.0)	989(91.0)		
Medium	(91.7)1008	(91.4)458			20(2.2)	18(2.7)			10(1.9)	28(2.6)		
High												
City												
Tripoli	(20.8) 229	(16.4)82	80.157	0.001	157(17.0)	154(22.7)	29.352	0.001	71(13.8)	240(22.1)	88.99	0.001
Benghazi	(22.7) 250	(10.8) 54			186(20.2)	118(17.4)			124(24.2)	180(16.6)		
Derna	(43.2)475	(51.9)260			444(48.2)	291(42.9)			262(51.1)	473(43.5)		
Misurata	(2.5)28	(0.0)0			24(2.6)	4(0.6)			22(4.3)	6(0.6)		
Sabha	(5.1)56	(12.4)62			53(5.7)	65(9.6)			10(1.9)	108(9.9)		
Tobruk	(1.6)18	(3.8)19			24(2.6)	13(1.9)			8(1.6)	29(2.7)		
Albeatha	(3.9)43	(4.8)24			34(3.7)	33(4.9)			16(3.1)	51(4.7)		

DISCUSSION

The main focus of this study was to assess the knowledge, attitude and practice among Libyan. As knowledge is an important issue for early detection and improvement of health seeking behavior. Participants revealed high knowledge and bad attitude toward antibiotics use. A similar result was obtained in Malaysia [11], in Kuwait [12] and in Baghdad, Iraq [13]. However, these finding are slight higher than those reported in Jordan, which estimated less than half of participants who have good knowledge (47.3%) [14].

In our study, knowledge and attitude regarding antibiotic was found to be statistically significant differences with age groups, gender, occupation, education level. Similar to the studies of Shehadeh *et al.*, [14] as well as Lim *et al.*, [11] who found that level of education, gender, and age has significant association with public attitude towards self-medication. However, in Baghdad, Iraq by Berq *et al.*, [13] found significant association between education level and attitude. However, knowledge and attitude regarding antibiotic was found to be not significantly with monthly family income. This result is same to previous study which

was done in Hong Kong by You *et al*., that found family income were associated with adequate patient knowledge [15]. These variations may be related to the difference in socio demographic characteristics and study design.

High proportion of participants reported that antibiotics are used for bacterial infection (83.9%) and about (26.5%) of the participants stated that antibiotics could be used for viral infection. In compare with a study was done in the United Arab Emirates, which found 91.4% of participants knew that antibiotics can kill bacteria and 48% said that antibiotics can kill virus [16]. which reflect higher knowledge than our result, however another study in Kuwait found antibiotics are effective against bacteria 40% or viruses 40% [17].

Less than one-third of respondents (27.4%) did not know "paracetamol is not an antibiotic", a similar result to that found in a Rupandehi District in Nepal (28.5%) [18] and in a Lebanese study (21.6%) [10].

In this study, many participants (85.4%) agreed that unnecessary use of antibiotics could lead to antimicrobial resistance. This finding is slightly higher than study done in Bahir Dar 69.7% [19], Jordan 50% [20], and Namibia 72% [21]. Moreover, 77.4% of Libyan participants know that frequent use of antibiotics can lead to side effects, which is almost identical with the Kosovo population (66.1%) [22].

The present study revealed bad attitude on the need of taking full course of the antibiotics regimen (68.5%) and (64.2%) using the leftover medicine. This finding is not in line with other study in which only (17%) participants kept antibiotics in their home for future use in Malaysia [11], and 28.5% in Lithuania study [23].

In contrast to other studies which were done on Iraqi community in Jordan [20] the current study, sharing of antibiotics with family and friends was minimal using the left over's prescriptions for future illness (64.2%) which similar to study in Fayoum Governorate, Egypt [24].

In our result we find that participant which check the expiry date of antibiotics before using them (93%), and which complete the full course of treatment (68.8%), this result similar to the finding of Nepal *et al*., [18], and we found (18.1%) of participants was using antibiotics as a preventative treatment, which less than result of Nepal *et al*., [18], and slightly higher thanKuwait study which found 44.3% of the participants used leftover antibiotics [12].

Approximately (31.5%) of the participants stop taking antibiotics when their symptoms improve. It's similar to that reported in Kuwait, which found more than one-third of prescribed an antibiotic did not complete their last antibiotic course, most of them stopped treatment because they felt better [17], and (51.5%) stop their course of antibiotics when their symptoms improve among Lebanese [10].

The percentage of participants who said antibiotics are safe drugs (76.4%), so they are most commonly used. A contrast to the result was conducted in District in Nepal that about 81.8% participants agreed that antibiotics should not be commonly used [18].

More than half of participants believe that antibiotics can cure all disease 49.3%. This finding is similar to that found in previous studies of Chandrakanth *et al.,* (51.3%) [25].

Alternatively, almost of the participants reported takes the remaining of antibiotics if they develop similar disease later (63.8%), and 93.0% usually read the instructions on the label. In Lebanon, 48.3% of participants use the left-over for future illness and 69.7% usually read the instructions on the label [10].

However, more than half of participants revealed good practice. Although there were also misuses such as failing to take full dose, purchasing antibiotics without prescription. However there was no significant association different between age, family income and antibiotic used and statistically significant differences with gender, occupation and education level. Which is not similar to the study was done by Voidăzan *et al*., and You *et al*., who found that age has significant association with antibiotic self-medicationin Romania [26], and Hong Kong respectively [15].

In this study, widespread use of antibiotics was reported, most of them being accessed with prescription. The majority of the participants 68.7% consumed antibiotics from1 to 3 times in previous year, which we consider a moderate level of consumption, where a healthy individual should not, on average, use antibiotics more than once per year. This report is similar to study done in Namibia (80%) [21] and in Ethiopia (79%) [27] butquite higher than the study which done in Lithuania 24.9% [23], in Egypt 53.7% [28] and in Bahir Dar 35.9% [24]. And also higher than the Southern part of Europe- Malta (48%), Cyprus (47%), Romania (47%), Sweden (24%) Poland (26%) and Germany (27%) [29].

Many factors could be attributed to the difference including the pattern of disease prevalence in different country, methods of data collection and time of collection. For example, upper respiratory disease often shows seasonal variation, which tend customers to use antibiotics. On the other hand, one could argue the

effect of availability of antibiotics since easy access might encourage customers to use antibiotics for minor illness.

The current study shows about 35% of antibiotics used without prescription as a self medications. This outcome is interesting as show most of antibiotics were prescribed by physician (65%). This rate is almost similar to the findings of a European study conducted in Italy 32.7% [30], 28.8% in SaudiArabia [31], 39.5% in Jordan [32], 29.8% in Cairo, Egypt [28], and the rate higher than reported in some European countries 19.8% in Romania, 15.2% in Spain, and 21.0% in Lithuania [33] and 9% in Hong Kong [15]. This difference might be because of variation of regulation from country to other and its enforcement, low level of awareness and education among population, drug availability and also physician don't follow guideline. However antibiotics usage without prescription was more prevalent among study participants in India 76% [26], and 73.9% in Sudan [34]. The high rate of self-medication in these countries in Libya may be related to the poor socioeconomic status, the high cost of physicians' fees, and inaccessibility of healthcare in some areas. Therefore, this highlights the need for policies of auditing antibiotic prescriptions in the health care facilities in Libya.

In this study, 39.2% of the participants reported that, the administration of antibiotics were prescribed by pharmacist. This finding higher than study in Cairo, Egypt (16.1%) [28]. This finding suggests wide practice of antibiotics administration without prescription. Thus, it is very important to look at the problem from pharmacy professionals' perspective and take necessary measures including introducing more strict regulation on dispensing the antibiotics without prescription.

Amoxicillin was the most commonly used antibiotics to treat a variety of minor symptoms without a prescription. Our findings are consistent with other study in Romania by Voidăzan *et al*., [26].

In current research we found, more than third of participants who receiving information from WHO webpage, the other third receiving information from social media pages and 24.9% of the participants say they received information about antibiotics from health care professional. A further 19.6% of participants say they found out via TV program and radio. Only 6.9% of participants say they got information from family or friends. According to the study where was done in Bhutan, Wangmo *et al.*, reported that the major source of knowledge on antibiotic use was from training programs (38%). This was followed by internet and social medias (19.7%). The least mentioned source of knowledge was from radios (5.9%) [35].

This study has some limitations. This study used an online survey that may present selection bias. However, this is less likely to affect our results, particularly as the survey was sent to participants who are increasingly using the internet and smartphones. In addition, our sample included more young age.

CONCLUSION AND RECOMMENDATION

This study provides a baseline of the knowledge, attitude, and practice regarding antibiotics among the Libyan community. Our population has sufficiency level in their knowledge toward antibiotic uses; expressed poor attitudes, as well as many had bad practices of antibiotics use. This finding will be useful in designing effective and targeted interventions to decrease misconceptions about antibiotic use and to increase awareness about the risks of inappropriate use of antibiotics in Libyan community.

The high rate of uses of antibiotics as self-medication in Libya Therefore, this highlights that need policies of auditing antibiotic prescriptions in the health care facilities in Libya.

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