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Antibiotics Self-Medication Among Medical and Non-Medical Students of Omar Al-Mukhtar University

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ABSTRACT

Self- consumption of antibiotics is being a big concern over the world, excessive as well as incorrect using of antibiotics give rise to various complications like spreading resistance of antibiotics, delaying in the disease diagnosis, masking the symptoms and making an infection worse which make it hard to find the appropriate treatment. This survey was conducted to determine prevalence, pattern of consumption, possible reasons, awareness as well as knowledge about self-consumption of antibiotics among both medical and non-medical students at Omar Al-Mukhtar University, Al-Bayda, Libya. A cross- sectional survey was carried out targeting both medical and non-medical students at Omar Al-Mukhtar University, Al-Bayda, Libya. 508 students were included in this research, 282 were medical students and 226 were non-medical students. The information was gathered from a printed questionnaire and an electronic questionnaire, which has been analyzed by using the Microsoft Excel software. Our research noticed that, the mean age was 22.215% for all participants, including males 259 (51.19%) and females 247 (48.81%). Approximately, 63.58% of Students practiced self-medication with antibiotics.59.54% of respondents picked the pharmacist as a preferred source of antibiotics. Moreover 20.6% of the students experienced antibiotics to treat sore throat during 6 months ago, while 19.08% of them had flu. Most students (72.18%) had a knowledge about the adverse effects of antibiotics while, 27.81% of them did not have any idea about the adverse effects. Fortunately, most students (70.7%) did not suffer any side effects. Penicillin groups (penicillin 20.4% and amoxicillin 17.32%) were the common self-consumed antibiotics between Omar Al-Mukhtar University students. Most students (70.79%) did not complete their antibiotics course and 4.42% of them had antibiotics for >7days. Self-consumption of antibiotics is common and widely spread between medical and non-medical Students at Omar Al-Mukhtar University, Al-Bayda, Libya. There is a pressing need to enforce legislation to regulate antibiotics access, more awareness campaigns are needed to spread knowledge about the possible complications of antibiotics between the students.

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INTRODUCTION

World health organization (WHO) defines self-consumption as "use of medication by individuals to treat self-recognized disorders or symptoms, the intermittent or continued use of medication previously prescribed by a physician for recurrent or chronic disease or use of medication advice by lay sources or health workers not entitled for prescribed drugs" [1].

Consumption of antibiotics without a prescription is a big concern over whole the world [2]. Huge and incorrect administration of antibiotics give rise to many problems [3]. Unlike other medications which have effects on patients only if used incorrectly, consumption of antibiotics can result in a delay in the disease diagnosis [3,4], masking the symptoms and making an infection worse, which make it hard to find the appropriate treatment.

The common reasons for consuming antibiotics without a prescription are the flu and upper respiratory tract infections like tonsillitis, which are self-limited and may lead to increased risk of bacterial resistance [5]. Antibiotics have many adverse effects which are usually tolerated because there is a huge need to treat the disease [3], but if used incorrectly can lead to increased risk of adverse effects like hypersensitivity, nausea,

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vomiting, diarrhoea, headache, teeth discoloration, liver and kidney problems. Furthermore, other adverse events such an increase in bacterial resistance may lead to secondary bacterial infections.

A rise in bacterial resistance makes treatment difficult, expensive and sometimes impossible and may lead to a significant increase in death rate. Self-used antibiotic is obtained from left over antibiotics in home pharmacy, uncompleted courses [2], from the relatives and from the pharmacies in the absence of supervision over the pharmacies [1,2]. There are many reasons for excessive using of antibiotics without a prescription among young adults, especially students, because they can easily get the information about the drug from the websites or leaflets, and they usually consume antibiotics on their own according to advice from friends or relatives [4]. However, self-medication in some cases may save lives of people if used correctly in acute diseases and decrease the treatment cost [1,2,4,6], especially, for patients who live in countryside and help to relive the pressure in the crowded hospital [2].

Antibiotics are compounds which produced by microorganisms such as bacteria or fungi, and they are capable of inhibiting or killing another microorganism in diluted solution [7]. The mechanism of antibiotics action is either by inhibiting the final stage of bacterial cell wall formation such as beta-lactam drugs [8], or by inhibiting ribosome and protein synthesis such as tetracycline [9]. The prevalence of tetracycline derivatives can lead to various complications including photosensitivity, onycholysis and nail discoloration [10], while diarrhoea, abdominal pain and other gastrointestinal problems are the most common side effects of azithromycin [11]. Moreover, allergic reactions, hypersensitivity, vomiting, pruritus and wheezing are the most dangerous side effects of penicillin [12].

Much research has been carried out on self-consumption in different places over whole the world, they reported the percentage of self - consumption as following; Brazil (22%), Italy (5%), USA (23%), Jordan (39.5%), Pakistan (7.26%), Sri Lanka (21%) and India (18%) [13]. The objective of this survey was to determine prevalence, possible causes, awareness as well as knowledge about self-consumption of antibiotics among medical and non-medical students at Omar Al-Mukhtar University, Al-Bayda, Libya.

Methods

Study design

A cross- sectional study was carried out between medical and non-medical undergraduate students from 7/2/2022 to 1/3/2022 in Omar Al-Mukhtar University, Al-Bayda, Libya.

Data collection

The data was obtained from two kinds of questionnaires, the first one is self-administered questionnaire which has been distributed among non-medical students to explain the difference between analgesics and antibiotics, while the second questionnaire is electronic for medical students who have some knowledge about this subject. The total number of questionnaires is 520 copies that have been distributed to medical students including pharmacy, medical, veterinary, dental students and non-medical students including numbers of law and literature students. The questionnaire has been divided into two sections; the first section was about demographics information (name, age, gender and collage), while the second section was about self-consumption practice and antibiotics use (e.g., Frequency, causes of self-consumption of antibiotics, source, kind of antibiotics, level of education about benefits and risks of self-consumption practice).

Statistical analysis

All information was analysed by using Microsoft Excel (2010) to calculate means, standard deviation SD and correlation coefficients.

Results

Using antibiotics without a prescription was dramatically observed between medical undergraduate students rather than non-medical undergraduate students. The prevalence of self-consumption between higher classes was dramatically common compared to lower classes.

508 medical and non-medical students were involved in this questionnaire-based cross-sectional study. Medical students were 282 while non-medical were 226 with a mean age of 22.22% for all participants. Males were 51.19% and females were 48.81% while the other features are represented in Table 1.

Table 1. General characteristics of participants

Parameters	Number	%	Means	SD
Gender				
Male	258	51.19	1.49	0.5
Female	247	48.81		
College type				
Medical	282	54.86		
Non-medical	226	43.97		
Age				
18-20	66	17.1	22.22	2.47
21-23	239	61.76		
24-26	75	19.38		
27-29	7	1.81		

Around 63.58% of the participants were practiced consumption of antibiotics without a prescription, while 36.41% of them consumed antibiotics under doctor's supervision as illustrated in table 2.

Table 2: Rate of self-medication.

Use of antibiotics without prescription	Number	%
Yes	323	63.58
No	185	36.41
Mean	0.364	
SD	0.48	

The different sources of antibiotics which helped to create judgments according to self-consumption were estimated in this survey. 59.54% of the students trust pharmacist to provide them the suitable antibiotics according to their situations without visiting a doctor, while 16.79%, 15.26% and 8.39% of the students relay on home pharmacy, others and relatives, respectively to get the antibiotics as shown in figure 1.

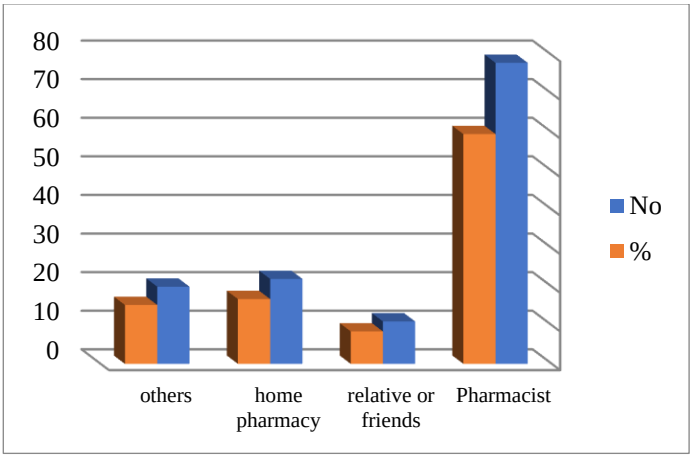

Figure 1. Sources of antibiotics used for self-medication.

The common illnesses which experienced by the students for consuming antibiotics were sore throat in 20.6% of students, while 19.08% of students had flu. Even though acne, ear infection and urinary tract infection represent the weakest causes of consuming antibiotics without a prescription (1.52%, 1.52% and 0.76%, respectively) as shown in figure 2.

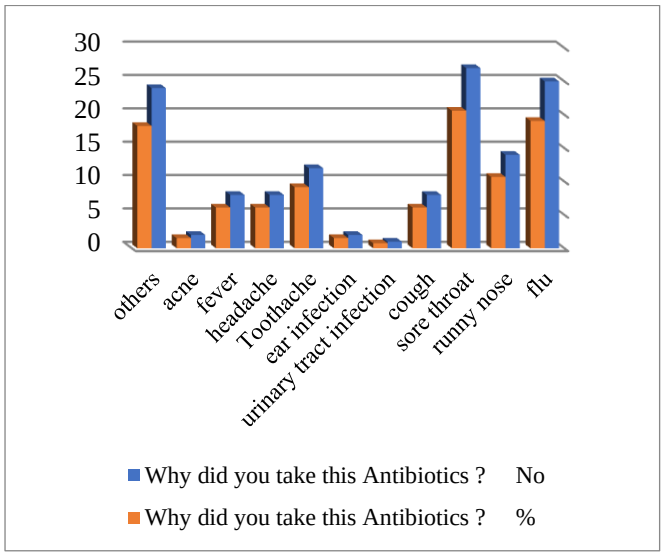

Figure 2. Pain/Illness experienced by students.

In addition, member of the family works in health field was the common cause of self-consumption of antibiotics with a rate of 30.46%, followed by same illness in the family (24.21%), then past practice with antibiotic (13.28%), while listening from others and poor economic status have same response rate of 7.81%, whereas living near to pharmacy, fearing from doctors and consulting costs were the weakest causes of self -consumption (5.46%, 3.9% and 1.565 respectively) as illustrated in table 3.

Table 3. Reasons of self-medication.

Reasons	No	%
Poor economic status	10	7.81
Same illness in the family	31	24.21
Member of the family works in health field	39	30.46
Consulting costs	2	1.56
Live near to pharmacy	7	5.46
Listening from other	10	7.81
Past practice with antibiotic	17	13.28
Fearing from doctor	5	3.9
Others	7	5.46
Means	4.015	
SD	2.35	

Finding of this survey showed that, most of the students (72.18%) knew about adverse effects of antibiotics, while 27.81% of them did not have any idea about adverse effects of antibiotics. Fortunately, most students (70.7%) did not suffer any side effects when they used antibiotics without prescription. Abdominal pain was the most common adverse effects that experienced by 8.44% of the student, followed by vomiting (7.7%), while diarrhoea, colic and constipation were noticed in 5.84%, 3.89% and 2.59% of the students respectively as shown in table 4.

Table 4. Side effects of antibiotic self-medication.

Side effect of antibiotic	No	%
Constipation	4	2.59
Abdominal pain	13	8.44
Diarrhoea	9	5.84
Colic	6	3.89
Vomiting	12	7.7
No side effect	109	70.7
Other	1	0.6
Mean	5.207	
SD	1.462409	

Moreover, antibiotics from penicillin groups (penicillin 20.4% and amoxicillin 17.3%) represents the common consumed antibiotics without a prescription between Omar Al-Mukhtar University students, followed by azithromycin (11.02%), while tetracycline, doxycycline, gentamicin and streptomycin were rarely consumed with an equal rate of 1.57% as illustrated in figure 3.

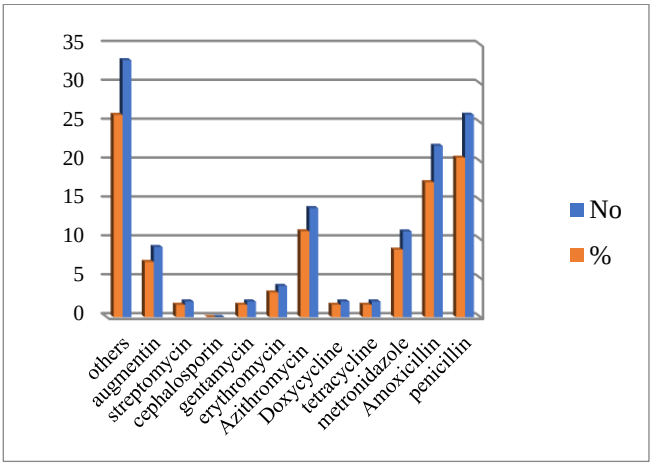

Figure 3. Distribution of antibiotic consumers regarding type of consumed antibiotics

Most students 70.79% used antibiotics for short period of time (less than 3 days) to relieve various symptoms, 24.77% of them consumed antibiotics from 3 to 7 days, while 4.42% of them used antibiotics for longer time (more than 7 days) as shown in figure 4.

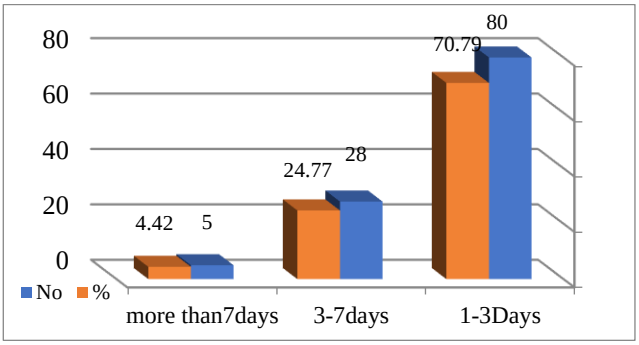

Figure 4. Duration of administered antibiotics

The outcomes showed that 54.72% of students did not use the antibiotics as prophylaxis, while 44.59% used them as prophylaxis. 60% of students were consulted the doctor when did not feel well after using antibiotics, while 23.87% of them claimed that they continued taking the antibiotics even though there was no improvement as shown in table 5.

Table 5. Possible decisions if they did not feel well after self-consumption.

What do you do if you do not feel good	No	%
Switch to another antibiotics.	13	8.38
Consult doctor.	93	60
Keep taking antibiotic until dose over.	37	23.87
Other	12	7.74
Mean	1.794	
SD	1.052	

According to our results, more than half of students (54.14%) keep the remaining dose for future use, while (33.12%) of them were riding it as shown in table 6.

Table 6. The percentage of consumers regarding the remaining dose

Dose remaining	No	%
Keep leftovers for future use	85	54.14
Prescribed to someone else	15	9.55
Rid it	52	33.12
Others	4	2.55
Mean	1.84	
SD	0.98	

Discussion

Antibiotics are like other medications in treating many diseases and limiting their spread. The WHO regarding research stated that self-consumption if administrated correctly and responsibly can play a crucial role in prevention of diseases without needing medical consultation [14]. However, in many cases self-consumption is used incorrectly between medical as well as non-medical undergraduate students specifically, because they are not aware of bacterial resistance that resulted from the irregular use of antibiotics, non-completing treatment course and consuming irregular doses. All these can lead to emergence of rapid mutation as well as resistant strains of pathogens.

The outcomes of this survey showed that the percentage of the participants who consumed antibiotics without consulting a doctor was 63.58%, which (181) 56% were medical students and (142) 44% were non-medical students. In comparison with another study that carried out to determine self-consumption of antibiotics in Jordan, the result showed that only 23% of the student were consuming antibiotics without a prescription [15]. In addition, Iran Collage where 53% of students practiced self-consumption [16], while in China, the percentage of the students was 47.8% [17] and 57% was the prevalence of self-consumption as the previous result from research conducted by Khalid et al .,2021 [18].

Thus, we conclude that Libya has an alarming high percentage of self-consumption of antibiotics. Although medical students have sufficient knowledge about bacterial resistance, they are more likely to consume antibiotics without visiting a doctor, and the reason for this finding may be due to their belief that they have sufficient experience to dispense treatment for themselves. The proportion of male was slightly higher (51.19%) compared with females (48.81%). This finding agreed with another research which done in Benghazi university where males were practiced self -consumed antibiotics more than females [19].

The findings of this survey reported that family members work in health field (30.46%, n=39) was most common factors of self-medication, and the same illness among family members comes in the second rank (24.21% n=31) followed by repeated antibiotics prescription (13.28%). The commonly consumed antibiotics are penicillin and amoxicillin, followed by azithromycin then metronidazole, these results agreed with A cross-sectional survey was

conducted at two universities in Moshi Kilimanjaro, Tanzania which amoxicillin was the commonly consumed antibiotic with prevalence 32.08 % [20]. However, these results are contradictory to another study done in Karachi in the year 2008 where metronidazole was the commonly used antibiotics [21], and Augmentin (37%), followed by Amoxicillin (23%) as the results of research which carried out at southern Punjab University in 2021 [18].

The reason for the frequent use of penicillin, perhaps because it is one of the oldest and the most famous types of antibiotics. 72.81% of students had heard about side effects of antibiotics and 27.81% had no knowledge about bacterial resistance. However, the percentages of self-medication antibiotics were very high. In this investigation, we found that sore throat and flu were among the most common reasons for using antibiotics and these diseases caused by viral infection rather than bacterial sources and not require antibiotics. These finding agreed with the results presented by the study in UAE [22], China [23], Italy [24] and also in Benghazi university [19].

Moreover, this study found that abdominal pain (8.44%) was the common adverse effect, followed by vomiting (7.79%). On the other hand, we found that the majority of students did not complete course of treatment, (70.79%) took antibiotics for short time (less than 3 days), which lead to negative effects on the stomach. A significant proportion of students (59.54%) choose pharmacists as a preferred source of antibiotics self-consumption, followed by relatives (8.39%), this finding agreed with a study conducted in Benghazi which noticed that the most common source of self-consumption was pharmacists (74%) [19]. This percentage can be reduced only if we educate our community about the risks of self-medication and if we hold those who break the laws by dispensing antibiotics without a prescription.

Conclusion

To conclude with, this study has discovered that self-consumption of antibiotics was common and highly prevalent between medical and non-medical undergraduate students at Omar Al-Mukhtar University, Al-Bayda, Libya. In comparison with non-medical students, the medical students were more prone to self-medicate themselves. At the policy making level, attention should be concentrated on the practice of selling antibiotics without a medical prescription. There is a pressing need to enact and enforce legislation which regulates antibiotics access and lots of awareness campaigns are needed to educate the students about the possible undesirable consequences and complications of irrational consumption of antibiotics without a medical prescription.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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