Incorrect Use of Antibiotics

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Abstract

The present study aims to determine the information about the safe and appropriate antibiotic which can be utilized among the undergraduate students of medical and dental colleges. The formula that was applied in the current study was an integrated self-administration approach. We found that dental students were more aware of the instructions provided by the doctor. They resorted to specialized assistance from healthcare professionals. Nevertheless, the observed difference between males and females in the medical profession in this study was significant where the females were more aware of self-medication compared to males. Furthermore, The findings of this research provide evidence about the self-medication prevalence. There was a sudden increase in the misuse of antibiotics other than being used for medicinal purposes. In dealing with this challenge, relevant healthcare bodies can play an important role in ensuring that self-medication is curbed through effective regulatory mechanisms. At the same time, they can offer information about the proper use of medications and various kinds of prescriptions.

Keywords: *Self-medication, Dental students, Antibiotic resistance.*

Introduction

Improper use of antibiotics is health, public, and a psychosomatic problem. Although there are increased cases of self-medication, a big concern arises when the drugs' far-reaching effects affect individuals abusing [1].For instance, when individuals become more depending on the information from newspaper adverts about drugs that can be used during their sickness instead of visiting health care professionals.

Whereupon, antimicrobial agents such as the antibiotics will continue to be abused. Frequent use of self-medication has Long-term detrimental effects if the antibiotics usage become more dependent [2]. This results in body resistant to organisms which are treated by the abused drugs [3-6]. Overall, this study strengthens the idea that self-medication among individuals who abuse the drugs can be a result of ignorance, lack of education on the proper use of drugs, extensive medication advertisement, and increased drug availability over the counter.

Methods

Previous studies had shown that a cross-sectional design study conducted sought to establish and make an estimation of antibiotic abuse among dental and medical students in Baghdad and Al-Iraqia university. The data were collected through conduction of both oral and written interviews among the students samples population.

Questionnaires were also issued to supplement the data results. In our survey, there was a sample population of 364 dentistry and medical students with a control group of 100 students who did not have a past record of self-medication and were exclusive of any serious diseases.

Results

The average age category for students who participated in our survey was between the ages of 20-23 years. The main survey's result was that about 47% of students who formed part of the sample population were found to be involved in self-medication.

Table 1: Demographic characteristics of research groups for incorrect usage of antibiotics

	Total	Male	Female
Gender	227	132 (58.15%)	95 (41.85%)
Medical students	46 (20.26%)	35 (76.1%)	11 (23.9%)
Dental students	181(79.74%)	97 (53.6%)	84 (46.40%)

Current study results refere to the serious challenge of antibiotics and other drug abuse on our community. Exceptionally, amongst the young population who represent the right foundation of the society members where they could be educated on a better way of accessing the right forms of medications and give them the insights on access to health care services through the proper channels. In the present study, common health problems that the participants sought to employ self-medication were the cough (25.1%), nasal congestion (10.2%), runny nose (19.82 %), sore throat (24.23%), and fever (8.8%), skin wounds (5.29%), diarrhea (3.96%) and other diseases (2.6%) as illustrated in Table (2).

Table 2: Distribution group of consumer's antibiotic based in the complaint(s)

Complain of using antibiotic	Total number	Percent%
Runny nose	45	(19.82 %)
Nasal congestion	23	(10.2%)
Cough	57	(25.1 %),
Sore throat	55	(24.23%)
Fever	20	(8.8 %)
Skin wounds	12	(5.29%)
Diarrhea	9.0	(3.96%)
Other	6.0	(2.6%)
Total	227	(100%)

We found that those who abused the drugs were influenced by social-cultural aspects such as stress, misguided life attitudes, and other social consumer bearings. For the students who were part of the survey, most of the drugs which they abused were obtained from the pharmacies. Students involved in self-medication noted that they borrowed this idea from local advertisements, opinion of family members (10.1%) from the viewpoint of friends, the others (14.1%) by experience or from previous prescriptions at the home or residence (11.894%) and from the advertisements (6.6 %) as shown in Table (3).

Table 3: The strategies of choosing Antibiotic

Selecting Antibiotic	Total number	Percent
Recommendation by community pharmacists	70	(30.83%)
Opinion of family members	60	(26.43%)
Opinioned of friends	23	(10.13%)
By experience	32	(14.1 %)
Previous doctor's prescription	27	(11.89%)
The advertisements	15	6.61%)(

To study the side effects of the increasing antibiotics' abuse, it is essential to assess whether self-medication increases the infection rate as a result of the congestion residential areas of students or not. Since research indicates that heightened self-medication and drug abuse levels can contribute towards making an individual's immune system resistant to the abused medications, congestion in the residential areas can increase the rate of infections when the students who abuse antibiotics are not able to recover when they contract diseases which are unresponsive to antibiotics as illustrated in Table (4).

Table 4: White Blood Cell Count and Differential in Patients and Control Group

	Patients (mean ±S.D)	Control (mean±S.D)
WBC Count x $10^3/\mu l$	9.38±2.11*	6.10±1.17
Hb gm/dl	12.26 6±1.7	13.77±1.5
RBC Count(x10 ^{6})	5.48±0.36	5.59±0.42

Neutrophile x 10^3/µl	6.26±1.38*	5.02±0.78
Monocyte x 10^3/µl	0.48±0.34	0.64±0.23
Eosinophile x 10^3/µl	0.67±0.29*	0.32±0.23
Basophile x 10^3/µl	0.16±1.26*	0.08±0.17
Lymphocyte x 10^3/µl	2.5±0.97	2.61±0.66

-*$p<0.05$

Self medication can play an important role in the increasing chronic illness and leads to medical complications that may affect the normal functioning of both the renal and liver function. To achieve a optimal level of life quality and patient care, professional pharmacist staff have the responsibility of taken the right measures that serve the interest of instilling effective and appropriate medication use across all social categories as shown in Table (5).

Table 5: Liver and Renal Test for Patients and Control Group

Parameters	Patients (Mean ±S.D)	Control (Mean±S.D)
AST(IU/L)	22.96±12.81	19.25±6.55
ALT (IU/L)	18.79±16.59	14.56±6.06
ALK(IU/L)	69.99±44.8*	62.58±19.85
Blood Urea(mmol/L)	4.51±0.86	4.50±0.59
Serum Creatnine (µl /L)	71.92± 11.27	69.62± 13.20

*$p<0.05$

AST: Aspartate transaminase.   -ALK: Alkaline phosphetase-.

-ALT : Alanine aminotransferase. - IU/L: International Unit/Liter

Discussion

In the current study, 90% of the antibiotic self-medication consumers for respiratory infection included nasal congestion, sore throat, cough, fever and runny nose with (19.82%) (10.2%) (25.1%) (24.23%) (8.8%) respectively. Antibiotics are essential but must be underestimated in dealing with simple infections that can be treated with full comfort and balanced food. The appropriate vitamins in our food have to be increased so that the immune system within our bodies can handle the sickness. Lack of proper regulation on the use of antibiotics as a result of diseases such a result of cold and influenza do not require antibiotics and are self-limiting [8].

A survey of self-medication among student population indicated that most of them abused the drugs and carried out self-medication based on misguiding information they received from friends and family, pharmacists and suggestions from media adverts as opposed to accessing health care services from legitimate professionals on the right medications to use [9]. Previous research indicates that medical students and other like-minded health professionals had great difficulties in tackling individual health concerns [10].

They arose mainly because of the nature of the competitive environments that they were exposed to while on duty. While the health profession is a tough discipline, the majority of the students either study or work under pressure. In this direction, the commitment to remain robust while undertaking various activities makes majority of them drift into self-medication to boost their awareness while in class [11].

Using the antibiotic at random or at a dose or duration that is not enough, bacteria strains are bound to resist treatment with various kinds of antibiotics meant to treat them [12]. The current study focuses on the antibiotics impact on the health, thus, we tried to measure a complete blood picture with control group compared as illustrated in table (4). Red blood corpuscles, packed cell volume, hemoglobin level showed an insignificant variance in the mean between patients & control group.

The white blood cells count, and the differential count (neutrophils, eosinophil's basophils) show a significant difference between patients & control. The high level of the white blood cell count can indicate that the immune system is active in order to fight the infection.

Neutrophils are the powerful white blood cells that destroy bacteria and fungi while eosinophil and basophils mostly combat allergies [13]. More antibiotic used leads to the greater chance of an antibiotic-resistant bacteria. The bacteria is an organism which is alive and which has the ability to defend and adapt itself against antibiotics in through many ways like by means of secreting certain enzymes so as to reduce the antibiotic effectiveness. Therefore, we should use this treatment cautiously [14].

On the other hand, Liver enzymes such as Aspartate transaminase, alanine aminotransferase shows an insignificant difference between patients & control group (Table 5). The high level of these two enzymes may appear in case the drug toxicity in patients bodies which had receive combination therapy. This result is consistent with other studies [13].

While alkaline phosphatase shows a significant elevation in patients more than the control group, the same results consistent with many studies, it occurs due to the side effect of treatment. [15]. In addition to the cause of increased liver enzymes, Cytokine production lead to the release of enzymes such as alkaline phosphatase in the blood.

Due to medication, counteractions may occur as some of the anti-drug cause liver damage resulting in increased release of these enzymes in the blood stream [16]. As a result of the challenges that have been specified from drug abuse and also from self-medication. The relevant organizations put up stringent measures to ensure that access to drugs is made through the right channels. Furthermore, the necessary government organizations canplay role in regulating the supply of drugs in health care facilities and over the counter [17]. As indicated by the many other researchs which have been conducted, pharmacies and drugs adverts require the right form of regulation in scaling down self-medication levels [18].

At present times, the fact that antibiotic resistance is on the rise puts to risk and threatens the professional ability to treat some of the infectious diseases. For instance, growing infections such as tuberculosis, pneumonia, gonorrhea, and blood poisoning have continued to become harder and more challenging to treat due to bacterial resistance [19]. If the fight against the antibiotics is to be won, strict forms of regulation and distribution of these drugs have to be tightened to ensure that individuals do not depend on over counter medications to the extent that they destroy their immune systems [5].

If this behavior is not adequately controlled, the rise in infections may contribute to more deaths among patients. In developing countries, where self-medication rates are higher than the developing countries, setting up of standard treatment guidelines will make progress in helping tame this menace. Effective control and regulation mechanism by the relevant stake holders will significantly help in managing and keeping infections among the patients at a manageable level.

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