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Measuring Students' Awareness Of Using Antibiotics In Treating Respiratory Tract Infections In Universities Of Baghdad, 2020-2021.

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Abstract

Background:

The emergence and spread of pathogenic bacteria that are resistant to antibiotics have become a major public health concern. The incorrect prescription, inappropriate consumption, and excess use of antimicrobial drugs, specifically antibiotics, are possibly the main factors contributing to the widespread antibiotic-resistant bacteria. This study aims to assess the prevalence of students who use antibiotics without consulting doctors in Baghdad Universities, check which antibiotic is more frequently being used as over-the-counter (OTC), and determine the regularity of antibiotics intake.

Subjects and Method: This cross-sectional study was conducted between 2020/October and 2021/January in Baghdad (Iraq) in which 150 students from many universities completed an online questionnaire that included student's name , gender , age , university & college, stage, smoking status, and clinical information about the disease and the antibiotics regarding the type, duration, and improvement. Statistical calculations were conducted using SPSS Statistics and Microsoft Office Excel.

Results:
High rates of antibiotics without a prescription were identified in our study: 62.7%. The drug most often used for self-medication was amoxicillin (60.6%). Antibiotic use, duration of treatment and outcome did not show an association with any of the cross-tabulated variables (p > 0.05). On the other hand, antibiotic type showed a significant association with gender (p=0.015) and smoking status (p=0.023) but no significant association with other variables (p > 0.05). 32.5% of amoxicillin and azithromycin users took the antibiotics regularly in the full course. Regularity of amoxicillin or azithromycin intake did not show a significant association with either gender or stage.

Conclusion:
Self-medicated antibiotics are a very common practice among students in our study, especially medical ones. Amoxicillin is the most widely used antibiotic. Many students who participated in our study don't have any idea about the full course of using antibiotics.

Keywords: Antibiotics, awareness, Respiratory Tract Infection, Baghdad Universities.

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1. Introduction

Antibiotics are type of antimicrobial agents, used for the management of bacterial infections. These drugs are not effective against viruses (e.g. Those of common cold and flu), and no single antibiotic can cure all forms of infections [1,2]. Improper utilization of antibiotics permits the emergence of resistant bacteria [2,3]. And also, this may lead also to the development of side effects and increasing the cost of healthcare services [4,5]. Acute respiratory tract infection (ARTI), which includes acute uncomplicated bronchitis, pharyngitis, rhino-sinusitis, and the common cold, is the most common reason for acute outpatient physician office visits and antibiotic prescription in adults. Antibiotics are prescribed at more than 100 million adult ambulatory care visits annually, and 41% of these prescriptions are for respiratory conditions [6].

In the United States, at least 2 million antibiotic-resistant illnesses and 23 000 deaths occur each year, at a cost to the U.S. Economy of at least $30 billion [7].

In one study in Al-Bayan University in Iraq, the prevalence of self- medication with antibiotics revealed a higher rate among medical students which considered as a health problem [8.]

Another cross-sectional survey was conducted in Al-Mustansiriyah and Al-Nahrain universities to find out the prevalence and determinants of self-medication among college students in Baghdad, showed that Antipyretics and antibiotics were the most used medicines [9]. Poor knowledge was detected among the non-medical students towards antibiotics usage in cross sectional study that was conducted among non-medical students at the University of Fallujah, Iraq [10]. Higher rates of self-medication with antibiotics were also reported among university students of Saudi Arabia, UAE and Egypt [11]

In places with greater rates of broad-spectrum antibiotics prescriptions, specifically extended-spectrum cephalo-sporins and macrolide, rates of multi-drug resistant pneumococcal disease are higher [12]. Educational initiatives on the correct use and prescription of antimicrobial drugs, addressed to both the general population and health care professionals, should thus be promoted [13].

The World Health Organization (WHO) has highlighted the role that can be played by general people to prevent and control the spread of resistance, and several key elements were identified: i) using antibiotics only when prescribed by a certified health

professional; ii) never demanding antibiotics if health worker finds there is no need for them; iii) steady follow-up to advice of health worker when using antibiotics; and iv) avoiding share or use of left over antibiotics [14]. Nevertheless, a large amount of evidence worldwide has showed widespread defects in population knowledge and attitude about antibiotics which affect their usage [15,16].

1-3 Aim of Study:

1) To assess the prevalence of students who use antibiotics without consulting doctors in Baghdad Universities.

2) To check which antibiotic is more frequently being used as over the counter OTC.

3) To determine the regularity of antibiotics intake.

2. Materials and methods

2.1. Study population:

All students who have symptoms of respiratory tract infections (fever, cough and shortness of breath) in universities of Baghdad.

Inclusion criteria were all students aged ≥18 years, but have knowledge about the meaning of term 'antibiotic', and accepted to participate.

Exclusion criteria: Students of Iraqi universities other than those in Baghdad governorate.

2.2: Study design and Sample size:

A Cross sectional study relies on data collected through online survey on social media platforms. It was conducted from 1st October 2020 to 1st January 2021 from University of Baghdad, Al-Nahrin University, Al-Mustansyriah University, Al-Iraqia University and 150 students were enrolled from different stages and colleges.

2.3. Operational definition:

Antibiotic: A drug used to treat bacterial infections.

Respiratory tract infection (RTI) is defined as any infectious disease of the upper or lower respiratory tract. Upper respiratory tract infections (URTIs) include the common cold, laryngitis, pharyngitis/tonsillitis, acute rhinitis, acute rhinosinusitis and acute otitis media while Lower Respiratory Tract infections (LRTIs) include pneumonia and TB.

2.4. Data collection:

The data was collected using an online questionnaire on Facebook, Instagram and Telegram groups. The following information was included:

- Student's general information: name, gender, age, university & college, stage and smoking status.

- Clinical information: symptoms (fever, cough, shortness of breath), doctor consultation state, self-prescribed antibiotics, the type, duration, number per day of usage and improvement state.

2.5. Statistics:

Statistical calculations were conducted using IBM SPSS Statistics 2018, and Microsoft office Excel 2010. The parametric variables were presented and statistical analysis was performed using Chi-square and Fisher's exact test to analyse various selected variables. Statistical significance was accepted for $p < 0.05$ (significant) and $p > 0.05$ (non-significant). Consulting physician, antibiotic use and type, duration of treatment, and outcome were cross-tabulated with gender, age group, stage and smoking status and tested for. Regularity was cross-tabulated with stage and gender.

2.6. Human Ethical Approval:

Students who agree to participate will enter the link of the questionnaire, others who won't agree, won't enter. The data was collected anonymously, the students wrote their name but this information was just for identity and wasn't used in the study or shared elsewhere.

Operational definitions of antibiotics regularity:

Regular doses were defined as:

Amoxicillin 500 mg 1x3 for 6-10 days

Azithromycin 500 mg 1x1 for 5 days [17,18.]

3. Results

One-hundred and fifty students filled the questionnaire with females forming 82% of the sample. Students aging 21-23 years formed 59.3% of the sample followed by 33.3% of those aging 18-20 years (Fig.1). The largest proportion of participants (58%) were medical students followed by pharmacy students (22.66%) and dentistry students (10.66%). Students from the 1st, 3rd and 4th stages had approximately similar rate of participation with 20.7%, 23.3% and 24%, respectively (Fig.2)

Notably, 94% of the students did not smoke and when they developed symptoms, only 37.3% of them consulted physicians before taking antibiotics (Fig.4). Amoxicillin was the most commonly used antibiotic (60.6%) followed by Azithromycin (29.8%) (Fig.3). About half of the students used antibiotics for 1-3 days but only 14.9% used them for more than 6 days.
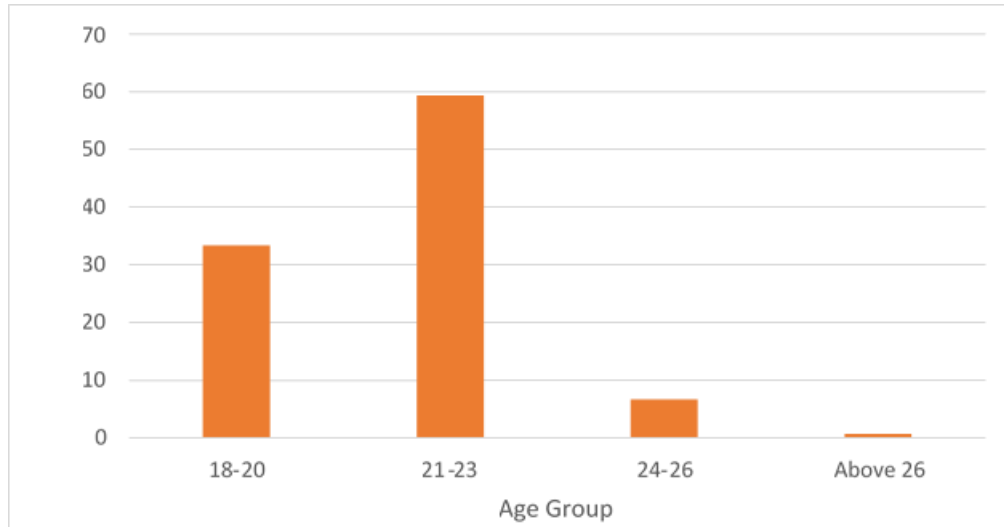
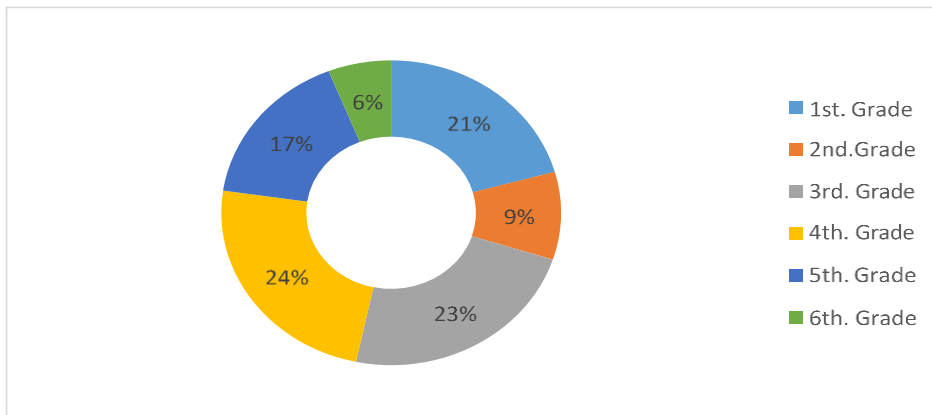Figure 1. Percentage of participants from each age group
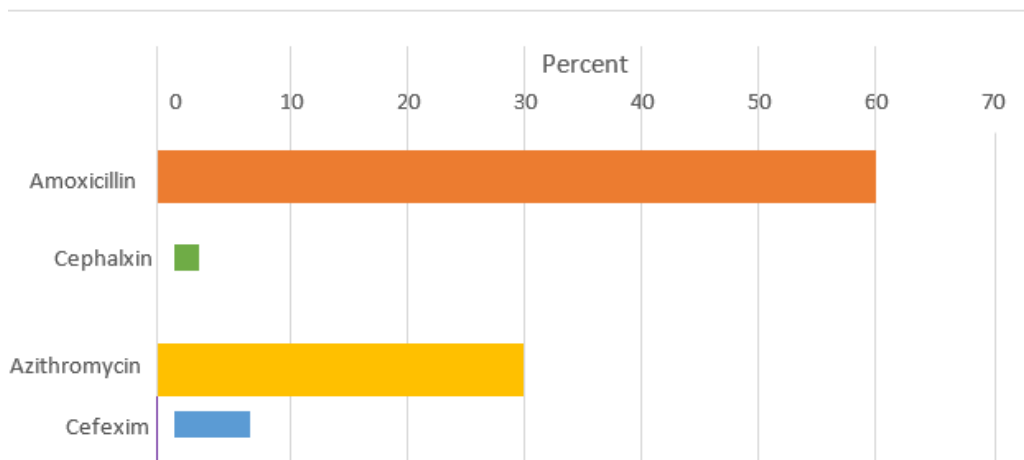

Figure 2. Percentage of participation from each grade

Figure 3. Types of antibiotics used.

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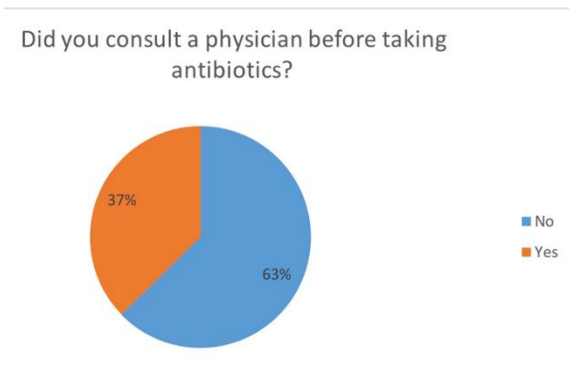
More than half (62.7%) of the students used antibiotics and Once-daily dosing was reported by 41.9% of students followed by thrice- daily dosing with 34.4% of students. Interestingly, 96.7% of students reported getting better after taking the antibiotic.

Figure 4. percentage of students who consulted physicians

Did you consult a physician before taking antibiotics?

- No 63%
- Yes 37%

Consulting physician, antibiotic use and type, duration of treatment, and outcome were cross-tabulated with gender, age group, stage and smoking status and tested for association (Table.1). Consulting a physician did not show significant statistical associated with gender, age group, stage or smoking status ($p > 0.05$). Likewise, antibiotic use, duration of treatment and outcome did not show association with any of the cross-tabulated variables ($p > 0.05$). Antibiotic type showed significant association with gender ($p=0.015$) and smoking status ($p=0.023$) but no significant association with other variables ($p > 0.05$).

Table.1 Cross-tabulation and level of significance (p values) of different variables		
Variable	Associated Variable	p-value
Consultation	Gender	0.826
	Age group	0.620
	Stage	0.824
	Smoking status	0.156
Antibiotic use	Gender	0.586
	Age group	0.307
	Stage	0.237
	Smoking status	0.188
Antibiotic type	Gender	0.015*
	Age group	0.622
	Stage	0.855
	Smoking status	0.023*
Duration	Gender	0.814
	Age group	0.373
	Stage	0.374
	Smoking status	0.870
Outcome	Gender	0.465
	Age group	0.385
	Stage	0.900
	Smoking status	0.980

Females were more likely to use amoxicillin while males used cefixime more frequently but azithromycin and cephalexin did not show difference between the two groups. Smokers were more likely to take cephalexin and azithromycin while non-smokers tended to use amoxicillin.

From the 83 students who used amoxicillin or azithromycin, 32.5% of them took the antibiotics regularly in full course. The remaining 11 students were distributed over other types of antibiotics. Regularity of

amoxicillin or azithromycin intake did not show significant association with either gender or stage (year of study).

4. Discussion

Improving public Awareness towards self-medications is a very important role each doctor and pharmacist is responsible for and is basically achieved by proper education regarding the adverse effects of OTC medications and the benefits of doctor consultation all these to achieve better results.

In our study, around 150 Students filled the questionnaire and only 37.3% of them consulted doctors once they have symptoms of respiratory tract infection and about 62.7% of them used antibiotics without consulting doctors. This relatively small percentage of doctor's consultation along with the relative high percentage of self-prescribed antibiotics reflects the availability of drugs without doctor prescription, the malpractice of antibiotics among pharmacists, the poor knowledge regarding the antibiotics side effects.

Amoxicillin was the most commonly used one (60.6%) may be because it is widely available in the community. This agreed with another survey that was conducted in Yogyakarta, Indonesia about antibiotics self-medication and over the counter drug use among 96 undergraduate medical students,

of these 49% self-medicated with antibiotics during the last year and again Amoxicillin was the most common antibiotic used representing 62% [19].

In survey that was conducted among pharmacy students in Iraq, 63.3% of students enrolled had indulged in self-medicated practice [20]. A high prevalence of self-medication was also found among medical students in Falluja & Anbar Universities [21].

A survey of patient behaviours and beliefs regarding antibiotic self-medication for respiratory tract infections was conducted in Poland and showed that 41.4% of patients reported self-medication with an antibiotic for RTI [22]. Furthermore, another survey conducted among Iraqi patients in Baghdad city also showed high rate of self-medication among different sociodemographic characteristics for wide variety of clinical conditions whether simple or not [23].

This displays that over the counter use of antibiotics is a major problem not only among medical and non-medical students but also among community in general.

Gender and year of study were not significantly associated with self-medication among participants in our study similar to other studies [24,25].

Regarding regularity of amoxicillin and azithromycin intake and whether it was taken

in full course or not, only 32.5%(n=27) of students who used either of those antibiotics(n=83) took the antibiotics in full course .this is supported by a cross sectional study among 440 undergraduate medical students of Mahadevappa Rampur Medical College Gulbarga, Karnataka, India about self-medication practice , 63.91% of students self-medicated with antibiotics out of which only 37.1% completed the full course of antibiotics regimen[26].

This study gives a good view for the prevalence of students who use antibiotics without consulting doctors in Baghdad Universities and the most frequently used one as OTC.

While the main limitations were small sample size, short period of the study and the sample was non-randomised therefore we cannot generalise the results to the entire population from which the sample has been drawn so it does not represent the community attitude.

In conclusion, Limited knowledge concerning proper antibiotics usage among students of Universities of Baghdad. Most students have been taking antibiotics without prescription. Amoxicillin was the most commonly used one followed by azithromycin. Most students did not take the antibiotics in full course.

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