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Prevalence of Antibiotic Misuse among Jazan University Students

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Abstract: **An antibiotic is a drug that kills or slows the growth of bacteria. Antibiotics have wide variety of uses but still their misuse can lead to resistance towards wide range of pathogens and bacteria. This may lead to face new set of threats to public health so the rational prescription of antibiotics has become a central focus of professional and public health measures to fight the spread of resistant organisms.**
Objective: The study conductedto assess the awareness of Jazan University students about antibiotics use by evaluation of prevalence of antibiotic use with common colds.
Method: A cross sectional study conduct in Jazan University conducted in medical and non-medical, all student males and females are included. The Sample size was 440 and the data collected by the non-structure self-admitted questionnaire and analyzed in SPSS program.
Result: The number of students studied was 440 the males was 49. 8% and the females was 50. 2%. thepercent of medical students 50. 2% and the percent of non-medical students 49. 8%. the study showed there is significant difference in antibiotic use with common cold between medical and non-medical students 48. 9%, 59. 4% respectively. The major causes for this use is common cold by 56. 4 % among other causes.
Conclusion: This study found antibiotic use with common cold is high among Jazan University student. There is no different in gender, social status and residence in antibiotic missus on other ways the effect of education leading to different between medical and non-medical student.

Keywords: Antibiotics, misuse, **Resistance; Prescription.**

1. INTRODUCTION

An antibiotic is a drug that kills or slows the growth of bacteria. Antibiotics are one class of antimicrobials, a larger group which also includes anti-viral, anti-fungal, and anti-parasitic drugs. Antibiotics are chemicals produced by or derived from microorganisms (i. e. bugs or germs such as bacteria and fungi). The first antibiotic was discovered by Alexander Fleming in 1928 in a significant breakthrough for medical science. Antibiotics are among the most frequently prescribed medications in modern medicine. Some antibiotics are 'bactericidal', meaning that they work by killing bacteria. Other antibiotics are 'bacteriostatic', meaning that they work by stopping bacteria multiplying. Each different type of antibiotic affects different bacteria in different ways. For example, an antibiotic might inhibit a bacterium's ability to turn glucose into energy, or its ability to construct its cell wall. When this happens, the bacterium dies instead of reproducing. Some antibiotics can be used to treat a wide range of infections and are known as 'broad-spectrum' antibiotics. Others are only effective against a few types of bacteria and are called 'narrow-spectrum' antibiotics.

Antibiotics have wide variety of uses but still their misuse can lead to resistance towards wide range of pathogens and bacteria. This may lead to face new set of threats to public health [1].

World Health Organization (WHO) defines the Antimicrobial resistance (AMR) as “the resistance of a microorganism to an antimicrobial agent to which it was originally sensitive”. [2]. The Antibiotics is given in 68% of acute respiratory tract cases and the 80% of these according to disease control center (CDC) guidelines were unnecessary. The annual spent on

unnecessary antibiotic prescriptions for adult upper respiratory infection is $1. 1 billion. When antibiotics fail to work, the pattern of disease become longer, repeated doctor visits or long hospital stays, and the need for more coasty and toxic drug [3]. World health leaders have described antibiotic- resistant microorganisms as "nightmare bacteria" that "pose a catastrophic threat" to people in every country in the world [4]so the rational prescription of antibiotics has become a central focus of professional and public health measures to fight the spread of resistant organisms. [5]

The pattern of resistance towards microbial agents is different for developed and developing countries. In developing countries there are resistant microorganisms which are still regarded as susceptible in developed countries. So the criteria for treating pathogens with antimicrobial agents are different at the level of developed and developing countries [6]. Antibiotics resistance with some microorganisms is becoming a serious problem especially for our community. This resistance is developing just because of misuse of antibiotics. The reason behind inappropriate use of antibiotics may be that people use antibiotics on self-medication basis and don't follow complete pattern regarding the use of antibiotics. Once resistance has been established it can't be reversible and hence it will be difficult to treat variety of different infections caused by different organisms [7]. There may be several factors leading to the misuse or overuse of antibiotics. These factors which lead to misuse of antibiotics may be at the patient level or at the level of doctors. Behind misuse of antibiotics several factors are laying that resist patient to use antibiotics appropriately. These factors can me named as cultural factors, behavioral factors, socio-economic status of patients and level of education both at the level of health care professionals and patients especially in our community [8]. It may be concluded that in developing countries the antibiotics that are at the level of bacterial resistance are generally inexpensive and broad spectrum. It is not wrong to say that the misuse of antibiotics is more at clinical practices rather than at public health personnel, because it is more common at the level of private practitioners that they charge higher fees and here the demands for antibiotics is higher and hence because of this reason more drugs are available in private clinics as compared to public hospitals. It is also common in most of the developing countries that the purchasing of antibiotic is done without prescription. This practice is more common in African, Asian and Latin American countries. Antibiotics can be available readily at patent drug stores, roadsides and hawkers, and hence in turn people don't use antibiotics for particular exact type of infections and if it is for particular type of infection than they don't follow complete course of that antibiotic which leads to resistance [9]

The most related study for this study is a cross-sectional study on knowledge, attitude and behavior was done related to antibiotic use and resistance among medical and non-medical university students in Jordan at 2012 the result showing the scoring level analysis revealed inadequate of the knowledge, high rate antibiotic use and self-medication among students with neglecting their specialty. 28. 1% of medical and 44% of non-medical students agreed that antibiotics effective in common colds. There is 61% of students did not terminate their last course of antibiotic, 31. 2% of student ask their physicians to prescribe the antibiotic. So they conclude that there are gaps regard the knowledge, attitude and practice related to antibiotics use between students were observed [10]

At national level in Saudi Arabia. A statistical investigation of patient factor in development of antibiotic resistance: A study in Eastern province in Saudi Arabia employed in patients in the outpatient settings of large-sized hospitals at 2012. The result showing only 18. 8% of the patient have knowledge regarding drug resistance and 24. 3% of the patient was follow their prescribed antibiotic treatment. These two factors identified as primary factors of concern for future attention [11]. Irregular antibiotics use is the primary causes for the antibiotic resistance spreading. Earlier studies from KSA, Jordan and another country indicated irrational antibiotic use among the public.

This study conductedto assess the awareness of Jazan University students about antibiotics use by evaluation of prevalence of antibiotic use with common colds, and to detect the source of antibiotic misuse.

2. METHODS AND MATERIAL

A cross sectional study conduct in Jazan University which, is one of leading universities in KSA have different faculties contain different specialist. This study conduct in four faculties tow medical and tow non-medical, all student males and females are included. Sample size 440 selected by using of cluster - cluster - simple random sampling method. The sample size calculated by using the following formula for simple random sampling.

$n=z2p\ (1-p)/d2$

The data collected by the non-structure self-admitted questionnaire which composed the demographic characteristic, questions to assess theantibiotic use with common coldand the factor related to it among universitystudents. Data verified, cleaned, entered and analyzed in SPSS program by descriptive statistics (frequencies, cross-tabs, chi square and p-value = 0. 05).

3. RESULTS

The number of students studied was 440 and the background characteristic of these students in this study (table 1). The table showsthe maleswas 49. 8% and the femaleswas 50. 2%,90% of these students was single and 40. 9% of them come from urban areas and 58. 4% from rural areas. Age groups of the students ranges from 18 years old to 29 years old (with 7% of them less than 20 years old, 80%of them from 20 to 25 years and 1. 6% of them plus 25 years old). Total number of students from the medical colleges 50. 2% (25% of them students of medicine, and 25. 2% students of applied medicine), and the total number of students from non-medical colleges 49. 8% (25%of them from sciences college, and 24. 8% from business college).

Table 1: Background characteristic of Jazan University students included in this study

Characteristics		**Frequency**	**%**
Gender	Male	219	49. 8
	Female	221	50. 2
Social Status	Single	396	90
	Married	39	8. 9
	Missing	5	1. 1
Residence	Urban	180	40. 9
	Rural	257	58. 4
Age Of Student	< 20	31	7
	20 – 25	352	80
	>25	7	1. 6
	Missing	50	11. 4
Type of Education	Medical	221	50. 2
	Non – Medical	219	49. 8
College	Medicine	110	25
	Applied medicine	111	25. 2
	Sciences	110	25
	Business	109	24. 8

The frequency of antibiotic use with common cold (table 2) related to (gender, social status, residence, age of students, type of education and their college). Regarding the gender of student, the females use antibiotic with common cold more than the males 56. 6%, 51. 6% respectively, the social status married students use antibiotic with common cold more than single students 59. 0%, 53. 6% respectively. There is slightly difference between rural and urban areas 54. 9%, 52. 8% respectively. In These factors there are no significant difference P-value>0. 05.

Otherwise, there is significant difference in antibiotic use with common cold between medical and non-medical students 48. 9%, 59. 4% respectively. Indetails; medicine college 34. 5%, science college 57. 3%, business college 61. 5%, applied medicine college 63. 3% in general different ways of education lead to this significant difference P-value<0. 05.

Table 2: Frequency of antibiotic use with common cold related to different background characteristic of jazan university students

Characteristics		Size of the problem		
		Antibiotic use with common cold		P-value
		Total No.	% of use	
Gender	Male	217	51. 6	0. 299
	Female	221	56. 6	
Social Status	Single	394	53. 6	0. 517
	Married	39	59. 0	
Residence	Urban	180	52. 8	0. 662
	Rural	255	54. 9	
Type of education	Medical	219	48. 9	0. 027
	Non-Medical	219	59. 4	
Colleges	Medicine	110	34. 5	0. 000
	Applied Medicine	109	63. 3	
	Sciences	110	57. 3	
	Business	109	61. 5	

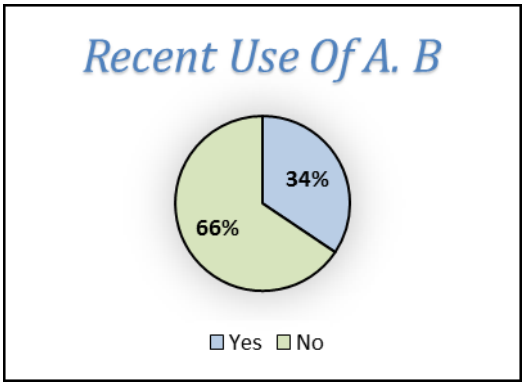

Figure 1: Percent of students who recently (within last year) used antibiotic.

The pie chart in Figure 1 describe the percent of students whose used antibiotic within last yearby 34%, and the percent of students who did not 66%. The reasons for this use shown in the graph in the Figure2. The common cold represent 56. 4 % of causes of antibiotics use within one year.

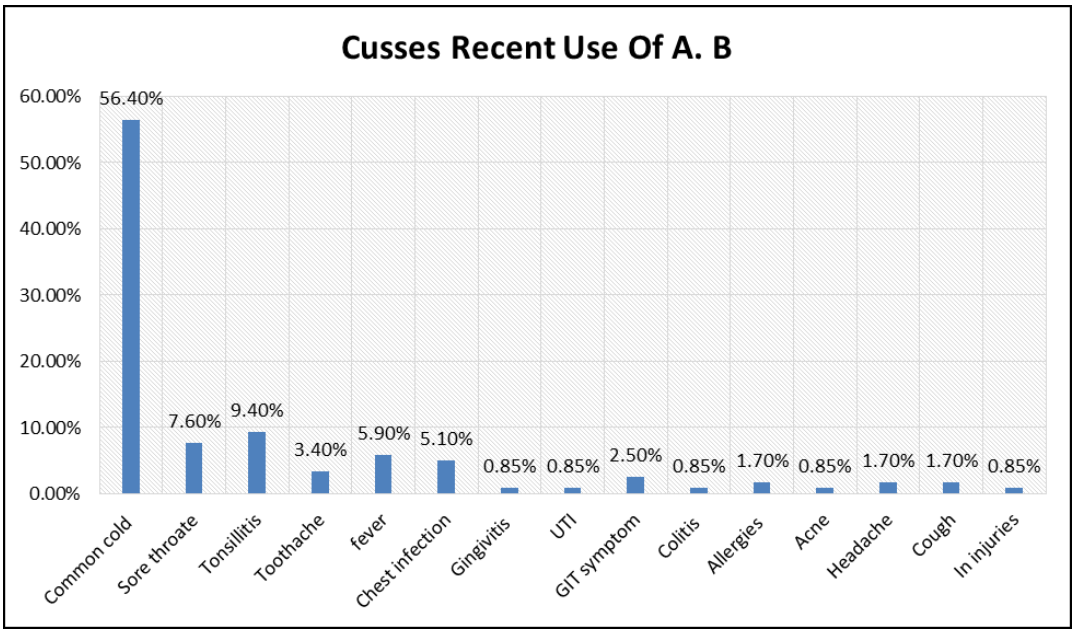

Figure 2: The percent of causes of antibiotics use within one year

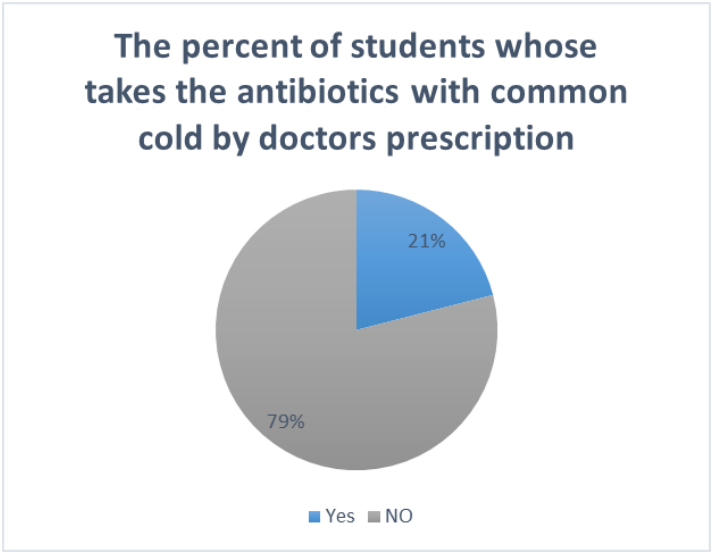

Figure 3: The percent of students whose takes the antibiotics with common cold by doctor's prescription

This Pie chart in Figure 3 shows the percent of students whose takes the antibiotics with common cold by doctor's prescription 79% and the students whose use without prescription 21%.

The other Sources of antibiotic usewithout prescriptionamong Jazan University students showedin table 3. The percentageof antibiotic use by advice from a friend or relative was 54. 6%, from the pharmacist was 73. 2% and home pharmacy 62. 4%. The major source of antibiotic prescription other than the doctors was from the Pharmacistby 73. 2% so, we asked all students if faced refused from the pharmacist if antibiotics requestedwithout doctor's prescription and they did not refuse.

Table 3: the percent of using the antibiotic from sources other than the doctor

Sources		Frequency	%	Total N0.
Use from advice of friend or family	Yes	147	54. 6	269
	No	120	44. 6	
	Missing	2	0. 7	
From the pharmacist	Yes	197	73. 2	269
	No	69	25. 6	
	Missing	3	1. 1	
Home Pharmacy	Yes	168	62. 4	269
	No	97	36	
	Missing	4	1. 4	

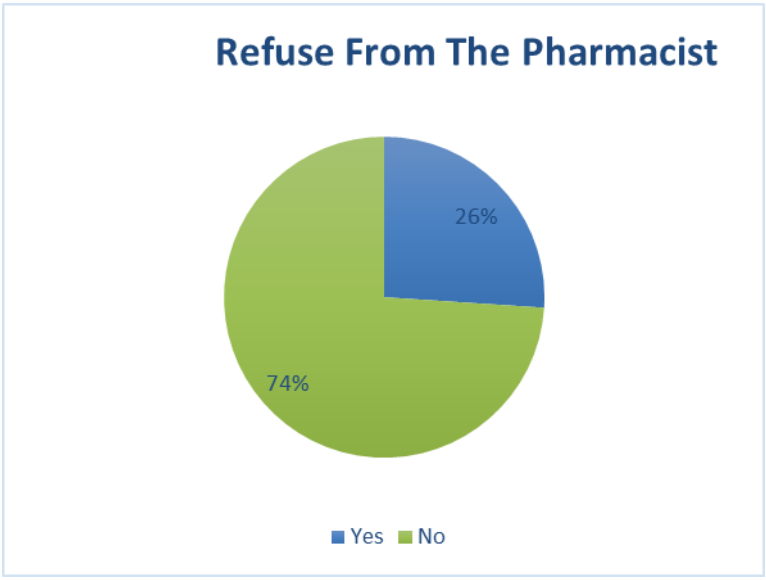

Figure 4: the present of PharmacistRefusal when someonerequest the antibiotics without prescription

This pie chart shows percent of pharmacist who did not refused the request of antibiotics without prescription74% and the percent of refusing the request of antibiotics without prescription26%.

4. DISCUSSION

The uncontrolled use of antibiotics is a well-established reason for antibiotic resistance due to the emergence of virulent strains of resistant microbes, which seriously affecting the health. [10]

An overall, antibiotic use with common cold in this study compared to Jordan study with 43. 7% in medical students and 62. 8% for the non-medical while the result of this study is more in the medical students48. 9% and non-medical students 59. 4%, this result show that there is more use of antibiotic with common cold among Jazan University students. [10]

Regarding this results also we look for the students who used antibiotics within last year the percent of them 34% of total number of students. We found the common colds is the more prevalent cause by 56. 4% followed by tonsillitis 9. 4%, sore throat 7. 6 % and the other cusses represent around 5% or less.

So, the acute respiratory tract infection represents the most common cusses and according to disease control center (CDC) guidelines theantibiotics which given with acute respiratory tract cases represent 68% and the 80% of these were unnecessary. [3]

The study connected in Jordan at 2012 about knowledge, attitude and behavior related to antibiotic use and resistance among medical and non-medical university students the result showing the scoring level analysis revealed inadequate of the knowledge, high rate antibiotic use and self-medication among students with neglecting their specialty. We found 21 % of student takes antibiotics with doctor's prescriptions while who are takes it without prescriptions 79%. [10] The sources of self-prescribesantibiotics in this study was from friend or relative advice 54. 6%, from the pharmacist 73. 2% and from home pharmacy 62. 4%.

5. CONCLUSIONS

This study found antibiotic use with common cold is high among Jazan University student. There is no different in gender, social status and residence in antibiotic missus on other ways the effect of education leading to different between medical and non-medical student. We recommend to apply the health policy on the pharmacist who prescribe the antibiotic without doctor prescription, Conduct researches in antibiotic field to discover new antibiotics to cover the resistant organisms, and awareness programs for university students.

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