

# “Educational-Staff Knowledge and Attitude towards Antibiotic Use in Technical Institute of Karbala”

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## ABSTRACT

**Background:** Antibiotics are compounds that produce by microorganisms (bacteria, fungi) that inhibitory action on the growth of other microorganisms. Irrational antibiotic use has led society to antibiotic resistance a serious health problem worldwide. 23000 deaths per year from antibiotic resistant bacteria and seventeen common disease-causing bacteria have antibiotic resistant versions nevertheless only few studies had conducted in Iraq on this subject.

**Objective:** The aim of this study was to assess knowledge and attitude toward antibiotics use for educational-staff in the Technical Institute of Karbala.

**Objects and Method:** Across sectional survey study using with an interviewer administered questionnaire. Data collected from a random sample of **200** educational - staff in the Technical Institute of Karbala, regarding their knowledge and attitude about the effectiveness of resistance toward and self-medications of antibiotics. Statistical analysis done by using Chi-Square ( $\chi^2$ ) test.

**Result:** In total of all participants, those completed the questionnaire, more than half of the respondents (59%) had adequate knowledge and (67%) had good attitude level of antibiotics. There was no significant difference between genders, marital status and occupation of participant's with knowledge level while there was relation with age groups, certificate and specialty of study sample. For attitude level, there was no significant difference between genders, age groups, marital status, certificate and specialty of study sample with attitude level; on the other hand, there was a significant difference with occupation.

**Conclusion:** In spite of good knowledge level as in general, but there was lacks aware in self-medication with antibiotics that's consider a serious problem requires considerable attention to reduce the risk of antibiotic resistance.

**Recommendation:** It is very necessary to understanding how to use the antibiotic because personal decisions based on these understandings that lead to decrease the resistance of bacteria to antibiotic.

**Keywords:** *Antibiotic Use, Self-medication, Drug Resistance*

## INTRODUCTION

In 2011, the World Health Day theme was “Combat drug resistance: no action today means no cure tomorrow” and for this occasion the World Health Organization introduced a six-point policy package to fight against the spread of antimicrobial resistance<sup>(1)</sup>. Irrational antibiotic use reflects not only patients' failure to comply with physician's instructions on how to use antibiotics adequately, but is also associated with inappropriate antibiotic prescribing. Rational antibiotic

therapy should base on the correct indication, the right drug and dosage, the drug of the first choice, the appropriate period of use, and the lowest treatment costs<sup>(2)</sup>. According to the WHO, lack of education about the prudent use of antibiotics was one of the factors that affected the use of antibiotics<sup>(3)</sup>. A substantial evidence has shown that the general community plays a role in the increase and spread of antibiotic resistance and the increase of antibiotics resistance will endanger their therapeutic effectiveness, increase treatment failures and, as a result lead to longer and more severe illness

episodes with higher costs and mortality rates <sup>(4)</sup>. WHO identified three key issues for public involvement, improving access to medical facilities, decreasing unnecessary use of antimicrobials, taking a full course of treatment, and not giving out medication to other people or keeping left over medication for future needs, and also urged member countries to initiate educational interventions for patients and the general population aimed at rationalizing the use of antibiotics to combat resistance <sup>(1)</sup>.

## OBJECTS AND METHOD

Across sectional survey, study using with an interviewer-administered questionnaire. Data collected from a random sample of educational - staff in the Technical Institute of Karbala, after obtaining verbal informed consent to participate in the study, recruited at different settings in their works, regarding their knowledge, attitude and physician relationship about the effectiveness of resistance toward and self-medications with antibiotics against infectious diseases. The interview were based on a well-structured questionnaire, which had been pre-tested on a small pilot scale and subsequently modified from reviewing available questionnaires in the literature <sup>(5,6)</sup> to ensure that the data would provide reliable information. Comparability with those surveys and the validity of the instrument were important factors in determining which behavior regarding antibiotics use, questionnaire form consisting of three parts: some demographics characteristic, knowledge, and attitude towards antibiotic use. Rating and scaling score calculated according to the number of correctly answered questions, the knowledge score categorized as inadequate or adequate, while attitude score categorized as poor and good. Each correct answer assigned (1) point while wrong or uncertain responses assigned (0) points. Then, the sum of the responses for each patient was calculated. The maximum knowledge score was 13 points and 8 points for the attitude score. Thus, the knowledge scores categorized into inadequate (0-6/13) or adequate (7-13/13) and attitude score divided into poor (0-4/9) or good (5-9/9) as dichotomous variables <sup>(7)</sup>. Collected data were presented in frequency, percentage and analyzed by using "SPSS-18" by using Chi-Sq. ( $\chi^2$ ) test after being coded. The comprised of significant (P-value) in any test were S=Significant difference (P<0.05) and NS= Non Significant difference (P>0.05) throughout the study.

## RESULTS AND DISCUSSION

The results would help in testing the adequacy of knowledge-attitude and provide further insight in designing future educational campaigns to promote appropriate antibiotic use and help in reducing antibiotic resistance. 200 participants were surveyed; the demographic details of the samples were summarized in table 1, present study revealed that the overall number of participants were, Instructor 128 (64%) and managers 72(36%) according to their occupation with 120(60%) male and female 80(40%) with male-female's ratio (0.99: 1) that agree with "Malak" in Lebanon <sup>(8)</sup> and "Kim" in Korea <sup>(9)</sup>. Out of which 140 (70%) were between 30 and 50 years old and over three-quarter of the respondents 174(87%) were married. Over all the study shows that 18 (90%) live in urban area. About half of patients had a postgraduate degree 102(51%) while 98 (49%) had undergraduate degree that agree with "Malak" in Lebanon <sup>(8)</sup>, diversity of participants according to those specialties to (25.5%, 39.5% and 35%) for medical, technology and managers respectively.

**Table 1: Characteristics of the study population**

Variable	Total participants N = 200 (100%)
<b>Occupation</b>	
Instructor	128 (64%)
Managerial	72 (36%)
<b>Age group</b>	
20-30	14 (7%)
30-40	70 (35%)
40-50	70 (35%)
50-60	46 (23%)
<b>Marital status</b>	
Single	26 (13%)
Married	174 (87%)
<b>Certificate</b>	
Undergraduate	98 (49%)
Postgraduate	102 (51%)
<b>Gender</b>	
Male	120 (60%)
Female	80 (40%)
<b>Residence</b>	
Urban	180 (90%)
Rural	20 (10%)
<b>Specialty</b>	
Medical	51 (25.5%)
Technology	79(39.5%)
Managerial	70 (35%)

Table (2) shows that 63% believed that antibiotics can kill bacteria. 25% responded that antibiotics can kill viruses and 77% are effective against cough and cold, while 15% of participants believed that antibiotics are effective in reducing fever and pain, almost half of participants 51% knew that antibiotics can kill normal flora that lives normally in the skin and gut which is similar percentage to that reported in Korea<sup>(9)</sup> but higher than that in UK<sup>(10)</sup>. 80 % of participants realized that bacteria are becoming resistant to antibiotics and that the unnecessarily use of antibiotics has increased the risk of bacterial resistance. 71% believed that if antibiotics are taken for long period, the bacteria become more resistant to antibiotics and 29 % believed that taken less doses do not decrease the bacterial resistance. Approximately, 57% of participants believed that antibiotics cause side effects including hepatic and renal problems; on the other hand, 69% of participants believed that antibiotics does not cause side effects. 8% stopped taking antibiotic if they get side effects including skin allergic reaction, other studies conducted in UK<sup>(10)</sup> Sweden<sup>(11)</sup>, Korea<sup>(9)</sup>, Italy<sup>(12)</sup> and United State<sup>(13)</sup> showed that many people thought that antibiotics are effective for common cold and cough symptoms and may be used for viral infections. As overall assessment for the study sample knowledge, the study shows 59% had adequate knowledge as shown in figure (1), but the average of knowledge score was not adequate

especially for educational staff in comparing with public people this finding similar to other study in Jordan<sup>(3)</sup>. Almost 90% checked the expiry date of medication before taking it, 71% stopped taking the medication if the symptoms disappear. 28% preferred to take antibiotic from the pharmacy without physician prescription and about 55% preferred to take antibiotic in cases of cough and sore throat that could be due to possible reason for inadequacy of knowledge in this area is the use of term “germ” rather than “bacteria” or “viruses” by the physicians during medical counseling. 45% shared the antibiotics with someone else if he had similar signs and symptoms, 61% agreed to know the kind and component of antibiotics before use it, while 55% of study sample prefer to keep antibiotics at home in case there may be a need for them later in emergency case. Approximately 76% of participants responded that pharmacists tell them how to administer antibiotic. 60% expected that physicians routinely prescribe antibiotics in case of cold symptoms and that 90% of physicians spent time to inform patient about the usage of antibiotics. 76% trusted physicians if they decided not to prescribe antibiotic, while 53% agreed to request antibiotic prescriptions from my physician and 45% consulted another physician if the first physician disagreed to prescribe antibiotic. As overall assessment, 67% of study sample had positive attitude toward using the antibiotic figure (2).

**Table 2: Knowledge Attitude and Patient Physician Relationship among participants**

Total participants N = 200 (100%)						
Antibiotic Action	Correct		Incorrect		Uncertain	
	No.	%	No.	%	No.	%
Antibiotics work on most coughs and colds.	154	77	36	18	10	5
Antibiotics can kill bacteria.	126	63	28	14	46	23
Antibiotics can kill viruses.	50	25	98	49	52	26
Antibiotics are effective in reducing pain (Analgesic).	30	15	152	76	18	9
Antibiotics can kill the bacteria that normally live on the skin and in the gut.	102	51	48	24	50	25
Antibiotic Resistance:						
Bacteria are becoming resistant to antibiotics.	124	62	40	20	36	18
The unnecessarily use of antibiotics can increase the resistance of bacteria to them.	160	80	22	11	18	9
If antibiotics are taken less than the prescribed dose, bacteria become less resistant to antibiotics.	58	29	98	49	44	22
If antibiotics are taken for a long time, bacteria become more resistant to antibiotics.	142	71	34	17	24	12
Antibiotic Side effects:						
Antibiotic does not cause side effects.	138	69	30	15	32	16

Conted...

Antibiotic may cause hepatic and renal problems.	114	57	34	17	52	26
If you get side effects during a course of antibiotics treatment, you should stop taking them as soon as possible.	134	67	32	16	34	17
If you get some kind of skin reaction when using an antibiotic, you should not use the same antibiotic again.	16	8	124	62	60	30
<b>participants Attitude:</b>	Agree		Disagree		Uncertain	
<b>Total participants N=200 (100%)</b>	No.	%	No.	%	No.	%
Do you normally look at the expiry date of antibiotic before taking it	180	90	18	9	2	1
I stop taking the antibiotic if the symptoms do not improve after taking it.	142	71	38	19	20	10
I prefer to be able to buy antibiotics from the pharmacy without a prescription.	56	28	130	65	14	7
I prefer to keep antibiotics at home in case there may be a need for them later	110	55	64	32	26	13
I prefer to use an antibiotic if I have a cough for more than a week	90	45	76	38	34	17
When I have a sore throat I prefer to use an antibiotic	110	55	36	18	54	27
I share antibiotic with someone else in my family/friends with similar symptoms to mine	90	45	86	43	24	12
Before the use of antibiotics requires knowledge of its kind and its components	122	61	14	7	64	32
<b>Physician Relationship:</b>	Agree		Disagree		Uncertain	
<b>Total participants N=200 (100%)</b>	No.	%	No.	%	No.	%
Pharmacists often tell you how antibiotics should be used.	152	76	36	18	12	6
Doctors often take time to inform the patient during the consultation how antibiotics should be used.	180	90	12	6	8	4
Physicians routinely prescribed antibiotics to treat common cold symptoms	120	60	46	23	34	17
I request antibiotic prescriptions from my physician	106	53	62	31	32	16
I trust the doctor decision if she or he decides not to prescribe antibiotic	152	76	32	16	16	8
I consult another physician to prescribe antibiotics if their physician disagreed to do so	90	45	100	50	10	5

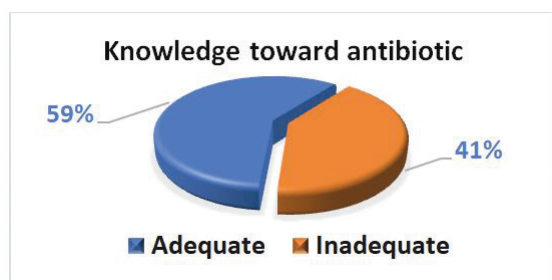


Figure 1: Knowledge toward antibiotic.



Figure 2: Level of Attitude toward antibiotic.

Table (3) shows the relationship between knowledge and attitude level toward antibiotic with demographic characteristic of study sample, the study showed no significant difference (p-value >0.05) between genders and marital status with knowledge and attitude level regarding antibiotic use, while there was high association in age groups with knowledge level, but no significant difference with attitude level that's agreed with "Malak" (8) and "Kim" (9). In addition, the study shows a significant association between the (certificate and specialty) of study sample with knowledge level but no significant differences with attitude level, while there was significant difference with occupation of study sample that could be due to the teaching profession that had a positive impact on the cognitive level of the employee, these findings support the idea that the better knowledge on antibiotics usage and the potential

for antibiotic resistance can change attitudes and behaviors regarding the appropriate use of antibiotic these finding agreed with “ You, J.H “ in Hong Kong<sup>(6)</sup>.

**Table 3: The relationship between Knowledge and Attitude level toward antibiotic with demographic characteristic of study sample**

	Level of Knowledge			Level of Attitude		
	Adequate	Inadequate	P-value	Good attitude	Poor attitude	P-value
<b>Gender</b>						
Male	74 (61%)	46 (39%)	0.3	<b>90 (75%)</b>	<b>30 (25%)</b>	<b>0.4</b>
Female	<b>44 (55%)</b>	<b>36(45%)</b>		64 (80%)	16 (20%)	
<b>Age group</b>						
20-30	<b>6 (43%)</b>	<b>8 (57%)</b>	<b>0.01</b>	<b>10 (71%)</b>	<b>4 (29%)</b>	<b>0.7</b>
30-40	<b>46(66%)</b>	<b>24(34%)</b>		52(74%)	18(26%)	
40-50	<b>33(47%)</b>	<b>37(53%)</b>		54(77%)	16(23%)	
50-60	<b>33(72%)</b>	<b>13(28%)</b>		38(83%)	8(17%)	
<b>Marital status</b>						
Yes	102(59%)	72(41%)	0.7	<b>132(76%)</b>	<b>42(24%)</b>	<b>0.3</b>
No	<b>16(62%)</b>	<b>10(38%)</b>		22(85%)	4(15%)	
<b>Certificate</b>						
Undergraduate	<b>50(51%)</b>	<b>48(49%)</b>	<b>0.02</b>	72(73%)	<b>26(27%)</b>	<b>0.2</b>
Postgraduate	<b>68(67%)</b>	<b>34(33%)</b>		82(80%)	20(20%)	
<b>Occupation</b>						
Teaching	80(63%)	48(37%)	0.1	104(81%)	<b>24(19%)</b>	<b>0.05</b>
Managerial	<b>38(53%)</b>	<b>34(47%)</b>		50(69%)	22(31%)	
<b>Specialty</b>						
Medical	<b>37(73%)</b>	<b>14(27%)</b>	<b>0.05</b>	<b>44(86%)</b>	<b>7(14%)</b>	<b>0.1</b>
Technology	<b>45(60%)</b>	<b>34(43%)</b>		60(76%)	19(24%)	
Managerial	<b>36(51%)</b>	<b>34(49%)</b>		50(71%)	20(29%)	

Data presented as number and using Chi2 respectively, p-value < 0.05 was considered significant.

**CONCLUSION**

In spite of good knowledge and attitude level toward antibiotic use as in general, but there was 49% from participation believed that antibiotics could kill viruses and 76% effective in reducing pain (Analgesic) and self-medication with antibiotics consider a serious problem that is requires considerable attention and patient counselling should be implemented by physicians and pharmacists about antibiotic use should provide to reduce the risk of antibiotic resistance.

**Ethical Clearance:** Taken from Technical Institute of Karbala committee.

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**Conflict of Interest:** No

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