

KNOWLEDGE, ATTITUDE, AND PRACTICE OF ANTIBIOTICS USAGE AND RESISTANCE AMONG DENTAL STUDENTS

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Abstract:

Aim: This study aimed to estimate the knowledge, attitude, and practice (KAP) of dental students in Erbil city toward antibiotic use, misuse, and resistance. **Method:** A cross-sectional study was conducted among 100 dental students in Erbil city. The students were divided into two groups, the first group included classes from first to fourth (47%). The second group was the fifth class (53%). The students answered a closed-ended questionnaire. The questionnaire included questions to evaluate the KAP of the dental students in using antibiotics. T-test, ANOVA, mean, and frequency in SPSS version 23 to analyze the data. **Results:** Knowledge and attitude scores were high (9.3000 ± 1.01005 and 9.4000 ± 1.28708 respectively). The practice score was low (6.3000 ± 2.73585). There was a significant difference in KAP means according to gender (males KAP = 8.7778, 8.6111, and 5.3889 respectively). Females KAP = 9.5763, 9.8305, and 6.9661 respectively. The results showed that there was an insignificant difference in knowledge and attitude between the first group and the second group. On the other hand, there was a significant difference between the first group and the second group in practice. **Conclusion:** Dental students must change their practice and do what they know because they have a noticeable effect on society and their teachers must improve their (KAP) not just their knowledge.

Keywords: Knowledge; Attitude; Practice; Dental Students; Antibiotic Resistance; Antibiotic Usage; Medical Education; Medical Students Survey

1. Introduction

Antibiotic resistance in recent past years was increased rapidly and has become a very serious problem because they are the most commonly prescribed drugs by physicians and those used by patients without a prescription, which means self-medication [1]. The overuse of antibiotics not only increases drug resistance but also causes increasing adverse effects such as nausea, diarrhea, and vomiting. Treating the disease rapidly, poor cost, easily provided, and the wrong diagnosis by the physicians or they want to treat the patients as soon as they can because they want to become famous all these may cause drug resistance [2]. Alternatively, the fear of the physician of bacterial spreading and the patient getting sicker are the main causes of increasing antibiotic resistance [3]. Another reason why antibiotic resistance increased very fast is that there is no strong law against the selling of drugs in developing countries, 50% of antibiotics are sold without physician prescriptions [3, 4].

By increasing people's knowledge about antibiotics and changing people's attitudes and practices toward antibiotic use we can reduce antibiotic resistance. Medical students are the future doctors and

have a great effect on the population, therefore, their attitude and practice should be changed toward antibiotic and their resistance [5, 6]. This study aims to estimate the (KAP) of dental students in Erbil City toward antibiotic use, misuse, and resistance.

2. Method

2.1 Study Design

The design of the study was cross-sectional that conducted in Erbil city. The study was based on a questionnaire, which was distributed randomly to dental students between 25 January and 11 April 2021. The inclusion criteria were dental students from all classes of Dentistry Faculty from the first to fifth class. Close-ended questionnaires were included. The exclusion criteria were empty questionnaires, or not completely answered questionnaires. This questionnaire was used to evaluate the KAP of the students.

2.2 The Sample

One hundred and thirty questionnaires were distributed among dental students, but only 100 of them were fully answered. The questionnaires were distributed at rest time and the end of the lectures. For standardization, at first, the researchers explained the background and the aim of the research at the beginning of the questionnaire. In addition, the questionnaires were explained and the students had been taught the way of answering. Then the questionnaires were distributed and after they finished they had been collected. For ethical considerations, the questionnaires were answered without students' names. In order to have better result about the students KAP according to their educational level, they were divided into two groups according to their classes in the faculty. Group (1) included the students of first grade, second grade, third grade, and fourth grade. Then group (2) included the fifth grade.

2.3 The Questionnaire

The questionnaire composed of 18 questions was used to measure the variables, which were KAP. The questionnaire was divided into four parts; First part was socio-demographic questions. The second, third, and fourth parts were prepared to test KAP, each part containing five questions. The answers were close-ended questions either yes or no, or agree, undecided, and disagree.

2.4 The Scoring

The evaluations of the KAP answers of each student had been collected in the following way: scores were collected from each part, for the correct answers were evaluated as 2, and 0 scores for the wrong answers to (yes or no) questions. For the (agree, undecided, and disagree); 2 scores for agreeing, 1 score for undecided, and 0 scores for disagreeing. The last question was a multiple-choice question, the question: the last time when you take antibiotics the choice was (a) before 1 week (b) before 1 months (c) before 6 months, and this question evaluated as the following; 2 scores for (c), 1 score for (b), and 0 scores for (a) answers [7].

2.4 Statistical Analysis

For statistical analysis, SPSS version 23 was used. Mean and standard deviation had been used for the age and KAP scores of the whole students. Frequency was used to describe the data to show the percentage of males and females, the percentage of grades, and frequency is used to know the percentage of the most correct answers that are done by dental students. T-test, ANOVA, and

prevalence value p-value considered < 0.05 as statistically significant for comparison between groups have been used.

3. Results

3.1 Distribution of the Sample

Distribution of the groups is shown in Figure (1). The percentage of group 1 (1st-4th classes) was 53% of the sample. The percentage of group 2 was 47% in the sample.

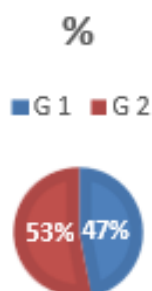


Figure 1: KAP of students according to their gender

3.2 Differences between KAP according to gender

Differences between the mean of knowledge, attitude, and practice scores according to gender are presented in Table (1). There was a significant difference between males and females in practice. Whereas, there was no significant difference in knowledge and attitude.

Table 1: Difference between the mean of knowledge, attitude, and practice scores between different gender groups

Gender	N (%)	Mean of Knowledge Scores	Mean of Attitude Scores	The mean of practice Scores
Male	54 (54%)	8.777 ± 0.864	8.611 ± 1.041	5.388 ± 2.710
Females	46 (46%)	9.576 ± 1.131	9.830 ± 1.532	6.966 ± 2.462
P Value		0.51	0.49	0.001*

*Significant difference

3.3 KAP of Students According To Their Grades

Frequency and differences between the means of KAP scores between group (1) and group (2) can be seen in Table (2). There was a significant difference in practice between the two groups, as group (1) was better in practice than group (2) (4.553 ± 1.637 and 7.301 ± 1.986 respectively).

Table 2: Frequency and differences between the means of knowledge, attitude, and practice scores between 5th grade and other grades

Variable	Groups	Frequency %	Mean scores/SD	P-Value
knowledge	1	47	9.463 ± 0.600	0.76
	2		9.641 ± 0.484	
Attitude	1	53	9.361 ± 0.904	0.811
	2		9.962 ± 0.274	
Practice	1		4.553 ± 1.637	0.000*
	2		7.301 ± 1.986	

*Significant difference

3.4 KAP of Whole Students

The mean KAP of whole students are in Table (3), their knowledge and attitude scores were high (9.3000 ± 1.01005 and 9.4000 ± 1.28708 respectively). The practice score was (6.3000 ± 2.73585).

Table 3: KAP of whole students

	Knowledge	Attitude	Practice
Mean	9.3000	9.4000	6.3000
Standard deviation	1.01005	1.28708	2.73585

Figure (1) shows the KAP percentage of the whole student's answers.

3.5 Answers' Evaluations

The mean percentage of true answers of KAP of all students is shown in Table (4). The means percentage of students knowledge and attitude were high. Figure (2) the graph shows that the Practice questions gain fewer correct answers with high false answers.

Table 4: Answers' evaluation and percentage of correct answers of all students

Type of questions	Questions with the most correct answer	Percentage of the correct answers
Knowledge	1. Can antibiotics be used to treat viral infections? No.	77%
	2. Can antibiotics be used to treat bacterial infections? Yes.	97%
	3. Can antibiotics be used to treat all diseases? No.	97%
	4. Taking the same antibiotic too often leads to bacterial resistance. Agree.	82%
	5. Nowadays antibiotic resistance becomes a serious problem. Agree.	68%
Attitude	1. Are you taking antibiotics immediately whenever you get sick? No.	75%
	2. Is it necessary to know some information about antibiotic resistance? Yes.	96%
	3. Is it necessary to read the leaflet before antibiotics? (Yes, no).	86%
	4. Are you advising your friends and family to take the antibiotic without consulting doctor? (Yes, no).	80%
	5. Is all type of antibiotics safe for receiving by all patients? (Yes, no).	92%
Practice	1. Are you stopping to take the antibiotic immediately when you get well before the end of the course? No.	29%
	2. Are you skipping the time taking antibiotics? No.	60%
	3. Are you repeating taking the same antibiotic when you get sick again? no.	38%
	4. Are you using antibiotics without doctor's prescription? No.	64%
	5. The last time when you take the antibiotic isbefore 6 months.	44%

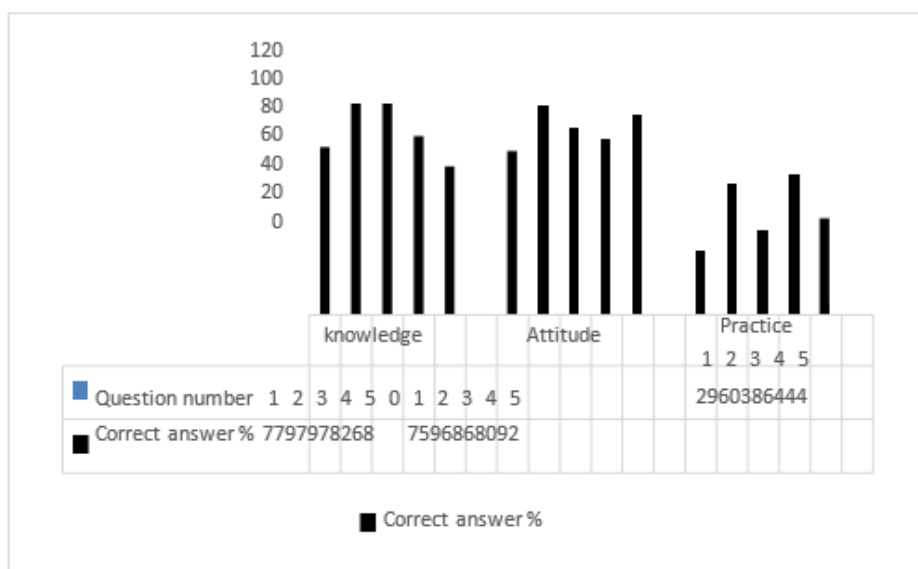


Figure 2: The percentage of the mean of correct answers of all students for KAP questions.

4. Discussion

The problem of Antibiotic resistance is increasing and became a serious problem in the recent last years. To solve this problem people's knowledge should be promoted. In addition, their attitude and practice such as, how and when they must use antibiotics or their avoidance should be changed. The most important thing is that they must know that antibiotics have no action on viral disease [4]. In our study, although they are dental students 23% of them, thought that antibiotics treats the viral disease. To improve the KAP of people we must start with medical students and nurses because they will affect the society. In this study, to find a good way for estimating the KAP ongoing level of students regarding antibiotics, the students divided into two groups. Group 1 included all classes except fifth class, and group 2 included only fifth grade who are in the last years of dentistry education.

In our study, we estimated the knowledge, attitude, and practice of dental students according to their gender. According to their gender, we noticed that there is no significant relationship between their gender and knowledge and attitude but there is a significant relationship between their gender and practice when we considered a P-value less than 0.05 as the females showed better practice. In a study the questionnaire was conducted in different age groups. It was seen that the knowledge and practice scores were similar in both groups. Whereas in our study, the practice score showed a significance difference between the two groups; this may be due to their education, which improved year by year [7].

According to classes of students, in our study, there was an insignificant difference in knowledge and attitude between the two groups ($P = 0.76$ and 0.811 respectively). Whereas, in practice, there was a significant difference in practice between the same groups ($P = 0.000$) at a level of $P < 0.05$ as the 5th grade were better in practice. This is a good point regarding the antibiotic prescription as the fifth class students practicing better than other classes, as they are near will graduate. Many similar studies were performed, and the most problem was estimated to be insufficient knowledge, attitude, and practice of people, and this is the main cause of antibiotic resistance in several countries [8]. From the factors that increase the resistance to antibiotics are that the patient feels when the doctor writes too many medications it means that he or she is a good doctor and this affects the doctor's practice because they are writing many medications. Therefore, medical students need to learn how to write a good prescription and the most important thing is to teach them that writing too many medications does not

mean a good prescription. When they know that, they will affect their patients, friends, and families. in the future [9]. The teaching should include knowledge about antibiotic uses, side effects, indications, and contraindications.

However, it is important to change the knowledge, attitude, and practice of the students to improve treatment efficacy [10]. In this study, 68% of students knowing that resistance to antibiotics is a serious problem, whereas, in the study done by WHO in a survey of multi-country public awareness survey. Of those who were surveyed, In Mexico 89% of the respondents were aware of the term antibiotic resistance. Whereas, in Egypt, only 21% were aware of antibiotic resistance [11].

Nowadays the antibiotic-resistance became a famous large problem and it is mentioned on television, the internet, in the newspaper...etc. This may well affect the younger people and be the cause to solve this problem or at least decrease it [12]. The main factor that increases the resistance to antibiotics is self-medication. In our study, the percentage of self-medication was 36%, while in a study done in southern China was 47.8%, in Sudan was 79.5%, and, similar percentages are also seen in Middle Eastern countries such as Iran at 48%. Thus, in our study, self-medication is low and this may be because our study was done on medical students. In our study, the correct answer to (are you advising your friend and family to take antibiotics without consulting a doctor?) was 80%, while in a World Health Organization study that has been done in 12 countries the percentage of the correct answer was 75%. In a WHO's study, the countries that have a low level of education were more using antibiotics without a doctor's prescription. They thought that it is ok to use antibiotics that their friends or one of the family members is used before to treat the same disease [13, 14]. A study in Pakistan was performed to assess the difference in antibiotic and resistance developing from them in comparison between medical students and non-medical students. The author concluded that most of the medical students are aware of antibiotics resistance developing from misuse was with a minimal difference between medical and non-medical [15]. Prescribing of the appropriate antibiotic is very crucial and it is associated with improved patients' health outcomes. Furthermore, it will reduce the development of bacterial resistance because of misuse or overuse of antibiotics [16].

In our study, the frequency of taking an antibiotic percentage is 56%, while, in a WHO's survey of around 12 countries the percent was 65%. Whereas, in Barbados, this percentage was 35%. The difference in the percentages depends on their education or maybe because of the large number of a sample which was over 500 and even some of them reached 1000 while in our study it was just 100 [11]. In this study, it is obvious that frequently the students use antibiotics because 56% used antibiotics before one week or before one month.

In WHO's study, approximately one-third 32% of the respondents believe that they should stop taking antibiotics when they become good; it means 68% of them gave a correct answer. In our study, the correct answer to the question (are you stopping to take the antibiotic immediately when you get well before the end of the course) was 29%. A World Health Organization study was done in 12 countries and they advise people to complete the course of antibiotics because this is a very important factor to decrease the resistance of antibiotics. In Sudan, 62% of the responders also believe to stop taking antibiotics when they feel good, this means just 38% of the responder gave the correct answer and this percentage is near to our result [11]. In this study, the students showed improper practice concerning the period that must be used 'is it when the patient gets well? The response to question three was incorrect which showed that 61% of the students had an improper practice is repeating the same antibiotic for other illnesses. The sample size was considered as a limitation of this study. In addition, the study included medical students only.

In the limitation of our study, we can conclude that the knowledge and attitude of dental students were good but their practice was improper. This means that they do not do what they know and believe. We suggest that education in medical institutes should take into consideration the proper antibiotic prescription as an important subject in their practices. The dental curriculum must be updated and adjusted to improve the knowledge, attitude and practice of dental students in the field of antibiotic prescriptions for their patients.

5. Acknowledgments

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6. Conflict of Interest

The authors reported no conflict of interests.

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