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Evaluation of the level of knowledge of sample of dental students in dealing with anaphylaxis

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***Abstract*---**The dental field considered being one of the most developing fields in the medical sectors, and being a profession that depend on providing health service, this field include some emergencies and critical clinical complication such as anaphylaxis. Dealing with this type of crisis should be done with high level and accuracy of diagnosis and treatment, as doing that will increase the chances of saving the patients from death possibility. The dental students should have a proper knowledge in how to deal with this type of cases, hence the objective of this study is to assess the level and knowledge of the dental students in dealing with anaphylaxis by application of specialized questionnaire. It concluded that dental students should be more educated and aware about this type of emergency and have the full knowledge about the signs, symptoms, diagnosis and treatment.

***Keywords*---**knowledge, sample of dental students, anaphylaxis.

Introduction

Anaphylactic shock is a serious and sometimes fatal allergic reaction that could took place in the dentist office. All registrants must be educated in handling with medical crises, involving resuscitation, and exhibit current evidence of capacity,' according to the GDC.[1] The incidence of anaphylaxis is having increasing curve in United Kingdome, however this increase that happened in the curve didn't show

an association with increase in the death rate.[2] The causes of anaphylactic shock includes multiple reasons such as: antibiotics, chlorhexidine, dental anathesia (general and local), latex containing materials and instruments, and formocresol.[3-10] Also, another researchers discussed that there are other reasons that may be associated with anaphylactic shock such as tooth paste and iodoform.[11,12] The anaphylactic shock contain multiple features that the dental team could recognize, in the skins some signs and symptoms could be identified such as: urticaria, Erythema, and pruritus, while in respiratory system another signs and symptom could appear such as: nasal congestion, hoarseness, cough, bronchospasm, and chest tightness.[13,14] Adrenaline is by far the most essential medicine in anaphylaxis, but it must be given quickly to be successful. Adrenaline administration delays increase the chance of mortality. The most prevalent cause of mortality linked with anaphylaxis is failure to provide adrenaline.[15,16] In the present study, the aim was to understand the level of understanding of dental students to the high risk of this medical cases and their information about how they could provide a good diagnosis and management. Since this type of cases may be fatal if it didn't receive a high level of diagnosis and treatment, hence the present study aimed to put a high focus on the basic and advanced knowledge and information about multiple factors that relate direct and indirect to anaphylaxis.

Subjects and methods

The study was done in the oral medicine department, faculty of dentistry, Baghdad University. 208 students were chosen randomly, from the 5th grade of faculty of dentistry. Every student got a questionnaire that contains multiple questions with multiple choice questions. Every question was designed by professors of oral medicine, as every question was so clear and detailed, and could be answered by the students accurately without any chance of misleading or foggy questions. The researchers put a high attention that every student has no idea about what he/she will see in the questionnaire, to exclude any type of preparation that mislead the results of the study. The researcher explained to the students the purpose of this study and gave them all of the information that may need to understand the importance of the present study, with putting high attention that the given information will not help or not help the capability of answering the questions, in addition that every student had the full freedom to join or refuse at the present study.

Results

The data were tabled, and collected by the researchers. The data then analyzed and input in IBM SPSS Statistics. 8 students decided not to involve in the study.

Table (1): Demographic distribution of gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	125	62.5	62.5	62.5
	Male	75	37.5	37.5	100.0
	Total	200	100.0	100.0	

Figure (1): Chart showing a demographic distribution of gender

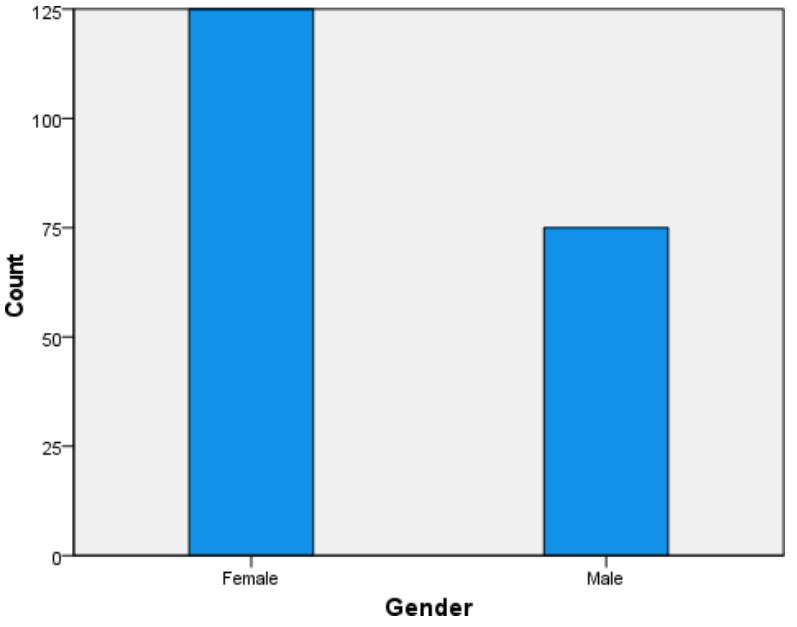


Table (2): Behavior of dental student when facing a patient with allergy

Behavior of dental student when facing a patient with allergy					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I dont begin the treatment	64	32.0	32.0	32.0
	I do the prick test by myself	38	19.0	19.0	51.0
	I refer the patient to allergy specialist	76	38.0	38.0	89.0
	I treat the patient without L.A	22	11.0	11.0	100.0
	Total	200	100.0	100.0	

Table (3): The adverse reaction that may happen due to local anesthetics

Adverse reaction due to L.A					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	54	27.0	27.0	27.0
	No	146	73.0	73.0	100.0
	Total	200	100.0	100.0	

Table (4): The symptoms that may appear on the patients

Symptoms					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nause and vomiting	34	17.0	17.0	17.0
	Shortness of breath	44	22.0	22.0	39.0
	Skin rash	50	25.0	25.0	64.0
	Skin swelling	26	13.0	13.0	77.0
	Hypotension	46	23.0	23.0	100.0
	Total	200	100.0	100.0	

Table (5): The substances that may make anaphylaxis.

Substance					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Epinephrine	78	39.0	39.0	39.0
	Antihistamine	72	36.0	36.0	75.0
	Corticosteriods	32	16.0	16.0	91.0
	Glucagon	2	1.0	1.0	92.0
	Salbutamol	16	8.0	8.0	100.0
	Total	200	100.0	100.0	

Table (6): The routes of administration.

Route of administration					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Intramuscular	52	26.0	26.0	26.0
	Subcutaneous	68	34.0	34.0	60.0
	Intravenous	49	24.5	24.5	84.5
	I dont know	31	15.5	15.5	100.0
	Total	200	100.0	100.0	

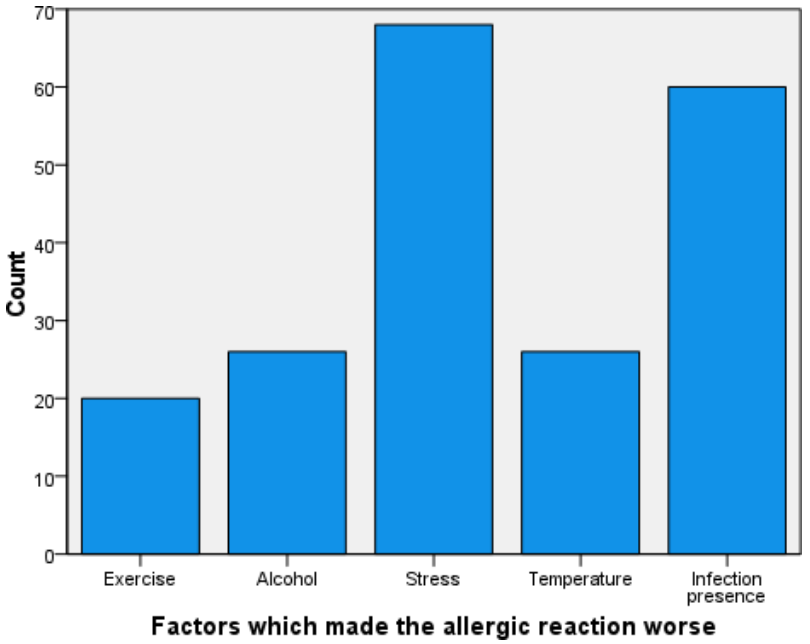
Table (7): How long after symptoms began was the self injectable epinephrine.

How long after symptoms began was the self injectable epinephrine					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5 min	92	46.0	46.0	46.0
	5-15 min	74	37.0	37.0	83.0
	15-30 min	30	15.0	15.0	98.0
	Others	4	2.0	2.0	100.0
	Total	200	100.0	100.0	

Table (8): Factors which made the allergic reaction worse.

Factors which made the allergic reaction worse					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Exercise	20	10.0	10.0	10.0
	Alcohol	26	13.0	13.0	23.0
	Stress	68	34.0	34.0	57.0
	Temperature	26	13.0	13.0	70.0
	Infection presence	60	30.0	30.0	100.0
	Total	200	100.0	100.0	

Figure (2): Figure showing the possible factors which made allergic reaction worse.



Discussion

The present study focused on understanding the knowledge and understanding of the dental students to anaphylaxis, considering it as one of the challenges that the dentist may encounter in daily routine. The study included 208 dental students randomly, but all of the students were from the same level. After collecting the students, 8 students didn't dismiss the study, by not continuing the study, as 4 of those students didn't fully complete the questionnaire, 2 of the students didn't want to fulfill the questionnaire and the last 2 students didn't give the questionnaire after finishing it. Hence, their questionnaire had been excluded and didn't consider in the present study.

The idea, aim, and the concept of the study had been discussed in details with students before giving them the questionnaire, and the process of filling the questionnaire done with attention that students couldn't share information with each other's during the filling process. Consequently, the collected data could express the information about the individual skills and knowledge of the students. The results of the present study gave information about the students attitude when they encounter a patient with anaphylaxis or possible happening of it. The results showed that 38 % of the students prefer to refer these type of cases to allergy specialist instead of dealing with these type of cases directly, this is could be normal as all of them are still students and didn't have the full experience and knowledge in how to deal with these type of cases.

Ashish R. et al. [17] performed a study to form and evaluate the knowledge and awareness among the dental students. They found that only 38% of dental students were aware of the symptoms of anaphylaxis, and 62% of dental students were uninformed of the symptoms and implications of anaphylaxis. If these results could be compared to the results of the present study, the results of the present study could show that most of the student had knowledge about the effect and symptoms of the anaphylaxis despite that the questionnaires and the criteria of extracting information are different between the two studies.

Madhuram Krishnamurthy et al.[18] performed a study to measure dental practitioners' awareness and attitude regarding handling anaphylaxis in patients receiving local anesthetic in Chennai. They found that vast majority of dental students were aware of one or more anaphylactic symptoms. However, none of the students proved that they were aware of all anaphylactic symptoms. The results were also unaffected by age. Despite that there are some methodological differences between this study and the present study; these findings came in disagreement with finding of the present study. The findings of the present study showed that the students knew the major signs and symptoms that students may encounter, despite that the questionnaire could not express this type of information as the present study was extracting the data by multiple choice question. This disagreement may come back to the differences in the area and environment of study, and the level of prevalence of that anaphylaxis.

Piotr et al.[19] stated that dentists in Poland have limited expertise on how to diagnose and manage anaphylaxis in an emergency. Improved postgraduate education, including anaphylaxis training. In their study, they discovered that a large majority of dentists were unaware of the proper dosages of adrenaline and methods of delivery in anaphylaxis in various age groups. This finding comes in fully agreement with the finding in the present study, since the 34 % of the students stated that they will use subcutaneous route and 24.5 % mentioned the intravenous routes, since the adrenaline when injected through alternative methods, epinephrine appears to have a less optimal therapeutic window; for example, when administered subcutaneously, beginning of action may be delayed, and the risk of side effects may be increased when the using of it done by intravenous route.[20] Aadil et al.[21] stated that 80% of the dental students had good knowledge about the drugs used for anaphylaxis.

Cofactors have been reported in roughly 30% of anaphylactic events, according to various authors and publications, ranging from 25.6 percent in France to 39 percent in Germany. In individuals with mild or borderline allergen sensitization, cofactors such as exercise, ethanol, acute illnesses, and stress may intensify anaphylaxis by lowering the threshold of allergen exposure (the allergen "dose") required to cause anaphylaxis .[22-25]

Multiple studies [25-28] had discussed the knowledge and understanding in addition to confidence level and response of the medical health provider to different types of emergencies, however due to high difference in population, sample size, and methodological differences, it made so hard to create a comparison between their findings and the findings of the present study. Hence, the present study could give an idea about the level of understanding of sample of dental students in Iraq universities. As it mentioned before, the level of knowledge in the diagnosis and treatment of this type of cases should be provided in a high level, as these type of cases may be fatal.

The present study recommended to held multiple future studies in different universities in Iraq and different areas worldwide, to assess the level of knowledge of dental and medical providing students to know their current level of information before their graduation, this may give a high chances to enhance the level of medical and dental health professionals skills in dealing with these type of cases, which in return will decrease the rate of mortality that it may occur.

Conclusion

The oral cavity is always prone to exposure to multiple of sensitive agents. Anaphylaxis is one of rare clinical effects specifically related to local anaesthesia which lead to morbidity and mortality. Despite that, if it's happened it may be potentially life threatening. Multiple dental students don’t know how to treat their patients accurately in the case of emergency, as these trends showed an increasing level in the recent years. Hence they should be more educated and aware about this type of emergency and have the full knowledge about the signs, symptoms, diagnosis and treatment.

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