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Original Research

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Effect of Emergency Primary Care Training Workshops: A Survey on 45 Iranian Dental School Interns

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Abstract:

Background: Dentistry is a therapeutic health care profession that is related to people's health. Moreover medical emergencies often occur in dental offices that little awareness of the professional workers can have unpleasant consequences.

Materials and Methods: In this interventional study, a survey of 45 final year dental students was examined. To do so, a test in terms of knowledge was taken as a standard questionnaire, and in the practical part a test was taken as on objective structured clinical examinations (OSCE) test in three stations, before and after the workshop; identification of emergency instruments, the performance of intramuscular and intravenous injections and cardiopulmonary resuscitations before and after the workshop obtained data were analyzed using, SPSS version 16, Student's t-test and paired T.

Results: Using the t-test, mean score of the students' knowledge prior to and after the workshop were 51 ± 13.08 and 83.41 ± 8.65 respectively ($P = 0.000$). The practical score (OSCE) of dental students was 50.85 ± 13.09 , which after the workshop came up to 85.73 ± 7.06 came up ($P = 0.000$). T-test of the performance before and after the workshop had a significant difference in each of the three stations. Significant differences between male and female students' knowledge and performance scores don't exist before and after the workshop ($P > 0.05$).

Conclusion: The level of knowledge and performance of students were assessed as average, therefore, training courses and revised the curriculum units are required.

Key words: Cardiopulmonary resuscitation, dentistry, emergency

Introduction

The dentistry sciences are closely interwoven with the medicine and the biological foundations. An expert dentist should be aware of the pathophysiology of many diseases as well as the complex mechanisms and various impacts of the body systems. In addition, to achieve the best diagnosis and represent a proper treatment, a dentist has to be prepared to face medical emergencies.^{1,2} Besides the development of the new therapeutic methods and drugs in the dentistry, complexity of the individual reactions to this growth will guide a dentist to access a wide spectrum of information. Despite the multitude of problems in the field, dentists need to raise awareness in a wider context of prevention and medical emergencies.²

Life-threatening medical emergencies may occur in dental offices.^{3,4} The probability of occurrence of medical emergencies in dental offices is reported as approximately between 0.08% and 0.65%, and syncope is the most common event.^{5,6} In one study, 12% of the total 182 dentists encountered a patient with cardiac arrest and 5% of them experienced at least one case of cardiac arrest.⁷ Thus, every dentist should improve his/her knowledge about the whole body systems¹⁻³ and must have competent information and experience about cardiopulmonary and cerebral resuscitation and also emergency cares.⁸ Globally, training in the diagnosis and management of the medical emergencies is assumed to be poor among dentists and dentistry students.^{3,4}

This study was conducted in order to evaluate the effectiveness of the emergency primary care workshop for the internship students of the Dental school of Qazvin University of Medical Sciences in 2011-2012.

Materials and Methods

In this interventional study, surveying population included dental students who were passing their internship course, and the sampling was done by the census method. The participants were senior dental students, and they were tested before and after the workshop. Those who passed any extra academic or non-academic course related to the medical emergency were excluded from the study.

In the current study, to assess students' knowledge, we designed a questionnaire that consisted of two parts. The first part composed of the students' demographic data (age, gender, and grade point

average) and the second included 15 multiple-choice questions with respect to the similar articles and the 2010 American Heart Association guidelines for cardiopulmonary resuscitation (CPR). The workshop of the emergency primary care was performed, and the students were advised about the emergency equipment for 1.5 h. They were informed about the theoretical basics of the CPR (principles of airway, breathing, and circulation), intubation methods, vital signs monitoring, and principles of the injection (intramuscular [IM], intravenous, and subcutaneous injections) by a critical care nurse PowerPoint slides. Then the students practiced the CPR and basic life support (BLS) on the model and in the field for half an hour. They were divided into two groups and participated in the workshop in 2 days.

In order to evaluate the knowledge of the students, they filled a questionnaire with 15 questions and 15 points before and 8 weeks after the workshop. Likewise, to investigate the proficiency and performance of the students, objective structured clinical examinations (OSCEs) in 3 stations (each station 5 min for an individual) were carried out before and 3 months after the workshop. Station 1 had 5 point and contained 5 different emergency equipment, and the students had to name them in a checklist. In station 2 the students were asked to perform CPR on a model. In this station proper position of the head, laryngoscope preparation, tongue movement to see the epiglottis, insertion of the intubation tube, and finding the accurate site for CPR and performance, had 5 points overall. Finding the vein, optimal angle of needle entry and ensuing aspiration were the contents of the third station with 3 points. Another 2 points of the station 3 were intended to locate true site for IM injection and perform it with aspiration. Toward a decrease of a bias in OSCEs, each station was graded by the same person for all of the students.

Data were collected, analyzed, and reported as mean and standard deviation. The Student's paired t-test was used for comparing the groups. $P < 0.05$ was considered as statistically significant using SPSS 16.0 software.

Results

This study was conducted on the senior students affiliated to the oral and maxillofacial surgery ward of the dental school of the Qazvin University of Medical Sciences. In the present investigation, 45 students, 26 men (60.5%) and 17 women (39.5%) with a mean age of 25.6 participated. in the current study, of which 2 students were not attended the workshop and also were not completed the questionnaires and thus excluded from the study. Minimum and maximum ages of the participating students were 22 and 46 years.

Using the t-test, mean score of the students' knowledge prior to and after the workshop were 51 ± 13.08 and 83.41 ± 8.65 , respectively ($P = 0.000$). The mean score of the students' performance prior to and after the workshop were 50.85 ± 13.09 and 85.73 ± 7.06 , respectively ($P = 0.000$). The data are summarized in Table 1.

Significant differences between male and female students' knowledge and performance scores don't exist before and after the workshop ($P > 0.05$) (Table 2).

Summary of the students' performance score before and after the workshop were categorized in "Graph 1" on the basis of the stations. Moreover, t-test of the performance before and after the workshop had a significant difference in each of the 3 stations ($P = 0.000$) (Table 3).

Table 1: Comparing of the mean and SD of the knowledge and performance score pre- and post-test.

Knowledge score				Performance score			
Pre-test	Post-test	t	P	Pre-test	Post-test	t	P
51±13.08	83.41±8.65	-15.6	0	50.85±13.08	85.73±7.06	-21.4	0

SD: Standard deviation

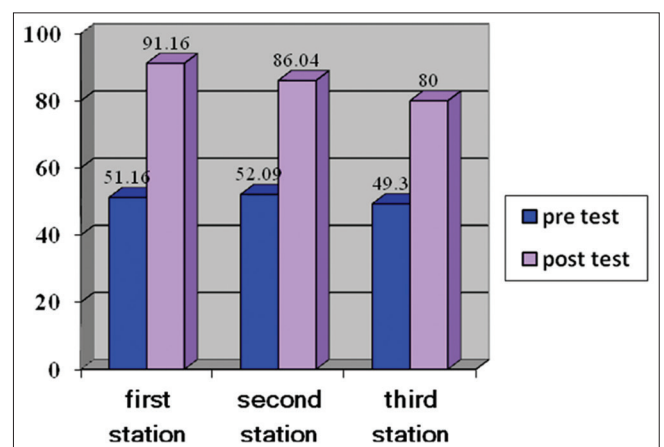
Table 2: Scores of knowledge and performance pre- and post-test based on gender.

Variable	Gender	Mean±SD	P value
Knowledge score	Before		
	Male	49.48±14	0.352
	Female	53.33±11.54	
	After		
Male	83.33±9.66	0.943	
Female	83.52±7.11		
Performance score	Before		
	Male	50.51±13.87	0.836
	Female	51.37±12.19	
	After		
	Male	84.35±7.76	0.09
	Female	87.84±5.39	

SD: Standard deviation

Table 3: The mean and standard deviation of the performance score before and after the workshop.

Station	The mean	SD	t	P value
First station	Pre-test	51.16	-12.81	0.000
	Post-test	91.16		
Second station	Pre-test	52.09	-15.71	0.000
	Post-test	86.04		
Third station	Pre-test	49.30	-13.12	0.000
	Post-test	80		



Graph 1: Students' performance score before and after the workshop.

Discussion

A medical emergency may lead to grievous and distressful consequence and even threatens the patient's life if it happens in a dental office, and the dentist does not have proper diagnosis and management. Dentists should always have enough information and also acceptable preparation and anticipation for facing a medical emergency.^{4,9} The results of the current study showed that participation in the workshop has a considerable role in order to improve the knowledge of the students to deal with an emergency situation.

The probability of a medical emergency in a dental office is between 0.08 and 2.5%.^{2,10} It was stated that the minimum knowledge score for providing an appropriate emergency service was 80%.¹¹ Mean knowledge score of the students in this study prior to the workshop was 51 ± 13.08 and it is compatible with the study of Sopka *et al.* in which the students answered 6 questions from 11 questions.¹² Furthermore the outcome of the present study is comparable with the interventional investigation of Asmita *et al.*, in which they estimated the physicians' knowledge about primary cares and BLS.¹³ Asmita *et al.* used a questionnaire and evaluated the physicians' proficiency and performance before and after participation in a workshop. The study results demonstrated that before participation in a workshop, 97.5% of the participants had a grade below 50% and after that 70% of the participants had a grade more than 80% which is equivalent with our study (83.4%). In the other observations, mean score of the dentists' knowledge were estimated to be 50% and 52% respectively^{14,15} and about half of the students who had declared that they can perform CPR and manage a cardiac arrest, had poor ability in performance.⁹ Many researchers studying the effectiveness of primary care training and training methods claimed that the learned contents will be forgotten if they do not use in a 6 months interval after learning. In one study on the ordinary people about learning the emergency primary care and CPR, after 1-year 88% of the participants did not have acceptable ability in performing CPR.⁹

Outcome of the present study showed that the best improvement was seen in the students' performance score that was increased from 50.85 ± 13.09 before the study to 85.73 ± 7.06 after the study. Previous reviews said that although CPR is very critical and important, yet, little attention in the medical curriculum was paid to teach lifesaving skills. Thus, our present requirement is not only to enhance the quantity of the emergency primary cares and CPR learning but also qualitative breakthrough must be considered as well.¹⁶ As we concluded, scientific and objective training that will be done with more and better time, leads to better learning outcomes.¹⁷ Therefore, modern learning methods should be selected in order to increase the capability and knowledge of the graduated dentists in the field of emergency primary care and CPR. These new methods will make the learning deeper and more durable in the future.¹⁸

In a brief report from England, all of the participants failed in the practical part of CPR but 44% of the students and 66.7% of the graduated dentists passed the theoretical part of CPR.¹⁰ There was no relationship between sex and knowledge score and it seemed that the basic information and learning modes of both sexes during the dentistry course were the same. On the other hand, the inverse relationship between age and knowledge score revealed that the students' information in the field of emergencies is not up-to-date, and they have not serious and ongoing study in this field.

Conclusion

According to the above statements, it seems that learning courses about medical emergencies are necessary during the education period and also after the graduation of the students. Just as the effectiveness of the leaning workshops in the progression of the knowledge and performance of the students, it is suggested that the medical emergencies will offer as a distinct theoretical and practical course in dental schools.

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