

Assessment of Dental Students' Cardiopulmonary Resuscitation Knowledge and Experience in Turkey

Aysun Caglar Torun*

Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Ondokuz Mayıs University, Samsun, Turkey

*Corresponding author: Aysun Caglar Torun, Assistant Professor, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Ondokuz Mayıs University, Samsun, Turkey, Tel: + 90 362 312 19 19/4077; Fax: + 90 362 457 60 91; E-mail: aysunct@hotmail.com

Received date: January 19, 2017; Accepted date: February 10, 2017; Published date: February 15, 2017

Copyright: © 2017 Torun AC. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Background: This questionnaire-based study aimed to evaluate the CPR knowledge and experiences of Turkish trainee dentists and research assistants at the Faculty of Dentistry of Ondokuz Mayıs University in Turkey.

Methods: All the dentists completed a 23-item questionnaire about basic and advanced life support. The survey questions focused on the CPR knowledge and experiences of the dentists.

Results: During their undergraduate education, 68.7% (n=68) of the trainee dentists and 60.5% (n=23) of the research assistants stated they had received CPR training (p=0.010 and p=0.016, respectively). In postgraduate education, 7.9% (n=3) of the research assistants said they had received CPR training (p=0.028). With regard to performing orotracheal intubation on a model, 31.3% (n=3) of the interns and 68.4% (n=26) of the research assistants had never performed this procedure (p=0.009 and p=0.006). There was a significant difference in the number of interns versus that of research assistant who had performed orotracheal intubation on a model (p=0.009). The interns gave correct answers to 5 (0-10) of the questions, and the research assistants correctly answered 6 (0-10) of the questions, on average (p=0.034).

Conclusion: An inability to manage medical emergencies properly can lead to legal complications and sometimes have tragic consequences. To ensure that dentists are able to manage medical emergencies in daily practice and enhance patient safety, training on CPR skills should be increased and made mandatory in all undergraduate and postgraduate dental courses.

Keywords: Dentistry; Cardiopulmonary resuscitation; Experience

Introduction

The need for emergency interventions is common in dentistry. Vasovagal syncope, orthostatic hypotension, and hypoglycemia, side effects due to local anesthetics, are the most commonly encountered emergencies [1-3]. In these and similar emergencies, cardiopulmonary resuscitation (CPR) may be required to ensure the continuity of the patient's respiration and circulation. The physician's knowledge and experience of CPR can save a patient's life. In Turkey and other countries, dentists receive training on CPR during their studies and after graduation. However, due to inadequate training and the failure of dentists to refresh their knowledge via education programs, many dentist practitioners may be unable to perform CPR correctly.

This questionnaire-based study aimed to evaluate the CPR knowledge and experiences of Turkish trainee dentists and research assistants at the Faculty of Dentistry of Ondokuz Mayıs University in Turkey.

Materials and Methods

This was a cross-sectional study approved by the ethics committee of Ondokuz Mayıs University in Turkey. Turkish trainee dentists at Faculty of Dentistry of Ondokuz Mayıs University and research

assistants with at least 1 year of experience were included in the study. All the dentists completed a 23-item questionnaire about basic and advanced life support, and all the participants signed a consent form. The survey questions focused on the CPR knowledge and experiences of the dentists. The first seven questions asked about the CPR training and experience of the participants. They were questioned about their departments, whether they had received CPR training during and after undergraduate education, their orotracheal intubation experience on a model or patient, their experience of using a defibrillator, and the annual average number of CPR procedures they had performed. Questions 8-13 were multiple-choice questions on CPR related to the compression/ventilation ratio, application and location of chest compression, epinephrine dose and implementation of the precordial thump. The final 10 questions asked the participants to rate their knowledge of various aspects of CPR using a 5-point Likert scale.

Statistical analysis

The data were analyzed using IBM SPSS V21 (Chicago, USA). The Kolmogorov-Smirnov test was performed to determine the normality of the data. The Mann-Whitney U test and Kruskal-Wallis test were used in the analysis of quantitative data that was not normally distributed. A Chi-square test was used in the comparison of qualitative data. The results are presented as frequencies, percentages, and median (min-max). The significance level was taken as p<0.05.

Results

Ninety-nine trainee dentists and 38 research assistants participated in the study. Of the research assistants who participated in the study, 23.6% (n=9) were training in pediatric dentistry, 21.0% (n=8) in oral and maxillofacial surgery, 18.5% (n=7) in oral and maxillofacial radiology, 7.9% (n=3) in restorative dental treatment, 13.3% (n=5) in prosthesis, and 15.7% (n=6) in orthodontics (Table 1).

During their undergraduate education, 68.7% (n=68) of the trainee dentists and 60.5% (n=23) of the research assistants stated they had received CPR training (p=0.010 and p=0.016, respectively) (Table 2).

In postgraduate education, 7.9% (n=3) of the research assistants said they had received CPR training (p=0.028). With regard to the average annual number of CPR procedures that the participants had performed, the majority of dentists stated they had never performed CPR (Table 3).

With regard to performing orotracheal intubation on patients, 68.7% (n=68) of the trainee dentists and 89.5% (n=34) of the research assistants said they had never performed this intervention (p=0.200 and p=0.81, respectively).

Departments		n (%)
Trainee dentist		99 (70.7%)
Research assistants		38 (29.3%)
	Paedodontics	9 (23.6%)
	OMFS	8 (21.0%)
	Oral Diagnosis	7 (18.5%)
	RDT	3 (7.9%)
	Prosthodontics	5 (13.3%)
	Orthodontics	6 (15.7%)

OMFS: Oral and MaxilloFacial Surgery; RDT; Restorative Dental Treatment.

Table 1: Departments of participants.

	Yes	No	p-value	Yes	No	p-value
	% (n) ¹	%(n) ¹		% (n) ²	%(n) ²	
Trainee dentist	68.7%(68)	31.1%(31)	0.327	-	-	-
Research assistant	60.5%(23)	39.5%(15)	0.343	7.9%(3)	92.1%(35)	0.028

¹Receiving CPR training during undergraduate education, ²Receiving CPR training after undergraduate education.

Table 2: Participants CPR training rates.

	0/year	1/year	2/year	3/year	4/year	p-value
	% (n)	% (n)	% (n)	% (n)	% (n)	
Trainee dentist	67.7% (67)	20.2% (20)	8.1% (8)	1.0% (1)	3.0% (3)	0.01
Research assistant	65.8% (25)	13.2% (5)	2.6% (1)	0.0% (0)	18.4% (7)	0.016

Table 3: Average annual CPR number of participants.

There was no significant difference between the number of trainee dentists and research assistants who had performed orotracheal intubation on patients (p=0.200). With regard to performing orotracheal intubation on a model, 31.3% (n=3) of the interns and 68.4% (n=26) of the research assistants had never performed this procedure (p=0.009 and p=0.006, respectively). There was a significant difference in the number of interns versus that of research assistant who had performed orotracheal intubation on a model (p=0.009). In terms of defibrillator usage, 96% (n=95) of the interns and 97.4% (n=37) of the research assistants had never used a defibrillator (p=0.000 and p=0.192, respectively).

There was no significant difference in the numbers of interns who had used a defibrillator versus the numbers of research assistants who had done so (p=0.054) Table 4. In the analysis of the participants' answers to the 16 questions about CPR, the interns gave correct answers to 5 (0-10) of the questions, and the research assistants

correctly answered 6 (0-10) of the questions, on average (p=0.034) (Table 5).

	Never Performed	It was not effective	It was effective	I cannot rate myself	p-value
	% (n)	% (n)	% (n)	% (n)	
Oratrakeal intubation on patients					
Trainee dentist	68.7%(68)	16.2%(16)	8.1%(8)	7.1%(7)	0.2
Research assistant	89.5%(34)	5.3%(2)	0.0%(0)	5.3%(2)	0.081
p-value	0.2				
Orotracheal intubation on model					
Trainee dentist	31.3%(31)	38.4%(38)	23.2%(23)	7.1%(7)	0.009

Research assistant	68.4%(26)	21.1%(8)	7.9%(3)	2.6%(1)	0.006
p-value	0.009				
Defibrillator usege					
Trainee dentist	96%(95)	3.0%(3)	0.0%(0)	1.0%(1)	0
Research assistant	97.4%(37)	2.0%(1)	0.0%(0)	0.0%(0)	0.192
p-value	0.054				

Table 4: Participants orotracheal intubation execution and defibrillator usage rates.

	Median (Min-Max)	p-value
Trainee dentist	5(0-10)	0.034
Research Assistant	6(0-10)	
	Median (Min-Max)	0.115
Yes ¹	6(0-10)	
No ¹	5(0-9)	0.694
	Median (Min-Max)	
Yes ²	5(3-7)	0.713
No ²	5(0-10)	
	Median (Min-Max)	0.059
Never Performed ³	5(0-10)	
I did but it was not effective ³	6(2-9)	0.764
I did effectively ³	6(2-10)	
I can't fully rate myself ³	6(4-10)	0.059
	Median (Min-Max)	
Never Performed ⁴	6(0-8)	0.764
I did but it was not effective ⁴	5(0-10)	
I did effectively ⁴	6(2-10)	0.764
I can't fully rate myself ⁴	4.5(1-6)	
	Median (Min-Max)	0.764
Never Performed ⁵	5(0-10)	
I did but it was not effective ⁵	7(0-10)	0.764
I did effectively ⁵	6(5-7)	
I can't fully rate myself ⁵	6(5-8)	

¹Have you received CPR training during undergraduate education?, ²Have you received CPR training in postgraduate education?, ³Have you performed orotracheal intubation on patients?, ⁴Have you performed orotracheal intubation on model?, ⁵Have you used defibrillator on a patient?

Table 5: Comparison of the effects different variables on correctly answering the questionnaire.

As shown in Table 5, the comparison of the average numbers of correct answers of the participants who had/had not received CPR training during undergraduate education, had/had not performed orotracheal intubation, and had/had not used a defibrillator revealed no significant difference (p=0.115, p=0.713, and p=0.764, respectively). Five dentists answered none of the questions correctly, and none of the dentists answered all the questions correctly.

Discussion

This study examined the CPR knowledge and experiences of dental interns and research assistants at the Faculty of Dentistry of Ondokuz Mayıs University in Turkey. According to the findings of this study, the majority of the participants had never performed orotracheal intubation on a patient and they had never encountered a situation that required the use of CPR. These results showed that dentists have little experience of CPR during their dentistry education. The results may be explained by the fact that most students are involved only in minor surgeries and operations on patients that do not affect patients' vital functions. A study conducted in Brazil also reported that dentists rarely encountered life-threatening complications in clinical practice and that syncope, orthostatic hypotension, and moderate allergic reactions were the most common complications [4,5]. A study conducted in Australia found similar results, with only one of seven dentists encountering an event that required resuscitation [1]. Another study reported that the rate of life-threatening complications, such as foreign object aspiration, asthma attacks, and cardiac problems, was 5.5-11% in dentistry [3]. Therefore, in dental clinical practice, life-threatening complications seem to be very uncommon. Nevertheless, dentists should be prepared for emergency management when such complications occur.

In cases of emergency management, the dentist must be familiar with the complete CPR algorithm used to ensure the sustainability of the respiratory and circulatory systems. To ensure familiarity with current CPR methods, the dentist should also take part in education programs at regular intervals. In a study of dental interns and postgraduate students, Narayan et al. in India found that the percentage of dentists with good knowledge of CPR was quite low [6]. They stated that training on CPR in the dental curriculum should be increased [6]. Similarly, a study in Iran reported that dentists had little knowledge and experience of CPR and suggested that training could address this lack of knowledge [7]. The same study reported that ongoing CPR training was a necessity for dentists. In the present study, although the experiences and CPR-related training of the dental research assistants and interns were similar, on average, the research assistants answered more questions correctly (6 of 16) than did the interns (5 of 16). There was no significant difference in various factors (e.g., previously receiving CPR training, practicing orotracheal intubation, and using a defibrillator) that could have affected the level of correct answers of the dentists who participated in the survey. The results of this study demonstrate that dentistry students in Turkey have insufficient knowledge and experience of CPR, in common with findings in many other countries [8-11].

CPR training during dentistry courses varies by country in terms of time allotted to training and necessity. In the United Kingdom, 93.9% of dentistry students receive CPR training during undergraduate education, and 98.9% receive such training during postgraduate education [4]. In Iran, since 2013, on a weekly basis, dental students receive 26 h of training (a combination of theory and practice) [12]. CPR training is compulsory in 95% of dentistry schools in the United

States (U.S.) [13]. In the U.S., many states request a CPR certificate from the dentist after graduation for state board dental registration [14]. In contrast, in Turkey, a first aid and emergency management course is an elective option in the 4th year of undergraduate education. This course covers basic life support and involves practice using a model. However, as this is an elective course, not all dental students undertake this type of training. In addition, CPR is included in the curriculum of general anesthesia in the 4th year of training. After undergraduate education, dentists in Turkey are not required to take part in compulsory training on CPR. Furthermore, after graduation, for those who continue to practice dentistry in the clinic, CPR certification is not mandatory. However, all dental practices are required to possess equipment, such as an ambu bag, adrenaline, and dopamine, to deal with potential emergencies. According to the present study, only 68.7% of dental interns and 60.5% of research assistants received CPR training during their undergraduate education.

An inability to manage medical emergencies properly can lead to legal complications and sometimes have tragic consequences. To ensure that dentists are able to manage medical emergencies in daily practice and enhance patient safety, training on CPR skills should be increased and made mandatory in all undergraduate and postgraduate dental courses.

Funding

No funding declared.

Conflict of Interest

None declared.

References

1. Chapman PJ (1997) Medical emergencies in dental practice and choice of emergency drugs and equipment: a survey of Australian dentists. *Aust Dent J* 42: 103-108.
2. Jevon P (2012) Updated guidance on medical emergencies and resuscitation in the dental practice. *Br Dent J* 212: 41-43.
3. Alhamad M, Alnahwi T, Alshayeb H, Alzayer A, Aldawood O, et al. (2015) Medical emergencies encountered in dental clinics: A study from the Eastern Province of Saudi Arabia. *J Family Community Med* 22: 175-179.
4. Atherton GJ, Pemberton MN, Thornhill MH (2000) Medical emergencies: the experience of staff of a UK dental teaching hospital. *Br Dent J* 188: 320-324.
5. Arsati F, Montalli VA, Flório FM, Ramacciato JC, da Cunha FL, et al. (2010) Brazilian dentists' attitudes about medical emergency during dental treatment. *J Dent Educ* 74: 661-666.
6. Narayan DP, Biradar SV, Reddy MT, Bk S (2015) Assessment of knowledge and attitude about basic life support among dental interns and postgraduate students in Bangalore city, India. *World J Emerg Med* 6: 118-122.
7. Jamalpour MR, Asadi HK, Zarei K (2015) Basic life support knowledge and skills of Iranian general dental practitioners to perform cardiopulmonary resuscitation. *Niger Med J* 56: 148-152.
8. Boddu S, Prathigudupu RS, Somuri AV, Lingamaneni KP, Rao P, et al. (2012) Evaluation of knowledge and experience among oral and maxillofacial surgeons about cardiopulmonary resuscitation. *J Contemp Dent Pract* 13: 878-881.
9. Sopka S, Biermann H, Druener S, Skorning M, Knops A, et al. (2012) Practical skills training influences knowledge and attitude of dental students towards emergency medical care. *Eur J Dent Educ* 16: 179-186.
10. Jodalli PS, Ankola AV (2012) Evaluation of knowledge, experience and perceptions about medical emergencies amongst dental graduates (Interns) of Belgaum City, India. *J Clin Exp Dent* 4: e14-e18.
11. Müller MP, Hänsel M, Stehr SN, Weber S, Koch T (2008) A state-wide survey of medical emergency management in dental practices: incidence of emergencies and training experience. *Emerg Med J* 25: 296-300.
12. Iranian curriculum of dentistry, approved at 2007. p.86: Persian.
13. Clark MS, Wall BE, Tholström TC, Christensen EH, Payne BC ((2006) A twenty-year follow-up survey of medical emergency education in U.S. dental schools. *J Dent Educ* 70: 1316-1319.
14. Peskin RM, Siegelman LI (1995) Emergency cardiac care. Moral, legal, and ethical considerations. *Dent Clin North Am* 39: 677-688.