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Knowledge and practice of senior medical students in Tehran University of Medical Sciences toward emergency management of tooth avulsion

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ABSTRACT

Introduction: Since physicians are frequently the first one to actually provide primary treatment in case of tooth avulsion, they need to have sufficient awareness in the basic principles of management this emergency situation. The aim of this study was to evaluate knowledge and self-reported practice of senior medical students at Tehran University of Medical Sciences (TUMS) about managing tooth avulsion.

Materials and Methods: This cross-sectional study evaluated the knowledge and self-reported practice of senior medical students (n=150) in TUMS towards management of tooth avulsion. A standard anonymous questionnaire obtained from previous studies was distributed among students. The questionnaire was consisted of questions on backgrounds (age, gender, previous encounter with tooth avulsion, previous education on management of traumatic dental injuries-TDIs); knowledge, and self-reported practice regarding tooth avulsion management; and satisfaction (self-competency, importance of educational programs, knowledge self-assessment, and willingness for further education). After collecting the questionnaires, the answers were scored and results were analyzed using descriptive statistics, linear regression model and Pearson correlation coefficient.

Results: Totally, 126 questionnaires were collected (Response rate= 84%) of whom 49 (%38.9) were male and 77 (%61.1) were female, with the mean age 25.1±1.2. Previous encounter with tooth avulsion was reported by 18 students (14.3%). Only five students (%4) had received education regarding TDIs. The knowledge, and self-reported practice mean score were 3.82±1.29 (out of 12), and 4.44±0.7 (out of 8), respectively. None of background variables had a significant relationship with the knowledge, and self-reported practice mean scores. There was no correlation between students' knowledge and self-reported practice. More than 97% of students reported low/very low self-competency for replantation of an avulsed tooth. Majority of the participants (%84.2) were dissatisfied with their level of knowledge and suggested that further education on the topic should be offered.

Conclusion: The results indicated that there is a need to improve the knowledge of medical students regarding management of traumatic dental injuries.

Keywords: Wounds and injuries, Medical students, Knowledge, Tooth avulsion.

Introduction

Among all facial injuries, traumatic dental injuries (TDIs) are the most common and the related prevalence range is 3.9-58.6 percent [1]. A large number of studies have revealed that dental trauma mainly affects the upper central incisors and can lead to a loss of function as well as a negative impact on quality of life, producing psychological and social discomfort, with lowered self-esteem, embarrassment upon smiling and difficulties

in communication with others [2]. Injuries to the face are usually the result of sporting activities, falls, car accidents, fights, and intentional assaults that occur more frequently in children than adult [3].

Avulsion injuries in children most frequently occur between ages 7 and 9 years when the permanent incisors are erupting. This kind of dental trauma is more common in boys than in girls. Most often the injury involves only a single tooth. The tooth most commonly avulsed in the permanent dentition is the maxillary central incisor [4]. Immediate replantation is the most appropriate treatment for avulsed permanent teeth. When replantation is not feasible, correct handling and maintenance of avulsed teeth in a suitable storage medium may help to ensure successful long-term outcomes. Conversely, incorrect handling and replantation after a prolonged, dry extra-alveolar period results in poor prognosis, with root resorption or ankyloses [5]. Since, the prognosis of a replanted permanent tooth depends primarily on (i) prompt and appropriate first-aid, commonly provided by non-health professionals at the site of the accident, (ii) the storage media of the avulsed tooth prior to replantation, and (iii) the viability of periodontal ligament remnants on the root surface [6].

There are two main reasons for delayed treatment of avulsed teeth. People present at the site of injury are usually lay persons such as parents, teachers and coaches who rarely know how to manage an avulsed tooth. In addition, soft tissue lacerations and bleeding are almost always associated with injuries to the teeth, which mask the loss of teeth. Therefore, it is not unusual for avulsion to be overlooked at time of the injury and be noticed by a first-aider, paramedic, a nurse or a physician when the injured child is brought to a clinic or an emergency room in a hospital [7-9].

International reports indicate that there is a gross lack of knowledge among people in various health care areas, including physicians and dentists, on management of traumatic dental emergencies [1,3-5]. The importance of providing some dental knowledge to members of the medical profession has been widely acknowledged however, with some exceptions, the inclusion of dental subject matter in medical student curricula has been limited or neglected [10-13]. The aim of this study was to evaluate knowledge of senior medical students at Tehran University of Medical Sciences about managing tooth avulsion.

Materials and Methods

This research represents a cross-sectional study on senior medical students at Tehran University of Medical Sciences, Iran, in 2018 regarding their knowledge and self-reported practice about management of tooth avulsion as an emergency situation. Ethical approval was granted by the Ethics Committee of Tehran University of Medical Sciences with the ethical approval number of IR. TUMS. DENTISTRY. REC. 1396. 2462.

The survey was voluntary and the responses were anonymous. All the participants were informed about the objectives and steps of the study. The instrument for data gathering in this study was a standard valid and reliable questionnaire based on similar previous study [1,4,13]. This anonymous questionnaire was consisted of four parts as follows:

Background information: including age, gender, previous encounter with tooth avulsion, and previous education on management of TDIs.

Knowledge: consisting of nine questions on students' knowledge regarding emergency management of tooth avulsion with multiple-choice, or 'yes', 'no' and 'I don't know' answers. A score of zero was given to false or "I do not know" answers and a correct answer scored one. One question had two correct answers and another one had three correct answers. By summing up the scores of nine questions, the knowledge score of each student was calculated (range: 0 to 12).

Self-reported practice: including one question on managing a paper case of tooth avulsion with multiple-choice answer. A score of zero was given to false or "I do not know" answers and a correct answer scored one. This question had more than one correct answers and by summing up the scores, the self-reported score of each student was calculated (range: 0 to 8).

Satisfaction: four questions regarding self-competency on replantation of an avulsed tooth, importance of educational programs with this regard, students' self-assessment of their knowledge, and willingness for further education on TDIs. The provided answers were based on the Likert scale from 'strongly agree' to 'strongly disagree' including 'No opinion'.

The participants were informed about the purpose and voluntary nature of the study, and asked to fill the questionnaire carefully. After the questionnaires were filled, the answers were scored and results were analyzed using descriptive statistics, linear regression model, and Pearson correlation coefficient. In SPSS version 22 (Chicago, IL, USA). P-values less than 0.05 were considered statistically significant.

Results

Totally, 150 questionnaires were distributed among senior medical students of which 126 questionnaires were collected (Response rate=84%). Forty-nine students (38.9%) were male and 77 (61.1%) were female. The mean age of respondents was 25.1±1.2. Previous encounter with tooth avulsion was reported by 18 students (14.3%). Only five students (4%) had received education regarding TDIs.

The mean score of students' knowledge with regard to emergency management of tooth avulsion was 3.82±1.29 (out of 12) with minimum 1 and maximum 8. Selecting dentist as "the best one for helping the injured person in case of tooth avulsion" by 82.9% of respondents, and choosing controlling the bleeding by a mild pressure and referring the child to a dentist as "the best practice in case of tooth avulsion in a 10-year-old child" by 57.3% of students were the highest and lowest correct answers in knowledge part (Table 1).

The mean score of students' self-reported practice with regard to emergency management of tooth avulsion was 4.44±0.7 (out of 8) with minimum 2 and maximum 6. The most correct answer was "referring the child to a dentist" (62.6%) and the most correct answer was "replanting the avulsed tooth" (just in 4.1%) in paper case in self-reported practice part (Table 2). None of background variables had a significant relationship with the knowledge, and self-reported practice mean scores. There was no correlation between students' knowledge and self-reported practice (P=0.75).

More than 97% of students reported low/very low self-competency for replantation of an avulsed tooth. Majority of the participants (%84.2) were dissatisfied with their level of knowledge and suggested that further education on the topic should be offered. More than 60% of students confirmed the importance of educational program towards emergency management of TDIs and about half of them (48.8%) were willing to attend in such a program.

None of background variables were had a significant relationship with the knowledge, and self-reported practice mean scores. There was no correlation between students' knowledge and self-reported practice. More than 97% of students reported low/very low self-competency for replantation of an avulsed tooth. Majority of the participants (%84.2) were dissatisfied with their level of knowledge and suggested that further education on the topic should be offered. The answers to TDI knowledge were scored on a scale of 0-12. Participants scored a maximum of 8 with average of 3.82±1.29. Most of the students (%85.7) didn't face a situation in which a tooth knocked out of the mouth. Among all participants, only five (%4) had received education regarding management of dental trauma. The answers to TDI self-assessment were scored on a scale of 0-8. Participants scored a maximum of 6 with average of 4.44 ± 0.7. Results of self-competency of students on replantation of an avulsed tooth indicated that most of students (97.5%) have low or very low competency on this regard.

None of the demographics had a significand relationship with the scores for TDI knowledge (Table 12). Self-perceived oral health was significantly associated with scores of the oral health behavior questions ($p<0.05$). Majority of the participants (%84.2) were dissatisfied with their level of knowledge and suggested that further education on the topic should be offered.

Discussion

In this study, we evaluated the knowledge and self-reported practice of senior medical students of TUMS, Tehran, Iran. Dental trauma can present as an isolated injury or as multiple extended injuries. In either case, they are frequently first attended by medical professionals in the emergency department. Although about 14.3% of the participants in this study had encountered a similar situation of tooth avulsion in their practice, they had never sought advice for appropriate management of the tooth avulsion. Despite their previous personal experience with dental trauma, they were not moved to seek additional knowledge in dental trauma management. A majority of the participants felt that dental trauma should ideally be managed by a dentist.

In the present study the average knowledge score for medical students was 3.82 ± 1.29 out of 12, while in a study conducted by Raoof et al. [1], the average knowledge score for physicians was 4.64 ± 1.46 out of 8 which are comparable. About appropriate containment for avulsed tooth Raoof et al. found the most correct answers by physicians were milk (43.7%), saline (82.8%), and patient saliva (60.9%); which, in our study the answers were milk (16.6%), saline (28.5%), and patient saliva (6.5%). This indicate that in our study, the grade of knowledge in this part is lower than the same study. Unfortunately, only 19 percent of medical students reported that they would immediately replant a permanent avulsed tooth. A study by Holan and Shmueli reported same result, it was found that 4% of the physicians thought that an avulsed permanent incisor should be replanted in any event, while

50% of them would not replant an avulsed tooth under any circumstances [3]. It seems that medical students were concerned with stopping the bleeding, which is the result of the basic emergency life support training provided during their medical education.

In a study conducted by Qazi et al. [4] in Pakistan, only 4.6% of non-dentist participants including physicians suggested immediate replantation and visiting a dentist for treatment was not considered necessary by the majority, even 6.1% of the responders opted to do nothing. But, in our study, 82.9% of medical students stated that the best person for the help in this situation is a dentist. In a study conducted by Abu-Dawoud et al. [7], the majority of the physicians (83.3%) surveyed had not received information on what to do if a tooth knocked-out and 96.6% did not have any dental health education course during their study. In our study, the result was same and only 4% of medical students had received information on this topic. In the report of Ulusoy et al. [13], 28 responders (40.6%) assessed their knowledge regarding medical treatment for traumatic injuries are insufficient and the majority (78.3%) stated that they would like further education. In our study, the result was similar and 67 (53.2%) students were dissatisfied with their knowledge about management of dental trauma and about half of the students were interested in participating in educational courses to improve their skills regarding TDI.

Finding from this study showed that there were no statistically significant association between the medical student's age, gender, semester, received first-aid training, dental trauma experience and their knowledge about dental trauma injuries. Holan and Shmueli [3], Diaz et al. [6] and Needleman et al. [14] and also obtained similar results. Some potential limitations of our study should be mentioned. First of them was that senior year students were distributed in different Tehran's hospitals, and that's why it was difficult to access them. Another limitation of this study was student's participation in responding to questionnaire.to solve this problem we provided a gift containing pen and non-sugar chewing gum. Another was the use of closed-ended questions that do not allow the researchers to include all possible responses.

In spite of these limitations, our study supports the findings of other authors in that the knowledge of physicians concerning emergency management of dental traumatic injuries is inadequate. The highlight of our study is that almost all the participants accepted that their knowledge on the management of dental trauma is definitely inadequate. All the participants were willing to attend an educational program on dental trauma. Data indicate that this important topic is neglected in the education of physicians as primary caregivers. Special emphasis must be given to practitioners regarding the treatment of an emergency involving a traumatized tooth. An effective approach may be incorporating an educational course about dental trauma emergency management in the medical curriculum. Medical students at the pre-doctoral level could engage in interdisciplinary seminars and case discussions within dental departments. Moreover, providing leaflets, stickers, and posters about basic emergency treatment to professional care providers can broaden their knowledge on the topic. Distribution of informational brochures to emergency rooms may help the practitioners to deal with such traumatic events. Continuing education courses that are voluntary or mandatory are another possible way to accomplish this goal.

Conclusion

Results showed that medical undergraduates have a poor knowledge on avulsion and tooth replantation. Educational programs are necessary to improve the knowledge and practice of future physician regarding emergency management of traumatic dental injuries.

	Choices	n (%)
Do you know "what is tooth avulsion"?	Yes*	61 (48.4%)
	No	64 (50.8%)
Would you care if a primary tooth is knocked out?	Yes	5 (4%)
	No*	73 (57.9%)
	I don't know	48 (38.1%)
Would you care if a permanent tooth is knocked out?	Yes*	24 (19%)
	No	36 (28.6%)
	I don't know	66 (52.4%)
A 10-year-old child had a tooth knocked out. What is the best practice in this situation?	Stop the bleeding by applying gentle pressure with a cloth over the injury and refer the patient to a dentist.	71 (57.3%)
	Put the tooth back in its socket and refer the child to a dentist.*	11 (8.9%)
	Place the tooth in a paper tissue and refer the child to a dentist	23 (18.5%)
	I don't know	19 (15.3%)
How urgent is it to seek professional help if permanent teeth have been knocked out?	Immediately*	45 (36.9%)
	Within half an hour*	14 (11.5%)
	Within few hours	39 (32%)
	Within the same day	13 (10.7%)
	Etc.	11 (9%)
If the tooth has fallen on the dirty ground, what would you do?	Clean the tooth with something	1 (0.8%)
	Clean the tooth with tap water/saline*	68 (54.9%)
	Clean the tooth with a disinfectant solution such as alcohol	0 (0.0%)
	I do nothing	17 (13.7%)
	I don't know	38 (30.6%)
Which storage medium is appropriate for storing a knocked out tooth?	Ice	6 (4.9%)
	Tap water	2 (1.6%)
	Paper tissue	18 (14.6%)
	Saline*	35 (28.5%)
	Gauze	12 (9.8%)
	Saliva (inside the mouth)*	8 (6.6%)
	Any disinfectant solution like alcohol	0 (0.0%)
	Milk*	8 (6.6%)
	Etc.	1 (0.8%)
	I don't know	39 (31.7%)
Which would be the first place you would redirect the child patient in case of knocked out teeth?	Medical nurse	2 (1.6%)
	Physician	11 (8.9%)
	Dentist*	102 (82.9%)
	Etc.	8 (6.5%)
How would you hold a knocked out tooth?	By the crown*	80 (69%)
	By the root	27 (23.3%)
	By the crown or root	9 (7.8%)

*Correct answer.

Table 1: Distribution of senior medical students' answers (n=126) to knowledge questions regarding emergency management of tooth avulsion.

	Choices	n (%)
If you were at a site where someone knocked-out a tooth, you would (you can choose more than one item):	Clean the tooth with a tooth brush	0 (0.0%)
	Rinse the tooth gently under running tap water*	27 (22%)
	Clean the tooth with other solutions like …..	5 (4.1%)
	Place the tooth in alcohol	0 (0.0%)
	Place the tooth in milk*	14 (11.4%)
	Place the tooth in saline*	62 (50.4%)
	Put the tooth back in its socket*	6 (4.9%)
	Refer the patient to dentist*	77 (62.6%)

*Correct answer.

Table 2: Distribution of senior medical students' answers (n=126) to self-reported practice questions regarding emergency management of tooth avulsion.

Conflict of Interest

There is no conflict of interest to declare.

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References

[1] Raoof M, Vakilian A, Kakoei S, Manochehrifar H, Mohammadalizadeh S. Should medical students be educated about dental trauma emergency management? A study of physicians and dentists in Kerman Province, Iran. J Dent Educ. 2013; 77:494-501.

[2] Jorge KO, Jorge MLR, Toledo FF, Alves LC, Paiva SM, Zarzar P. Knowledge of teachers and students in physical education's faculties regarding first-aid measures for tooth avulsion and replantation. Dent Traumatol. 2009; 25:494–499.

[3] Holan G, Shmueli Y. Knowledge of physicians in hospital emergency rooms in Israel on their role in cases of avulsion of permanent incisors. Int J Paediatr Dent. 2003; 13(1):13-9.

[4] Qazi SR, Nasir KS. First-aid knowledge about tooth avulsion among dentists, doctors and lay people. Dent Traumatol. 2009; 25(3):295-9.

[5] Ulusoy AT, Onder H, Cetin B, Kaya S. Knowledge of medical hospital emergency physicians about the first-aid management of traumatic tooth avulsion. Int J Paediatr Dent. 2012; 22:2116.

[6] Díaz J, Bustos L, Herrera S, Sepulveda J. Knowledge of the management of paediatric dental traumas by non-dental professionals in emergency rooms in South Araucanía, Temuco, Chile. Dent Traumatol. 2009; 25(6):611-9.

[7] Kumar S, Sajjanar AB, Athulkar M, Sajjanar J, Shewale A, Wasnik M, Dhongde P, Moon A. The Status of Knowledge Related to the Emergency Management of Avulsed Tooth amongst the Medical Practitioners of Nagpur, Central India. J Clin Diagn Res. 2017;11(5): ZC21-ZC24.

[8] Newman L, Crawford PJM. Dental injuries: 'first aid' knowledge of Southampton teachers of physical education. Endod Dent Traumatol. 1991; 7: 255–258.

[9] Stokes AN, Anderson HK, Cowan TM. Lay and professional knowledge of methods for emergency management of avulsed teeth. Endod Dent Traumatol. 1992; 8: 160–162.

[10] Thompson CC. Teaching basic dental concepts to medical students. J Dent Educ 1975; 39(9):6003.

[11] Stanley HR, Baughman RA, Garrington GE. Dental education in medical schools. J Am Dent Assoc. 1979; 99(2):177.

[12]Curtis JW, Garrison RS, Camp MG. Dentistry in medical education: results of a comprehensive survey. J Med Educ. 1985; 60(1):16-20.

[13]Abu-Dawoud M, Al-Enezi B, Andersson L. Knowledge of emergency management of avulsed teeth among young physicians and dentists. Dent Traumatol. 2007; 23(6):348-55.

[14]Needleman HL, Stucenski K, Forbes PW, Chen Q, Stack AM. Massachusetts emergency departments' resources and physicians' knowledge of management of traumatic dental injuries. Dent Traumatol. 2013; 29(4):272-9.

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