Dental Traumatology

Dental Traumatology 2010; 26: 338-341; doi: 10.1111/j.1600-9657.2010.00894.x

Knowledge and management of traumatic dental injuries in a group of Saudi primary schools teachers

Mohammad Al-Obaida

Department of Restorative Dental Sciences, College of Dentistry, King Saud University, Riyadh, Kingdom of Saudi Arabia

Correspondence to: Mohammad Al-Obaida, Department of Restorative Dental Sciences, College of Dentistry, King Saud University, P.O. Box 60196, Riyadh 11545, Eng. A.B. Research Chair For Growth Factors and Bone Regeneration Kingdom of Saudi Arabia Tel.: +9661 4677420 Fax: +9661 4661078 e-mail: malobaida@ksu.edu.sa Accepted 27 February, 2010 **Abstract** – The purpose of this study was to evaluate the knowledge level of a group of Saudi primary school teachers in the management of dental trauma. A three-part questionnaire on demographic data and knowledge was distributed to the teachers in Riyadh city. Twenty-four selected schools were visited and 277 teachers participated in the study of which 5 of them had formal education in dental injuries. Concerning knowledge, 124 teachers (44.8%) believed dental trauma emergency should be dealt with immediately. This study showed that majority of teachers were not aware of the most favorable storage media for avulsed permanent teeth. It was concluded that the majority of Saudi primary school teachers in Riyadh city do not know how to handle a child who sustains dental injury.

Introduction

Children are subjected to facial injuries because of their extra activities, the most is the dental injuries (1). The majority of dental injuries happen between ages 8 and 11 years (2). It has been shown that when a child reaches school age, accidents in the school environment in the form of falls are very common and are the main cause of traumatic dental injuries (2). Dental injuries can vary from simple concussions to extensive maxillofacial damage involving periodontal structures and displacement or avulsion of teeth. Crown fracture is the most frequent type of injury, comprising 26-76% of injuries to the permanent dentition (3). Luxation injuries comprise 30-44% of all dental injuries (4). The complete detachment of tooth from the socket (avulsion) is the most complicated and serious which comprises 1-16% of dental injuries with peak incidence record in the 7- to 11-year-old age group and the maxillary central incisors being the most affected (5-7). It was 75% more frequent in children under the age of 15 (8).

In nearly all cases of dental injuries, prompt and appropriate management of traumatic dental injuries is an important determinant of prognosis especially in case of avulsion (7, 9-11) where immediate re-plantation of cleaned tooth is the best treatment of choice, with success rates of 85–97% healing of periodontal ligament depending on the root development stage (12). This requires an individual to have knowledge and experience to be available at the area where the trauma happened. When

immediate re-plantation is not feasible, one should consider length of time for which the tooth is out of the mouth, the manner of handling and cleaning the tooth, and the medium in which it was stored. All these factors needs knowledge of dental emergency aids which is well outlined in the guideline presented by the International Association of Dental Traumatology (IADT) which are all very important in the success of treatment and prognosis (13). Parents and school teachers who deal with children should be familiar with the dental emergency aid. Many studies around the world indicated the lack of knowledge of school teachers with regard to emergency management of dental trauma (14-21). However, no studies concerning knowledge and attitudes of school teachers on dental trauma management have been done in Saudi Arabia.

The purpose of this study was to evaluate the knowledge level in the management of dental injuries in a group of school teachers in the primary schools in the capital city of Riyadh using a questionnaire.

Materials and methods

A modified questionnaire that was used in the study done by Sae-Lim and Lim (19) was distributed to a group of Saudi primary school teachers in Riyadh to evaluate the knowledge of dental injuries management for children (Fig. 1). Twenty-four selected schools were visited and teachers who were present at school were requested to fill in a questionnaire inquiring about their knowledge on dental injuries.

Part 1. Personal and professional information
() Male () Female
Q2. Age
() 20 - 30 () 31 - 40 () 41 - 50 () <50
Q3. Length of service (year)
Q4. Did you have first-aid training? If yes, did it cover "management of dental trauma"?
Q5. Have you ever experienced an accident where a tooth was knocked out?
Part 2. Knowledge to dental injuries
CASE 1. During school hours, a 9-year-old boy was hit in the face with a softball. His upper front teeth
were broken. He was otherwise unhurt and did not lose consciousness.
Q1. Are the damaged front teeth likely to be permanent or primary (baby) teeth?
() Look for parts of broken tooth and after class, contact his parents to evolvin what had
happened
() Look for parts of broken tooth and then give him a warm drink and contact her parents.
() Look for parts of broken tooth and send to the school nurse.
() Look for parts of broken tooth and contact his parents. Send him immediately to the dentist.
CASE 2. During school hours, a 12-year-old girl fell from the stairs and hit in the mouth. Her mouth
was bleeding and an upper front tooth was found to be missing.
() Look for the tooth and wash it with tap water
() Sideline the injured box getting him to bite on a tissue paper to control the bleeding
() Get the boy to hold the tooth carefully in his mouth and take her immediately to the nearest
dentist.
() Look for the tooth and put it back into the socket.
Part 3. Medical knowledge regarding dental trauma
Q1. If your students came to you with a knocked-out tooth in the hand after an accident, who would
be the first person you would contact and seek treatment?
() Medical doctor
() Defilist
Q2 Would you replant (out back) the tooth back into the socket from which it avulsed?
Q3. If you decide to replant a tooth back into its socket but it had fallen onto the ground and was
covered in dirt, what would you do?
() Scrub the tooth gently with a toothbrush.
() Rinse the tooth under tap water.
() Put the tooth straight back into the socket without any pretreatment.
Q4. If liquid is used to wash the tooth, what liquid would you use?
() lap water
() antiseptic solution
Q5. If you did not replant the tooth, how would you transport it to the dentist?
() ice
() child's mouth
() paper tissue
Q6. It a liquid is used to transport the tooth, what liquid would you use? (Arrange with priority)
() iresni milk () obild'e meuth
() water
() normal saline
Q7. Would you search for if the child had tetanus vaccine?
() yes
() no

Fig. 1. Questionnaire.

All teachers, both males and females, were randomly selected from the primary schools in Riyadh, Saudi Arabia. The questionnaire was distributed to 440 teachers. Two hundred seventy-seven teachers responded (131 males and 146 females). The questionnaire was divided to three parts. Part 1 consisted of questions about personal and professional profiles of the teachers. Part 2 consisted of questions about their knowledge to dental injuries. Part 3 was concerned with their medical knowledge assessment regarding dental trauma. The teachers who agreed to take part in the survey were assured of strict confidentiality. Statistical analysis was performed using SPSS software for Windows version 12.0.

Results

The teachers' response rate was 63%. The results from Part 1 on teachers' demographic characteristics are shown in Table 1. Their age range was from 20 to 52 years and teaching experience ranged from 1 to 32 years. Positive results were obtained from old teachers who had reasonable length of teaching and dental trauma experience. In general, 17.8% (42 teachers) had first-aid training once in their teaching career and only 1.8% (5 teachers) were trained to deal with dental emergencies as part of their first-aid training. Regarding the number of trauma cases seen, 22.7% have seen at least one trauma case throughout their teaching career. The responses from Part 2 knowledge survey were generally negative (Table 2).

In Case I where a 9-year-old boy broke his upper front teeth when hit in the face with a softball but was unhurt and conscious, 35.3% of the respondents knew that the fractured tooth was most likely to be a permanent incisor. Regarding the immediate emergency management of the case, 55.2% gave the wrong response. In Case II where a 12-year-old girl had mouth bleeding and lost her upper front tooth when she fell from the stairs, regarding emergency management of this case, 74.3% gave the wrong action on how to deal with the injury.

340 Al-Obaida

Table 1. Demographic characteristics of the teachers – Part 1

Demographic information	п	%
Personal profile		
Gender		
Male	131	47.2
Female	146	52.8
Age		
20–29	125	45.1
30–39	92	33.2
40–49	55	19.8
>50	5	1.9
Length of teaching experience (year)		
Less or equal to 5	100	36.1
More than 5 and less than or equal to 10	62	23.3
More than 10	115	41.6
First-aid training in general		
Yes	42	17.8
No	235	82.2
Training in dental emergencies		
Yes	5	1.8
No	272	98.2
Dental trauma experience		
Yes	63	22.7
No	214	77.3

Table 2. Results of the attitude questionnaire - Part 2

	Male				Female			
	Correct		Incorrect		Correct		Incorrect	
Attitude	п	%	п	%	п	%	п	%
Awareness of tooth eruption timing	40	14.4	91	32.9	58	20.9	88	31.8
Immediate reaction to trauma	43	15.3	88	31.8	81	29.4	65	23.5
Reaction regarding avulsed tooth	30	10.8	101	36.5	41	14.8	105	37.9

Table 3. Results of the knowledge questionnaire – Part 3

	Male	Male				Female			
	Correct		Incorrect		Correct		Incorrect		
Knowledge	n	%	п	%	n	%	п	%	
Immediate contact to dentist	113	40.8	18	6.5	127	45.8	19	6.9	
Immediate re-implant the tooth	26	9.4	105	37.9	41	14.8	105	37.9	
Clearance of avulsed teeth	84	30.3	47	17.0	88	31.8	58	20.9	
Washing liquid	47	17.0	84	30.3	57	20.6	89	32.1	
Transportation vehicle	29	10.5	102	36.8	25	9.0	121	43.7	
Transportation liquid	4	1.4	127	45.8	1	0.4	145	52.4	
Tetanus vaccine control	46	16.6	85	30.7	32	11.5	114	41.29	

Results of the survey on the action taken by the teachers in the event of dental trauma (Part 3) were presented in Table 3. For the question that the first person he would contact and seek treatment, 86.6% gave

the right response to immediately contact the dentist. In regard to immediately re-implant the tooth, 24.1% gave the right response. Regarding to re-plant a tooth back into its socket that had fallen onto the ground and was covered in dirt, 62.1% gave the right response to wash the tooth with tap water. In using a liquid to wash the tooth, 37.5% gave the right response and selected tap water to wash it. Regarding the best way to transport the tooth to the dentist, 19.4% gave the right response of transporting it in the child's cavity. Surprisingly, 98.2%gave the wrong response of using a liquid to transport the tooth and only scrubbing the tooth to clean it.

Discussion

This work used a questionnaire to investigate primary school teacher's knowledge in management of dental injuries. The result demonstrated that only 44.8% of teachers would seek health professional consultation immediately. Different finding was reported by previous worker who stated that 85% of Tanzanian teachers would send the child who had dental injuries for dental consultation immediately after injury (18). This difference in finding may be due to that these teachers may have more positive and adequate dental knowledge. Previous studies mentioned the importance of first-aid training for dental emergency (14-17, 22). Furthermore, this study showed that only 1.5% of school teachers had courses in first-aid dental emergency and 28.5% had experienced trauma in children at school. This is consistent with the review done by Glendor in 2009 that confirmed the failure of a large part of the educational process of professional caregivers and lay people (23). This failure may lead to mismanagement of tooth avulsion. The proper knowledge and immediate response and reaction to dental trauma were significant in the management success and prognosis of traumatized tooth (13) although 57% gave the inappropriate response.

At the primary schools in Riyadh, the age of children ranges from 6 to 12 years old. Knowledge on the type of traumatized tooth at this age range was critical during management. Avulsed primary tooth must not be re-implanted in the oral cavity to avoid damage to succeeding primary tooth in the alveolar bone while permanent tooth should be re-implanted into its socket although this study showed that only 35.3% of the school teachers are aware of tooth eruption time (2, 4).

Similarly in two studies (24, 25), the knowledge level of tooth avulsion, re-plantation and management of avulsed teeth was found to be low in Kuwaiti parents and school children.

In the dental profession, it is generally accepted that prompt and proper management of traumatized dental injuries is an important determinant of prognosis especially in relation to avulsed permanent incisor. Furthermore, the wellbeing of avulsed teeth depends largely on appropriate manipulation and handling of the tooth to maintain vitality of cells over the root, cleansing of the tooth by tap water, time of which the tooth is out of its socket, storage medium in which the tooth is stored and immediate consultation to a dentist (7, 9-11, 17). This study presented that 62% of the school teachers gave the appropriate manipulation, 37.6% selected tap water to wash the tooth, while only 1.8% knew the proper medium to store the tooth. Nearly 87% wanted to contact the dentist but they do not consider the time lapse from injury to dental consultation as an important factor. Parallel findings were reported by previous investigation (18).

Conclusion

The study gave a clear idea that there was insufficient knowledge and awareness of primary school teachers in Riyadh city in the management of dental injuries.

Recommendation

The Ministry of Health and other governmental dental facilities should take proper measures to improve the knowledge of the society in general dentistry and primary first aid especially the school teachers who are dealing with children.

References

- 1. Caglar E, Ferreira LP, Kargul B. Dental trauma management knowledge among a group of teachers in two south European cities. Dent Traumatol 2005;21:258–62.
- Petersson EE, Andersson L, Sorensen S. Traumatic oral vs. non-oral injuries. Swed Dent J 1997;21:55–68.
- 3. Gassner R, Bosch R, Tuli T, Emshoff R. Prevalence of dental trauma in 6000 patients with facial injuries. Oral Surg 1999;87:27–33.
- Andreasen JO, Andreasen FM. Luxation injuries. In: Andreasen JO, Andreasen FM, editors. Textbook and color atlas of traumatic injuries of the teeth, 3rd edn. Copenhagen: Munksg-aard; 1993. p. 315–82.
- Fountain SB, Camp JH. Traumatic injuries. In: Cohen S, Burns AC, editors. Pathways of the pulp. St. Louis, MO: Mosby; 1994. p. 436–85.
- Glendor U, Halling A, Andersson L, Eilert-Petersson E. Incidence of traumatic tooth injuries in children and adolescents in the county of Vastmanland, Sweden. Swed Dent J 1996;20:15–28.
- Andreasen JO, Andreasen FM, Andersson L. Textbook and color atlas of traumatic injuries to the teeth, 4th edn. Oxford: Blackwell Munksgaard; 2007.
- Bhat M, Li SH. Consumer product-related tooth injuries treated in hospital emergency rooms: United States, 1979–87. Community Dent Oral Epidemiol 1990;18:133–8.
- Andreasen JO, Andreasen FM, Skeie A, Hjorting-Hansen E, Schwartz O. Effect of treatment delay upon pulp and periodontal healing of traumatic dental injuries – a review article. Dent Traumatol 2002;18:116–28.

- Trope M. Endodontic consideration in dental trauma. In: Ingle JI, Bakland LK, editors. Ingle's endodontics, 6th edn. Ontario: BC Decker Inc; 2008. p. 1348–52.
- 11. Andreasen JO. The effect of extra-alveolar period and storage media upon periodontal and pulpal healing after replantation of mature permanent incisors in monkeys. Int J Oral Surg 1981;10:43–53.
- Andreasen JO, Borum MK, Jacobsen HL, Andreasen FM. Replantation of 400 avulsed permanent incisors. 4. Factors related to periodontal ligament healing. Endod Dent Traumatol 1995;11:76–89.
- Flores MT, Andersson L, Andreasen JO, Bakland LK, Malmgren B, Barnett F et al. Guidelines for the management of traumatic dental injuries. II. Avulsion of permanent teeth. Dent Traumatol 2007;23:130–6.
- Addo ME, Parekh S, Moles DR, Roberts GJ. Knowledge of dental trauma first aid (DTFA): the example of avulsed incisors in casualty departments and schools in London. Br Dent J 2007;202:E27.
- Blakytny C, Surbuts C, Thomas A, Hunter ML. Avulsed permanent incisors: Knowledge and attitudes of primary school teachers with regard to emergency management. Int J Paedia Dent 2001;11:327–32.
- Newman L, Crowford PJM. Dental injuries: knowledge of Southampton teachers of physical education. Endod Dent Traumatol 1991;7:255–8.
- Hamilton FA, Hill FJ, Mackie IC. Investigation of lay knowledge of the management of avulsed permanent incisors. Endod Dent Traumatol 1996;13:19–21.
- Kahabuka FK. Primary school teacher's knowledge actions to be taken when a child sustains oro-dental trauma. Dar-es-Salaam, United Republic of Tanzania: Citation Tanzanian Public Health Association; 2001. pp. 177–80.
- Sae-Lim V, Lim LP. Dental trauma management awareness of Singapore pre-school teachers. Dent Traumatol 2001;17:71–6.
- Al Jundi SH, Al-Waeili H, Khairalah K. Knowledge and attitude of Jordanian school health teachers with regards to emergency management of dental trauma. Dent Traumatol 2005;21:183–7.
- Chan AWK, Wong TKS, Cheung GSP. Lay knowledge of physical education teachers about the emergency management of dental trauma in Hong Kong. Dent Traumatol 2001;17:77–85.
- Al-Asfour A, Andersson L, Al-Jame Q. School teachers' knowledge of tooth avulsion and dental first aid before and after receiving information about avulsed teeth and replantation. Dent Traumatol 2008;24:43–9.
- Glendor U. Has the education of professional caregivers and lay people in dental trauma care failed? Dent Traumatol 2009;25:12–8.
- Andersson L, Al-Asfour A, Al-Jame Q. Knowledge of firstaid measures of avulsion and replantation of teeth: an interview of 221 Kuwaiti schoolchildren. Dent Traumatol 2006;22:57–65.
- Al-Asfour A, Andersson L. The effect of a leaflet given to parents for first aid measures after tooth avulsion. Dent Traumatol 2008;24:515–21.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.