

Knowledge and attitude of dental trauma among dental students in Saudi Arabia

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ABSTRACT

Objective: The aim of this study was to assess the level of knowledge and attitude of Saudi dental students in the management of dental trauma in children. **Materials and Methods:** A self-administered questionnaire comprising 17 close-ended questions was used in this survey. The questions were divided into three parts including: Personal and professional profile; knowledge assessment; attitude toward dental trauma. Data of 307 respondents were analyzed using SPSS (Statistical Package for Social Studies) version 22.0 (IBM Corporation, Chicago, IL, USA). **Results:** The response rate was 76.8%. Around 40.3% of students reported attending additional courses about dental trauma with a significant difference between males (57.2%) and females (19.4%). The vast majority of students (95.7%) stressed the importance of dental trauma education. While 77% could correctly identify the media of transportation of an avulsed tooth, only 26.9% of the students knew the proper method of transportation. Regarding the knowledge of immediate replantation, only 67.5% of students responded correctly. **Conclusion:** The present study demonstrates an insufficient knowledge concerning dental trauma management among dental students in Saudi Arabia. This highlights the need to improve the knowledge of dental students regarding dental trauma and its management using a variety of educational methods such as problem-based learning and powering the curriculum concerning those topics of dental trauma.

Key words: Attitude, dental students, dental trauma, knowledge, Saudi Arabia

INTRODUCTION

Trauma to both primary and permanent dentitions and their supporting structures is commonly occurring in children.^[1] Most of these injuries happen between 8 and 11 years.^[2] Many studies on dental traumatology gave evidence that most dental accidents in children occur at home and school.^[3] Dental injuries can vary from simple concussions to a considerable damage involving structures surrounding the tooth.^[4] Avulsion, a complete detachment of tooth from the socket, is the most complicated and serious type of all dental injuries. It represents 1–16% of dental trauma with a peak incidence in the 7–11-year-old children, with the highest incidence in maxillary central incisor.^[5,6] The appropriate management of traumatically avulsed tooth is critical for the survival of the tooth.^[7-9] A series of guidelines for the management of avulsed permanent teeth were published by the International Association for Dental Traumatology (IADT). These guidelines outline the

proper approach for the immediate care of avulsed permanent teeth, helping dentists and other health care professionals to make a decision regarding avulsion cases.^[10]

Several studies have assessed the knowledge of various populations such as dentists, school teachers, and physicians regarding the emergency management of teeth avulsion.^[11-15] Most of these studies reported the need for better communication between dental

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How to cite this article: Al-Shamiri HM, Alaizari NA, Al-Maweri SA, Tarakji B. Knowledge and attitude of dental trauma among dental students in Saudi Arabia. *Eur J Dent* 2015;9:518-22.

DOI: 10.4103/1305-7456.172636

professionals and the community to improve the awareness.

In Saudi Arabia, the incidence of dental trauma is higher than that reported in other countries.^[4,16,17] However, as far as we know, the data regarding knowledge of dental trauma among dental students is lacking. Therefore, this study is aimed to assess the level of educational knowledge and attitude of Saudi dental students in the management of dental trauma in children, as well as, to examine the influence of dental education on the management of dental trauma among those students.

MATERIALS AND METHODS

This study consisted of a cross-sectional survey of undergraduate dental students at the school of Dentistry, Al-Farabi Colleges, Riyadh, Saudi Arabia. All clinical dental students (4th–5th year) enrolled during 2014–2015 academic year were eligible to participate ($N = 400$). The study was approved by the Al-Farabi College Institutional Ethical Review Board.

A structured questionnaire was adapted from pretested questionnaires that have been used in similar studies by Al-Obaid,^[4] Fujita *et al.*,^[17] with some modifications to suit the student's educational level. Before submitting the questionnaire, a pilot study was performed on a random sample of the students ($N = 40$) and the questionnaire was modified according to the feedback obtained.

Students were asked to fill out the anonymous self-administered questionnaire at the end of the lectures, and sometimes during the clinical sessions without the discussion for 15 min. Students, who agreed to participate in the study, signed a consent form.

The self-administered questionnaire comprised 17 close-ended questions divided into three parts. The first part screened the personal and professional profiles of the students including age, gender, educational level, first aid training, and dental trauma courses. The second part assessed the knowledge of those students about the dental trauma. The third part investigated the attitude and the management of dental trauma with the emphasis on the avulsion of the teeth.

SPSS (Statistical Package for Social Studies) version 22.0 (IBM Corporation, Chicago, IL, USA) was used for data

entry and descriptive statistics including frequencies and proportions. Chi-squared test was used to compare groups. A $P < 0.05$ was considered significant.

RESULTS

Out of the 400 dental students participated in the survey, 307 returned questionnaires, giving a response rate of 76.8%.

Table 1 presents the number and percentage of students regarding the age, educational level, and professional data. Around 54.4% of the participants were males. Regarding professional data, the significantly higher percentage of male reported attending first aid (65.3%) and dental trauma management courses (65%) as compared to females ($P < 0.05$).

With regard to dental trauma, knowledge, around (95.7%) of the participants stressed the importance of dental trauma education. Also, there was an acceptable, correct response in relation to the chronology, the possibility of replantation, and the success immediate replantation. However, only (67.5%) of the participants correctly answered the question regarding the period within which the tooth must be replanted. A positive correlation was found between the knowledge of students toward dental trauma and the academic level ($P = 0.000$; [Table 2]).

Generally, students showed variations regarding their attitude toward dental trauma [Table 3]. While 77% identified correctly the media of transportation of an avulsed tooth, only 26.9% of the students knew the proper method of transportation. Female students showed better attitude than males, and the differences were statistically significant ($P \leq 0.001$).

Table 1: Results of personal and professional data n (%)

Variable	Gender		P	Total
	Male	Female		
Age				
18-25	140 (83.8)	133 (95)	0.008	273 (88.9)
26-35	21 (12.6)	6 (4.3)		27 (8.8)
36-45	6 (3.6)	1 (0.7)		7 (2.3)
Educational level				
4 th year	80 (47.9)	71 (50.7)	0.624	151 (49.2)
5 th year	87 (52.1)	69 (49.3)		156 (50.8)
First aid course	109 (65.3)	56 (40.9)	0.000	165 (54.3)
Course of dental trauma management	93 (65)	23 (21.7)	0.000	116 (46.6)
Additional course about dental trauma	95 (57.2)	26 (19.4)	0.000	121 (40.3)

Table 2: Results of correct response of dental trauma knowledge *n* (%)

Variable	Academic year			Gender			Total
	4 th year	5 th year	<i>P</i>	Male	Female	<i>P</i>	
Importance of dental trauma education	140 (93.3)	152 (98.1)	0.041	157 (94.6)	135 (97.1)	0.273	292 (95.7)
Chronology of maxillary anteriors in 8-year-old child	73 (50)	142 (93.4)	0.000	116 (70.3)	99 (74.4)	0.429	215 (72.1)
Possibility of avulsed teeth replantation	105 (70)	146 (93.6)	0.000	138 (82.6)	113 (81.3)	0.761	251 (82)
Period within which the tooth must be replanted	80 (53.7)	124 (81)	0.000	126 (76.8)	78 (56.5)	0.000	204 (67.5)
Successful outcome of immediate replantation	114 (79.2)	105 (70.9)	0.105	100 (63.3)	119 (88.8)	0.000	219 (75)

Table 3: Results of correct response of attitude regarding dental trauma *n* (%)

Variable	Academic year			Gender			Total
	4 th year	5 th year	<i>P</i>	Male	Female	<i>P</i>	
Attitude to replant an avulsed tooth	101 (68.2)	62 (40.2)	0.000	52 (32.1)	111 (80.4)	0.000	163 (54.3)
Attitude to replant an avulsed tooth covered with mud	79 (55.2)	136 (88.9)	0.000	129 (80.1)	86 (63.7)	0.004	215 (72.6)
Attitude of washing an avulsed tooth	47 (32.4)	109 (70.8)	0.000	108 (66.7)	48 (35)	0.000	156 (52.2)
Method of transportation of an avulsed tooth	36 (24.8)	44 (28.9)	0.000	11 (6.9)	69 (50.4)	0.000	80 (26.9)
Media of transportation	88 (60.7)	143 (92.3)	0.000	114 (70.4)	117 (84.8)	0.013	231 (77)
Tetanus vaccine	100 (68.5)	81 (52.6)	0.005	76 (46.6)	105 (76.6)	0.000	181 (60.3)

DISCUSSION

A suitable emergency management and treatment plan is critical to the success and good prognosis of dental trauma. Treatment guidelines for dental trauma are required to help dentists and other healthcare workers to provide the proper and effective care for children in case of trauma.^[10] Consequently, it is important to enhance the awareness and upgrade the information about dental trauma for those professional. If those guidelines were applied immediately after traumatic injury, both short- and long-term outcomes would be improved.^[10]

This cross-sectional study was conducted to evaluate the level of the knowledge and attitude toward dental trauma, with particular emphasis on dental avulsion among clinical dental students in Riyadh, Saudi Arabia. These students have had some lectures about dental trauma and its management in the curriculum of some subjects (oral surgery, endodontics, and pedodontics).

The current results demonstrated a significant shortage in attending courses about dental trauma, especially among female students. This could be attributed to the closed social culture in Saudi, which makes it more difficult for females to attend such courses. Hence, dental students should be encouraged and motivated to attend courses about dental trauma and its management.

We evaluated the knowledge of the students about the dental trauma through some questions related to

the chronology of eruption of the maxillary anterior teeth, (the most common teeth vulnerable to trauma), the period within which the avulsed tooth must be replanted, and if the immediate replantation is essential for successful outcome or not. Overall, there was an acceptable positive response from the students regarding the above points. Unsurprisingly, there was a significant favorable response from students of the higher academic level (5th-year students) compared with those of lower academic level. This result is expected to and could be attributed to the fact that their knowledge regarding dental trauma is more updated and refreshed than 4th-year dental students. Another possible explanation for this finding is the fact that the 5th year students had been exposed to clinical cases as compared to those of lower academic levels.

The vast majority of students (95.7%) from both academic levels stressed the importance of receiving dental trauma education, indicating their willingness to receive more educational programs regarding dental trauma. This finding is in consistent with previous studies.^[1]

Vital factors that might affect the success of the treatment of an avulsed tooth are the storage period, transportation method, and the media of the transportation, which directly related to the viability of periodontal ligament cells.^[18] According to the guidelines of dental trauma management published by American Academy of Pediatric Dentistry and the IADT, the immediate replantation of a tooth is recommended for the best prognosis.^[7,10] If the tooth cannot be replanted within 5 min, it should be stored

in a medium that will help to maintain the vitality of the periodontal ligament fibers.^[19] The best media for transportation is Viaspan™, Hank's balanced salt solution, and milk.^[10,20,21] In the present study, around 77% of the students (60% of 4th and 92.3% of 5th year students) selected milk as the best media of transportation indicating that they have reasonable knowledge that milk is one of the most practical and obtainable medium for transport of avulsed teeth. The pH and osmolality of the milk are similar to those of extracellular fluid.

The avulsed tooth should be kept moist, as the risk of ankylosis will be increased significantly with increasing the time of dryness over 20 min.^[22-24] Unfortunately, most of the students in the present study (73.1%) were not aware that the avulsed tooth could, and should be transported to the dentist in the patient mouth, keeping it inside the lip or cheek if the patient was conscious.^[10] This again indicates a lack of current knowledge about this point.

Management of dental trauma is one of the areas in which dental students reported low levels of confidence.^[25] This finding was identified by some previous studies among the United Kingdom dentists which have highlighted the lack of confidence and competence in dental trauma management.^[12,26,27] Vasconcellos *et al.*^[28] in his study of general dentists in Brazil stressed the need for the general dentists to improve their knowledge about dental trauma management.

It has been reported that all observational studies such as cross-sectional surveys are prone to limitation and bias.^[29] This study has some limitations that should be taken into consideration. One possible limitation is the likelihood of selection bias given that dental students who chose to participate in the survey may be more keenly interested or concerned with dental trauma and its management than those who did not participate. Therefore, the results are likely not generalizable to nonrespondents. Additionally, a general limiting characteristic of the self-reporting survey is the probability of socially acceptable responding,^[30] and, therefore, the results may not necessarily fully reflect student's real knowledge and daily professional practice. Nonetheless, despite these limitations, the study provides some important information about the Saudi dental students' knowledge and attitude regarding dental trauma.

Similar to previous studies, the results of the present study demonstrate the insufficient knowledge

regarding dental trauma management among dental students in Saudi Arabia.

This highlights the need to improve the knowledge of dental students regarding dental trauma and its management using a variety of educational methods such as problem-based learning and powering the curriculum concerning those topics of dental trauma.

Financial support and sponsorship
Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Panzarini SR, Pedrini D, Brandini DA, Poi WR, Santos MF, Correa JP, *et al.* Physical education undergraduates and dental trauma knowledge. *Dent Traumatol* 2005;21:324-8.
2. Petersson EE, Andersson L, Sörensen S. Traumatic oral vs non-oral injuries. *Swed Dent J* 1997;21:55-68.
3. Abdellatif AM, Hegazy SA. Knowledge of emergency management of avulsed teeth among a sample of Egyptian parents. *J Adv Res* 2011;2:157-62.
4. Al-Obaida M. Knowledge and management of traumatic dental injuries in a group of Saudi primary schools teachers. *Dent Traumatol* 2010;26:338-41.
5. Glendor U, Halling A, Andersson L, Eilert-Petersson E. Incidence of traumatic tooth injuries in children and adolescents in the county of Västmanland, Sweden. *Swed Dent J* 1996;20:15-28.
6. Andreasen JO, Andreasen FM, Andersson L. Textbook and Color Atlas of Traumatic Injuries to the Teeth. Blackwell Publishing Ltd, 9600 Garsington Road, Oxford OX4 2DQ, UK: John Wiley and Sons; 2013.
7. Trope M. Clinical management of the avulsed tooth: Present strategies and future directions. *Dent Traumatol* 2002;18:1-11.
8. Andersson L, Bodin I. Avulsed human teeth replanted within 15 minutes – A long-term clinical follow-up study. *Endod Dent Traumatol* 1990;6:37-42.
9. Andreasen JO, Andreasen FM, Skeie A, Hjørting-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.
10. Andersson L, Andreasen JO, Day P, Heithersay G, Trope M, Diangelis AJ, *et al.* International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 2. Avulsion of permanent teeth. *Dent Traumatol* 2012;28:88-96.
11. Cohenca N, Forrest JL, Rotstein I. Knowledge of oral health professionals of treatment of avulsed teeth. *Dent Traumatol* 2006;22:296-301.
12. Hamilton FA, Hill FJ, Holloway PJ. An investigation of dento-alveolar trauma and its treatment in an adolescent population. Part 2: Dentists' knowledge of management methods and their perceptions of barriers to providing care. *Br Dent J* 1997;182:129-33.
13. 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;13:13-9.
14. Raphael SL, Gregory PJ. Parental awareness of the emergency management of avulsed teeth in children. *Aust Dent J* 1990;35:130-3.
15. Stokes AN, Anderson HK, Cowan TM. Lay and professional knowledge of methods for emergency management of avulsed teeth. *Endod Dent Traumatol* 1992;8:160-2.
16. Al-Majed I, Murray JJ, Maguire A. Prevalence of dental trauma in 5-6- and 12-14-year-old boys in Riyadh, Saudi Arabia. *Dent Traumatol* 2001;17:153-8.
17. Fujita Y, Shiono Y, Maki K. Knowledge of emergency management of avulsed tooth among Japanese dental students. *BMC Oral Health* 2014;14:34.

18. Andreasen JO. External root resorption: Its implication in dental traumatology, paedodontics, periodontics, orthodontics and endodontics. *Int Endod J* 1985;18:109-18.
19. McDonald N, Strassler HE. Evaluation for tooth stabilization and treatment of traumatized teeth. *Dent Clin North Am* 1999;43:135-49, vii.
20. 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.
21. Barrett EJ, Kenny DJ. Survival of avulsed permanent maxillary incisors in children following delayed replantation. *Endod Dent Traumatol* 1997;13:269-75.
22. Sigalas E, Regan JD, Kramer PR, Witherspoon DE, Opperman LA. Survival of human periodontal ligament cells in media proposed for transport of avulsed teeth. *Dent Traumatol* 2004;20:21-8.
23. Chappuis V, von Arx T. Replantation of 45 avulsed permanent teeth: A 1-year follow-up study. *Dent Traumatol* 2005;21:289-96.
24. Donaldson M, Kinirons MJ. Factors affecting the time of onset of resorption in avulsed and replanted incisor teeth in children. *Dent Traumatol* 2001;17:205-9.
25. Rodd HD, Farman M, Albadri S, Mackie IC. Undergraduate experience and self-assessed confidence in paediatric dentistry: Comparison of three UK dental schools. *Br Dent J* 2010;208:221-5.
26. Maguire A, Murray JJ, al-Majed I. A retrospective study of treatment provided in the primary and secondary care services for children attending a dental hospital following complicated crown fracture in the permanent dentition. *Int J Paediatr Dent* 2000;10:182-90.
27. Kostopoulou MN, Duggal MS. A study into dentists' knowledge of the treatment of traumatic injuries to young permanent incisors. *Int J Paediatr Dent* 2005;15:10-9.
28. de Vasconcellos LG, Brentel AS, Vanderlei AD, de Vasconcellos LM, Valera MC, de Araújo MA. Knowledge of general dentists in the current guidelines for emergency treatment of avulsed teeth and dental trauma prevention. *Dent Traumatol* 2009;25:578-83.
29. Lu CY. Observational studies: A review of study designs, challenges and strategies to reduce confounding. *Int J Clin Pract* 2009;63:691-7.
30. Boroumand S, Garcia AI, Selwitz RH, Goodman HS. Knowledge and opinions regarding oral cancer among Maryland dental students. *J Cancer Educ* 2008;23:85-91.

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