

# Assessment of schoolteachers' knowledge about management of traumatic dental injuries in Al-Madinah city, Saudi Arabia

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## ABSTRACT

**Objective:** This study aimed to assess the knowledge of primary and intermediate schoolteachers about the management of TDIs in Al-Madinah city, Saudi Arabia. **Materials and Methods:** A previously validated, self-administered, anonymous, close-ended structured questionnaire was administered to schoolteachers in 13 different schools. It included two parts: basic demographic information (part one) and questions regarding the management of dental traumatic injuries (part two). **Results:** A total of 178 schoolteachers voluntarily completely filled in the questionnaire. Nearly 28.1% of the teachers acquired a first-aid training program and 6.2% only learned about dental injury management in first-aid training. Concerning the knowledge about the management of dental traumatic injuries, 55.1% of teachers realized the appropriate time for treatment of dental traumatic injuries. A few percentage of teachers selected correct answers for the suitable storage medium. The most commonly selected storage media were found to be cold milk, physiological saline, and patient's saliva at 14.6%, 6.7%, and 2.2%, respectively. **Conclusion:** The knowledge among primary and intermediate schoolteachers in the management of dental traumatic injuries is unsatisfactory.

**Key words:** Children, dental trauma, knowledge, teachers

## INTRODUCTION

Traumatic dental injuries (TDIs) are prevalent among children of all ages and may result in fracture, displacement, or loss of teeth, which negatively affects function, esthetics, and psychological well-being of children.<sup>[1,2]</sup>

Almost 25% of children encounter dental trauma at school,<sup>[3]</sup> with males twice as often affected as females,<sup>[4,5]</sup> with the highest frequency occurring at the ages of 8–10 years<sup>[6]</sup> and the commonly affected teeth are upper central incisors.<sup>[7,8]</sup>

The most common causes of TDIs are falls, sports, bicycle riding, and car accidents. Children with Class II division 1 malocclusion, increased overjet, and incompetent lips not covering the upper anterior teeth are more prone to trauma.<sup>[4,9,10]</sup>

Prognosis and treatment outcomes depend on proper immediate management of TDIs; therefore, parents and teachers should have the appropriate knowledge on how to deal with these injuries.<sup>[11,12]</sup> Several studies

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have been done internationally<sup>[12-16]</sup> and few ones on the national level<sup>[17-20]</sup> to evaluate the knowledge concerning management of TDIs within different members of the community. Most of the previous studies revealed lack of knowledge about appropriate management of TDIs among schoolteachers.<sup>[13,18,21,22]</sup>

In Saudi Arabia (KSA), Al-Obaida in 2010 stated that most primary schoolteachers cannot handle a child who experiences dental injury.<sup>[17]</sup>

Therefore, this study aimed to assess the knowledge of primary and intermediate schoolteachers concerning management of dental traumatic injuries in Al-Madinah city, Saudi Arabia.

## MATERIALS AND METHODS

The current study had been approved by the Research Ethics Committee, College of Dentistry, Taibah University.

This observational cross-sectional study targeted primary and intermediate schoolteachers in Al-Madinah city, KSA. Thirteen schools were randomly selected representing different districts in Al-Madinah city; meetings were conducted with the school administrators and teachers to give them an overview of the study. Teachers were invited to participate voluntarily in this questionnaire-based study. Filling out the questionnaire was considered consent for inclusion in the study.

A previously validated, self-administered, anonymous, closed - ended questionnaire was distributed among the schoolteachers.<sup>[12]</sup> It included two sections: basic demographic information, attendance of first-aid training, and ability to differentiate primary from permanent teeth (section 1). The second section included questions concerning management of different TDIs. Each correct answer was scored 1 and incorrect answer was scored 0. A total score was given to each questionnaire as a percentage of total correct answers. A score of >70% was considered good knowledge, a score 50%–69% was considered as acceptable knowledge, and a score <50% was considered poor knowledge.

Data were analyzed using the Statistical Package for the Social Sciences software version 16.0 (SPSS Statistics, IBM, New York, USA). A simple descriptive analysis in the form of frequencies and percentages was performed, followed by Chi-square test to correlate knowledge with gender, age, and years of teaching.  $P = 0.05$  was considered statistically significant.

## RESULTS

Two hundred questionnaires were disturbed, of which only 178 participants completely filled in all items of the questionnaires and the other 22 questionnaires were excluded due to missing answers. Questions concerning basic demographic information results were presented as numbers and percentages [Table 1].

Answers to the second part of the questionnaire (knowledge questions) are shown in Table 2. Nearly half of the respondents answered correctly regarding the place of treatment of the dental traumatic injuries and the appropriate time of treatment. Regarding management of avulsed teeth, 78.7% of the teachers reported that avulsed primary teeth should not be replanted, while one-third of the sample stated that avulsed permanent teeth should be replanted. Finally, few percentages of teachers responded correctly to questions about the suitable storage medium for storing avulsed teeth.

Most of the responding teachers had poor knowledge about the management of TDIs and few had an acceptable knowledge [Figure 1].

Chi-square test was conducted to correlate the level of knowledge with gender, age, and years of teaching. The association of knowledge with age was statistically

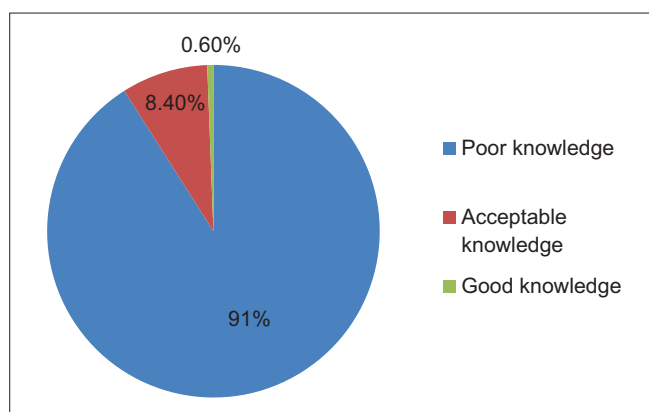
**Table 1: Demographic data of the study sample**

Demographics/characteristics	n (%)
Gender	
Female	76 (42.7)
Male	102 (57.3)
Age groups (years)	
21-30	16 (9.0)
31-40	83 (46.6)
41-50	75 (42.1)
51-60	4 (2.2)
Years of teaching	
1-10	55 (30.9)
11-20	71 (39.9)
21-30	50 (28.1)
31 or more	2 (1.1)
Received first-aid training	
Yes	50 (28.1)
No	128 (71.9)
Learned dental injury management in first-aid training	
Yes	11 (6.2)
No	167 (93.8)
Confident in distinguishing types of teeth	
Yes	113 (63.5)
No	65 (36.5)

**Table 2: Knowledge toward the management of dental traumatic injuries**

Questions of knowledge	Answers	Frequency (%)
Immediate management of fractured teeth	The fractured part is useless, ignore it	74 (41.6)
	Try to find the fractured part, wrap it with gauze or tissue	38 (21.3)
	Put it in liquid medium and bring it for examination*	39 (21.9)
	Do not know	24 (13.5)
	Others	3 (1.7)
Immediate management of displaced teeth	Do not touch, let it remain in its new position	67 (37.6)
	Try to put back to the original position*	32 (18.0)
	Ask the patient to carefully clench one's teeth if it is possible*	27 (15.2)
	Do not know	40 (22.5)
	Others	12 (6.7)
Should knocked-out baby teeth be put back to their original position?	Yes	6 (3.4)
	No*	140 (78.7)
	Do not know	32 (18.0)
Should knocked-out permanent teeth be put back to their original position?	Yes*	68 (38.2)
	No	62 (34.8)
	Do not know	48 (27.0)
Medium for storing knocked-out teeth	The tooth is useless, do not spend time to find it	67 (37.6)
	Gauze or tissue	21 (11.8)
	Cold milk*	26 (14.6)
	Physiological saline*	12 (6.7)
	Patient's saliva*	4 (2.2)
	Tap water	4 (2.2)
	Distilled water	4 (2.2)
	A container or plastic bag in dry condition	1 (0.6)
	Disinfectant solution	13 (7.3)
	Do not know	26 (14.6)

\*significance of 0.05



**Figure 1:** Knowledge distribution among the study sample

significant, showing  $P < 0.001$  [Table 3], while the association of knowledge with gender and years of teaching was statistically insignificant showing  $P = 0.104$  and  $0.803$ , respectively.

## DISCUSSION

This questionnaire-based study aimed to assess the knowledge of primary and intermediate schoolteachers about the management of TDIs in

**Table 3: Association of age with knowledge**

Age group (years)	Knowledge			Total	P
	Good	Fair	Poor		
21-30	0	2	14	16	<0.001
31-40	0	8	75	83	
41-50	0	5	70	75	
51-60	1	0	3	4	

Al-Madinah city, KSA. The current study revealed unsatisfactory knowledge among primary and intermediate schoolteachers in the management of TDIs. The current result matches findings from some international<sup>[12-16]</sup> and national studies.<sup>[17-20]</sup>

The association of knowledge with age was statistically significant, indicating that teachers' age had an impact on the knowledge of management of TDIs, similar results were reported by Nirwan *et al.*, 2016.<sup>[14]</sup> On the other hand, the association of knowledge with gender and years of teaching was statistically insignificant, which contradicts other studies.<sup>[23,24]</sup>

The present study revealed that most of the teachers had not acquired training about management of TDIs

in first-aid training (93.8%). Furthermore, most of the teachers (71.9%) have not received any first-aid training for the management of TDIs. Similar findings were also reported in another study,<sup>[14]</sup> in which 85.7% of the teachers had not received training for managing dental trauma.

Only 28.1% of teachers acquired first-aid training on traumatic injuries, similar results were reported by Griffin,<sup>[25]</sup> but it was lower than the percentage found in another study done in Hong Kong.<sup>[12]</sup>

Half of the teachers chose going to the dentist for emergency dental treatment followed by 19.7% of the teachers who chose to seek a nearby hospital. Other studies showed that almost half of the respondents would seek a nearby emergency service.<sup>[26,27]</sup>

Around 41.6% of the teachers were unable to manage fractured teeth as they thought the fractured part was useless and they prefer to ignore it, which was in agreement with a study done by Nirwan *et al.*<sup>[14]</sup> In the current study, 21.9% of respondents chose to put the fractured part in a liquid vehicle and deliver it to the dental office. Nearly a similar percentage (23.4%) was reported in a matching study where teachers would search for fractured part and take child to dentist.<sup>[23]</sup>

The present study revealed that most of the respondents (63.5%) were able to distinguish deciduous teeth from permanent teeth, these findings are similar to that of other studies.<sup>[14]</sup> Distinguishing between the two types of dentition is critical to carry out the appropriate management of TDIs; a significant number of respondents (78.7%) had chosen not to replant the knocked-out deciduous teeth to their original position, which was similar to results obtained by Young *et al.*<sup>[12]</sup> In addition, 38.2% of the teachers knew that avulsed permanent teeth should be replanted. On the contrary, lower percentages (16.2% and 24%, respectively) were reported in previous studies.<sup>[12,21]</sup>

Time elapse since fracture or avulsion is an important factor in the management of TDIs. Approximately half of the teachers in our study believed that TDIs should be dealt with immediately, which was similar to other studies.<sup>[17,23]</sup>

Storage medium is a crucial part in the success of replantation of an avulsed tooth. In the present study, few percentages of respondents could point out the suitable storage medium for storing avulsed teeth; the results were as follows: 14.6%, 6.7%, and 2.2% for

cold milk, physiological saline, and patient's saliva, respectively. Nearly similar results were obtained in two other studies<sup>[12,13]</sup> where 21.7% and 17%, respectively, of the teachers selected milk as storage medium. However, higher percentage (45.3%) of teachers considered milk a suitable transport medium for avulsed teeth in another study.<sup>[25]</sup> Lack of knowledge regarding storage media reflects absence of knowledge regarding the importance of maintaining the viability of periodontal ligament.

## CONCLUSION

Knowledge among primary and intermediate schoolteachers in Al-Madinah city, Saudi Arabia, about the management of TDIs is unsatisfactory.

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### Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- Zaror C, Martínez-Zapata MJ, Abarca J, Díaz J, Pardo Y, Pont À, *et al.* Impact of traumatic dental injuries on quality of life in preschoolers and schoolchildren: A systematic review and meta-analysis. *Community Dent Oral Epidemiol* 2018;46:88-101.
- Lee JY, Divaris K. Hidden consequences of dental trauma: The social and psychological effects. *Pediatr Dent* 2009;31:96-101.
- Glendor U. Epidemiology of traumatic dental injuries – A 12 year review of the literature. *Dent Traumatol* 2008;24:603-11.
- Noori AJ, Al-Obaidi WA. Traumatic dental injuries among primary school children in Sulaimani city, Iraq. *Dent Traumatol* 2009;25:442-6.
- Lam R, Abbott P, Lloyd C, Lloyd C, Kruger E, Tennant M, *et al.* Dental trauma in an Australian rural centre. *Dent Traumatol* 2008;24:663-70.
- Eyuboglu O, Yilmaz Y, Zehir C, Sahin H. A 6-year investigation into types of dental trauma treated in a paediatric dentistry clinic in Eastern Anatolia region, Turkey. *Dent Traumatol* 2009;25:110-4.
- Fakhruddin KS, Lawrence HP, Kenny DJ, Locker D. Etiology and environment of dental injuries in 12- to 14-year-old Ontario schoolchildren. *Dent Traumatol* 2008;24:305-8.
- Taiwo OO, Jalo HP. Dental injuries in 12-year old Nigerian students. *Dent Traumatol* 2011;27:230-4.
- Artun J, Behbehani F, Al-Jame B, Kerosuo H. Incisor trauma in an adolescent Arab population: Prevalence, severity, and occlusal risk factors. *Am J Orthod Dentofacial Orthop* 2005;128:347-52.
- Traebert J, Bittencourt DD, Peres KG, Peres MA, de Lacerda JT, Marcenes W, *et al.* Aetiology and rates of treatment of traumatic dental injuries among 12-year-old school children in a town in Southern Brazil. *Dent Traumatol* 2006;22:173-8.
- Francisco SS. Evaluation of elementary education teachers' knowledge on avulsion and tooth replantation. *RSBO J* 2015;12:32-40.
- Young C, Wong KY, Cheung LK. Emergency management of dental trauma: Knowledge of Hong Kong primary and secondary school teachers. *Hong Kong Med J* 2012;18:362-70.
- Pithon MM, Lacerda dos Santos R, Magalhães PH, Coqueiro Rda S. Brazilian primary school teachers' knowledge about immediate management of dental trauma. *Dental Press J Orthod* 2014;19:110-5.
- Nirwan M, Syed AA, Chaturvedi S, Goenka P, Sharma S. Awareness in primary school teachers regarding traumatic dental injuries in children and their emergency management: A survey in South Jaipur. *Int J Clin Pediatr Dent* 2016;9:62-6.
- Skeie MS, Audestad E, Bårdsen A. Traumatic dental

- injuries – Knowledge and awareness among present and prospective teachers in selected urban and rural areas of Norway. *Dent Traumatol* 2010;26:243-7.
16. Hashim R. Dental trauma management awareness among primary school teachers in the emirate of Ajman, United Arab Emirates. *Eur J Paediatr Dent* 2011;12:99-102.
  17. Al-Obaida M. Knowledge and management of traumatic dental injuries in a group of Saudi primary schools teachers. *Dent Traumatol* 2010;26:338-41.
  18. Zakirulla M, Togoo RA, Yaseen SM, Al-Shehri DH, Al-Ghamdi AS, Al-Hafed MS, *et al.* Knowledge and attitude of Saudi Arabian school teachers with regards to emergency management of dental trauma. *Int J Clin Dent Sci* 2011;2:25-9.
  19. Halawany HS, AlJazairy YH, Alhussainan NS, AlMaflehi N, Jacob V, Abraham NB, *et al.* Knowledge about tooth avulsion and its management among dental assistants in Riyadh, Saudi Arabia. *BMC Oral Health* 2014;14:46.
  20. AlJazairy YH, Halawany HS, AlMaflehi N, Alhussainan NS, Abraham NB, Jacob V, *et al.* Knowledge about permanent tooth avulsion and its management among dentists in Riyadh, Saudi Arabia. *BMC Oral Health* 2015;15:135.
  21. Prasanna S, Giriraju A, Narayan NL. Knowledge and attitude of primary school teachers toward tooth avulsion and dental first aid in Davangere city: A cross-sectional survey. *Int J Clin Pediatr Dent* 2011;4:203-6.
  22. Sreelakshmi N, Rajendra Reddy E, Thabitha Rani S, Aduri R, Vinay Kumar L, Mahita PV. Assessment of knowledge and attitude among public and private school teachers in urban and rural areas towards management of traumatic dental injuries. *J Int Oral Health* 2016;8:344-50.
  23. Chandukutty D, Peedikayil FC, Premkumar CT, Narasimhan D, Jose D. Awareness of dental trauma management among school teachers of Kannur, Kerala, India. *J Clin Diagn Res* 2017;11:ZC08-12.
  24. Singh M, Ingle NA, Kaur N, Yadav P. Evaluation of knowledge and attitude of school teachers about emergency management of traumatic dental injury. *J Int Soc Prev Community Dent* 2015;5:108-13.
  25. Griffin A, Jones G, Hunter L. Emergency management of avulsed permanent incisors: Knowledge and attitudes of teachers in 15 Irish schools. *J Ir Dent Assoc* 2007;53:196-8.
  26. Sae-Lim V, Lim LP. Dental trauma management awareness of Singapore pre-school teachers. *Dent Traumatol* 2001;17:71-6.
  27. 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.