

Assessment of Knowledge and Attitudes of School Teachers Regarding Emergency Management of an Avulsed Permanent Tooth of Southern Region of Saudi Arabia

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ABSTRACT

Aim: An avulsion is defined as one of the most common dental injuries where the tooth is displaced completely from its socket, followed by trauma. The most important time in managing the avulsed tooth is the first few minutes and as children spend their most of waking time in school so the teacher is considering their immediate caregiver. Hence, this study was done to carry out the knowledge and attitude of school teachers regarding emergency management of avulsed permanent tooth in schools located in the southern region of Saudi Arabia.

Materials and methods: The study was conducted at Najran School of Saudi Arabia. All teachers who are willing to participate in the study were involved. A questionnaire was made after reviewing several studies and was administered through emails to 318 teachers. The questionnaire consists of part I regarding demographic questions and part II information related to knowledge, action taken, education, and their way of managing the avulsed tooth at accident place. Statistics analysis was done using SPSS version 16.

Results: Fifty percent of the participants know about the tooth avulsion. Fifty percent of the teachers who get information from the school health dental program get the tooth back to the dentist. There is a significant association found between the source of information and choice of treatment. Fifty-nine percent of the participants do not know about the management of tooth avulsion. And workshop plan then 89% was interested to attend the training.

Conclusion: The present study revealed that knowledge regarding the management of avulsed tooth is low among the school teachers. There is a strong need for a school health dental program for the management of avulsed teeth among the school teachers.

Keywords: Avulsed tooth, Emergency management, Knowledge.

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INTRODUCTION

Dentoalveolar trauma involves injuries to the tooth, periodontium, and supporting alveolar bone. These injuries are becoming a public health problem because of their high prevalence among children and adolescents. Several epidemiological studies were done which show the prevalence of traumatic dental injuries in permanent dentition is ranging between 11 and 30% and, on the other hand, it ranges from 5 to 29% in the primary dentition.¹ Among all the injuries, facial injury is one of the worst injuries which causes psychological as well as physical problems.² Avulsion of permanent teeth is one of the most serious dental injuries, and correct emergency management is very important for the prognosis. Avulsion creates a very negative impact on the functional as well as the esthetic aspect of the children because of its poor prognosis.³ It was observed in a study that among all dental injuries, avulsion was reported for about 1–16% of the time.⁴ The biggest challenge for proper emergency management of an avulsed tooth is to maintain the vitality of the periodontal cells.⁵ The immediate replantation of an avulsed tooth is considered the best choice of treatment.⁶

In Saudi Arabia, dental trauma incident is reported more as compared to other countries.⁷ School is a place where children are more prone to get dental trauma. Falls, collisions followed by sports activities such as cycling and soccer are the most prevalent etiological factor. Various dental traumas are encountered by sports such as soft tissue injury, fracture, tooth intrusion, crown and root fracture, and avulsion.⁸ Traumatic dental injuries are widespread among the population and are considered as one of the serious

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public health problems among children.⁹ Such types of dental injuries mostly occur during school hours and in the presence of teachers. However, the teachers have limited knowledge to act in this type of situation. So the teachers, coaches, and students in physical education need to keep them informed about the correct first-aid measures to be used in such situations.¹⁰

Dental avulsion is one of the most commonly encountered incidents at the school and teachers are mostly present during the

incident.¹¹ As children are unable to carry management of avulsed tooth, the immediate caregivers present on the spot are mostly teachers. Several studies were done to assess the knowledge of various groups like the dentist, physician and dental student, assistant, and school teachers regarding the management of teeth avulsion.^{3-7,12} Most of the studies suggested that a better communication network is needed to make awareness for the community regarding the management of avulsed teeth, which causes great functional and esthetic impairment due to its worse prognosis.^{9,10} The data regarding the knowledge and awareness among school teachers for the management of avulsed tooth are very low. Therefore, the present study aimed to assess the knowledge and attitudes of school teachers regarding emergency management of an avulsed permanent tooth in schools located in the southern region of Saudi Arabia.

MATERIALS AND METHODS

The current descriptive, cross-sectional questionnaire survey was conducted in Najran School located in the southern region of Saudi Arabia. Prior approval was taken from the manager of the school. School authorities appraised the study and informed oral consent for completion of the questionnaire was obtained from each teacher before the start of the study. Ethical clearance was also obtained from the Institutional Ethical Committee. An interview of 318 teachers was taken in primary school through an online survey. The questionnaire was designed and modified from previous studies and before the start of the study it was presented to the expert committee for approval. Its validity was accredited by experts in the field of dentistry. The questionnaire comprised of close-ended questions, with alternate choices to help the respondents make a quick decision. The questionnaire was divided into two parts. Part I consisted of general demographic information and part II consisted of questions related to management and knowledge around the avulsed tooth. All data were taken in Arabic language and later translated to English. The self-administrated questionnaire comprised of 15 closed-ended questions. Every teacher was informed a week prior. All the available subjects who were willing to participate in the study were included in the study. Those who were not willing were excluded from the study. All the data were entered in MS Excel and later analyses were done in SPSS version 16 (Chicago, USA). The *p* value was computed using the Chi-square test and the exact (Fisher's) test. *p* value of 0.05 was considered to be statistically significant. After the questionnaires had been collected, the teachers were given pamphlets and brochures containing educational material regarding tooth avulsion and its immediate management.

RESULTS

After analysis, the data results are shown in tables and graphs. Table 1 shows the sociodemographic data of participants. Sixty-five percent of participants in the study were male and 35% were female. Out of which half (50%) of the participants were in the 31-40 years age group. As per their educational status, most participants (72%) had bachelor's degrees, 25% had a diploma, and the rest had masters and doctorate. Most of the teachers (91%) who were included in the study were from government schools and only 9% of the participants were from private schools.

Table 2 shows the result regarding knowledge and attitude toward the emergency management situation at the site of the

Table 1: Sociodemographic characteristics of school teachers

<i>Sociodemographic profile</i>	<i>Number (%)</i>
Gender	318 (100)
Male	207 (65)
Female	111 (35)
Age (years)	
20-30	90 (28)
31-40	160 (50)
41-50	58 (18)
>50	10 (3)
Education	
Bachelors	232 (72)
Masters	5 (2)
Doctorate	3 (1)
Diploma	78 (25)
School	
Government	289 (91)
Private	29 (9)

avulsed tooth. Data show that 61% of the teachers supervised the children in their sports activities, whereas 69% of teachers help children in other cultural activities. Regarding the avulsed tooth, 29% of teachers did not have any idea about the avulsed tooth. Further findings suggest that 63% of teachers reported that they have come across the incident where tooth avulsion happened and 49% of teachers knew that the child should be referred to the dentist in case of an avulsed tooth.

The knowledge regarding the position of holding the tooth was also poor. Around half of the participants answered that they hold the tooth from anywhere in such a condition. Around 59% of the participants said they do not have enough knowledge of the managed avulsed tooth. Most participants want an educational program on management of avulsed tooth so they can know more and take prompt action in such type of scenario and out of all 87% participants said yes to attend such type of educational program if it happened.

Figure 1 shows the knowledge of teachers to take the opinion of the dentist after avulsion. More than half (55%) of the participants said immediate dentist opinion is needed after avulsion. Figure 2 shows how to clean the tooth after avulsion. In which 16% of participants said they do nothing while 30% of participants said they wash it with sterile saline after avulsion. Figure 3 shows that after avulsion 42% of teachers carry the tooth to the dentist and 29% of participants said they do not have any idea so they do nothing with avulse tooth. Figure 4 shows the transport medium of the avulsed tooth from the accident spot to the dentist. In which 22% of participants said they transport it in a wet handkerchief. Figure 5 shows the source of information where teachers get advice on the management of avulsed teeth. It shows that 57% of the participants do not have any information to manage the avulsed tooth. Only 5% of people get information from the school dental health program and 8% received it from the dental clinic.

The test was done by using SPSS version 16. *p* value computed using chi-square test and exact (Fisher's 0) at 0.05 is reported. After running the test, the association was found between the source of information and choice of treatment. Total 38% of participants who got information from dental clinic get the tooth to the dentist after avulsion. Same, teachers who get information from the school

Table 2: Knowledge and attitude of school teachers about emergency trauma

Question	Number (%)
1. Do you supervise the children during sport activity?	
a. Yes	194 (61)
b. No	124 (39)
2. Do you supervise children during other cultural activity?	
a. Yes	219 (69)
b. No	99 (31)
3. Do you know what an “avulsed tooth” is?	
a. Broken down	44 (14)
b. Come out of socket	188 (59)
c. Don’t know	86 (27)
4. Have you come across an accident where a tooth was “Avulsed”?	
a. Yes	201 (63)
b. No	117 (37)
5. If you have come across a child with avulsed tooth, what would you do?	
a. Refer the child immediately to the dentist	157 (49)
b. Put back the tooth into the socket and rush to the dentist	40 (13)
c. Wash the child’s mouth with tap water and take the tooth in a wet cloth	121 (38)
6. How would you hold the tooth?	
a. From the crown	94 (30)
b. From the root	62 (19)
c. Any where	162 (51)
7. Have you received advice on what to do when a permanent tooth was avulsed in an accident?	
a. Yes	66 (21)
b. No	252 (79)
8. Are you satisfied with your knowledge on “the management of dental trauma”?	
a. Yes	51 (16)
b. No	187 (59)
c. Don’t know	80 (25)
9. Do you think it is important to have an educational program on “management of dental trauma”?	
a. Yes	250 (79)
b. No	35 (11)
c. Don’t know	33 (10)
10. Would you like to attend an educational program on “management of dental trauma”?	
a. Yes	276 (87)
b. No	22 (7)
c. Don’t know	21 (6)

dental program get the tooth to the dental clinic, about 50% of the teacher do the same. Around 67% of teachers who get trained in teacher training programs get the tooth to the dental clinic. There

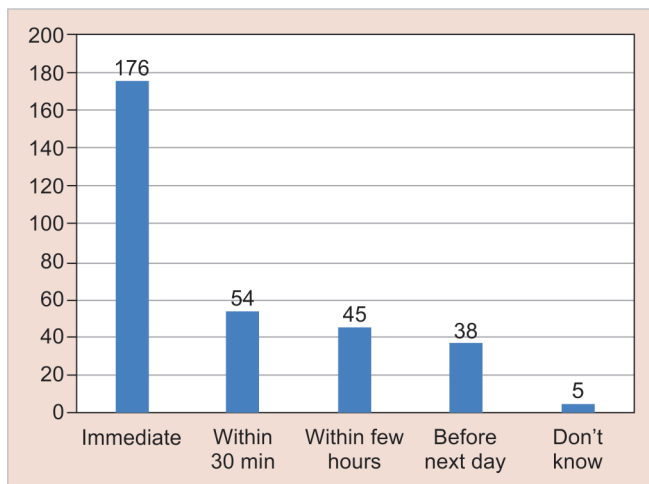


Fig. 1: Knowledge regarding the time of the dentist’s opinion needed after avulsion

is no association found between the knowledge and source of information. And no association was found between the education of teachers and dentist visit time.

DISCUSSION

Appropriate management is very much important for the future prognosis of teeth affected by traumatic injuries, especially in young children. Those most likely to be involved at the site of an injury are school-aged children and school teachers, making teacher knowledge of emergency management fundamental to the provision of correct care to an injured child.⁹ A suitable emergency management and treatment plan is critical to the success and good prognosis of dental trauma. However, the appropriate immediate treatment is often not performed due to a lack of knowledge among laypersons who generally provide the initial management before the child’s contact with a dentist.¹³ If those guidelines were applied immediately after traumatic injury, both short- and long-term outcomes would be improved.¹⁴ Postponement of evaluation by a dentist has been found to hurt the prognosis of an avulsed tooth. Thus, storage in a medium until replantation is fundamental. Furthermore, it is important to be aware that replantation should not be performed when a primary tooth has been avulsed as there is a risk of injury to the underlying germ of the permanent successor.²

Sixty-five percent of participants in the study were male and 35% were female. The sample population in the study conducted by Singh et al. comprised of 51.1% males.¹⁵ Similarly, a study done by Mesgarzadeh et al. comprised of 52% males, which was lower than the present study.¹⁶ In terms of age, the majority of the respondents (50%) were between 31 years and 40 years of age, which is in accordance with the study conducted by Bayrak et al. and Singh et al., in which 36.7 and 33.5% of teachers were between 31 years and 40 years of age, respectively.^{9,15} In contrast, Mesgarzadeh et al. showed that the majority of respondents were between 41 years and 50 years of age.¹⁶

Further findings suggest that 63% of teachers reported that they have come across the incident where tooth avulsion happened and 49% of teachers knew that the child should be referred to the dentist in case of an avulsed tooth. A similar study conducted by de Lima Ludgero et al., in Brazil, showed that 88.5% of school teachers

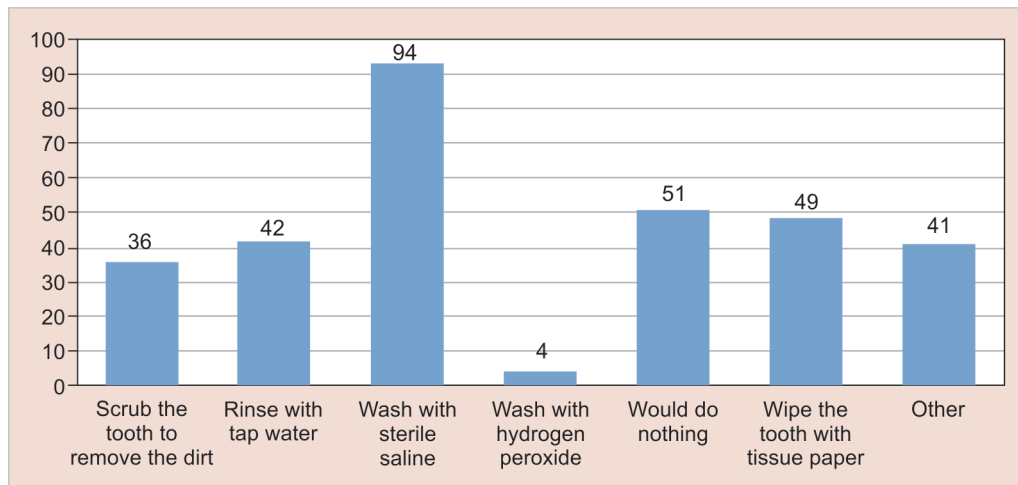


Fig. 2: Knowledge about how to clean the avulsed tooth

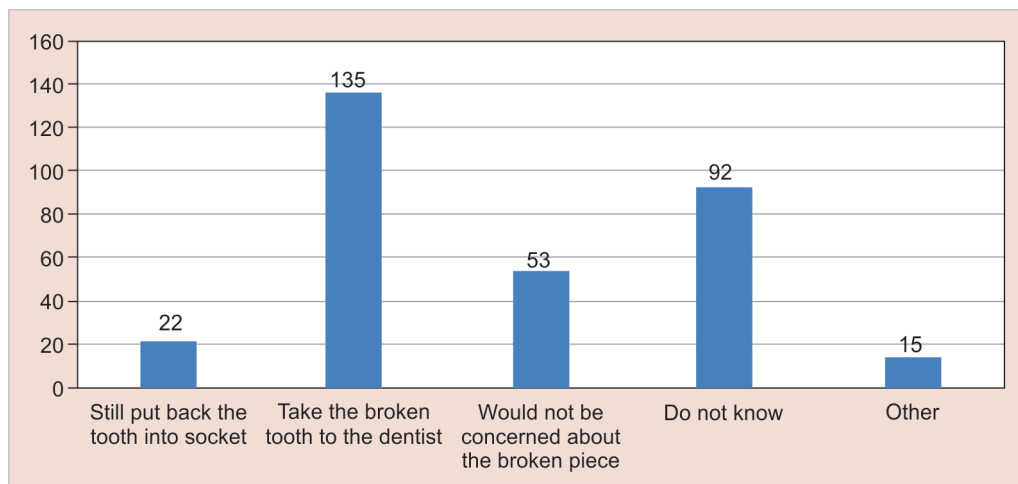


Fig. 3: Choice of immediate treatment done for the avulsed tooth

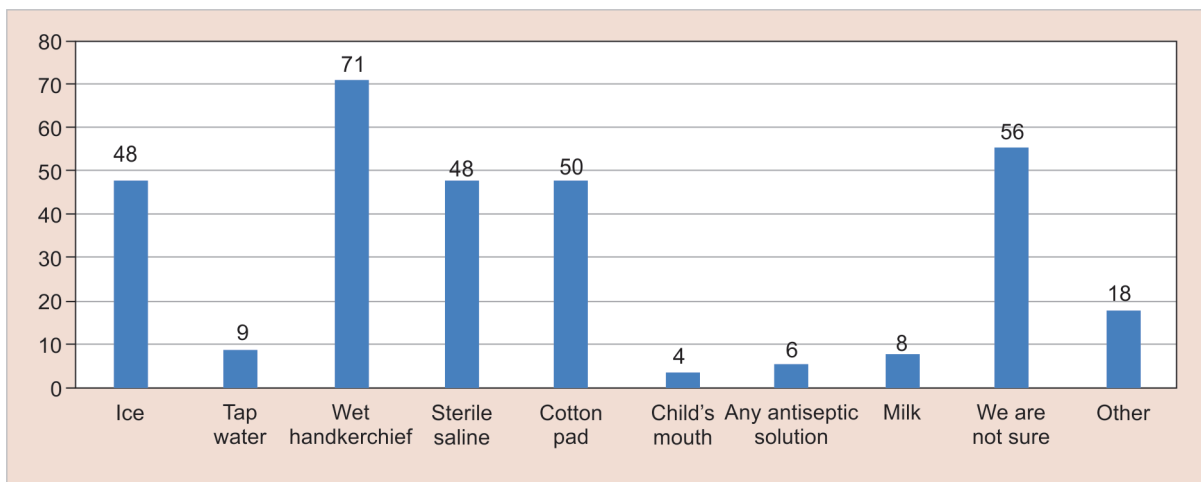


Fig. 4: Knowledge about the transport media used to store the avulsed tooth

would immediately seek professional help following tooth avulsion where 13% managed it by putting the tooth back in socket and rush to the dentist, and the remaining says that they put the tooth in a wet cloth and wash child mouth with tap water and refer them to

the dentist.¹⁷ Despite the anxiety involved in seeking emergency care for an injured child, the majority of the school teachers (60.99%) in the study conducted by Kaul et al. stated that they would ask the child to keep the tooth safely in his mouth and take him to

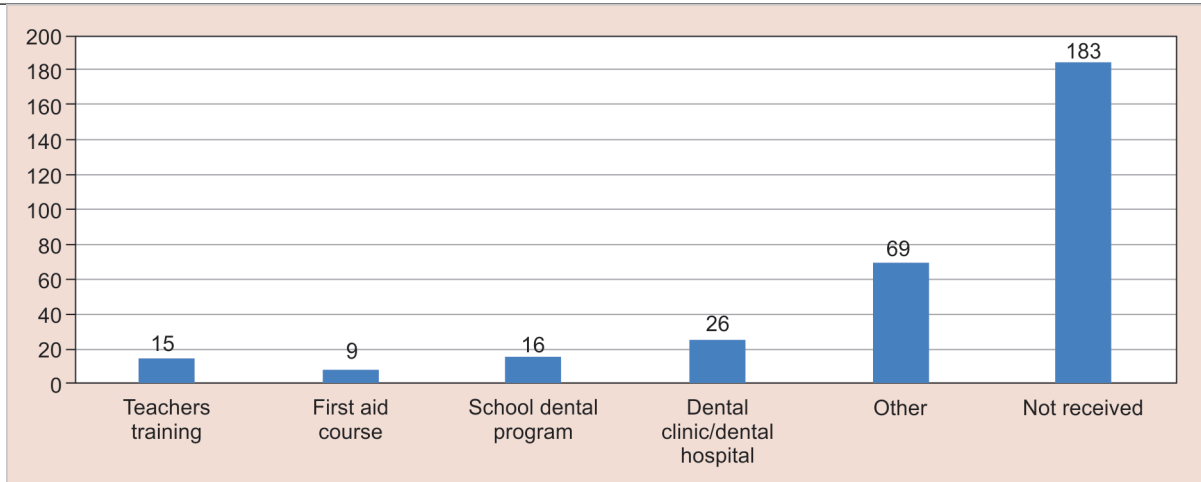


Fig. 5: Source of information about the advice on the treatment of avulsed tooth

the nearest dental clinic or dentist.¹⁸ Similarly, studies conducted by Hashim where 85.8% of teachers were in favor of referring the child to the dentist.¹⁹ Contrary to this, the results of the study conducted by Mohandas and Chandan found that the majority of teachers would refer or call the parents and ask them to take the child to a dentist.²⁰

The knowledge regarding the position of holding the tooth was also poor in the present study. Around half of the participants answered that they hold the tooth from anywhere in such a condition. Previous findings state that around 79% of the participants do not have any idea what to do in such type of condition.¹⁷ Around 59% of the participants said they do not have enough knowledge of the managed avulsed tooth. Most participants want the educational program on management of avulsed tooth so they can know more and take prompt action in such type of scenario and out of all 87% participants said yes to attend such type of educational program if it happened. This is one of the important practices to include in the primary teacher orientation, to enable the proper management on a priority basis.

A study done by Al Obaid, on the knowledge level of primary teachers in Riyadh Saudi Arabia, said that 44% of teachers believed that dental trauma surgery is dealt with immediate action and awareness should be generated among the schools' teacher in managing the dental injuries of children on a prior basis.²¹ A study by Mori et al. suggested that prognosis of the avulsed tooth depends on the time lapse between injury and treatment, as it is the most important time in which action has to be taken either by the patient or by someone else at the place to reimplant the avulsed tooth immediately.²²

In the present study, 22% of participants said they transport it in a wet handkerchief. A study done by de Lima Ludgero et al. in Brazil shows that 39.3% would store the avulsed tooth in water, while 18% of people were not sure which medium is good for the transport of the avulsed tooth.¹⁷ Contrary to this, studies conducted by Mohandas and Chandan, Ahluwalia et al., Chandukutty et al., and Taranath et al., found that a good number of school teachers, i.e., 49.6, 47.4, 40, and 35.7%, respectively, were aware of a correct storage medium.^{13,20,23,24} Lots of other mediums were used like 15% ice, 3% tape water as the study done by Flores et al., suggested that lots of storage medium are there which can be used for an avulsed tooth, e.g., saliva, milk, saline solution, and water.² Although water is the most readily available medium at the scene but it should

be considered as the last option because it causes lysis of vital periodontal cells. Due to a lack of awareness many teachers do not have an idea about the favorable storage medium. Fifteen percent of saline, 16% cotton pad, and 3% milk which is a much better medium than water as the study was done by Oswald et al., suggested that wet medium is much better than a dry medium for storage of avulsed tooth and also suggested that milk is a much better medium than water because of its osmolarity, 2% antiseptic solution and 1% transport it in children mouth only.²⁵

The knowledge of the teachers regarding tooth cleaning material was fair. Sixteen percent of participants said they do nothing while 30% of participants said they wash it with sterile saline after avulsion. In the study conducted by Kaul et al., most of the school teachers preferred cleaning the dirty avulsed tooth gently under tap water rather than using a toothbrush or putting back the tooth into the socket without any pre-treatment.¹⁸ Contrary to these findings, results obtained from the study conducted by Taranath et al. and Chandukutty et al. showed a majority of school teachers (54.2, and 36.6%, respectively) being aware of the correct solution for cleaning a dirty avulsed tooth.^{13,23}

Only 42% of teachers were aware of the urgency of visiting the dentist and 29% of participants said they do not have any idea so they do nothing with avulse tooth. On the contrary, in the study conducted by Kaul et al., a vast majority of teachers (78.33%) were in favor of seeking immediate professional help.¹⁸ Similar results were obtained from studies conducted by Chandukutty et al. and Taranath et al. (45.9 and 33.6%, respectively).^{13,23}

The loss of a permanent tooth is a painful and regretful experience for any patient. Studies have highlighted the importance of trained/experienced school staff, who are most often required to respond initially to the traumatic incident. The school system and teachers in schools, besides imparting education, are becoming increasingly aware and are taking an active part in the proper health care of a child. We can use this to our advantage by taking necessary measures to help teachers increase their knowledge regarding emergency management of dental trauma. Educational programs and dental camps can prove to be beneficial in this regard. Mounting posters, leaflets, and media campaigns to educate teachers can prove to be of vital importance. Programs to update teachers' knowledge about dental trauma management in addition to first aid training need to be included in basic teacher training programs.

CONCLUSION

School teachers are likely to be among the first to see a child immediately after an injury has occurred, and their knowledge regarding emergency procedures is critical to ensure a good prognosis of the clinical treatment. The study suggested that teachers of the primary school of Najrana have some idea about the avulsed tooth, but a lot of teachers do not have any idea management of avulsed tooth. The study suggested that lack of awareness among management of the school teacher observed during the study which shows that awareness generation camping is required to aware the school teachers regarding the management of avulsed tooth. Further studies to assess and compare the knowledge and attitude regarding emergency management of dental trauma would give a broader perspective.

REFERENCES

- Lam R. Epidemiology and outcomes of traumatic dental injuries: a review of the literature. *Aust Dent J* 2016;61(Suppl 1):4–20. DOI: 10.1111/adj.12395.
- Flores MT, Andersson L, Andreasen JO, et al. Guidelines for the management of traumatic dental injuries. II. Avulsion of permanent teeth. *Dent Traumatol* 2007;23(3):130–136. DOI: 10.1111/j.1600-9657.2007.00605.x.
- Zakirulla M, Togoo RA, Yaseen SM, et al. Knowledge and attitude of Saudi Arabian school teachers with regards to emergency management of dental trauma. *Int J Clin Dent Sci* 2011;2:25–29.
- Halawany HS, Al Jazairy YH, Al Hussainan NS, et al. Knowledge about tooth avulsion and its management among dental assistants in Riyadh, Saudi Arabia. *BMC Oral Health* 2014;14(1):46. DOI: 10.1186/1472-6831-14-46.
- Jyothi KN, Venugopal P, Nanda S, et al. Knowledge and attitude of medical doctors towards emergency management of avulsed tooth - a cross sectional survey. *J Dent Sci Res* 2011;2:156–167.
- 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):348–355. DOI: 10.1111/j.1600-9657.2006.00477.x.
- 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(4):153–158. DOI: 10.1034/j.1600-9657.2001.170403.x.
- Knowlton R, Kracher CM, Schmeling W, Smith Sports-Related Dental Injuries and Sports Dentistry. *Continuing Dental Education*. Available from <http://www.dentalcare.com>.
- Bayrak S, Tunc ES, Sari E. Evaluation of elementary school teachers' knowledge and attitudes about immediate emergency management of traumatic dental injuries. *Oral Health Prev Dent* 2012;10(3): 253–258.
- Krishnan B, Joseph J. Knowledge of basic dental physiology among teachers can improve preliminary management of acute dental avulsion in school children. *Int J Clin Exp Physiol* 2014;1(1):63–67. DOI: 10.4103/2348-8093.129745.
- 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(4):183–187. DOI: 10.1111/j.1600-9657.2005.00307.x.
- 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):13–19. DOI: 10.1046/j.1365-263X.2003.00414.x.
- Taranath M, Senaikarasi RM, Manchanda K. Assessment of knowledge and attitude before and after a health education program in East Madurai primary school teachers with regard to emergency management of avulsed teeth. *J Indian Soc Pedod Prev Dent* 2017;35(1):63–67. DOI: 10.4103/0970-4388.199218.
- Andersson L, Andreasen JO, Day P, et al. International association of dental traumatology guidelines for the management of traumatic dental injuries: 2. Avulsion of permanent teeth. *Dent Traumatol* 2012;28(2):88–96. DOI: 10.1111/j.1600-9657.2012.01125.x.
- Singh M, Ingle NA, Kaur N, et al. Evaluation of knowledge and attitude of school teachers about emergency management of traumatic dental injury. *J Int Soc Prev Community Dent* 2015;5(2):108–113. DOI: 10.4103/2231-0762.155735.
- Mesgarzadeh AH, Shahamfar M, Hefzollasan A. Evaluating knowledge and attitudes of elementary school teachers on emergency management of traumatic dental injuries: a study in an Iranian urban area. *Oral Health Prev Dent* 2009;7:297–308.
- de Lima Ludgero A, de Santana Santos T, Fernandes AV, et al. Knowledge regarding emergency management of avulsed teeth among elementary school teachers in Jaboação dos Guararapes, Pernambuco, Brazil. *Indian J Dent Res* 2012;23(5):585–590. DOI: 10.4103/0970-9290.107331.
- Kaul R, Jain P, Saha N, et al. Evaluation of knowledge, awareness, and attitude toward emergency dental trauma management among the school teachers of Kolkata. *Indian J Dent Res* 2017;28(6):595–603. DOI: 10.4103/ijdr.IJDR_118_17.
- 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.
- Mohandas U, Chandan GD. Knowledge, attitude and practice in emergency management of dental injury among physical education teachers: a survey in Bangalore urban schools. *J Indian Soc Pedod Prev Dent* 2009;27(4):242–248. DOI: 10.4103/0970-4388.57660.
- Obaid AIM. Knowledge and management of traumatic dental injuries in a group of Saudi primary schools teachers. *Dent Traumatol* 2010;26(4):338–341. DOI: 10.1111/j.1600-9657.2010.00894.x.
- Mori GG, Turcio KH, Borro VP, et al. Evaluation of the knowledge of tooth avulsion of school professionals from Adamantina, Sao Paulo, Brazil. *Dent Traumatol* 2007;23(1):2–5. DOI: 10.1111/j.1600-9657.2005.00391.x.
- Ahluwalia P, Pannu P, Kalra S, et al. Assessment of knowledge and attitudes of school teachers regarding emergency management of an avulsed permanent tooth. *St Int Dent J* 2015;1:16–21.
- Chandukutty D, Peedikayil FC, Premkumar CT, et al. Awareness of dental trauma management among school teachers of Kannur, Kerala, India. *J Clin Diagn Res* 2017;11:ZC08–ZC12. DOI: 10.7860/JCDR/2017/19308.9252.
- Oswald RJ, Harrington GW, Van Hassel HJ. A post replantation evaluation of air-dried and saliva-stored avulsed teeth. *J Endod* 1980;6(5):546–551. DOI: 10.1016/S0099-2399(80)80148-8.