



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

International Journal of Current Research  
Vol. 15, Issue, 01, pp.23546-23551, January, 2023  
DOI: <https://doi.org/10.24941/ijcr.44754.01.2023>

INTERNATIONAL JOURNAL  
OF CURRENT RESEARCH

## RESEARCH ARTICLE

# KNOWLEDGE AND ATTITUDE OF SCHOOL TEACHERS REGARDING TRAUMATIC DENTAL INJURIES IN PATIALA DISTRICT, PUNJAB

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### ARTICLE INFO

#### Article History:

Received 14<sup>th</sup> October, 2022  
Received in revised form  
17<sup>th</sup> November, 2022  
Accepted 19<sup>th</sup> December, 2022  
Published online 30<sup>th</sup> January, 2023

#### Key words:

Traumatic Dental Injuries,  
Avulsion, School.

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### ABSTRACT

**Background:** Traumatic dental injuries frequently occur at school environment. However, teachers are not prepared to provide the adequate emergency management. **Objective:** The purpose of this study was to evaluate the level of knowledge and attitudes of elementary school teachers about dental trauma and its management in Patiala district, Punjab. **Methods:** The questionnaire was sent to teachers in randomly selected primary schools in Patiala, Punjab. A total of 112 teachers responded (response rate 93%). The questionnaire surveyed teachers' background, knowledge and management of tooth fracture, avulsion, and also investigated teachers' attitudes and self-assessed knowledge. **Results:** The majority of the participants in the study were females 94.6%. 32.1% had witnessed dental emergency in school premises. All the teachers (100%) agreed that dental trauma emergency management must become one of the educational priorities for the teachers. Most teachers were unsatisfied with their level of knowledge for dental trauma and the majority were interested in having further education on the topic. **Conclusions:** The findings revealed that the level of knowledge of management of dental trauma (especially tooth avulsion) among school teachers in Patiala is inadequate, and education campaigns are necessary to improve their emergency management of dental injuries.

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Citation: Dr. Gogulnath, S., Dr. Surinder Kaur and Dr. Haridarshan Singh Sidhu. 2023. "Knowledge and attitude of school teachers regarding traumatic dental injuries in Patiala district, Punjab". *International Journal of Current Research*, 15, (01), 23546-23551.

## INTRODUCTION

Dental injuries are common in childhood. 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 tooth injuries. Dental trauma can vary from minor enamel chipping to extensive maxillofacial damage involving the supporting structures and displacement or avulsion of teeth (1). The teeth most commonly avulsed in both the primary and the permanent dentition are the maxillary central and lateral incisors. Oral factors (increased overjet with protrusion), environmental determinants (material deprivation) and human behavior (risk-taking children, children being bullied, emotionally stressful conditions, obesity, attention-deficit hyperactivity disorder and violence) were found to increase the risk for Traumatic Dental injuries (2). Avulsed permanent teeth can be saved if replanted immediately or stored in a physiologic solution, such as saline, milk or even saliva until professional help is obtained. However, if such proper first aid procedures are not provided, the tooth will be lost. The immediate and appropriate management of traumatically avulsed teeth provided within the first 15 min after avulsion is critical for the long-term success of the treatment (3).

Dental injuries can lead to tooth loss subsequently it can have a negative impact on children's psychological well being. The prognosis of the injured teeth depends on immediate and appropriate management by those present at the site where trauma took place this includes school teachers and staff, Studies have demonstrated that traumatic dental injuries are sometimes not properly treated, one of the reasons for this problem being the time between the trauma episode and seeking dental treatment, which can sometimes be years.

**Aim:** The purpose of this study was to evaluate the level of knowledge and attitudes of elementary school teachers about dental trauma and its management in Patiala district, Punjab.

## MATERIALS AND METHODS

The cross-sectional study was conducted in Patiala district of Punjab, India by the department of Pedodontics and Preventive Dentistry, Government Dental College and Hospital Patiala. A self-administered questionnaire consisting of 19 closed questions based on those employed in previous studies (4,5) was developed for data collection. Prior to the main study, this was evaluated for ease of comprehension in a brief pilot study was conducted with teachers

employed outside the study area. This led to a number of minor modifications of wording. Copies of the definitive questionnaire were delivered in person to each school and, in an attempt to improve the response rate, arrangements were made for their collection one week later. Responses were entered onto a personal computer and Microsoft Excel was used for analysis and presentation.

### The questionnaire has three sections.

**Section 1:** Demographic characteristics of study participants including gender, age, position, first aid training and experience with dental trauma.

**Section 2:** Questions related to the participants attitude towards emergency management of dental trauma.

**Section 3:** Questions with two case scenarios of dental injuries.

## RESULTS

A total of 120 school teachers agreed to participate in this study. Completed questionnaires were returned by 112 teachers (93%). Most of the participants in the study were females 94.6% (N=106). The age group of the participants in the study are <35 years are 7.1% (N=8), 36-45 years are 48.2% (N=53), >45 years are 44.6% (N=51). The majority of the participants in this study are more than 35 years of age and almost everyone has kids 97.3%. Only 59.8% (N=67) of the participants had first aid training during their teacher training. Among the above participants who had first aid training only 8% (N=9) had their dental trauma first aid. Every participants (100%) from this study agreed that time is an important factor in the prognosis of dental trauma. And also all the participants agreed that teacher intervention in school dental injuries may play a key role in traumatized teeth. 57.1% (N=64) had personal experience in dental trauma either of their own or their children. 42.9% (N=48) does not had any personal experience of dental trauma. While asking the self assessed knowledge in the management of dental trauma the results are 7.1% (N=8) showed moderate knowledge, 89.3% (N=100) Showed little knowledge, 3.6% (N=4) showed no knowledge. Their main source of information regarding traumatic dental injuries is from Dentist 56% (N=63) and from friends 41.1% (N=46). From all the participants 32.1% (N=36) had witnessed dental emergency in school premises. Out of the school teachers who participated in this study 90.2% (N=102) responded correctly that the teeth most frequently affected by traumatic accidents (sports/during school time) are the upper front teeth. A total of 9.8% (N=11) responded that back teeth are most frequently traumatized and none of them gave the option of lower front teeth. All the teachers (100%) agreed that dental trauma emergency management must become one of the educational priorities for the teachers.

### RESPONSE TO CASE SCENARIOS

**QN 1: During school hours, a 9 year-old child is hit in the face with ball. Her upper front tooth is broken. Otherwise, she is healthy, unhurt, and conscious:** In this study only 64.3% (N=72) knew that the damaged tooth was permanent teeth, Only 33% (N=37) knew that the correct immediate action is to look for the broken tooth and send the child to dentist. More than half of the participants 67% responded that immediate action would be to contact the parents and advise them to send child to the dentist.

**QN 2: A 13 year-old boy is hit in the face and his upper front teeth is missing and there is blood in his mouth. Otherwise he is unhurt, healthy and he did not lose consciousness:** For the above question only 27.7% (N=78) gave the correct answer that the immediate management is to save the tooth in child's mouth and look for professional help. While the majority 69.6% (N=78) thought that stopping the bleeding by compressing a cloth over the injury was the correct immediate action. Of all the participants 51.8% (N=58) indicated that they would go to a general dentist while 30.4% (N=34)

indicated that they would go to a pediatric dentist 11.6% (N=13) indicated that they would go to hospital. 5.4% (N=6) indicated that they would go to General physician. Majority of the participants 81.3% (N=91) gave the correct answer that rinse the tooth under tap water and put it back into its socket 6.3% (N=7) gave the answer to discard the tooth 5.4% (N=6) don't know what to do Only 17.8% (N=20) gave the correct answer that the desirable liquid for storing the tooth is fresh milk and child's saliva, while majority 42.9% (N=48) gave the answer that they will store in tap water More than half of the participants 71.4% (N=80) indicated that they will wrap the tooth in a hand kerchief or paper tissue. While only 13.4% (N=15) indicated the correct answer that put the tooth in child's mouth.

## DISCUSSION

In the present study majority of the teachers responded that the upper front teeth are most commonly traumatized. This is because there is an increased risk of traumatic dental injuries to the upper front teeth if the patient has a pronounced overjet with protrusion in combination with inadequate lip coverage. With respect to teacher's experience to dental trauma it was found that 33% of school teachers have witnessed dental emergency, similar results were obtained in studies conducted by Chandkuty D et al (6), but a higher response rate was observed in a similar study conducted by Nikam AP et al (7), many studies have indicated that respondent's personal experience of dental trauma may exert positive effects in some aspects of trauma management. Avulsion is more common in children as the bone is in the formation stage and is not completely mineralized and more resilient, thus any injury or trauma to tooth at this stage causes the tooth to avulse instead of getting fractured. It is generally accepted that the ideal treatment for an avulsed tooth is immediate replantation. Once outside the socket, the cells of pulp and periodontium begin to deteriorate. This is due to lack of blood supply and environmental factors. Functional healing was observed in teeth re-implanted within one hour after the injury. Longer the time span between avulsion and replantation, poorer is the prognosis.

In the present study regarding the knowledge and management of avulsed tooth the response rate was average. Lower awareness was reported in study conducted by Vergotine RJ et al. (8), in which only 19% responded correctly to immediate management of avulsed tooth. However, studies conducted by Mesgarzadeh AH et al. (9), Caglar E et al., and Sae-Lim V et al., reported more awareness of 50%, 43% and 74% respectively. With respect to the appropriate procedure for replanting the avulsed tooth it was observed in the present study that 81.3% of the school teachers knew that the soiled avulsed tooth has to be washed under tap water and put it back into its socket. The response rate was agreement with the Chan AW et al. (10), The response rate was lower in the study Mesgarzadeh AH et al. (9), in which teachers' knowledge was found to be 38.1%. A major factor which influences the prognosis of replantation is that the storage medium in which the tooth is kept should have pH and osmolarity compatible for maintaining the vitality of Periodontal Ligament cells. Currently milk is considered as one of the best storage medium because of ideal physiological properties which helps in maintaining the vitality of Periodontal Ligament cells for up to six hours. Moreover, milk is easily available at the time of accident. Storage in tap water should be the last resort because of its hypotonicity, which would lead to necrosis of PL cells. While storing in saliva at the buccal vestibule may lead to infection of the periodontal membrane and the risk of swallowing in young children. Regarding the storage medium of the avulsed tooth in the present study only 10.7% of the school teachers chosen milk. Majority of the teachers in our study opted for tap water and disinfecting solution as a storage medium. The awareness regarding storage medium for avulsed tooth was poor in our study. It might be mainly due to the fact that teachers were not aware that maintain the viability of periodontal ligament cells is more important than making tooth germs free

## CONCLUSION

Among the school teachers surveyed it was observed that there was low knowledge of emergency management of dental trauma. It has been noticed that management regarding dental trauma is not included in the teaching curriculum. So educational programs should be developed for teachers to encourage them to seek treatment immediately when a dental injury occurs to a child in school. First aid training with dental content and acquisition of dental injury information from other sources has shown to increase knowledge regarding emergency management of dental trauma.

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### Annexure

## KNOWLEDGE AND ATTITUDE OF SCHOOL TEACHERS REGARDING TRAUMATIC DENTAL INJURIES

### SECTION 1(DEMOGRAPHIC DATA)

1. Gender
  - Male
  - Female
2. Age
  - <35 years
  - 36 -45 years
  - >45 years
3. Education
  - Diploma
  - Bachelor/Masters
4. Position
  - Educational
  - Health/physical
  - Administration
5. Do you have kids
  - Yes
  - No
6. Have you had first aid training during your teacher training?
  - Yes
  - No
7. If you did, have it included dental trauma first aid?
  - Yes
  - No

8. Did you have personal experience in dental trauma (yourself / your child )?

- Yes  
 No

## SECTION 2 (SELF ASSESSMENT)

9. Self assessed knowledge in dental trauma management

- None  
 Little  
 Moderate  
 High

10. Enthusiasm for more education in the subject (traumatic dental injuries)

- Not interested  
 Little interested  
 Very interested

11. Main source of information in the subject (traumatic dental injuries)

- Courses  
 Dentist  
 Friends  
 Other

12. Which teeth are most frequently affected by traumatic accidents(sports / during school time)

- Upper front teeth  
 Lower front teeth  
 Back teeth

13. Have you came across dental emergency in school premises

- Yes  
 No

14. Time consciousness for emergency management of dental trauma can play a vital role in improving tooth prognosis

- Strongly agree  
 Agree  
 Disagree

15. A tooth after avulsion will be lost definitely, so there is no need for treatment \*

- strongly agree  
 agree  
 Disagree

16. Dental trauma emergency management must become one of the educational priorities for teachers

- Strongly agree  
 Agree  
 Disagree

17. Teacher intervention in school dental injuries may play a key role in traumatized tooth

- strongly agree  
 agree  
 Disagree

**SECTION 3 (CASE SCENARIOS)**

18. During school hours, a 9 year-old child is hit in the face with ball. Her upper front tooth is broken. Otherwise, she is healthy, unhurt, and conscious.

a. The broken tooth is likely to be

- Temporary tooth
- Permanent tooth
- Do not know

b. Your immediate emergency management of the case is

- Calm down the child and send her back to class
- Contact parents and advise them to send child to the dentist immediately
- Look for broken tooth piece and send child to the dentist with it
- Do not know what to do

19. A 13 year-old boy is hit in the face and his upper front teeth is missing and there is blood in his mouth. Otherwise he is unhurt, healthy and he did not lose consciousness.

a. The immediate emergency action you would take is

- Stop the bleeding by compressing a cloth over the injury
- Look for tooth, wash it, and put in back in its place
- Save the tooth in child's mouth and look for professional help
- Do not know what to do

b. Mark desirable liquids for storing a tooth that has been knocked out while you are on your way to the dentist

- tap water
- fresh milk
- child's saliva
- saline solution
- disinfecting solution
- chicken egg white

c. Which is the best time for putting back a tooth in if it is knocked out of the mouth?

- immediately after the accident
- within 30 minutes after bleeding has stopped
- within the same day
- Do not know what to do

d. What type of health services would you seek first

- General physician
- pediatric physician
- Hospital
- General dentist
- Pediatric dentist

e. If the tooth has fallen on the dirty ground what would you do?

- Rinse the tooth under tap water and put it back into its socket
- Rub away the dirt by a sponge and soap and put it back
- Put it back into the socket immediately without cleaning
- Discard the tooth
- Do not know what to do

f. How would you transport the tooth on the way to dentist if you cannot put the tooth back into its socket?

- Put the tooth in ice
- put the tooth in child's mouth
- place the tooth in child's hand
- wrap the tooth in a hand kerchief or paper tissue

\*\*\*\*\*