

# Knowledge and attitude regarding management of tooth avulsion injuries among school teachers in rural India

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## Abstract

**Objectives:** Traumatic dento-alveolar injuries are frequent in children and adolescents, affecting teeth, their supporting structures, and adjacent soft tissues. Because school teachers are likely to be in contact with the child soon after injury, it is important to ascertain their knowledge and attitude about this. **Aim:** The study aimed to assess the knowledge and attitude of school teachers in Coorg with regard to immediate management of avulsed teeth. **Materials and Methods:** This cross-sectional study was conducted among school teachers in Coorg district. A self-administered questionnaire containing 16 questions was given to a sample of 600 school teachers. **Results:** Descriptive statistics and independent sample *t*-test were used for analysis. Only 24.7% teachers thought the tooth was important and wanted to search for the avulsed tooth. Regarding the knowledge about replantation of tooth, 25.7% teachers knew that a fallen tooth can be placed back in the socket. Extraoral time for replantation of the tooth that was opted by 44 teachers (30.3%) was  $\leq 30$  min. **Conclusion:** This survey reflected the lack of experience and inadequate knowledge regarding dental trauma management among school teachers in Coorg. The implications of this study are directed toward education of these school teachers who are involved in the supervision of children in schools.

**Key words:** Dental first aid, dental trauma, extra-oral time, replantation, tooth injury

## INTRODUCTION

One of the most common injuries during the growing age of an individual is dento-alveolar injuries. Although the oral region comprises 1% of total body area, the oral injuries account for as much as 5% of all body injuries,<sup>[1]</sup> with an even higher proportion of oral

injuries among children. A traumatic dental injury is a public health problem because of its frequency, occurrence at a young age, and costs, and the treatment may continue for the rest of the patient's life.<sup>[2]</sup>

Coorg is a hilly district in Karnataka, South India. This district consists of three talukas, namely, Virajpet, Madikeri, and Somwarpet. Hockey is the most commonly coached and played game of choice in schools in Coorg. During play, it is common to have injuries due to fall or hit. Avulsion injuries of the tooth due to trauma are common among children of this place. Untimely and improper management of tooth avulsions can lead not only to physical and mental stress to the children and their parents, but also the emotional and social component of the child's development may

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be impacted which, in turn, can lead to poor oral health related quality of life in these children.

Most of our childhood time is spent in schools. The closest companions for children during school days are teachers, apart from their friends. They are the primary source of contact, especially when injuries occur in school. In addition, in hilly regions like Coorg, accessibility to health services for immediate management of injuries is meager. Hence, knowledge and preparedness of the teachers to tackle these injuries play a pivotal role in the prognosis of the tooth. Earlier reports reflect low knowledge of school teachers regarding dental trauma management.<sup>[3-5]</sup> To date, no published studies have assessed the knowledge and attitude on dental trauma management among school teachers in Coorg.

With this background, the aim of the study was to assess the knowledge and attitudes of the government and private school teachers regarding management of tooth avulsion injuries.

## MATERIALS AND METHODS

A descriptive, questionnaire study was designed to assess the knowledge and attitude on dental trauma management among the government and private school teachers in Coorg district.

Prior permission was taken from the Block Education Officer, Virajpet to conduct the study. Permission for conducting the study was obtained from the principals of the respective schools. Ethical approval was obtained from the Institutional Review Board of Coorg Institute of Dental Sciences.

A 16-item questionnaire was developed both in English and Kannada languages (local language) for the study purpose. The questionnaire was pretested in a group of 20 school teachers of a nearby school and modifications were made accordingly. The test-retest analysis showed a good reliability of 0.7 of the questionnaire. Those school teachers who were involved in the pilot study were excluded from the final study. The first set of questions elicited information on personal and professional data and recorded age, gender, teaching experience, dental first aid training, and personal tooth injury experience. The second set of questions was regarding knowledge and attitude of the school teachers on the management of tooth avulsion injuries. The knowledge questions were assigned one point each for the correct answer and zero points for the wrong answer.

The list of schools was obtained from the Block Education Office. A convenience sample of 300 government and 300 private school teachers was included as study participants. The schools were randomly selected and all the school teachers of the selected school were included as study subjects after obtaining consent from them. The study was carried out for 3 months duration. Each prospective participant was approached individually by the investigator, who assessed his or her willingness to participate voluntarily in the study by completing the questionnaire. Questionnaires were distributed to the teachers personally and they were given sufficient time to answer the questions. The questionnaires were collected back on the same day. Teachers who were undergoing teachers training course in the schools were not included in the study.

## Statistical analysis

The collected data were entered in Microsoft Office Excel. For the purpose of analysis, the answers to the questions were dichotomised into correct and wrong answers. The data were analyzed using statistical tools such as descriptive statistics and *t*-test. SPSS for Windows, version 18 was employed for statistical analysis. The level of significance was set at 5%.

## RESULTS

Out of the 600 school teachers who participated in the study, 84 (14%) teachers responded to have attended a dental education program and having received training regarding dental first aid. Although all teachers had undergone training on first aid during teachers training course, only 14% of the total school teachers responded to have undergone training regarding dental first aid [Table 1].

**Table 1: Distribution of the study participants based on having received information on first aid in dental trauma in a dental education program**

Characteristics	Government school teachers <i>n</i> (%)	Private school teachers <i>n</i> (%)	Total <i>n</i> (%)
Information on dental first aid and having attended a dental education program			
Yes	39 (13)	45 (15)	84 (14)
No	261 (87)	255 (85)	516 (86)

*n* = Number of school teachers

In response to the first line of action that the teachers would take following injury to the teeth, a total of 202 (33.66%) teachers, which included 86 (28.7%) government school teachers and 116 (38.7%) private school teachers, correctly replied that they would inform the parents of the students [Table 2].

The question about searching for the missing tooth evaluated knowledge and attitude of the school teachers toward the importance of missing tooth. In response to this question, 246 (41%) teachers replied that they would search for the missing tooth, out of which 125 (41.7%) were private school teachers [Table 2].

Out of the 246 teachers who responded that they would search for the avulsed tooth, 89 teachers answered they would do so because they felt that the tooth was important and 105 (42.7%) teachers replied that the parents may ask for the tooth [Table 2].

In our study, 149 (24.8%) school teachers replied that a fallen tooth could be replanted back into the socket [Table 2]. Of the total 24.8% teachers who answered that a fallen tooth can be replanted, 97.3% responded that they would refer the child immediately to the dentist for placing back the tooth in the socket rather than doing it themselves.

Regarding the proper storage media in which the tooth can be transported to the dentist, 112 (77.24%) teachers opted water and 13 (9.3%) preferred milk as the best transportation medium, and this was statistically significant [Table 2].

In response to the question on the extraoral time permissible for a tooth prior to replantation, 33.8% government school teachers and 26.7% private school teachers indicated < 30 min to be appropriate [Table 2].

More respondents (72.3% compared to 27.7%) wanted to clean the tooth before placing the tooth in the socket or before giving the avulsed tooth to the student. 62.5% school teachers opted to clean the tooth in water [Table 2].

The mean knowledge score of the government school teachers was  $2.37 \pm 1.50$  and that of private school teachers was  $2.39 \pm 1.67$ , and there was no significant difference between them. Significantly more number of government school teachers replied that there was a routine dental check-up in their school, as against private school teachers. More school teachers (71.2%) wanted a dental care facility close to their school. As shown in Table 3, the positive attitude of the teachers was reflected in that 96.8% teachers wanted to learn more regarding immediate management of tooth avulsion injury.

## DISCUSSION

The determining factors for a favorable prognosis of replantation of avulsed tooth are minimal time of the avulsed tooth outside the socket, the storage and transportation medium of the avulsed tooth, and also minimal handling of the root surface and the periodontal ligament. The prevalence of dental injuries is 60%, of which over 48% involves maxillary teeth.<sup>[6]</sup> Several studies show that the populations at large, as well as many professionals involved in the treatment of dento-alveolar injuries have little knowledge concerning the management of tooth avulsions.<sup>[3,7-11]</sup>

Over 16% of the dental injuries occur in the school environment and 19% of the injuries are caused due to fall.<sup>[6]</sup> Since school teachers are likely to be in contact with the children soon after the injury, their knowledge is very important for the better prognosis of the

**Table 2: Distribution of study participants based on responses to knowledge and attitude questions regarding management of avulsion injuries**

Response to the questions	Total <i>n</i> (%)	Government school teachers <i>n</i> (%)	Private school teachers <i>n</i> (%)
Inform the child's parent following dental trauma in school	202 (33.66)	86 (28.7)	116 (38.7)
Search for the tooth	246 (41)	121 (40.3)	125 (41.7)
Tooth is important	89 (36.2)	30 (24.7)	59 (47.2)
Teachers who responded that the fallen tooth can be replanted	149 (24.8)	77 (25.7)	72 (24)
Transportation media for the avulsed tooth as being milk	13 (9)	11 (14.8)	2 (2.8)
Recommended extraoral time for replantation of the tooth being <30 min	44 (30.3)	25 (33.8)	19 (26.7)
Number of respondents who opted to clean the tooth prior to replantation	434 (72.3)	246 (82)	188 (62.7)
Cleaning the tooth with water chosen as the response to the question on with what the teeth will be cleaned prior to replantation	271 (62.5)	133 (54.1)	138 (73.4)

*n* = Number of school teachers

**Table 3: Attitude of school teachers on the need for dental care facility in the vicinity of the school and education regarding immediate management of avulsion injuries**

Response to questions	Total n (%)	Government school teachers n (%)	Private school teachers n (%)
Positive reply for the need of dental care in the vicinity of the school	427 (71.2)	238 (79.3)	189 (63)
Education required for management of tooth injury	581 (96.8)	290 (96.7)	291 (97)

*n* = Number of school teachers

avulsed tooth. This study was carried out to assess all these factors including the attitude of school teachers toward such injuries. In addition, the study tried to elicit a relationship between teaching experience and knowledge regarding avulsion injuries.

A rather disturbing finding in this study, as shown in Table 1, was that although all teachers had undergone training on first aid during teachers training course, only 14% of the total number of school teachers responded to have had training regarding dental first aid. These results are consistent with several other studies in which less percentage of teachers reported to have received training in dental trauma management.<sup>[4,5,12-14]</sup> Similar results were observed among teachers who responded to having attended a dental health education program and those not having attended such program. This finding may be attributed to the fact that in most of the dental health education programs, more emphasis on maintenance of dental hygiene is stressed as against management of avulsion injuries. Or it might be that if health education is not regularly reinforced, it does not bring about a change in knowledge. The cause for such a finding cannot be ascertained as we had not collected data on the type of educative program the teachers had attended, the topics covered, as well as the duration and frequency of these programs. However, the present finding calls for education in this aspect of tooth care in future dental health education programs, followed by continuous reinforcement.

The first action that the teachers have to take following injury to the teeth is to inform the parents. This correct answer was given by 33.66% of the teachers in the present study, which is low when compared to other similar studies.<sup>[5,12,14]</sup>

The question about searching for the missing tooth evaluated the knowledge and attitude of the school

teachers toward the importance of missing tooth. Out of the 246 teachers who responded that they would search for the avulsed tooth, only 149 (24.8%) teachers knew that a fallen tooth can be replanted back into the socket. This is in contrast to a study wherein only 1% of the school teachers replied positively.<sup>[4]</sup> However, studies done in UK reported 27.7% teachers responding positively for the same.<sup>[12]</sup> 18.8% and 19% responded positively for the same in Sao Paulo, Brazil and UK.<sup>[15]</sup>

Of the total 24.8% teachers who answered that a fallen tooth can be replanted, 97.3% responded that they would refer the child to the dentists for placing back the tooth in the socket rather than doing it themselves. This is similar to a survey done in USA on the elementary school staff's knowledge about dental injuries.<sup>[13]</sup> In a study done in University Hospital, Cardiff, 35.3% school teachers opined that a dentist should carry out the procedure of replantation.<sup>[12]</sup> Milk was opted as a transport medium for avulsed tooth by 13 (9.3%) school teachers in the present study. More government school teachers responded correctly as compared with private teachers, and this was statistically significant at  $P < 0.05$ . In contrast, findings from a study on elementary school staff in UK showed that 34% teachers believed that the best storage medium was milk and only 6% thought it to be water. This may be due to the fact that this survey also involved nurses for grades 2–5, who may have had a better knowledge compared to the teachers or the teacher assistants who were also the participants of the study.<sup>[13]</sup>

Time is one of the most important factors for prognosis of avulsed tooth to preserve its vitality after replantation.<sup>[5]</sup> This determines the prognosis of the replanted tooth. In our study, with respect to the extraoral time permissible for a tooth prior to replantation, 33.8% government school teachers and 26.7% private school teachers indicated < 30 min to be appropriate. These teachers had better knowledge than the teachers in other similar studies.<sup>[12,16]</sup> Intuitive guessing has been previously suggested regarding this topic – when employing questionnaires – a possible limitation of this study also.<sup>[13]</sup>

In the present study, 62.5% school teachers opted to clean the tooth in water. In a study done in Brazil, 58.3% teachers had opted this answer.<sup>[2]</sup>

The positive attitude of the teachers reflected in our study toward learning regarding immediate management of tooth avulsion injury is similar to the response observed in a survey done among physical education teachers in Bangalore urban schools.<sup>[6]</sup>

## CONCLUSION

Traumatic dental injury is a public health problem. If not treated appropriately and on time, it not only causes disability or loss of teeth, but also has an impact on the quality of life of the individual.

This survey clearly reflects the lack of knowledge regarding dental trauma management among school teachers in Coorg. The implications of this study are directed toward education of these school teachers who are involved in the supervision of children in schools. However, these teachers have a great enthusiasm toward increasing their knowledge with regard to immediate management of dental trauma.

To this end, future collaboration of dentists and school teachers for dissemination of oral health knowledge with an emphasis on the management of dental trauma, as well as inclusion of dental first aid in the first aid curriculum of teachers' training course are recommended. Dentists as health educators must reach the teachers via school dental health programs, radio, and TV interviews.

Thus, the oral health of the children can be enhanced by educating and training the school teachers on topics regarding maintenance of oral hygiene, early recognition of oral diseases, and knowledge about immediate management of dental trauma.

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