

# Evaluation of the Knowledge and Attitude Regarding the Emergency Management of Dental Trauma Among The School Teachers In Bhopal City.

Dr. Deoyani D Bansod<sup>1</sup>, Dr. Arpana Bansal<sup>2</sup>,  
Dr. Kartik Choudhary<sup>3</sup>, Dr. Babita Niranjana<sup>4</sup> Dr. Prachi Sijeria<sup>5</sup>.

<sup>1</sup>Post- Graduate Student (Department of Pediatrics and Preventive Dentistry, Rishiraj College of Dental Science and Research Centre, Bhopal /Madhya Pradesh Medical Science University, Jabalpur, India)

<sup>2</sup>Professor and Head (Department of Pediatrics and Preventive Dentistry, Rishiraj College of Dental Science and Research Centre, Bhopal /Madhya Pradesh Medical Science University, Jabalpur, India)

<sup>3</sup>Reader (Department of Pediatrics and Preventive Dentistry, Rishiraj College of Dental Science and Research Centre, Bhopal /Madhya Pradesh Medical Science University, Jabalpur, India)

<sup>4</sup>Reader (Department of Pediatrics and Preventive Dentistry, Rishiraj College of Dental Science and Research Centre, Bhopal /Madhya Pradesh Medical Science University, Jabalpur, India)

<sup>5</sup>Reader (Department of Pediatrics and Preventive Dentistry, Rishiraj College of Dental Science and Research Centre, Bhopal /Madhya Pradesh Medical Science University, Jabalpur, India)

Corresponding Author: Dr. Arpana Bansal (email ID - varpana@yahoo.com)

## Abstract:

**Background:** Dental problems including trauma to children's primary and permanent teeth and their supporting structures are quite prevalent. The prognosis of traumatized teeth depends on prompt intervention and primary care, which frequently rely on the expertise of the teachers who may be present at the place of incidents. Thus, the goal of this study was to assess the attitudes and knowledge of the school teachers in Bhopal city on the emergency management of dental trauma.

**Methods:** Cluster sampling in two stages was used in the interventional study's design. This study included 86 teachers in total. A questionnaire was used to obtain the data. Following an educational talk on oral trauma, a reevaluation with same questionnaire was conducted. Statistical analysis were done for results.

**Results:** Out of 86 teachers, the majority of teachers (82.6%) had seen dental trauma, 75.6% of teachers accepted the lack of knowledge toward the management of dental trauma, 60.5% were not aware that avulsed teeth might be re-implanted. Following the use of the intervention, a positive outlook and an increase in knowledge were seen.

**Conclusion:** Due to the fact that many teachers lack understanding about dental trauma, there is a need for increased awareness in order to enhance teacher's attitudes and knowledge about the emergency care of dental trauma in children by setting up educational and motivating programs.

**Key Word:** Dental trauma, Avulsed tooth, Children, School teachers, Knowledge, Emergency management.

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## I. INTRODUCTION

Traumatic Dental Injury is an accidental form of injury which has impact on the teeth, other hard and soft tissues of oral cavity. Dental trauma may vary from minor soft tissue injury to major dentoalveolar fractures and avulsion of teeth. [1] Treatment of this dental emergency includes multiple visits, and supervision for long term repercussion to developing dentition which are relatively expensive. [2] They have been identified as a public health problem as they significantly affect the individual, involve considerable social expenses. [3][4]

It has been reported that nearly 50% children experience dental trauma by the age of 4 years. [5] In a meta-analysis, prevalence of dental trauma in children and adolescents was reported to be 17.5%. [6] As more than 80% of dental trauma occurs in individual younger than 20 years of age, which is the sensitive growth period. [7] Due to spending a lot of time engaging in various physical activities, the likelihood of dental injury is highest in children between the ages of 6 and 12. [8] Boys tend to report more severe dental injuries than girls. Maxillary central incisors account for 37% of dental trauma cases, followed by mandibular central incisors 18%, mandibular lateral incisors 6%, and maxillary lateral incisors 3%. [9] Proper and timely care is important for the management of dental trauma as delay in treatment is associated with poor outcomes. [5]

Traumatic dental injuries most frequently occur at home and in school. [8]. During childhood, high incidence of accidental injuries happens due to play activities such as running, skating, bike riding. [10]. During the school time, a teacher serves as the main caregiver for children. [10] Children spend a considerable amount of day time in school. [11] Numerous studies have discovered a serious lack of knowledge among teachers when it comes to traumatic oral injuries. [12] For particular types of traumatic injuries, it is crucial to be able to manage an emergency situation instantly after a traumatic event. [13] Therefore, in order to deal with the issue, school teacher's knowledge of emergency dental trauma management is essential. [14]

Thus, present study was conducted with the purpose to assess the knowledge and attitude towards emergency management of Dental trauma amongst school teachers and to analyze the effect of Oral Health Education (OHE) intervention of knowledge and attitude towards emergency management of Dental trauma.

## II. MATERIAL AND METHODS

This interventional study was conducted in the Bhopal city over a duration of a month (September 2022). The study population comprised of the school teachers of Phanda Block, Bhopal city.

The study included 86 school teachers. The participants were enrolled in the study using Two-stage cluster Random sampling technique. First, one of the two zones for the city of Bhopal's educational system was chosen. All private schools were listed, and a random selection was made.

### Methodology

The survey was conducted after obtaining approval from the institutional ethics committee. The assessment of knowledge and attitude towards dental trauma was done using a self-administered closed-ended questionnaire. The questionnaire consisted of 16 items obtaining information about the first aids, management of dental trauma and transport of the tooth. Questionnaire was developed in English and regional language.

The questionnaire was given to the teachers from different schools. Teachers were then educated through audio and visual aids regarding management of dental trauma. After the OHE, the reassessment of knowledge and attitude was done by administration of the same questionnaire. The principal investigator made herself available to the participants in case any clarification was needed by the participants.

### Statistical analysis

The data was collected and analyzed using SPSS (Statistical Package for Social Sciences) 21.0 version, IBM, Chicago. Descriptive statistics was performed. Comparison of responses to various questions before and after OHE and comparison of responses between different groups based on experience was done using Chi-square test. P value <.05 was considered statistically significant.

### Ethical considerations

The survey procedure was conducted after obtaining approval from the Institutional Ethics Committee, Rishiraj College of Dental Sciences and Research Center, Bhopal. The permission was granted from Head of the Institution and written informed consent was obtained from each participant. Confidentiality of participant's information was maintained.

## III.RESULT

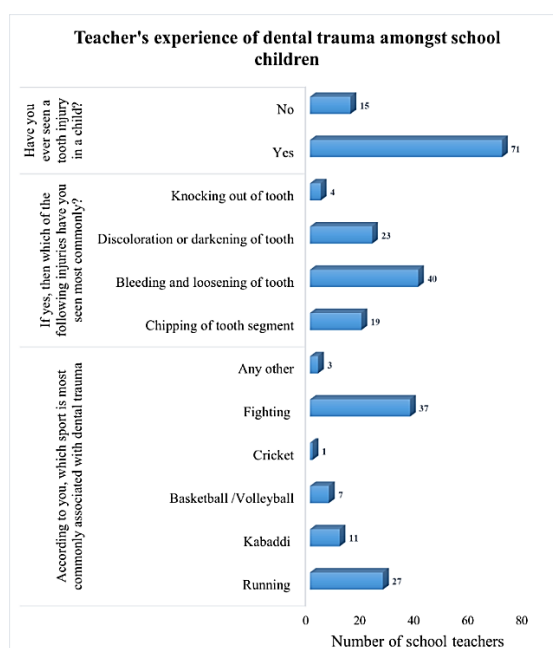
The present study included 86 participants with the mean age of 38.4±8.98 years (range- 24-58 years) and with mean teaching experience of 11.6±7.73 years (range- 1-29 years). Age, gender, teaching experience and classes assigned to them have been described in table 1.

**Table 1. Distribution of study participants based on age, gender, teaching experience and class assigned to them.**

Parameter		Frequency	Percentage
Age	21-30 years	20	23.3
	31-40 years	32	37.2
	41-50 years	23	26.7
	51-60 years	11	12.8
	Total	86	100.0
Gender	Male	3	3.5
	Female	83	96.5
	Total	86	100.0

Teaching experience	<5 years	19	22.1
	5-10 years	27	31.4
	11-20 years	25	29.1
	>20 years	15	17.4
	Total	86	100.0
Class assigned	Primary	42	48.8
	Secondary	24	27.9
	Higher secondary	20	23.3
	Total	86	100.0

Majority (82.6%) teachers had witnessed dental trauma. Knocking out of tooth was reported only by 4.7% teachers. Dental trauma was reported to happen commonly during fighting (43.0%), running (31.4%) and kabaddi (12.8%). Experience of school teachers with respect to dental trauma had been described in figure 1.



The knowledge and attitude of school teachers pertaining to dental trauma had been presented in table 2. There was no significant difference in the knowledge amongst school teachers belonging to different based on teaching experience (p value >.05). A significantly greater proportion of participants with teaching experience of less than 5 years believed that they cannot do emergency management of dental trauma. [Table 2]

**Table 2. Distribution of participants based on the response to various questions before the intervention.**

Questions		Teaching experience				Total	Chi-square value	Df	P value <sup>a</sup>
		<5 years	5-10 years	11-20 years	> 20 years				
If a child falls and suffers from the dental trauma where should child be taken in this case firstly?	To a general hospital	1 (5.3%)	0 (0.0%)	2 (8.0%)	0 (0.0%)	3 (3.5%)	8.682	9	.467
	To a dental clinic	16 (84.2%)	24 (88.9%)	19 (76.0%)	15 (100.0%)	74 (86.0%)			
	Manage at school	2 (10.5%)	2 (7.4%)	4 (16.0%)	0 (0.0%)	8 (9.3%)			
	No need of treatment	0 (0.0%)	1 (3.7%)	0 (0.0%)	0 (0.0%)	1 (1.2%)			
<b>If a child falls down while playing and his or her tooth get loosened or completely knocked out.</b>									
In above case how would you control	By applying pressure on affected area with cloth or gauze	7 (36.8%)	8 (29.6%)	5 (20.0%)	6 (40.0%)	26 (30.2%)	9.917	9	.357

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the bleeding from the injury?	By applying pressure on affected area with cold bag or ice pack	3 (15.8%)	3 (11.1%)	3 (12.0%)	5 (33.3%)	14 (16.3%)			
	Any of the above	5 (26.3%)	12 (44.4%)	10 (40.0%)	2 (13.3%)	29 (33.7%)			
	No need of treatment	4 (21.1%)	4 (14.8%)	7 (28.0%)	2 (13.3%)	17 (19.8%)			
What can be done if tooth is knocked out from the socket?	The tooth can be picked up and put back into socket (re-implantation)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4.135	3	.247
	The child should be taken to the hospital along with the knocked-out tooth	4 (21.1%)	11 (40.7%)	11 (44.0%)	8 (53.3%)	34 (39.5%)			
	Nothing can be done once the tooth has been knocked out	15 (78.9%)	16 (59.3%)	14 (56.0%)	7 (46.7%)	52 (60.5%)			
If you want to put back tooth into the socket, what will you do?	Clean with the soap	2 (10.5%)	3 (11.1%)	3 (12.0%)	1 (6.7%)	9 (10.5%)	2.096	6	.911
	Rinse the tooth with water	11 (57.9%)	19 (60.4%)	18 (72.0%)	11 (73.3%)	59 (68.6%)			
	Rub it vigorously with toothbrush	6 (31.6%)	5 (18.5%)	4 (16.0%)	3 (20.0%)	18 (20.9%)			
Do you know the various storage media to carry knocked out tooth?	Yes	2 (10.5%)	5 (18.5%)	4 (16.0%)	4 (26.7%)	15 (17.4%)	1.575	3	.665
	No	17 (89.5%)	22 (81.5%)	21 (84.0%)	11 (73.3%)	71 (82.6%)			
If yes, to carry that knocked out tooth to dentist which of the following is the most appropriate media?	In a glass of water	10 (52.6%)	12 (44.4%)	12 (48.0%)	9 (60.0%)	43 (50.0%)	6.001	6	.423
	In a glass of saline	0 (0.0%)	0 (0.0%)	2 (8.0%)	0 (0.0%)	2 (2.3%)			
	In a clean cloth	9 (47.4%)	15 (55.6%)	11 (44.0%)	6 (40.0%)	41 (47.7%)			
	In a glass of cold milk	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)			
How much time should you take to reach the dentist with a tooth that has knocked out?	Within 30 minutes of injury	7 (36.8%)	18 (66.7%)	13 (52.0%)	8 (53.3%)	46 (53.5%)	9.304	9	.410
	Within 24 hours	5 (26.3%)	6 (22.2%)	7 (28.0%)	5 (33.3%)	23 (26.7%)			
	Next day	0 (0.0%)	0 (0.0%)	1 (4.0%)	0 (0.0%)	1 (1.2%)			
	No use of tooth	7 (36.8%)	3 (11.1%)	4 (16.0%)	2 (13.3%)	16 (18.6%)			
Do you supervise children during sport activities?	Yes	18 (94.7%)	27 (100.0%)	24 (96.0%)	13 (86.7%)	82 (95.3%)	3.907	3	.272
	No	1 (5.3%)	0 (0.0%)	1 (4.0%)	2 (13.3%)	4 (4.7%)			
Can you do emergency management in case of dental trauma?	Yes	7 (36.8%)	20 (74.1%)	15 (60.0%)	12 (80.0%)	54 (62.8%)	8.932	3	.030*
	No	12 (63.2%)	7 (25.9%)	10 (40.0%)	3 (20.0%)	32 (37.2%)			
Do you have first aid safety kit in your school?	Yes	15 (78.9%)	23 (85.2%)	22 (88.0%)	13 (86.7%)	73 (84.9%)	.750	3	.861
	No	4 (21.1%)	4 (14.8%)	3 (12.0%)	2 (13.3%)	13 (15.1%)			
Do you think your knowledge of dental trauma and its emergency management is sufficient?	Yes	3 (15.8%)	6 (22.2%)	6 (24.0%)	6 (40.0%)	21 (24.4%)	2.813	3	.421
	No	16 (84.2%)	21 (77.8%)	19 (76.0%)	9 (60.0%)	65 (76.0%)			
Do you think it is important to have an educational program in management of dental trauma?	Yes	17 (89.5%)	25 (92.6%)	23 (92.0%)	14 (93.3%)	79 (91.9%)	.208	3	.976
	No	2 (10.5%)	2 (7.4%)	2 (8.0%)	1 (6.7%)	7 (8.1%)			
Would you like to attend the program on dental trauma	Yes	17 (89.5%)	25 (93.6%)	23 (92.0%)	12 (80.0%)	77 (89.5%)	1.887	3	.596
	No	2	2	2	3	9			

and emergency management?		(10.5%)	(7.4%)	(8.0%)	(20.0%)	(10.5%)			
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<sup>a</sup>Chi-square test. \*p value <.05 was considered statistically significant.

On comparison, it was found that there was a significant improvement in the knowledge and attitude after the oral health education intervention. [Table 3]

**Table 3. Comparison of knowledge and attitude to the study participants before and after the intervention**

Question	Response	Pre-intervention	Post intervention	Chi-square value	df	P value
If a child falls and suffers from the dental trauma where should child be taken in this case firstly?	To a general hospital	3 (3.5%)	4 (4.7%)	9.553	3	.023*
	To a dental clinic	74 (86.0%)	82 (95.3%)			
	Manage at school	8 (9.3%)	0 (0.0%)			
	No need of treatment	1 (1.2%)	0 (0.0%)			
If a child falls down while playing and his or her tooth get loosened or completely knocked out.						
In above case how would you control the bleeding from the injury?	By applying pressure on affected area with cloth or gauze	26 (30.2%)	70 (81.4%)	63.334	3	.001*
	By applying pressure on affected area with cold bag or ice pack	14 (16.3%)	15 (17.4%)			
	Any of the above	29 (33.7%)	1 (1.2%)			
	No need of treatment	17 (19.8%)	0 (0.0%)			
What can be done if tooth is knocked out from the socket?	The tooth can be picked up and put back into socket (reimplantation)	0 (0.0%)	41 (47.7%)	94.532	2	.001*
	The child should be taken to the hospital along with the knocked-out tooth	34 (39.5%)	45 (52.3%)			
	Nothing can be done once the tooth has been knocked out	52 (60.5%)	0 (0.0%)			
If you want to put back tooth into the socket, what will you do?	Clean with the soap	9 (10.5%)	5 (5.8%)	9.053	2	.011*
	Rinse the tooth with water	59 (68.6%)	75 (87.2%)			
	Rub it vigorously with toothbrush	18 (20.9%)	6 (7.0%)			
Do you know the various storage media to carry knocked out tooth?	Yes	15 (17.4%)	85 (98.9%)	117.146	2	.001*
	No	71 (82.6%)	1 (1.2%)			
If yes, to carry that knocked out tooth to dentist which of the following is the most appropriate media?	In a glass of water	43 (50.0%)	27 (31.4%)	97.998	3	.001*
	In a glass of saline	2 (2.3%)	45 (52.3%)			
	In a clean cloth	41 (47.7%)	0 (0.0%)			
	In a glass of cold milk	0 (0.0%)	14 (16.3%)			
How much time should you take to reach the dentist with a tooth that has knocked out?	Within 30 minutes of injury	46 (53.5%)	76 (88.4%)	29.498	3	.001*
	Within 24 hours	23 (26.7%)	10 (11.6%)			
	Next day	1 (1.2%)	0 (0.0%)			
	No use of tooth	16 (18.6%)	0 (0.0%)			
Do you supervise children during sport activities?	Yes	82 (95.3%)	82 (95.3%)	.000	1	1.000
	No	4 (4.7%)	4 (4.7%)			
		Yes	54	81	25.103	1

Can you do emergency management in case of dental trauma?		(62.8%)	(94.2%)			
	No	32 (37.2%)	5 (5.8%)			
Do you have first aid safety kit in your school?	Yes	73 (84.9%)	82 (95.3%)	5.287	1	.021*
	No	13 (15.1%)	4 (4.7%)			
Do you think your knowledge of dental drama and its emergency management is sufficient?	Yes	21 (24.4%)	70 (81.4%)	56.027	1	.001*
	No	65 (75.6%)	16 (18.6%)			
Do you think it is important to have an educational program in management of dental trauma?	Yes	79 (91.9%)	85 (98.8%)	4.720	1	.030*
	No	7 (8.1%)	1 (1.2%)			
Would you like to attend the program on dental trauma and emergency management?	Yes	77 (89.5%)	83 (96.5%)	3.225	1	.073
	No	9 (10.5%)	3 (3.5%)			

<sup>a</sup>Chi-square test. \*p value <.05 was considered statistically significant.

#### IV. DISCUSSION

In the present study, assessment of knowledge and attitude towards dental trauma of school teacher was done. If improperly managed, dental trauma can lead to pulp necrosis, apical periodontitis, discoloration of tooth crown, fistulas, external inflammatory root resorption. <sup>[15]</sup> Additionally, it may also have psychological and social impact. <sup>[7]</sup>

School teachers can play a great role in the emergency management of dental trauma as they are likely to be the first to see the child after they have encountered dental trauma. <sup>[16]</sup> Furthermore, knowledge of school teachers towards dental trauma is more valuable as children spend about 40% of their awake time in school and are more engaged in sports or playing activities at school. <sup>[16]</sup>

In the present study, 82.6% teachers had witnessed dental trauma. This conforms to the fact that school teachers are more likely to have seen dental trauma. <sup>[16]</sup> 86% teachers showed positive attitude towards taking the child to dentist in case of emergency and 30.2% teachers were aware of the most appropriate method to present bleeding from injury.

Extraoral time and storage media are the most critical factors determining the success of tooth replantation. Delayed management may jeopardize the prognosis of an avulsed tooth. <sup>[17][18]</sup> In the present study, a large number (60.5%) of teachers were unaware of the possibility of the replantation of the tooth, only 53.5% participants were aware of the time that should be taken for transportation of avulsed tooth, 82.6% were ignorant of storage media for avulsed tooth; utility of cold milk as storage media was not known to any of the participants. These findings indicated towards the low levels of awareness towards dental trauma. Similarly, Namdev R et al. (2014) reported low levels of awareness towards avulsed tooth amongst Indian parents from Rohtak. <sup>[19]</sup>

Dental trauma had been reported to occur more frequently due to falls, accidents while playing and participating in sports activities. <sup>[20]</sup> In the present study, positive attitude towards this aspect was shown by the teachers, where 94.7% reported that they supervise children during sport activities.

As shown in the present study, incapability of most of the participants (63.2%) and the self-reported insufficient knowledge of emergency management amongst teachers (84.2%) highlighted the need to conduct awareness campaigns and workshops and indeed, majority of participants (89.5%) also felt the need and showed interest in attending educational program in management of dental trauma. Katge FA et al. (2021) also reported lack of knowledge towards dental trauma and self-perceived need of training in dental trauma management, amongst school teachers of Navi Mumbai. <sup>[21]</sup> Similar findings were reported by Nirwan M et al. (2016) from Jaipur and Kaul R et al. (2017) from Kolkata. <sup>[22][23]</sup> Not only India, but few studies from other parts of the world have also reported lack of knowledge of school teachers in relation to dental trauma management. <sup>[24][25]</sup>

In the present study, no significant difference was observed between the knowledge and attitude of teachers having different teaching experience, which indirectly showed that past experience did not seem to have increase the knowledge of the correct emergency procedures. With the increase in incidence of traumatic dental injuries, a regular update of knowledge in dental traumatology is required. <sup>[15]</sup> Oral health education is a way to increase the knowledge of dental first-aid.

In this study, a significant improvement in the knowledge and attitude of the teachers had been noticed after the educational intervention. Nashine N et al. (2018) in their study amongst school children reported significant increase in knowledge about dental trauma of study subjects, after the informative lecture. <sup>[10]</sup>

The result of this study and earlier research from other regions of the country have provided significant insight into the necessity and efficacy of an Oral Health Education and training program for school teachers to address traumatic dental injuries in an emergency situation.

## V. CONCLUSION

According to the study's findings, Bhopal City's school teachers are lacking the necessary knowledge of management of dental trauma and shows supportive attitude towards it. In order to increase awareness of and foster a favorable attitude about dental trauma among school teachers, oral health education may be a useful strategy. Educating teachers about basic dental health will significantly lessen the unfavorable effects of trauma. Therefore, implementation of educational and motivational dental health program in the school is essential.

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