

## Assessment of Knowledge and Attitude among Public and Private School Teachers in Urban and Rural Areas towards Management of Traumatic Dental Injuries

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### Abstract:

**Background:** Traumatic dental injuries (TDI) commonly occur in children during school hours. However, the majority of the teachers are unaware about adequate emergency management. The purpose of the study was to assess the knowledge and attitude among private and public school teachers in urban and rural areas towards the management of TDI.

**Materials and Methods:** A total of 609 teachers from urban and rural areas have volunteered to participate in this study. A multiple choice questionnaire was designed and given to the teachers to mark the appropriate answer. Comparative analysis between private and public teachers in urban and rural areas was carried out using Chi-square test.

**Results:** In public schools, teachers from the urban area were found to be more knowledgeable than the rural area, whereas among private schools, rural area teachers were more knowledgeable than urban teachers with regard to management of TDI. However, there was no significant difference among total urban and rural teachers in the emergency management of avulsion injuries.

**Conclusion:** The present study revealed that the knowledge and awareness among both urban and rural teachers were inadequate. Hence, educative programs are very essential for teachers, as they are the first responders in case of dental trauma in schools.

**Key Words:** Private teachers, public teachers, urban area, rural area, TDI

### Introduction

School children are often subjected to accidents in the school environment due to contact sports, fights, and falls, etc., which remain the most common reasons for frequent dental injuries in children. Traumatic dental injuries (TDI) to anterior teeth may pose a great threat to dental health in young children as they create esthetic concerns and cause a psychological impact. TDI vary from enamel fractures to complete loss of the tooth. In these dental injuries, most common type is crown fracture (26-76%),<sup>1</sup> followed by luxation (30-44%)<sup>2</sup> and avulsion (1-6%).<sup>3-5</sup> The prognosis of these injuries significantly depends on prompt and appropriate emergency management of the child by the people available at the accident site.

As school teachers spend maximum time with children in school, they are often the first persons to confront children with dental trauma. Hence, they play a crucial role in the emergency management of TDI in children. In general, both the private and public school teachers receive first-aid training in their curriculum. However, the literature shows that teachers have limited knowledge in the management of TDI. Hence, the present study was undertaken to gather a primitive data regarding their knowledge, attitude, and practice of private and public school teachers in both rural and urban regions towards management of TDI, based on which awareness and pertinent emergency management of TDI could be conducted for the benefit of the child.

### Materials and Methods

This prospective study was conducted in 10 government and 10 private schools of both rural and urban areas of Telangana region. A total of 609 teachers of both genders (males 174 and females 435) aged between 20 and 40 years in both urban (306) and rural (303) areas volunteered to participate in this study.

A multiple choice questionnaire was designed in both English and Telugu languages, which comprised of two sections, one dealing with the demographic data and the other with the knowledge and attitude of teachers toward the emergency management of TDI in children (Appendix 1).

After obtaining permission from the concerned authorities, the objectives of the study were explained to the participants. The prepared questionnaires were distributed personally and were asked to mark the appropriate answer. Filled questionnaires were collected on the following day.

In order to improve their awareness and knowledge, an educative lecture was delivered in both English and local languages along with the distribution of informative leaflets. The filled questionnaires were analyzed, and the data was compiled, tabulated and were divided into five groups. They are:

- Group I: Urban public versus rural public.
- Group II: Urban private versus rural private.
- Group III: Rural public versus rural private.
- Group IV: Urban public versus urban private.
- Group V: Urban total versus rural total.

Comparative analysis of knowledge and attitude among public and private teachers in urban and rural regions was carried out using Chi-square test.

**Results**

**Part I**

In the present study, the majority of the studied group were academicians and about 12.7% in urban and 14.8% in rural were physical trainers, with 10-20 years of teaching experience. Though 66.6% teachers in urban and 57.4% teachers in rural underwent training on first-aid course in their curriculum but none of the teachers had any form of dental aid training. Greater number of teachers from the rural region had experienced (38.6%) and witnessed (61%) TDI than teachers from urban region 12.7% and 19.6%, respectively (Table 1).

**Part II**

*Group I (Table 2)*

Urban public teachers have marked significantly more correct answers than teachers from rural region regarding their first place of approach to the dentist or dental hospital, awareness of fractured fragment being reattached and also about transport media for an avulsed tooth should be liquid, particularly fresh milk. Whereas, in case of management of fractured tooth fragment and mobile teeth, a significant number of public teachers in rural area have shown a positive attitude than urban public teachers.

*Group II (Table 3)*

The private teachers from the rural region have answered significantly more correct answers in the case of their positive attitude in the management of fractured tooth fragment and awareness on reattachment of the fractured fragment. In the case of avulsion injuries, they suggested that the dirty knocked out should be washed under tap water and to be transported in a liquid medium. Whereas, urban private teachers have answered significantly better in emergency management of mobile teeth and immediate approach following avulsion.

*Group III (Table 4)*

The rural private teachers have showed significantly better response than public teachers with regard to a first place to seek treatment following TDI, immediate management of

**Table 1: Responses to Part 1 - Demographics of study sample.**

	Urban total (%)	Rural total (%)
Age		
20-30	33	19.80
31-40	25.24	32.67
41-50	26.21	33.66
>50	6.92	6.93
Gender		
Male	17.47	41.58
Female	78.64	57.42
Length of service		
10-20	36.89	65.34
20-30	32.03	18.81
>30	25.24	8.91
Which of the following do you teach		
Academics	81.55	80.19
Physical education	12.62	14.85
School type		
Primary	33	11.88
Secondary	31.06	58.41
Both	32.03	21.78
First aid training		
Yes	66.01	57.42
No	30.09	35.64
Experienced TDI		
Yes	12.62	38.61
No	79.61	59.40
Witnessed TDI		
Yes	19.41	60.39
No	77.66	37.62

TDI: Traumatic dental injuries

avulsed tooth, washing the dirty knocked out tooth under tap water and suggested milk as an ideal transport medium for knocked out a tooth.

*Group IV (Table 5)*

Among public and private teachers in the urban region, private school teachers' response toward displaced teeth was significantly more positive.

*Group V (Table 6)*

On comparing total urban and rural teachers, both have showed an equally significant response. Question regarding the first place of contact revealed that most of the urban teachers would consult dentists and dental hospitals rather than doctors as compared to rural teachers. The majority of the urban teachers suggested that they would immediately seek dentists help for replanting the knocked out tooth. Whereas the rural teachers showed significant response with regard to immediate management of knocked out tooth and fractured tooth fragment.

**Discussion**

According to the results of this study, 66.6% urban and 57.4% rural teachers underwent first-aid training. Similar studies were reported by Pujita *et al.*<sup>6</sup> and Skeie *et al.*<sup>7</sup> But, none of the

Table 2: Comparison of rural and urban public school teachers' knowledge and attitude towards management of traumatic dental injuries.

Q. No	Rural public		Urban public		Chi-square test	P value
	Correct	Incorrect	Correct	Incorrect		
1	66	66	94	19	28.1	<0.0001*
2	69	45	12	132	78.1	<0.0001*
3	36	72	78	60	12.2	0.0005*
4	96	36	75	63	15.5	<0.0001*
5	18	96	54	84	2.12	0.1452
6	66	36	96	33	0.512	0.4742
7	81	39	102	39	1.47	0.2253
8	69	57	54	63	0.00675	0.9345
9	51	69	57	78	17.4	<0.0001*
10	3	75	39	99	9.04	0.0026*

\*P value ≤0.01

Table 3: Comparison of rural and urban private school teachers' knowledge and attitude towards management of traumatic dental injuries.

Q. No	Rural private		Urban private		Chi-square test	P value
	Correct	Incorrect	Correct	Incorrect		
1	99	51	105	39	1.35	0.2461
2	75	81	9	141	65.9	<0.0001*
3	60	60	33	123	24	<0.0001*
4	93	66	96	54	55.7	<0.0001*
5	12	144	69	81	0.247	0.6194
6	102	54	93	57	0.213	0.6446
7	111	39	120	36	25.2	<0.0001*
8	108	39	60	78	9.67	0.0019*
9	36	99	15	120	30.2	<0.0001*
10	30	30	12	48	0.768	0.3808

\*P value ≤0.01

Table 4: Comparison of rural private and rural public school teachers' knowledge and attitude towards management of traumatic dental injuries.

Q. No	Rural private		Rural public		Chi-square test	P value
	Correct	Incorrect	Correct	Incorrect		
1	99	51	66	66	6.76	0.0093*
2	75	81	69	45	3.62	0.0572
3	60	60	36	72	5.81	0.7870
4	93	66	96	36	3.59	0.0581
5	12	144	18	96	0.000473	0.9827
6	102	54	66	36	1.07	0.3003
7	111	39	81	39	14.6	0.0001*
8	108	39	69	67	6.40	0.0114*
9	39	99	51	69	37.2	<0.0001*
10	30	30	3	75	5.81	0.0159*

\*P value ≤0.01

Table 5: Comparison of urban private and urban public school teachers' knowledge and attitude towards management of traumatic dental injuries.

Q. No	Urban private		Urban public		Chi-square test	P value
	Correct	Incorrect	Correct	Incorrect		
1	105	39	94	19	3.26	0.0712
2	9	141	12	132	0.303	0.0572
3	96	54	75	63	2.39	0.1221
4	96	54	75	63	1.12	0.2900
5	69	81	54	84	4.34	0.0372*
6	93	57	96	19	0.599	0.4389
7	120	36	102	39	0.0911	0.7628
8	60	78	54	63	31.8	<0.0001*
9	15	120	57	78	1.09	0.2961
10	12	48	39	99	2.39	0.1221

\*P value ≤0.01

Table 6: Comparison of total rural and total urban school teachers' knowledge and attitude towards management of traumatic dental injuries.

Q. No	Rural total		Urban total		Chi-square test	P value
	Correct	Incorrect	Correct	Incorrect		
1	165	117	201	58	21.6	<0.0001*
2	144	126	21	273	142.9	<0.0001*
3	96	132	111	183	0.073	0.7870
4	189	102	171	117	68.3	<0.0001*
5	30	240	123	165	0.305	0.5806
6	168	90	189	90	0.774	0.3791
7	192	78	222	75	20.8	<0.0001*
8	177	96	114	141	3.10	0.0781
9	87	168	72	198	0.0286	0.8658
10	33	108	51	180	1.68	0.1946

\*P value ≤0.01

teachers in the present study had dental first-aid training, which is in contrast to Pujita *et al.*,<sup>6</sup> who reported 9.4% urban and 8% rural teachers had training toward dental injuries.

In the present study, it was observed that majority of the teachers from the rural region have personally experienced and witnessed TDI than teachers from urban. This frequency can be compared to similar studies reported by Pujita *et al.*<sup>6</sup> and Skeie *et al.*<sup>7</sup>

In the case of fractured teeth, the majority of the teachers from the rural region were aware that they would search for the fragment tooth and send the child to the school nurse or dentist. A similar response was obtained in other studies by Mesgarzadeh *et al.*,<sup>8</sup> Al-Obaida,<sup>9</sup> Al-Jundi.<sup>10</sup> On contrary, Pujita *et al.*,<sup>6</sup> Skeie *et al.*,<sup>7</sup> found that there was no much difference in their responses. Awareness with regard to re-attachment of the fractured fragment, there was no difference in the knowledge level of both urban and rural teachers in our study. Similar knowledge level was observed in other studies.<sup>10,11,12</sup>

In the present study, regarding the management of mobile teeth, a significant number of rural teachers answered that they would take the child immediately to the dentist. In contrast, Pujita *et al.*,<sup>6</sup> reported that there were varied opinions of urban teachers with the majority of the teachers suggesting that they would call the parent and ask them to take the child to a dentist.

It was unfortunate to identify inadequate knowledge level among urban and rural teachers in the emergency management of tooth avulsion. There was a diverse opinion with regard to immediate response toward the management of avulsion injuries. Few teachers suggested that bleeding should be controlled by making the child bite on a handkerchief, few others said to find the missing tooth and re-implant it and few of them said that the tooth should be placed in a liquid and send the girl to the nearest dentist.

Time is a crucial factor for avulsed tooth, to preserve their vitality after replantation. In the present study, 72.5% of urban teachers considered that they would immediately or within

30 min would consult dentist for re-implantation of teeth which is in consistent with the findings reported by Al-Obaida,<sup>9</sup> Pujita *et al.*,<sup>6</sup> Chan *et al.*,<sup>13</sup> and Caglar *et al.*<sup>14</sup> With regard to cleaning the dirty knocked out tooth, both urban and rural teachers suggested that they would prefer running tap water to clean the tooth. Whereas, few other studies reported <50% teachers were aware of appropriate manipulation of knocked out tooth.<sup>6,8,9,15</sup>

Regarding the storage or transport media for an avulsed tooth, options mentioned were ice, any liquid, child's mouth, child's hand and paper tissue. In this study, very few number of teachers opted that they would use any liquid as transport media which revealed their lack of knowledge in this aspect. Whereas other studies reported by Pujita *et al.*'s,<sup>6</sup> Skeie *et al.*,<sup>7</sup> urban teachers suggested that child's hand could be used. Among the liquids, such as saline, fresh milk, and tissue culture media, milk is considered more superior transport media.<sup>16</sup> Greater number of teachers of both urban and rural regions in our study opted tap water as transport media. In various other studies, 13% chose milk as a proper storage medium,<sup>11</sup> similar to findings of 15% in Singapore,<sup>17</sup> and 9% in Hong Kong.<sup>13</sup> This response is lower than the responses obtained in the studies by Blakytyn *et al.*,<sup>18</sup> McIntyre *et al.*,<sup>19</sup> and Sae-Lim and Lim.<sup>12</sup>

**Conclusion**

The results of the present study revealed that teachers from urban public and rural private were found to be more knowledgeable in the management of minor TDIs than rural public and urban private teachers. However, their awareness in all types of TDI, especially in the emergency management of avulsion injuries was found to be inadequate. Therefore, educational and informative programs should be undertaken on a regular basis to enhance their knowledge and improve the prognosis of school children who have the highest risk of adverse dental trauma irrespective of the region and sector of school. In addition, it would be beneficial to children if dental aid training program is incorporated in the regular teacher's training curriculum. Moreover, this issue should be dealt seriously on a larger scale to assess the accurate level of knowledge among teachers and also to provide necessary awareness programs.



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**Appendix 1: Part I and Part II Questionnaire used in the study**

**QUESTIONNAIRE**

**PART I: Personal and Professional information.**

Please tick ( ) the appropriate box.

**NAME**

- 1) Age (Years):
  - 20-30
  - 31-40
  - 41-50
  - >50
- 2) Gender
  - Male
  - Female
- 3) Length of service (years)
  - 10–20
  - 20-30
  - >30
- 4) Which of the following do you teach at school?
  - Academics
  - Physical Education Trainer
- 5) School type?
  - Primary school
  - Secondary school
  - Both
- 6) Which sector?
  - Private
  - Public
- 7) Did your teacher training have first aid component?
  - YES
  - NO
- 8) If yes, did your first aid course cover the management of TDI?
  - YES
  - NO
- 9) Have you ever experienced personally any traumatic dental injury?
  - YES
  - NO
- 10) Have you ever witnessed personally any traumatic dental injury?
  - YES
  - NO

- General hospital
- Dental Hospital
- School dental service clinic
- I would give treatment/ manage at the site.
- Others ...Please specify

CASE 1. During school hours, a 9-year-old boy was hit in the face with a softball while playing. His upper front tooth was broken with no major associated injuries.



- Q2. Which of the following actions would you consider as the most appropriate?
- After school, contact his parents to explain what had happened.
  - Give him a warm drink and contact his parents immediately.
  - Search for the fractured tooth fragment and send him immediately to the school nurse or doctor.
  - Contact her parents and get them to take him to dentist.
- Q3. Are you aware that this fractured tooth fragment could be reattached?
- YES
  - NO

CASE 2. If a 9 year old student tells you that he fell and bumped his tooth against the bench. When you look at his teeth, there is not much damage except for slight mobility seen in the upper front tooth region associated with slight bleeding from the gums of the tooth.



- Q4. Which of the following would you do?
- I would do nothing since his tooth is not damaged.
  - I would tell him to go to a dentist if he experiences pain in the future.
  - I would send him to a dentist immediately.

**PART II:**

- Q1. If your students come to you with any type of traumatic dental injury, which would be the first place you would contact and seek treatment?
- Medical doctor
  - Dentist

CASE 3. If a 10 year old student crashed onto his friend while running and you realize that his upper front right tooth got dislocated through his palate.



Q5. Which of the following would you do?

- I would relocate the tooth with my finger and send him immediately to a dentist.
- I would not touch the tooth and send him immediately to a dentist.
- I would do nothing but tell him to go to a dentist if he has pain in the future.

CASE 4. During school hours, a 12-year old girl fell from the stairs and realized that an upper front tooth was found to be missing and bleeding from that space.



Q6. Which of the following would you do?

- Sideline the injured girl, getting her to bite on a handkerchief to control the bleeding.
- Look for the tooth, wash it with tap water and put it back into the socket.

- Put the tooth in liquid and send the girl to the nearest dentist.
- Ask the girl to hold the tooth carefully in her mouth and take her immediately to the nearest dentist.

Q7. How urgent do you think it is to seek professional help if a permanent tooth has been knocked out?

- Immediately
- Within 30 min
- Within a few hours
- Before next day

Q8. If you decide to replant a tooth back into its socket but it had fallen onto the ground and was covered in dirt, what would you do?

- Scrub the tooth gently with a toothbrush.
- Rinse the tooth under tap water.
- Put the tooth straight back into the socket without any pretreatment.
- Rinse the tooth with detergent or soap.

Q9. If you did not replant the tooth, how would you transport it to the dentist?

- Ice
- any liquid
- child's mouth
- child's hand
- paper tissue

Q10. If used a liquid to wash or transport the tooth, what liquid would you use?

- tap water
- fresh milk
- saliva of the child
- alcohol
- fruit juice
- normal saline solution
- antiseptic solution