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# **Knowledge and influence of primary management of dental trauma in school children, among Hubli- Dharwad school teachers by using two different educating tools: An interventional study**

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**Abstract**---Traumatic injuries to the teeth and teeth supporting structures are one of the few areas of dentistry that should be considered as an emergency situation. The present study was conducted to assess the teachers' knowledge as well as providing knowledge about the dental emergencies and also to know which the best educating tool to provide education is. 120 teachers were categorized into two groups that is group 1 lecture group and group 2 that is smart phone group. A detailed standardized questionnaire consisting of multiple-choice questions. Lecture presentation, was one of the study instrument for group 1. As this is an interventional study between two educating tools that is one being the lecture presentation and the other being the smartphone app. The lecture presentation was for group one where the teachers were given only a lecture about how to manage the emergency dental trauma situation. Smart phone app (Tooth Emergency) was another educating tool in this interventional study. This smartphone was used for the group 2. In group 1, 26 (43.3%) school teachers experienced teeth trauma cases in children and 34 (56.7%) school teachers did not. In group 2, 14 (23.3%) school teachers experienced teeth trauma cases in children, and 46 (76.7%) school teachers did not experience any kind of teeth trauma in child. In response to what will you do when one of the tooth of your student is either broken or totally out of the mouth, the reply was to consult a dentist by 60 in both groups and to just inform in 0 in both groups.

Which type of dental injury you come across in children and reply was soft tissue injury in 26 and 19 and hard tissue injury in 34 and 41 in group I and II respectively. Most common type of dental injury you come across in children was shaken tooth in 6 and 8, knocked out tooth (tooth fallen out of mouth) in 28 and 33 and soft tissue (Lip, chin) injury in 26 and 19 respectively. Smart phone app (Tooth Emergency app) can be a better educating tool in emergency management of dental trauma in school children.

**Keywords**---smart phone app, dental trauma, school children.

## **Introduction**

According to International association of dental traumatology, one-third of children (primary teeth) and one-fifth of adolescents and adults (permanent teeth) sustain a traumatic dental injury.<sup>1</sup> Children while playing, running tend to fall and also can come in contact with blunt objects during physical activities with or without there mistake. These accidents may lead to dental injuries. Traumatic injuries to the teeth and teeth supporting structures are one of the few areas of dentistry that should be considered as an emergency situation.<sup>2</sup> A traumatic dental injury and its sequelae are of concern to both the clinicians and the parents of affected children.<sup>3</sup> So, every dentist who treats children must be well prepared to meet the child emergencies/challenges. It is important for the dentist to prevent and also educate the care giver to manage the dental trauma situation whenever possible and to restore them skill fully to their original appearance. If dental traumatic emergency situation is not handled with proper care and left untreated can affect children psychological, physical, emotional and social status.<sup>4</sup>

The common reported cause of dental trauma in children is fall, sports activity and adventurous games. Nowadays adventurous sports are becoming very popular both indoor and outdoor and also children are showing a great deal of interest in these adventurous sports, apart from this accidents and fighting have also been reported.<sup>5</sup> As children spend majority of time at school and home, the most common place for occurrence of traumatic injuries is reported to be at school followed by home and other places. Now smartphones are serving as multipurpose device, allows to browse internet and very important to download apps.<sup>6</sup> These applications available in the smart phones has made every possible tough task much easier and these applications also increases the ease of living and also making things quicker at the range of your fingertips.<sup>7</sup> The present study was conducted to assess the teachers' knowledge as well as providing knowledge about the dental emergencies and also to know which is the best educating tool to provide education.

## **Materials and Methods**

The present study was conducted in Dharwad district of Karnataka. The survey was conducted under the Department of Pediatric and Preventive Dentistry, SDM college of dental sciences and hospital, Dharwad. A constituent unit of Shri

Dharmasthala Manjunatheswara University. The English medium school teachers were selected for the study purpose. School teachers were full time teachers as the requirement for the study was school teachers who spend full working hours with the children as the bond between the teachers and the children would be better. Full time school teachers teaching primary and secondary grade school children.

The first educating tool is a lecture and the second educating tool is a smartphone app. The lecture consisted of only the verbal communication for the group one which was named as lecture group and the second group that is the smartphone app group consisted of only an app without any lecture.

The sample size was 120 school teachers in number. These 120 teachers were further categorized into two groups that is group 1 lecture group and group 2 that is smart phone group. A detailed standardized questionnaire consisting of multiple-choice questions. Lecture presentation, was one of the study instrument for group 1. As this is an interventional study between two educating tools that is one being the lecture presentation and the other being the smartphone app. The lecture presentation was for group one where the teachers were given only a lecture about how to manage the emergency dental trauma situation. Smart phone app was another educating tool in this interventional study. This smartphone was used for the group 2. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

## Results

Table 1  
Distribution of subjects

S I No	Sample Size	Attribute
Group 1	60	Lecture group
Group 2	60	Smart phone app group

Table 1 shows that group 1 was lecture group and group 2 was smart phone app group.

Table 2  
Questionnaire used in study

Questionnaire	Response	Group 1	Group 2	P value
Did you experience any teeth trauma cases in your teaching experience?	Yes	26	14	0.03
	No	34	46	
What will you do when one of the tooth of your student is either broken or totally out of the mouth?	Consult a dentist	60	60	0.05
	Just inform the parents and wait	0	0	
Which type of dental injury you come across in children?	Soft tissue injury	26	19	0.01
	Hard tissue injury	34	41	

Most common type of dental injury you come across in children?	Shaken tooth	6	8	0.02
	Knocked out tooth (tooth fallen out of mouth)	28	33	
	Soft tissue (Lip, chin) injury	26	19	
Are you satisfied with the level of knowledge you are having in managing dental injuries?	Yes	0	47	0.05
	Require training regarding managing dental injury	60	13	
How do you manage bleeding in soft tissue injury (lip, tongue)?	Wipe the area neatly and apply turmeric	1	0	0.04
	Apply an ointment/antiseptic liquid/spirit	11	0	
	Control bleeding and visit a dentist	34	58	
	Control bleeding and send the child home	14	2	
Is knocked out (fallen out) tooth an emergency?	Yes	60	60	0.02
	No	0	0	
How fast do you think it is to seek dentist help if a permanent tooth has been knocked out?	Immediately	30	58	0.05
	Within few hours	16	0	
	Before next day	0	0	
	Within 30 minutes	14	2	
Do you have to try to find the knocked out (fallen out) tooth which is fallen on ground?	Yes	60	60	0.04
	No	0	0	

Table 2 shows that in group 1, 26 (43.3%) school teachers experienced teeth trauma cases in children and 34 (56.7%) school teachers did not. In group 2, 14 (23.3%) school teachers experienced teeth trauma cases in children, and 46 (76.7%) school teachers did not experience any kind of teeth trauma in child. In response to what will you do when one of the tooth of your student is either broken or totally out of the mouth, the reply was to consult a dentist by 60 in both groups and to just inform in 0 in both groups. Which type of dental injury you come across in children and reply was soft tissue injury in 26 and 19 and hard tissue injury in 34 and 41 in group I and II respectively. Most common type of dental injury you come across in children was shaken tooth in 6 and 8, knocked out tooth (tooth fallen out of mouth) in 28 and 33 and soft tissue (Lip, chin) injury in 26 and 19 respectively. Are you satisfied with the level of knowledge you are having in managing dental injuries and response was 0 and 47 and require training regarding managing dental injury by 60 and 13 respectively. How do you manage bleeding in soft tissue injury (lip, tongue) and the response was wipe the area neatly and apply turmeric in 1 and 0, apply an ointment/antiseptic liquid/spirit in 11 and 0, control bleeding and visit a dentist

in 34 and 58 and control bleeding and send the child home in 14 and 2 respectively. Is knocked out (fallen out) tooth an emergency and response was yes in 60 in both groups. How fast do you think it is to seek dentist help if a permanent tooth has been knocked out and response was immediately in 30 and 58, within few hours in 16 and 0, before next day in 0 and 0 and within 30 minutes in 14 and 2 respectively. Do you have to try to find the knocked out (fallen out) tooth which is fallen on ground and response was yes in 60 in both groups respectively. The difference was significant ( $P < 0.05$ ).

## Discussion

Dental trauma is a common form of injury, especially in children and the prevalence of dental trauma in school children is a continuing clinical and dental health problem. Children from their infancy to adolescence go through many milestones and as the advancing age children are at higher risk for dental trauma as they try to explore many things around them.<sup>8</sup> It has already been stated that dental trauma remains to be one of the important oral health problems in childhood, and can cause much pain and distress. It is thus important to provide immediate emergency care to reduce such outcomes. The prognosis of dental injuries highly depends on correct and immediate first aid care at the site and proper advice, which may frequently be the responsibility of people available at the injury site.<sup>9</sup>

The primary goal of this study was to assess the school teacher's knowledge and awareness regarding dental trauma and its primary management, and to compare two different educating tools regarding the same. And also to minimize complications from dental trauma among children. Children teeth trauma situation being an emergency, school teachers experienced teeth trauma cases within the school premises and were the first to come in contact with the children. In the inter comparison, the school teachers were asked whether they had experienced any teeth trauma cases in their teaching experience, in baseline group 33.3% (40) school teachers experienced teeth trauma cases in children within school premises and 66.7% (80) school teachers did not come across any kind of teeth trauma cases within school premises (Table No. 3a). In comparison Anand et al<sup>10</sup> stated that 26.6% of physical education teachers have come across dental trauma in their school premises and 66.6% of them have never seen an emergency dental traumatic condition.

In baseline line group 38.3% (46) teachers stated it is better to consult a dentist immediately than inform the parents and wait, but 61.7% (74) school teachers wanted to inform the situation to the parents and wait for them to arrive at the site. Here 61.7% of school teachers did not know the importance of consulting a nearby dentist for the said situation, this could be due to the lack of knowledge and awareness of the emergency management of the situation. After the intervention of the smart phone app the school teachers knowledge improved to 100% in both the groups and realised the importance of consulting a nearby dentist for the said situation and the p value was significant.<sup>11</sup> However dental trauma in children can be seen in many forms and this gives rise to a question whether it is soft tissue injuries or hard tissue injuries that are more commonly seen in children, 90.8% (109) of school teachers have come across hard tissue

injury and 9.2% (11) school teachers have seen soft tissue injuries. This shows the dental injuries are more involving the teeth not confined to only soft tissues. In comparison, Rai SB et al<sup>12</sup> stated that the highest incidence of trauma to the anterior teeth (hard tissue injury) was seen in school children.

School teachers level of knowledge in managing the dental injuries were assessed and asked if they were satisfied with the level of knowledge they had in emergency management of dental injuries. In the baseline group 99.2% (119) school teachers required training regarding managing dental injuries, this could have been because of lack of knowledge and thirst for more knowledge in managing the dental injuries as they are the first to come across the injured children. In group – 2, 78.3% (47) school teachers were satisfied with the level of knowledge they had attained through the smart phone app and 21.7% (13) school teachers were still not completely satisfied with the level of knowledge they had attained through the smart phone app, the smart phone app contained more clinical images and simple text explanation in bulletin points, this could be one of the many reasons for the higher percentage of the school teachers who were satisfied with the level of knowledge in managing the dental injuries and the p value was significant.

In the inter comparison of school teachers in managing the bleeding in soft tissue injury, 30.8% (37) school teachers wanted to control the bleeding and visit a dentist as they knew this would be the best option to do. In group – 1, after a thorough lecture 56.7% (34) school teachers wanted to control bleeding and visit a dentist and 23.3% (14) school teachers wanted to control the bleeding and send their child home and 18.3% (11) school teachers wanted to apply an ointment or an anti-septic liquid or spirit around the soft tissue injury and this difference of opinion among the group – 1 school teachers could be because of the lecture which would have not been understood completely as there were no clinical images that were present in the lecture. In group – 2, the school teachers were given access to the smartphone app and were informed to go through the app. And the teachers were not given any kind of lecture or any other explanation during this time.

And after a 15 days gap the school teachers belonging to group 1 and group – 2 were again assessed with the standardized questionnaire. In group 96.7% (58) school teachers wanted to control bleeding and visit a dentist in a soft tissue injury situation but here again 3.3% (2) school teachers wanted to control bleeding and send the child home. Here the smartphone app provided better knowledge to the school teachers when compared to the lecture group the reason could be because the smart phone was always with the school teachers and whenever they wanted to search for any information regarding the dental trauma, it was available easily and it was in a simple terminologies which was understandable even for a common man.<sup>13</sup> Children in school premises are always active and during their playtime tend to get hurt with blunt objects and teeth tend to get knocked out and the school teachers knowledge to assess the situation as an emergency plays a very important role in handling the situation.<sup>14</sup> Apart from knowledge the duration to get the avulsed tooth to a nearby dentist depends on many other factors like the distance, transport options available and availability of human resources etc.

## Conclusion

Authors found that the school teachers gained a higher percentage of knowledge using the smart phone app (Tooth Emergency app). Hence it can be concluded that smart phone app (Tooth Emergency app) can be a better educating tool in emergency management of dental trauma in school children.

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