

# Knowledge and Awareness of Primary School Teachers Towards Emergency Management of Dental Trauma; A Survey Based Study in Schools of Riyadh, KSA

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## Abstract

**Introduction:** Dental trauma is one of the important problems in childhood. It can vary from a minor chip to extensive maxillofacial damage. Traumatic dental injuries occur most commonly in home and school, where parents and teachers are usually nearby. In this connection, their knowledge about the management of traumatic dental injuries is vitally important for the prognosis of injured teeth. **Aims:** To assess knowledge and awareness regarding emergency management of dental trauma and estimate the incidence of trauma during their teaching experience. **Materials and Methods:** Cross-sectional observational survey was conducted among 300 school teachers in Riyadh Saudi Arabia using a self-administered questionnaire. **Results:** The prevalence of self-reported trauma witnessed during teaching experience was 56% (CI  $\pm$  5.45). However, 37% and 18% have witnessed less than five and five or more dental traumas during their work experience respectively. Almost half of the participant (47%) Prefer to Visit the nearest dentist. Others prefer to rush to a hospital (15%). Most of the Participants (54%) did not receive first aid training, and they respond differently to dental trauma. (36%) keep the fractured part in a liquid, one-third (31%) keep the fractured part in a gauze/tissue paper. However, one-fifth (21%) did not know what is the best storage media for the broken teeth. **Conclusion:** A healthy number of school teachers had witnessed dental injuries during their work hours but their knowledge regarding dental trauma management was not sufficient. **Clinical significance:** A traumatic dental injury is an event with many consequences; and can significantly affect the quality of life of parents and child alike. Loss or fractures of teeth has a negative psychological effect on the children and parents as well.

*Key Words: Survey study, Dental trauma, Primary school teachers, Prevalence, Awareness*

## Introduction

One of the greatest assets a person can have is a "smile" that shows beautiful, natural teeth [1]. Dental injuries may occur throughout life, but Traumatic Dental Injuries (TDI) is a very significant problem among children [2]. A traumatic dental injury is an event with many consequences; and can affect the behavior of a child, physiologically, psychologically, financially and can significantly affect the quality of life of parents and child alike. Prevalence rates in a number of studies worldwide revealed that TDI's are very common in children with some studies reporting a rate of up to 35%. Previous literature identifies that a significant number of school-aged children experience trauma of some sort to primary or permanent dentition [3].

Vuletic et al. reported that approximately 40% of children have their first contact with the dentist due to a traumatic injury [4]. Injuries to dentition are overtaking caries and periodontal disease and have become the most serious dental public health problem in children [1,3]. Oral injuries are most frequent during the first 10 years of life, decreasing gradually with age. In preschool children, oral injuries make up as much as 17% of all bodily injuries [5].

In 2011, Al-Majed [6] carried out the first epidemiological study in Saudi schoolboys; the study involved 862 boys aged 12-14 years attending 20 schools in Riyadh. The prevalence of dental trauma was 34% [6]. While the prevalence of dental trauma in 255 "12-15" year old Saudi girls was 31.4%, where 15% of trauma occurred in schools [7].

Al-Haj Ali reported that 30% of children sustain injuries to the primary dentition and 22% to the permanent dentition. It was estimated that over 50% of children would sustain a traumatic dental injury before leaving school [8].

In preschool children, falls are the most common cause of oral injuries, whereas in school-age children, injuries are most often caused by sports or hits by another person. In adolescents and young adults, assaults and traffic accidents are the most common etiologic factors [5].

The cause of an injury can vary according to age, sex, climate and socioeconomic status of the children [1]. Falls, sports, collisions, physical leisure activities, being struck by an object, and traffic accidents are the major causes of traumatic dental injuries. Among them, fall is the main cause [9].

Therefore, prevention should consider a number of characteristics such as oral predisposing factors, environmental determinants, and human behavior [10].

School is one of the locations with the greatest prevalence of traumatic dental injuries [4]. A significant number of school-aged children experience trauma of some sort to primary or permanent dentition where teachers are generally present at the time dental trauma occurs, as such accidents often take place during or after school activities [11].

A survey on knowledge of physical education teachers in secondary schools about the emergency management of dental trauma in Hong Kong has been published 10 years ago. It revealed that their level of knowledge about the management of dental injuries was insufficient. Survey studies among

school teachers in Singapore, Brazil, and UK revealed that they possessed very little technical knowledge on the first response management of tooth avulsion or other dental trauma [4].

Appropriate management is very much important for the future prognosis of teeth affected by TDIs, especially in young children. However, many international studies found that adults at emergency sites lacked knowledge regarding the immediate management of dental trauma; these studies included parents [8].

In this study, we aimed to assess knowledge and awareness of school teachers regarding emergency management of dental trauma, measure the background of dental trauma education and its influence, and to estimate the incidence of trauma during their teaching experience in primary school teachers in Riyadh city.

## Materials and Methods

Cross-sectional observational survey was conducted among 255 school teachers in Riyadh Saudi Arabia using a self-administered questionnaire with 14 questions written in English and was translated to Arabic language.

The questionnaire was composed of two sections. The first section included basic demographic information, participants gender, age, years of experience. The second part consisted of questions about whether the respondents had received formal first-aid training or acquired dental trauma information management of dental traumatic injuries (fractured/ displaced teeth), the best place and time for treatment after trauma, and the best medium for storing knocked out teeth.

We visited 15 schools situated in different parts of Riyadh city. The target schools included both male and female teaching staff. They belonged to primary level and were randomly selected. The data were subjected to statistical analysis using SPSS 16.

## Results

Out of 300, a total of 255 questionnaires was returned successfully, the response rate was 85%. Data was subjected to Statistical Packages for the Social Sciences (SPSS) version 16.0.

The majority (63%) of participants were female, more than half (56%) had 1-10 years of work experience, and one quarter had work experience between 11-20 years (Table 1). Most of the Participants (54%) did not receive first aid training (Figure 1).

The prevalence of self-reported trauma witnessed during teaching experience was 56% (CI  $\pm$  5.45). Most of the teachers (44%) did not witness any dental traumas during their work experience. However, 37% and 18% have been witnessed less than five and five or more dental traumas during their work experience respectively (Figure 2 and Table 2).

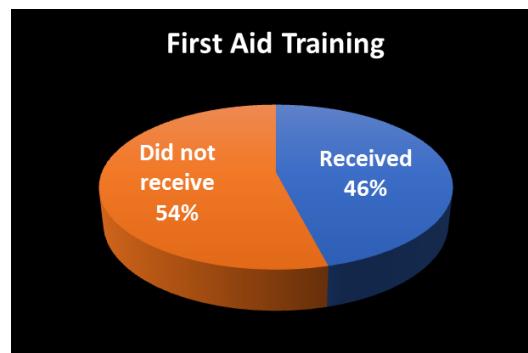


Figure 1. Ratio of school teachers have received first aid training versus who did not receive.

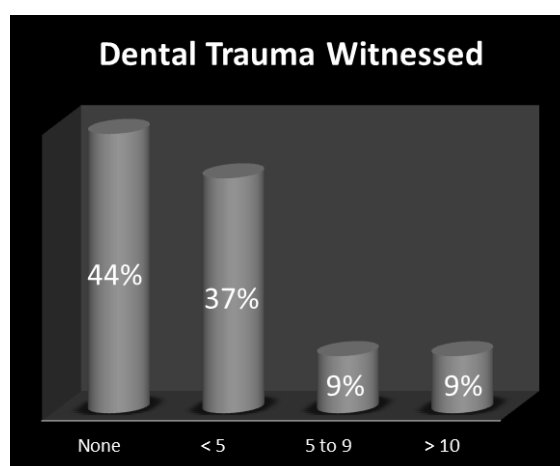


Figure 2. Number of dental traumas witnessed by the school teacher.

Table 1. Demographic data of participants.

|                        | Number | Percentage |
|------------------------|--------|------------|
| <b>Gender</b>          |        |            |
| Male                   | 94     | 37%        |
| Female                 | 161    | 63%        |
| <b>Age group</b>       |        |            |
| 21-30 years            |        | 30%        |
| 31-40 years            |        | 37%        |
| 41-50 years            |        | 24%        |
| 51-60 years            |        | 6%         |
| 60+ years              |        | 2%         |
| <b>Work experience</b> |        |            |
| 1-10 years             |        | 56%        |
| 11-20 years            |        | 26%        |
| 21-30 years            |        | 14%        |
| 31-40 years            |        | 4%         |

Almost half of the participant (47%) prefer to visit the nearest dentist. Others prefer to rush to hospital (15%), nearest private doctor (11%), Child's family doctor (5%), or treat by themselves (9%). Although, 46% of the participants had

received first aid training, they respond differently to dental trauma. Most of them (36%) keep the fractured part in a liquid, one-third (31%) keep the fractured part in a gauze/tissue paper, ignore the fractured part (15%), or do not know what to do (Table 3).

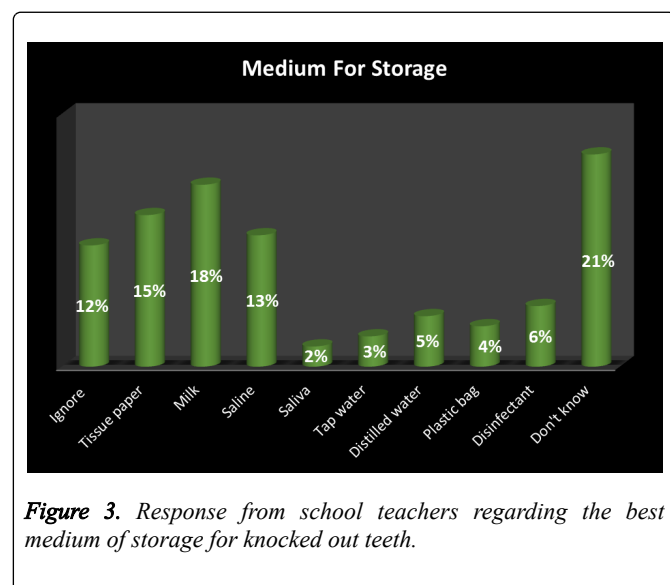
**Table 2.** Ratio of patients receiving dental trauma management training.

| Dental Trauma Management Training | Percentage |
|-----------------------------------|------------|
| Received                          | 13%        |
| Not Received                      | 87%        |

**Table 3.** Response from the school teachers to a dental trauma.

| Places of treatment                             | Response Percentage |
|---|---------------------|
| Rush to casualty (hospital)                     | 15%                 |
| Call an ambulance                               | 8%                  |
| Nearest private doctor                          | 11%                 |
| Child's family doctor                           | 5%                  |
| Visit the nearest dentist                       | 47%                 |
| Ignore the fractured part                       | 15%                 |
| Keep the fractured part in a gauze/tissue paper | 31%                 |
| Keep the fractured part in a liquid             | 36%                 |
| Do not know                                     | 17%                 |
| Other   | 2%                  |

However, one-fifth (21%) did not know what is the best storage media for the broken teeth, 18% store it in milk, 15% in tissue paper, 12% ignore it, and the rest store it either in distilled water, tap water, saliva, disinfectant, or in plastic bag (5%, 3%, 2%, 6% and 4% respectively) (Figure 3).



**Figure 3.** Response from school teachers regarding the best medium of storage for knocked out teeth.

## Discussion

Traumatic dental injuries are of high occurrence and often occur in schools, causing alterations in the child's facial

development, psychological changes in behavior besides other complications. Teachers are likely to be in contact with the students soon after an episode of TDI. It is their knowledge of emergency procedures that is crucial in ensuring a better prognosis of the clinical treatment [9]. Lack of correct first aid procedures to trauma in primary teeth can cause injuries itself and also bring about irreversible harm to the permanent dentition. Most dental injuries affecting children at preschool age are overlooked, despite the high prevalence. This fact can be related to the belief that the primary teeth are only temporary. The knowledge about the importance of primary teeth and correct attitudes in emergency procedures of dental trauma can lead to adequate care, improving the prognosis and avoiding serious consequences for the child primary and permanent dentition [3].

Almost all the earlier studies have also observed that majority of the respondents had experienced TDI in children at schools and considered the knowledge regarding dental trauma management essential. Hence, this study aimed to investigate the awareness levels in primary school teachers regarding TDIs and related emergency management [9].

The prevalence of self-reported trauma witnessed during teaching experience in this study was 56%, while Hashim R. found that in UAE Ajman, around 24.9% of teachers had previous direct or indirect experience of dental trauma cases [12].

The awareness of dental trauma management of school teachers in Riyadh was low, this is similar to other local and international studies [9].

School teachers witness a large number of dental as well as facial injuries and they are expected to manage the situation accordingly. This study was designed to determine the knowledge of school teachers when it comes to the management of dental trauma.

It can be concluded that the school teachers have a limited knowledge and training regarding the dental trauma management. They lack knowledge regarding the basic first aid to be given when any dental trauma takes place. The results depict the knowledge of teachers belonging to a limited number of schools from Riyadh city.

The World Health Organization Health Promoting School program suggests that finding solutions for dental trauma is a public health problem [5].

Open Seminars and including dental trauma management instructions should be given to teachers and added to the first aid training.

The general conclusion of many international studies dealing with this topic is that school staff have little knowledge related to handling of dental trauma [13,14]. However, a growing focus worldwide on the emergency management of dental trauma has emerged, and in some institutions, there is now an educational program. Studies carried out in the US [13] and in England and Wales [15] reported that more than one third of the teachers have received advice regarding dental trauma.

According to a Jordanian study, dental emergency training has also been included as part of teacher's school health education program in Jordan [16-20].

The development of technology has increased access to information. A study pointed out that the most preferred sources of information regarding the emergency management of tooth avulsion, regardless of sociodemographic characteristics, are the internet for young people and the television for elderly people. Information on the internet must be reliable and should, therefore, be given by a medical professional. Smartphones also can be used to reach professional information about dental trauma first aid measures. One such app for the public is DENTAL TRAUMA, which can be downloaded onto iPhones and android phones [5].

In order to gather a comprehensive data, we need to widen the scope of this study and reach out to the schools on a larger scale within Riyadh as well as other cities. The statistics resulted from that research will be comparatively more accurate.

## Conclusion

The knowledge regarding dental trauma management was not sufficient among the school teachers. The large majority of school teachers did not receive any training related to dental trauma management. A healthy number of school teachers had witnessed dental injuries during their work hours but their responses suggested they did not know about the basic first aid management of those injuries.

In order to gather a comprehensive data, we need to widen the scope of this study and reach out to the schools on a larger scale within Riyadh as well as other cities. The statistics resulted from that research will be comparatively more accurate.

## Clinical Significances

A traumatic dental injury is an event with many consequences; and can significantly affect the quality of life of parents and child alike. Loss or fractures of teeth has a negative psychological effect on the children and parents as well.

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