

# Prevalence of Traumatic Injuries and Knowledge Regarding Emergency Care among 11-14 years Government School Children in Rural Area, Dehra, Kangra District, Himachal Pradesh

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## Abstract

**Objective:** To assess the prevalence of traumatic injuries and the knowledge regarding the emergency care among school children in rural area Dehra, Kangra district, Himachal Pradesh.

**Materials and Methods:** A cross-sectional survey was carried out in 13 government schools among 1041 subjects aged 11- 14 years. The demographic details and knowledge regarding emergency care was recorded on a structured questionnaire. The data regarding the traumatic injuries was recorded using modified Ellis' classification.

**Results:** Prevalence of Traumatic Dental Injuries (TDI) was found to be 5.12 %. Maxillary central incisor was the most common tooth to be affected (58.1%). The main cause for TDI was found to be due to falls (51.2%). Enamel with dentin fracture with pulp exposure was the main type of TDI (46.7%). The awareness regarding emergency care revealed that 63.4% of subjects were aware of emergency care. The knowledge regarding TDI increased with increase in age.

**Conclusion:** The prevalence of dental trauma was found to be low and the awareness level regarding emergency care was found to be fair. Hence it is highly recommended to plan a community wide trauma prevention campaign targeting parents, children and dental care providers.

*Key words: Traumatic injury, Prevalence, Knowledge, Awareness*

## Introduction

Dental trauma can take place in infancy, childhood, adolescence and adulthood. Dental trauma in infancy and childhood are particularly relevant in terms of public health, because of the economic cost of the treatment, the long-term consequences that trauma can have on oral health, and the possibility of prevention [1]. The causes of Traumatic Dental Injuries (TDIs) are well known. Sports are one of the most common forms of recreation practiced by individuals in today's high stressed life. It encompass a wide range of human activities ranging from simple pastime, recreation games to sophisticated professional level, competitive and adventurous sports all involving physical activities, skills and accomplishments that are not the routine part of an individual's life. Sports participation is a frequent cause of injury, in general to children and adolescents. Muscle injuries, torn cartilage, fractured bones, tendinitis, soft tissue lacerations, contusions and broken teeth are just some of the many kinds of injuries associated with the participation in sports. The national youth sports foundation for the prevention of athletic injuries, estimates that during season of play, athletes have a 10 % chance of sustaining an injury to the face or mouth [2]. The main reported causes of anterior permanent tooth injuries are falls, collisions with people or inanimate object, traffic accidents, sports and violence [3,4]. Predisposing factors include inadequate lip coverage and increased incisal overjet of the teeth [5]. Approximately 40% of children have their first contact with the dentist due to a traumatic injury [6]. Separate studies showed that 13-39% of all dental injuries

were sports related and of all sports accidents reporting 11-18% were maxillofacial injuries [7]. Trauma to the oral region occurs frequently and comprises 5% of all injuries for which people seek treatment [8]. In children, sports were found to be responsible for 13% of overall oral trauma [9]. Given the high incidence of traumatic injuries, it is important to provide prompt treatment for a dental emergency for the wellbeing of the tooth. There are no study reports regarding the prevalence of traumatic injuries among school children in rural area of Dehra, hence this study was undertaken to assess the prevalence of traumatic injuries and the knowledge regarding the emergency care among 11- 14 years old school children in rural area, Dehra, Kangra district, Himachal Pradesh, India.

## Materials and Methods

### Data collection

A cross-sectional survey was carried out in 13 government schools among 1041 (726 boys and 315 girls) school children aged 11-14 years at Dehra, Kangra District, Himachal Pradesh, India. The permission to carry out the study was obtained from the concerned school authorities. The consent was taken from the parents before the examination. The children above the age group of 11 years, present on the day of examination were included in the study. Physically, mentally, and emotionally disturbed children were not included in the study. The oral examinations were conducted by calibrated examiners, following training for TDI, using a modified version of Ellis's classification. The examination was carried out using mouth

mirror, explorer and adequate light. The data regarding the demography, type of traumatic injury and the knowledge regarding the emergency care was recorded on a questionnaire which was distributed to all the children. They were assisted to fill the questionnaire with proper guidance.

#### Statistical analysis

The data's were analysed using SPSS version 13.0. Chi square analysis was used to find the significance of the cross-tabulation of counts of two or more variables. Student *t*-test (Unpaired) and Analysis of Variance (ANOVA) were used to find the significance of the cross-tabulation of a variable with the mean of another variable.

### Results

A total of 1041 government school children aged 11-14 years were examined. The mean age group of the children was 12.6 years. 69.7 % of them were boys and 30.3% were girls. Among them 26.4% (275) were 11 years, 16.8% (175) were 12 years, 26.2% (273) were 13 years and 30.5% (318) were 14 years old. The overall prevalence of TDI was found to be 5.12 %. The observed prevalence of dental trauma was higher in boys (62.3%) than in girls (37.7%). The most commonly reported cause of injuries to the teeth was falls which was 51.2% followed by 19.6% sports related injuries, 6.8 % collisions with inanimate objects, 2.4 % violence and 20% contributed to other causes.

Maxillary central incisor was the most common tooth to be affected due to trauma (58.1%), out of which maxillary right central incisor was most commonly involved (30.9%) (*Table 1a*). 11.3% had only enamel fracture, 16.3% had fracture of teeth involving both enamel and dentin while 46.7% of the subjects had fractures in enamel and dentin with pulp exposure. Other types of traumatic injuries include tooth loss and discoloration (*Table 1b*).

The awareness regarding emergency care revealed that 63.4% of subjects were aware of emergency care out of which only 48.1% of subjects had given correct response for emergency care (*Table 2*). It was also observed that awareness regarding emergency care increased with age. This difference observed was statistically significant (*Figure 1*).

### Discussion

In many countries, one of the most common forms of recreation practiced is sports. It has been widely reported that participation in sports carries a considerable risk of sustaining injury [10-13]. In the present study sports was found to be one of the other major factors resulting in injuries (19.6%) which was same as reported by Camp (1996) [7].

The prevalence of TDI was found to be 5.12% in the present study which was similar to a study by David et al. [14] who reported 6% prevalence and; Rai and Munshi [15] in which the prevalence was found to be 5.29%.

The incidence of dental trauma caused by sports seems to depend on the various factors like age and sex of the individual. There was higher prevalence in boys (62.3%) than in girls (37.7%) which is in accordance to other studies Altun et al. [16], Cavalcanti et al. [17] and David et al. [14] which reflects the more agitated nature of boys in comparison to girls. The major cause of the injuries was found to be due to falls which was same as reported by Marceles, Alessi [3] and Traebert, Soriano et al. [4]. The maxillary dentition was found to be affected more than mandibular dentition which was found to be similar to studies done by David et al. [14] and Ferreira et al. [18]. The reason could be the relationship between the two arches; maxillary anterior teeth being in front of mandibular anterior teeth in most of the cases.

An oral injury may occur to anyone who participates in competitive sports or some recreational activities. With the increase in incidence of orofacial injuries, the knowledge of emergency care is imperative. In the present study, 63.4% subjects claimed to be aware of emergency care that needs to be given for orofacial injuries. This claim regarding awareness was found to be greater among girls and increased with age. This increase in claims with age can be explained by an increase in the learning abilities as reported by Patel et al. [19].

It was also observed that out of the total sample, only 48.1% children's knowledge regarding emergency care of orofacial injuries was appropriate. Several investigators have stressed that the knowledge of parents, physicians, school teachers, and physical education teachers regarding emergency management of dental injuries was poor and underlined the

**Tables 1a and 1b.** Frequency distribution of teeth with TDI among 11-14 years old children by tooth involved and type of dental injuries.

TDI by Tooth involved (Table 1a)					
Tooth Number (FDI Notation)	11	21	12	22	
% age	30.9 (9)	27.2 (8)	11.3 (5)	9.9 (3)	
Type of Dental Injuries according to Elli's Classification (Table-1b)					
	Enamel fracture (Elli's Class-I)	Fracture of teeth involving both enamel and dentin (Elli's Class II)	Fractures in enamel and dentin with pulp exposure (Elli's Class III)	Discolouration due to trauma (Elli's Class IV)	Tooth loss (Elli's Class VI)
% age	11.3 (2)	16.3 (3)	46.7 (15)	23 (4)	2.7 (1)

**Table 2.** Showing response regarding awareness of emergency care.

Subjects claiming to be aware of emergency care	Number of subjects	Percentage
Visit a doctor immediately	249	23.9
Clean the wound and visit a dentist	201	19.3
Clean the wound and take medication for pain/ infection	56	5.4
Clean the wound and carry the tooth in the mouth to a dentist	51	4.9
Clean the wound and throw the tooth	103	9.9
<b>Total</b>	<b>660</b>	<b>63.4</b>
Subjects claiming to be not aware of emergency care	381	36.6

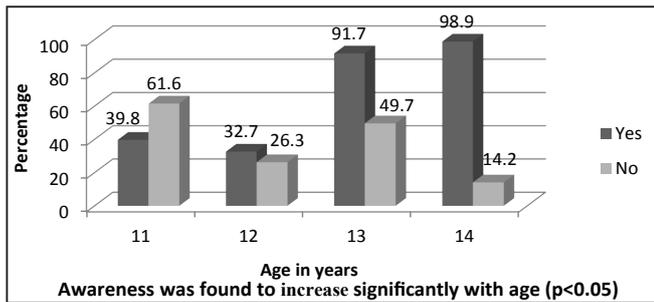


Figure 1. Showing age wise awareness of emergency care to be done after injury to teeth.

importance of education in this regard as reported by Raphael et al. [20], Stokes et al. [21] and Newman and Crawford [22] which can be considered as one of the reason for lack of proper knowledge in these children. Majority of the subjects asked for further information, which indicates their willingness to learn more about emergency care.

Based on the above mentioned findings, these children's

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knowledge regarding orofacial injuries and emergency care can be considered inadequate. However the various epidemiological studies conducted in this regard varies in sample design and selection which necessitates the requirement of further detailed longitudinal studies in this regard for better understanding.

## Conclusion

The present study revealed the low prevalence of traumatic dental injuries and moderate level of awareness regarding emergency care. Therefore, health education strategies needs to be employed and also use of preventive measure should be encouraged among the school going children.

## Acknowledgment

The authors thank the school authorities and the children who participated in this study. The authors report no conflict of interest.