

# Prevalence of Traumatic Dental Injuries in School Going Children of Lucknow, India

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## ABSTRACT

**Introduction** - Traumatic dental injury in children is an important public health problem. The aim of present study was to evaluate the prevalence of TDI and its associated factors in school going children of Lucknow, India. **Methods:** A total of 1112 school going children were examined. Type of trauma, affected tooth, the cause of trauma and treatment received were observed. **Results:** Prevalence of TDI was 5.6%. Males were slightly more affected than females. Children in the 10-17 years old group were significantly more affected. Maxillary central incisors were most commonly involved whereas Ellis class I fracture were most frequently observed. Fall caused the majority of the trauma. No traumatized teeth received any treatment. **Conclusion:** TDI are not very common in examined population in Lucknow. Necessary step need to be taken to raise the awareness of parents and school authorities for the treatment of TDI.

**KEYWORDS:** Lucknow, Prevalence, School Going Children, Traumatic Dental Injuries, Trauma

## INTRODUCTION

Traumatic dental injury (TDI) is a challenging and largely neglected public health problem for oral health professionals.<sup>1</sup> The majority of such injuries involves anterior teeth. The consequences of TDI include pain, possible infection, alteration in physical appearance, speech, restricted bite, psychological and emotional impacts. Immediate management is paramount for improving the prognosis of treatment. Previous studies have observed that 6% to 34% individuals suffer from traumatic dental injuries during childhood or adolescence.<sup>2,3</sup> Moreover, the trends in last two decades indicate that incidence of TDI is on the rise.<sup>4</sup> However, the majority of TDI can be prevented, and necessary steps should be taken to avert such problem.<sup>5</sup> Though researchers have shown considerable interest in this field data from this part of the country is few and far between. Hence, the present study aimed to assess the prevalence of traumatic dental injuries in school going children of Lucknow, India.

## MATERIALS AND METHODS

A cross-sectional survey was carried out on 1112 school going children aged 3-17 years, living in Lucknow, India. Schools were selected in a manner that it would cover the entire topography of the city. Two public schools each from the northern, eastern, southern and western fraction of Lucknow city were chosen. After taking written consent from the institutional ethical committee, the school authorities were informed about the nature of the study. Written consent forms explaining the same were sent to the parents through their children. Assent forms were provided to children aged eight years and older. Only the children who submitted duly signed forms were

included in the study. The children with any special healthcare needs or who were physically, mentally and emotionally challenged were excluded from the study.

Children were examined using mouth mirror and probe while seated on a chair in natural day light. Children younger than eight years of age were examined in the presence of their parents on a regular parent teacher meeting day. A thorough intra and extra oral examination was performed and relevant medical, and dental history was recorded. Categorized items in the form of patient's age, gender, etiology and type of fracture were examined by an experienced clinician and a trained assistant recorded the observations on a specially designed proforma sheet.

Before the actual examination began the examiner and the supervisor calibrated and standardized the whole procedure. The prevalence of TDI was recorded using the Ellis and the Davey's classification. Radiographs were not taken for obvious reason, thus, Ellis class VI was not diagnosed. Categorical groups were compared by chi-square ( $\chi^2$ ) test. Analysis was performed on SPSS (Windows version 17.0) software.

## RESULTS

Overall 1112 children were examined of which 58.7% were male, and 41.3% were female. Majority of the subjects i.e., 65.6% belonged to 10-17 years age group, followed by 6-9 year age group which comprised 17.5% of study population, while 3-5 year age group had only 16.9% of subjects. TDI was observed in 62 children hence the prevalence of traumatic dental injuries was found to be 5.6%. (Fig. 1)

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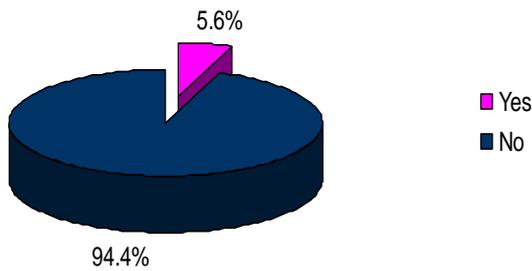


Fig. 1. Prevalence of traumatic dental injuries in children

The frequency of traumatic dental injuries was higher in males (6.1%) than females (4.8%), however, the difference was not statistically significant. ( $\chi^2=0.91$ ,  $p=0.340$ ) (Fig. 2) Age wise comparison revealed the frequency of traumatic dental injuries to be significantly higher in 10-17 year old children as compared to 3-5 year age group. ( $\chi^2=9.92$ ,  $p=0.007$ ) (Fig. 3)

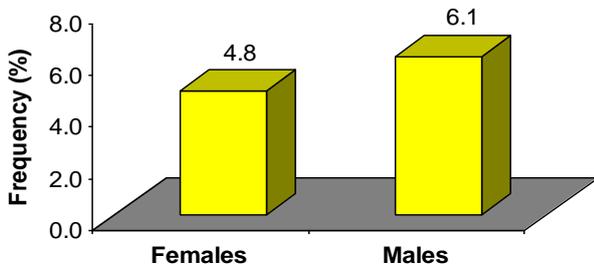


Fig. 2: Gender wise prevalence of traumatic dental injuries among children ( $\chi^2=0.91$ ,  $p=0.340$ )

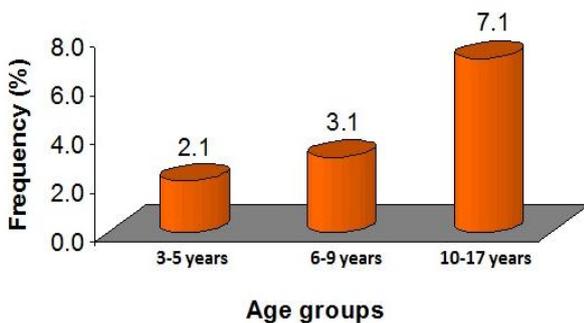


Fig. 3. Age wise prevalence of traumatic dental injuries among children ( $\chi^2=9.92$ ,  $p=0.007$ )

Maxillary Central incisors were significantly more involved in TDI. ( $\chi^2=293.20$ ,  $p<0.001$ ) (Fig. 4) Ellis' Class I injuries were the highest accounting for 62.7% of total injuries, followed by class II (14.7%), class IX (10.7%), class III (8.0%) and class IV (4.0%). ( $\chi^2=109.50$ ,  $p<0.001$ ) (Fig. 5) It was observed that 38.7% of all injuries were due to fall, 22.6% due to sports, 12.9% involved bicycle accidents, while 11.3% subjects did not remember the cause of trauma. Biting on a hard object was the cause in 8.1% cases and in 6.5% the cause

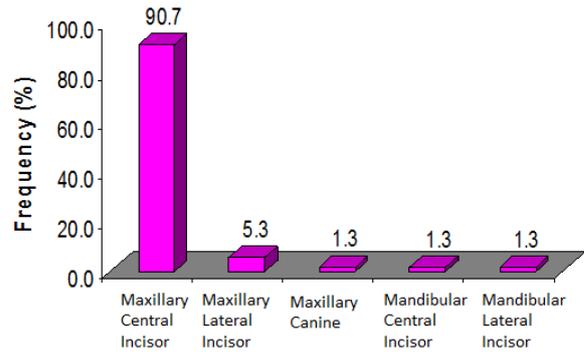


Fig 4: Distribution of teeth injured in children ( $\chi^2=293.20$ ,  $p<0.001$ )

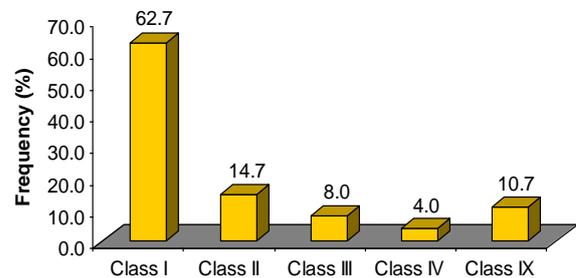


Fig 5: Distribution of type of trauma ( $\chi^2=293.20$ ,  $p<0.001$ ) ( $\chi^2=109.50$ ,  $p<0.001$ )

was cited to be violence. TDI due to fall and sports were significantly higher when compared to other causes. ( $\chi^2=33.14$ ,  $p<0.001$ ) (Fig. 6)

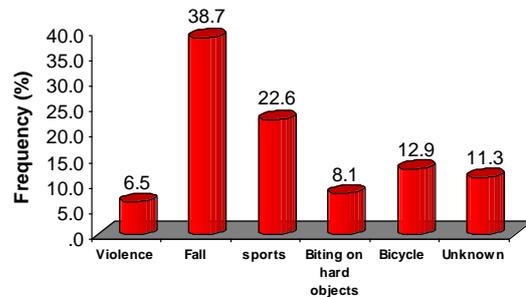


Fig 6: Distribution of cause of traumatic dental injuries ( $\chi^2=33.14$ ,  $p<0.001$ )

## DISCUSSION

In the present study, the prevalence of traumatic dental injuries in 3-17-year-old children from Lucknow was observed to be 5.6%. (Fig 1) This result corroborates with earlier studies where the prevalence was found to be 5.3%<sup>6</sup>, 4.1%<sup>7</sup>, and 4.7%<sup>8</sup>. However, Kahabuka *et al*<sup>9</sup> have reported higher prevalence rate than the present study. The reason for such discrepancy can be attributed to sample selected, classification systems used to report traumatic injuries, type of study and methodology used.<sup>10</sup> It can also be due to the relative lack of outdoor activities and more emphasis on education.

In our study differences in prevalence between boys and girls were not of statistical significance (Fig 2). This finding differed from the majority of the other reports.<sup>4</sup> Nevertheless, some studies have also reported similar prevalence for boys and girls.<sup>11,12</sup> Behavioral and cultural diversity may explain differences in findings between countries. Reduction in the gender difference is possibly due to increased sports and other outdoor activities among girls.<sup>13</sup> The prevalence of dental injuries increased with age and traumatic dental injuries in the 10-17 year age group was significantly higher than in 3-5 year age group as observed by Ferreira JMS *et al*<sup>14</sup>. (Fig 3) It could be that children are comparatively weaker at the younger age and cannot take part in vigorous activities hence there is less chance of getting injured. Moreover, the fact that the prevalence of dental injuries increased with age did not mean that the oldest were the most vulnerable but it shows a cumulative picture of all TDI occurred upto that age.

Out of all the injured teeth evaluated in this study, 90.7% were central upper incisors. (Fig 4) Similar findings have been observed in other studies.<sup>15,16</sup> The majority (69.3%) of children with traumatic injuries had one traumatized tooth, 29.3% had two damaged teeth, and 1.3% had three damaged teeth. This distribution is also similar to that reported in the literature.<sup>17,18</sup> Maxillary central incisors are generally more proclined than the mandibular ones and tend to be the first to receive trauma resulting in a fracture.<sup>19</sup> Enamel fracture (62.7%) was the most common form of dental injuries, as in many previous studies.<sup>20,21</sup>

Fall injuries were the most frequent cause of trauma, and this was generally supported by other studies.<sup>1,4</sup> (Fig 6) The surprising finding in our study was that none of the traumatized teeth had received any dental treatment. We didn't find any other study with similar finding, however, Rai *et al*<sup>22</sup> and Gupta *et al*<sup>23</sup> observed only 1.68% and 2.3% traumatized teeth received any treatment respectively. This observation can be attributed to lack of knowledge and motivation.

Financial condition of the patient and lack of accessibility to appropriate dental care are also contributing factors. Educational programs need to be instituted at the community and school level to raise the awareness about dental trauma and its prevention.

## CONCLUSION

Traumatic dental injuries are relatively less common in Lucknow and so is its awareness as can be inferred by the lack of treatment of the traumatized teeth. More emphasis must be placed on these problems involving school, community health bodies and most importantly, the parents, so that appropriate mode of prevention and treatment can be rendered promptly.

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