Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr ICV 2018= 82.06

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Prevalence of Traumatic Dental Injuries in Children Aged 3–18 Years in Darbhanga Town

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ABSTRACT:

Background: Traumatic dental injuries (TDI) have a strong impact on children's and adolescent's life quality because they cause physical and emotional distress in them and they might have a high negative impact on the social relationships. Oral injuries are fourth most common area of bodily injuries among 7-30 year-old individuals. Involvement of children in sports activities and increase in traffic accidents have contributed to transform these TDI an emergent public health problem. **Aim and Objectives:** The current retrospective study is to determine the prevalence of TDI reported to Dental Department at Darbhanga Medical College and Hospitals, during the years 2016–2017. **Methodology:** Sample size is the total number of patients reported to the Dental Department at Darbhanga Medical College and Hospitals, within the period of 2016–2017. The data were retrieved from records of patients who reported to the department. **Results:** All recorded data were analyzed using the Statistical Package for the Social Sciences statistical software program (2012). The results were evaluated by Chi-square test. A total of 424 patients aged between 3 and 18 years met the inclusion criteria and were enrolled in the study. The highest frequency of TDI was in the 10–12yearold participants and lowest frequency was in 3–6yearold children. The etiology of TDI was analyzed, highest were caused by falls followed by sports activities and then striking objectives and then followed by accidents and cycling. The most common type of injury was uncomplicated crown fracture (without pulp exposure) followed by avulsion and complicated crown fracture (with pulp exposure). **Conclusion:** Study observed the children in mixed dentition period as the population at risk. Hence, prevention through health promotion and correction of predisposing risk factors should be carried out in early mixed dentition period to reduce the prevalence of dental injury and to avoid the financial costs of treatment.

Key words: Dental traumatic injuries, permanent dentition, prevalence, retrospective analysis

Received: 12 March, 2018 Revised: 14 July, 2019 Accepted: 15 August, 2019

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This article may be cited as: Choudhary HV, Priyadarshni P, Vatsa R, Srivastava AK, Suryavanshi R. Prevalence of Traumatic Dental Injuries in Children Aged 3–18 Years in Darbhanga Town. J Adv Med Dent Scie Res 2019;7(10):8-12.

INTRODUCTION

Traumatic dental injuries (TDI) are the most overlooked oral conditions regardless of their high prevalence rate and associated impact on children.[1] Dental trauma in addition to causing pain and loss of function has the potential for periapical sequelae, which can adversely affect the development of the permanent teeth as well as the developing occlusion.[2,3] Epidemiological data showed a wide variation in the prevalence of dental injuries in children.[4-7] Dental injuries to the deciduous teeth can result in problems to the underlying permanent teeth, such as hypoplasia, discoloration, and delay in eruption time, and tooth malformation.[8] Along with pain and possible infection, the consequence of dental trauma includes alteration in physical appearance, speech defects, and emotional impacts; thus, affecting the child's quality of life.[9-11] Risks and severity to dental trauma vary according to the age, sex, and location of the tooth in the oral cavity.[12,13]

Dental injuries may occur throughout life, but traumatic dental injuries (TDI) are a very significant problem among children. The main etiology being accidents such as falls, fights, and during sports. They are associated with biological, socioeconomic, psychological, and behavioral factors.[14] The predisposing dental risk factors include increased incisal overjet, open bite, protrusion, and lip incompetence.[15]It is a dental emergency situation in young patients and requires immediate assessment and management because many permanent teeth continue their development in those ages.[16] The improvement of TDI in permanent teeth illustrates important aspects that must be carefully planned, requiring several follow-up appointments, mainly due to the possible appearance sequels in the developing permanent dentition.[17] The importance of assessing the prevalence of traumatized teeth by the survey was pointed out by Andreasen and Andreasen in 1994.

Epidemiological data provide a basis for evaluating the concepts of effective treatment, resource allocation, and planning within any health environment. Hence, the purpose of the current study was to determine the prevalence of traumatic injuries in 3–18yearold children who reported to Dental Department at Darbhanga Medical College and Hospitals, Laheriasarie Darbhanga.

METHODOLOGY

The present retrospective study was carried out in Dental Department at Darbhanga Medical College and Hospitals, Laheriasarie Darbhanga India. Ethical clearance was obtained. Sample size is the total number of patients reported to the Dental Department at the college hospital within the period of 2016–2017.The data were retrieved from records of patients who reported to the department. Their distribution according to age, gender, cause of the injury, type of injury, and teeth injured was recorded. Cases with incomplete documentation were excluded. The type of TDI was classified, according to the system described by Ellis classification 1970. It is a simplified classification and has been used in a previous study for recording dental trauma and as we did not evaluate injuries to the alveolar socket and fractures of the jaws or laceration of the gingival or oral mucosa, we preferred to use this simple classification instead of Andreasen's classification. A total number of 424 children reported, out of which 285 were boys and 139 were girls between the age of 3 and 18 years of age. All recorded data were analyzed using the Statistical Package for the Social Sciences (SPSS, IBM Ltd, India) statistical software program (2012). The results were evaluated by Chi‑square test. The association between the occurrence of dental injuries with relation to age, sex, and number of injured teeth is statistically significant.

RESULTS

A total of 424 patients aged between 3 and 18 years met the inclusion criteria and were enrolled in the study. The distribution of patients by gender showed that males were more often affected (67.2%) than females (32.8%) [Tables 1]. The highest frequency of TDI was in the 10–12yearold participants and lowest frequency was in 3–6yearold children [Tables 2]. When the etiology of TDI was analyzed, highest were caused by falls, followed by sports activities and then striking objectives and then followed by accidents and cycling[Table 4]. Maxillary anterior teeth were affected more compared to the mandibular teeth, and incisors were the most affected teeth. The most affected teeth were the maxillary central incisors, followed by the maxillary left lateral incisors and then mandibular incisors [Table 5]. The teeth least involved were the maxillary and mandibular canines. The most common type of injury was uncomplicated crown fracture (without pulp exposure) followed by avulsion and complicated crown fracture (with pulp exposure) [Tables 3]. When it comes to the type of occlusion, Class 2 div 2 type of malocclusion had increasing frequency of trauma.

Table 1: Number of traumatized teeth according to the gender

Gender	n	%
Male	285	67.2%
Female	139	32.8%

Table 2: Distribution of teeth according to the age of patients

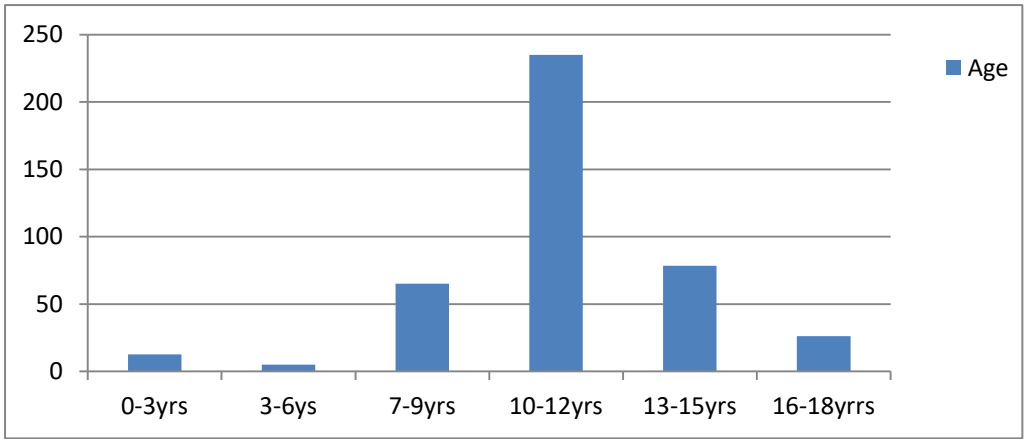


Table 3: Distribution of teeth according to the type of the injury

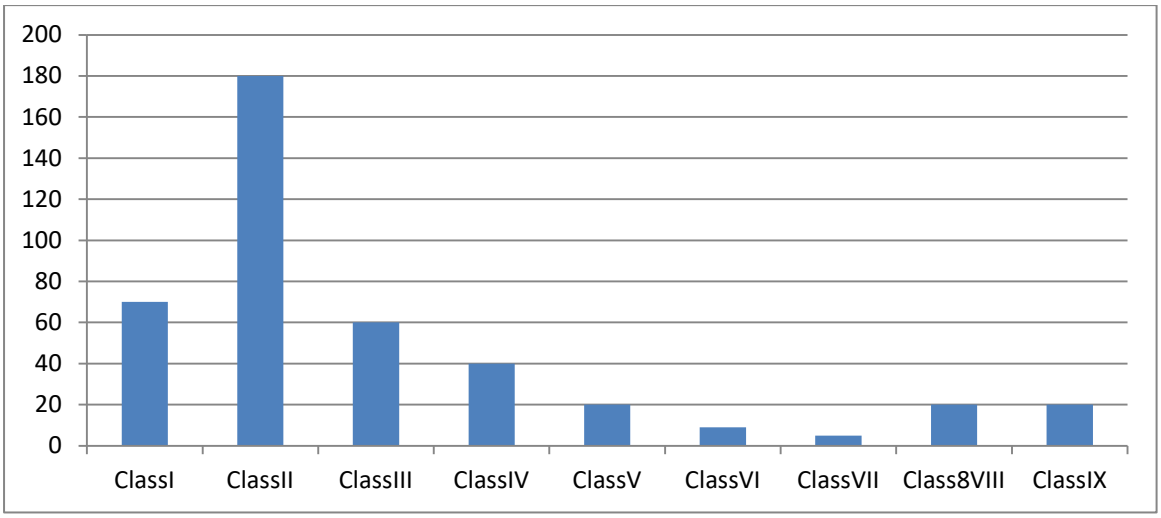


Table 4: Distribution of teeth according to cause

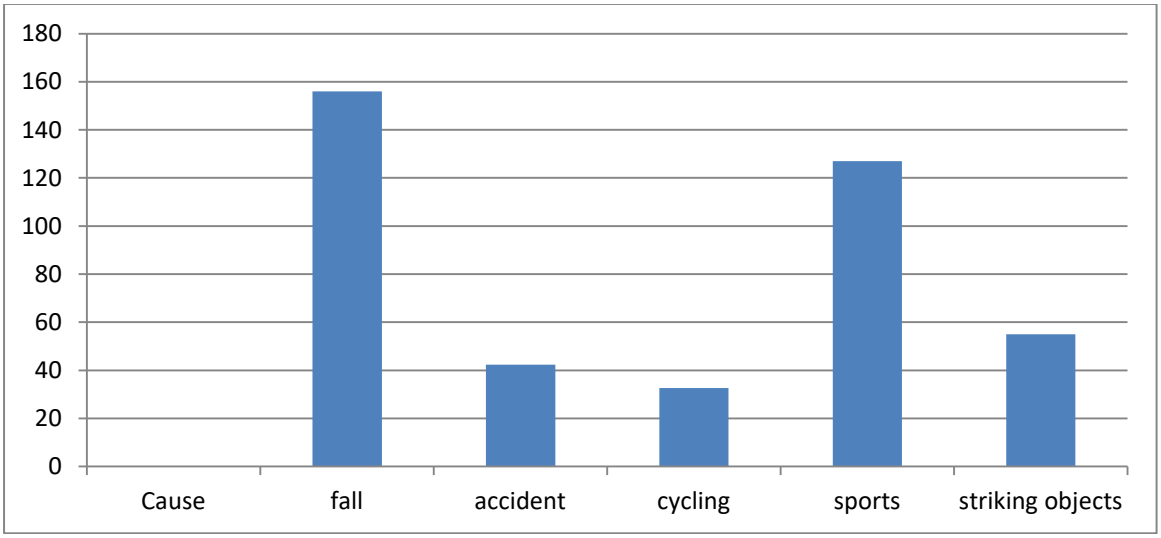
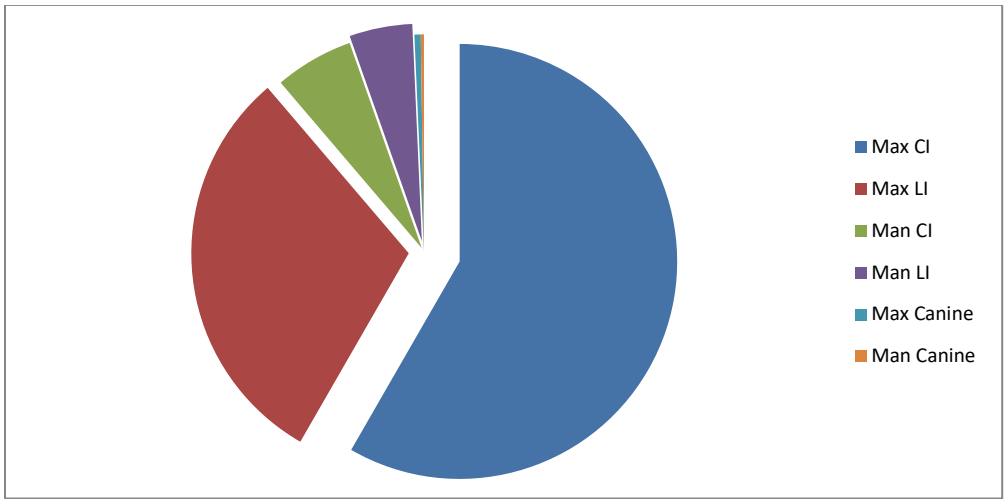


Table 5: Distribution of teeth according to tooth injured



DISCUSSION

Traumatic dental injury is not a result of disease but a consequence of several factors that will accumulate throughout life if not properly treated. For this study, children between 3 and 18 years of age were chosen, as during this period, there is the maximum physiologic growth and development and the children are actively involved in lot of outdoor activities.[18] Epidemiological knowledge of TDI adds valuable information on public health, and when associated with clinical observations and trials, it provides essential evidence to all the science segments.[17] The retrospective epidemiological evaluation developed in the present study was based on the verification of the clinical records of patients with TDI treated at Dental Department at Darbhanga Medical College and Hospitals, Laheriasarie Darbhangaduring the period of 2016–2017. The present study has shown that gender is a predisposingfactor in dental trauma. Increased frequency was seen among boys than girls which was 67.2% which is in accordance with many other studies. Similar result was found in different geographical locations by Hamdan MA, Rajab LD, Nik-Hussein NN, in their study.[19,20] Age is another well‑established risk factor, and although TDI has been reported in all age groups, it is more prevalent in school children and teenagers. Previous studies have demonstrated that the majority of TDIs occur in childhood and adolescence.[21] Similar to previously reported findings, the present study has also illustrated the greater prevalence of TDI among children between 8 and 12 years. The maxillary central incisors were the most frequent injured teeth. This is in line with the findings of Hamdan and Rajab and Nik‑Hussein also found that maxillary central incisors were injured in 78% and 79.2% of traumatic cases, respectively.[22,23] The main etiological factor of the dental trauma among our study population was fall.

Yassen *et al*.[24] also have shown similar findings. Unlike previous studies, the second cause of TDI in our study was sporting activities (26%); Borssén *et al*. reported similar findings.[25,26] The most common type of injury recorded in the present study was uncomplicated crown fracture which is in line with the studies conducted by Hamdan and Rajab and Nik‑Hussein.[22,23] It is highly recommended to plan proper educational programs to enhance the level of general knowledge about prevention and managing these injuries. In these programs, the importance of proper treatment of traumatized teeth, be it the primary or permanent, should be stressed to prevent their biologic and psychologic consequences.

CONCLUSION

The study observed the children in mixed dentition periodas the population at risk. Hence, prevention through health promotion and correction of predisposing risk factors should be carried out in early mixed dentition period to reduce the prevalence of dental injury and to avoid the financial costs of treatment. An effort can be made to reduce the prevalence of traumatic injuries by taking into consideration the following measures:

- The use of intraoral and extraoral devices which protects the face and teeth from trauma
- Elimination or reduction of predisposing factors in the form of orthodontic treatment
- Educational programs whereby the children and their parents are given information regarding the preventive and treatment aspects of this commonly occurring condition
- Health promotion policies should aim to create an appropriate and safe environment.

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