

Prevalence of traumatic injuries to anterior teeth



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Medident - Prevalence of traumatic injuries TO ANTERIOR TEETH IN CHILDREN AGED 8-12 YEARS IN KANPUR CITY

Abstract:

Aims: This study was carried out to evaluate the prevalence, causes and anatomical risk factors of traumatic injuries to anterior teeth among the 8 to 12 years old school going children in Kanpur city, India.

Material & Methods: The sample size included 2913 school children aged 8 to 12 years from 30 both private and government schools. Simple random sampling technique was used to draw the sample. To record teeth injuries; the classification of Ellis (Ellis et al 1970), as modified by Holland (Holland et al 1988) was used. Descriptive statistical analysis was carried out in the present study. Chi-Square Test and Z-test for a proportion (Binomial distribution) was used during statistical analysis. P values $P \leq 0.05$ were considered statistically significant.

Results: The study shows prevalence of 10.57% of traumatic injuries to anterior teeth among 8-12 years old school going children (prevalence of 8.25% at the age of 8 years which reached to 14.12% at the age of 12 years). Boys were more involved (14%) than girls (6.7%). The maxillary central incisors (89.29%) were the most affected teeth followed by the lateral incisors (6.82%). Fractures involving only enamel (79.87%) were the most frequent type of traumatic dental injuries. Falls (46.75%) were the most frequent cause of trauma followed by collisions (7.14%). Traumatic Dental Incisors were more prevalent among those with overjet > 3.5 mm and inadequate lip coverage.

Conclusion: Children being male and having an overjet > 3.5 mm & inadequate lip coverage were associated with a higher probability of having a traumatized tooth.

Keywords: Prevalence, Traumatic dental Injuries, Anterior teeth, overjet

Introduction:

Traumatic dental injuries to the permanent incisors are common amongst children. They have an unfavorable social and psychological impact on the quality of life of children and adolescents when they do not receive adequate treatment. The result from the fact that it mainly affects the anterior teeth, causing physical and psychological discomfort, pain, loss of function of mastication and phonation, decreased self esteem and embarrassment when smiling, therefore has a direct impact on the social life of affected individuals¹.

Dental trauma is associated with several etiological and risk factors. Data from dental clinics and hospital based studies have shown that falls, collisions, sports activities, traffic accidents and high levels of violence are the main etiological factors².

Epidemiological studies reveal that one out of two children sustains a dental injury, most often between the ages of 8 and 12³. Despite its importance, there are few reports available on the epidemiology of injuries to the teeth of children in developing and industrialized countries, in particular when compared to epidemiological data on dental caries and periodontal diseases⁴. The prevalence of traumatic dental injuries amongst school going children <https://assignbuster.com/prevalence-of-traumatic-injuries-to-anterior-teeth/>

in different parts of the world varies from a low 2.6 (Macko et al⁵) to a high of 43.8% (Marcenes and Murray⁶).

The purpose of the present study was to evaluate prevalence, causes and the anatomic risk factors of the traumatic injuries to anterior teeth among 8 - 12 years old school going children in Kanpur city.

Material & Methods:

Ethical approval: The study was approved by the ethical committee of the Rama Dental College, Hospital & Research Centre. The examinations were conducted with permission from the education authorities and head teachers and the informed consent of the children's parents.

Study group: Three thousand school children between the age group of 8-12 years were randomly selected from both the Government and Private schools of Kanpur were initially examined. Eighty seven children were excluded from the study because they had a history of or were currently receiving orthodontic treatment. Thus the total number of children included in this study was 2913. Data was collected by an interview and oral examination. A Proforma was prepared to collect data during oral examination and brief face-to-face interview. A single examiner trained and calibrated for the criteria used, conducted both the interview of the parents and the clinical examination of the children. The children were examined at their schools under natural light. Children who participated in the study were examined at the schools during school hours, in a predetermined timetable, as arranged with the school authorities.

Data collected during the interview:

- Time of the accident:
- Type of accident
- Place of accident.

Data collected during Clinical Examination:

To record teeth injuries, the classification of Ellis ⁷, as modified by Holland et al. ⁸ was used:

- Class 1: Fracture of enamel only.
- Class 2: Fracture of enamel and dentine; without pulp involvement.
- Class 3: Fracture of enamel and dentine; with pulp involvement.
- Class 4: Discoloration of the tooth, with or without a sinus.
- Class 5: Displacement; extrusion, intrusion, and lateral displacement.
- Class 6: Tooth loss as a result of trauma.
- Class 7: Tooth restored by composite or crown following fracture.

At the time of survey the soft tissue injuries were not always recorded. In addition, vitality tests and radiographic examinations were not carried out; therefore, root fractures were not recorded.

Endodontic treatment could not be recorded, and endodontic treatment needs were calculated based on the presence of discoloration, fistulous tract and fracture with pulp exposure.

The horizontal relation of the incisors was measured with a CPITN periodontal probe.

The measurement was done holding the CPITN periodontal probe parallel to the occlusal plane.

The children were separated into two groups according to overjet of less than 3.5mm and 3.5mm or more than 3.5mm.

Incisal overjet was not recorded where there was a loss of upper incisors or if a lingual cross bite was present.

To record lip pattern, each child was instructed to stand in a specified position and the lip line carefully observed. If in the rest position, the incisors were covered completely by the lips, the lip coverage was scored adequate; otherwise an inadequate score was recorded.

Results:

Table 1 shows the number and proportion of children who had at least one traumatized permanent anterior teeth.

Table 1: The number and proportion of children with traumatized anterior teeth

Discussion:

The prevalence of trauma to anterior teeth in this study (10.57%) corroborates the assertion that dental injuries among children frequently present between 10% and 20% (Dearing et al⁹, 1984).

The fact that in this study, boys had suffered more traumatic dental injuries than girls (boys-53.14%, girls-46.86%) is basically explained by behavioral

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or even cultural factors, in that boys engage in leisure activities or sports of generally more aggressive nature or with a greater accident risk than girls do. This research agrees with most other studies that show higher incidence of trauma in males ¹⁰⁻¹⁴ . However, few authors have shown similar trauma in boys and girls ^{15, 16} .

The most common cause of traumatic dental injuries, observed in this present study was falls. The difficulty of grouping falls as a cause of trauma was reported in 1970. In the present study, the children that suffered dental trauma were asked about the causes of fall for the purpose of distinguishing falls without pushing from the ones in which the individual was pushed, which were grouped in the ' violence' category, because they represent a form of aggression. The percentage of schoolchildren that did not remember the accident was also high, which could result in the under reporting of violent incidents.

The school going children examined, suffered trauma mostly at home and on the streets. Thus the discussion about healthy environments becomes highly relevant, because environment and health are interdependent and non-separable. Therefore, every place, appraised as alive territory, where exists a relation between children and nature (family, work relationship, leisure, education), are environments that must be favorable to health ¹⁷ .

Maxillary central incisors (89. 29%) were the most commonly involved teeth during dental trauma than other anterior teeth because of their morphology and location which makes them more susceptible to traumatic injuries ¹⁸ .

The result agrees with the findings of Chen et al ¹⁰ (77%), Caliskan & Turkun ¹⁴ (66.2%), Zaragoza et al ¹⁹ (87.9%), Zerman & Cavarella ¹² (80%) and Borssen & Holm ²⁰ (67%).

Fractures involving only enamel (79.87%) were the most frequent type of traumatic dental injuries observed in our study sample, agreeing with other studies ²²⁻²⁴.

Vernier calipers provide an accurate measurement of overjet under ideal conditions. However, since the study was carried out under field circumstances CPI style periodontal probe was used to measure overjet as it was more feasible.

In relation to overjet, different authors have argued over which particular value should be regarded as an increased overjet or not. Thus, some recognize an increased overjet when the value is more than 3 mm, and others when it is more than 5 mm. Normal overjet was considered to be in the range of 0-3.5 mm ⁹. The CPITN probe served the need, since its markings were located at 3.5 and 5.5 mm which facilitated the grouping of the children into ranges of ≤ 3.5 mm and > 3.5 mm.

In our study we found that the risk trauma increased as the overjet increased, the finding was similar to various previous studies ²⁵⁻²⁷.

Traumatic dental injuries are also associated with normal function deviation and position of perioral tissues. As was seen in several previous studies ²⁹⁻³², it was observed in the present study that the schoolchildren that presented

inadequate lip coverage showed a statistically significant association between the presence of this condition and the occurrence of dental trauma. This can be explained by reduction of cushioning effect in presence of incompetent lips.

This study showed that 92.21% of children with dental trauma remained untreated and thus there was a need of dental treatment in 92.21% of children with dental trauma. The reasons for such neglect are unclear. One could suggest that in developing countries, the majority of the population cannot afford private dental treatment and the dental public services are unable to offer more complex treatments. Nevertheless, high levels of untreated traumatized teeth were found in developed countries as well, such as the UK where quality public dental services are accessible to the majority of the population. One factor that could be determining low rates of treatment is related to the fact that traumatic dental injuries is not a disease and parents might not pay the necessary attention to it. This could be related to the severity of the dental injury. As the majority of traumatic dental injuries affect only the enamel this could have a lower potential to produce a negative impact on children and their parents.

Another aspect that could be enhancing the treatment neglect is the dentist's lack of knowledge regarding the treatment of dental trauma, both in developed and in developing countries ¹⁷.

In conclusion, the dental injuries are frequently occurring during the different stages of life but they are particularly common in childhood.

Although dental injuries are rarely life-threatening, they are of public health importance due to their high prevalence and impact on individuals and society in terms of pain, discomfort, social and functional limitation and handicap, and the effect on the child's quality of life. Thus, there is need to create dental awareness through dental health education amongst school going children to improve their quality of life.

Furthermore traumatic dental injuries are preventable; therefore public health preventive and promotive programmes should be encouraged to reduce the prevalence of traumatic dental injuries in school going children. Health promotion policies should aim to create an appropriate and safe environment. Soft playground surfaces, school-crossing patrols, marked zebra crossings and bicycle lanes would help create a safe environment. The use of seat belts, air bags, special car seats for children and bicycle helmets should be enforced. Mouth guards should be used when playing sports, in particular contact sports.

Public Health Education regarding the epidemiology of dental injuries and its prevention through health promotion may play a major role in reducing the prevalence of traumatic dental injury and avoiding the financial costs of treatment, especially in developing countries.