

# Prevalence and Factors Associated with Traumatic Dental Injuries (TDI) to Anterior Teeth of 11-13 Year Old School Going Children of Maduravoyal, Chennai

Navin Anand Ingle, Naveen Baratam, Zohara Charania

## ABSTRACT

*The epidemic of general injuries is among the most neglected health problems of the 21<sup>st</sup> century and the importance of Traumatic Dental injuries (TDI) has attracted little attention. **AIM:** To assess the prevalence and factors associated with anterior teeth traumatic injuries in 11-13 year old school children of Maduravoyal, Chennai. **METHODOLOGY:** Cluster sampling methodology was used for selection of subjects, where each school formed a cluster. All students aged 11-13 years were examined in accordance with the Ellis and Davey classification of traumatic injuries to anterior teeth. Statistical analysis was done by Chi-Square test. **RESULTS:** Among the 687 (M=393, F=294) examined, 11.5% (n=79) experienced TDI. 78.5% (n=62) boys experienced TDI which was approximately thrice as higher as in females being 21.5% (n=17). The most commonly affected teeth were maxillary central incisors. "Fall" was the most common cause for TDI. Most common type of fractures were class I and class II and most of them were untreated. All these findings were statistically highly significant ( $P < 0.001$ ). **CONCLUSION:** TDI is an existing dental problem and emphasis should be given in school dental health programmes on preventive aspects of TDI.*

## KEY-WORDS

*Traumatic Dental injuries, Prevalence, Ellis and Davey classification, Fall, School Dental Health Program.*

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## INTRODUCTION

The epidemic of general injuries is among the most neglected health problems of the 21<sup>st</sup> century and the importance of traumatic dental injuries has attracted little attention. Dental trauma in children and adolescents is a serious dental public health problem. High levels of violence, traffic accidents, and greater participation of children in sports have contributed to transform dental traumatic injuries into a public health problem. Dental injuries result in functional, esthetic and psychological disturbances accompanied by great concern from the child, the parent and the dentist. Oral injuries are the fourth most common area of bodily injuries among 7-30-year-olds(1).

Trauma is one of the most common presentations of young children to a pediatric dentist and can be distressing for both child and parent. The treatment of injuries should always be commenced as early as possible following the accident.

During childhood the development of the occlusion both functionally and esthetically is dependent on the satisfactory presence of teeth. Unfortunate and disastrous results can occur when a trauma is inadequately treated, causing conditions like malformed or malpositioned teeth, premature tooth loss and pulpal death with abscess formation. Often the prognosis for success depends on the rapidity with which the tooth is treated after the injury, regardless of whether the procedure involves protecting a large area of exposed dentin or treating a vital pulp exposure.

The child should be carefully assessed regarding treatment needs before approaching the parents because many cases are not as bad as they first appear. Initial reassurance to both parent and child is of great value. Trauma may leave deficit that affects the self esteem and quality of life of the patient.

Against this background, the present study aimed:

- To assess the prevalence of traumatic dental injuries (TDI) to anterior teeth of 11-13 year old school going children of Maduravoyal.

- To identify which gender is more prone to TDI.
- To predict the most common factor associated with TDI.
- To assess which anterior tooth in the oral cavity is most affected

## MATERIALS AND METHODS

A cross sectional survey was carried out on school going children of Maduravoyal, Chennai. Cluster sampling methodology was used, where each school formed a cluster. A total of 12 schools were examined in Maduravoyal, out of which 8 schools were selected using random sampling methodology with an average of 70-80 students in each school to reach a sample size of 600. The parents were informed and consent obtained from both parents and school authorities before the study commenced.

Examination of anterior permanent teeth was done in accordance with the Ellis and Davey classification using a standard mouthmirrors and probes. Subjects who had clinical evidence of traumatic dental injury were interviewed for details of the injury event by using structured questionnaire.

Information concerning sex, age, type of fracture, cause of fracture, number and the type of injured tooth were recorded. The children were examined with plane mouth mirror while seated on chair with good natural light / artificial illumination.

The data was collected and subjected to statistical analysis by means of SPSS (PC Version 10) was used. The Chi-square test was used to compare qualitative data and determine statistical significance.

## RESULTS

Out of the 687 students who were examined and responded the questionnaire, 57.2% were male participants and 42.8% were female participants (Fig. 1). 45.9% were 11 year old, 29.7% were 12 year old and 24.5% were 13 year old (Fig. 2). The prevalence of traumatic dental injury was found to be 11.5% (Fig. 3). 78.5% of boys and 21.5% of girls were effected with anterior tooth fracture. The boys were four times

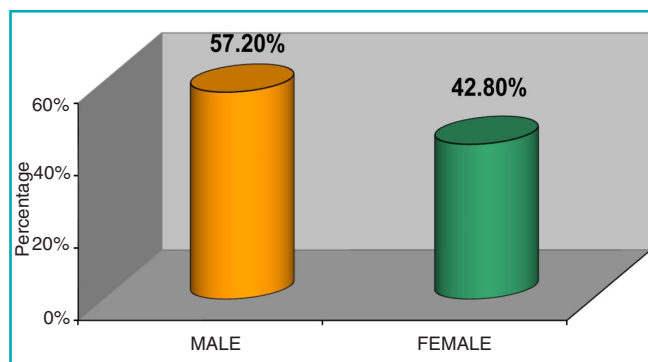


Figure 1 : Distribution of sample according to sex

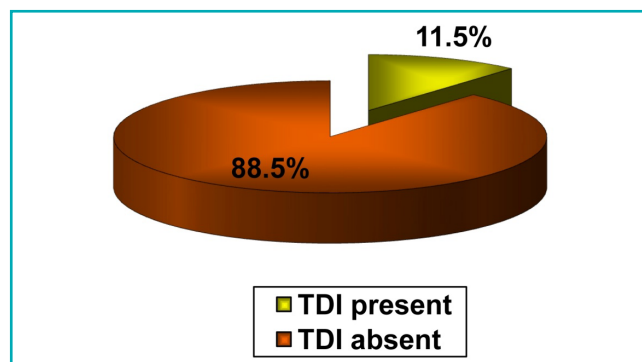


Figure 3 : The prevalence of traumatic dental injury

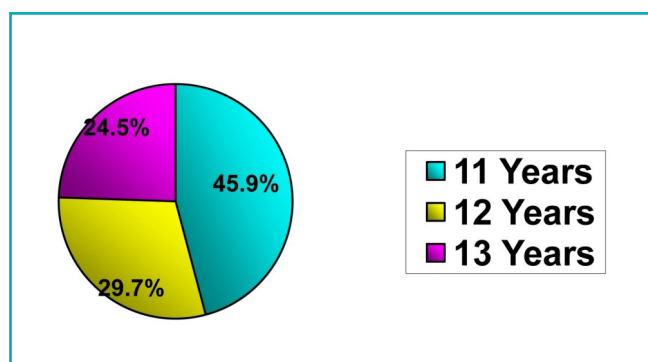


Figure 2 : Distribution of sample according to age

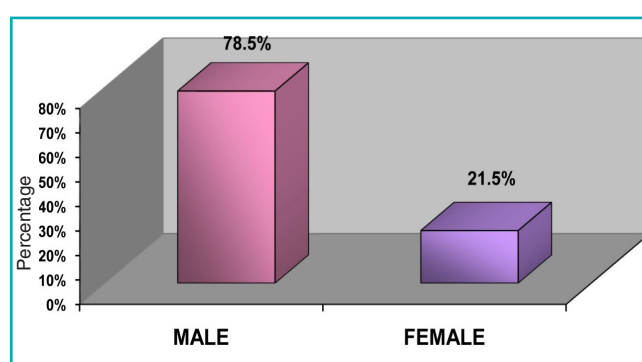


Figure 4 : The prevalence of traumatic dental injury by gender

more prone to traumatic dental injuries compared to girls (Fig. 4).

In 11, 12 and 13 year old students 47.4%, 29.3% and 23.4% respectively had anterior traumatic dental injury (Fig. 5). 86.1% were affected by single tooth fracture. 12.7% and 1.3% had two and three teeth fracture respectively (Fig. 6).

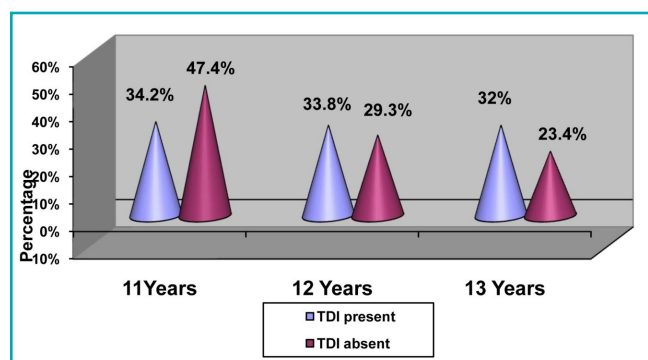


Figure 5 : The distribution of traumatic dental injury according to age

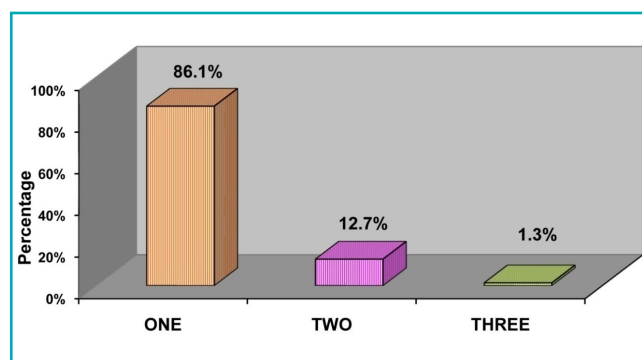
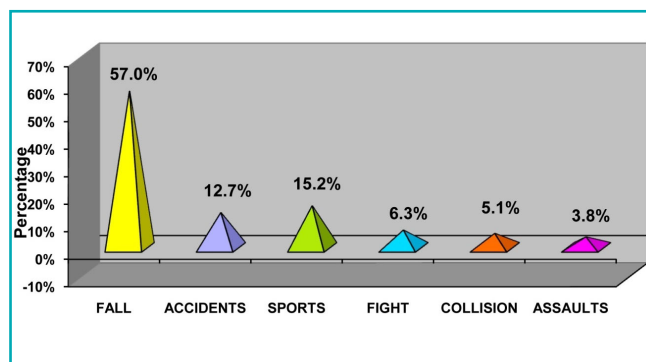


Figure 6 : Distribution according to the number of fractured teeth among children

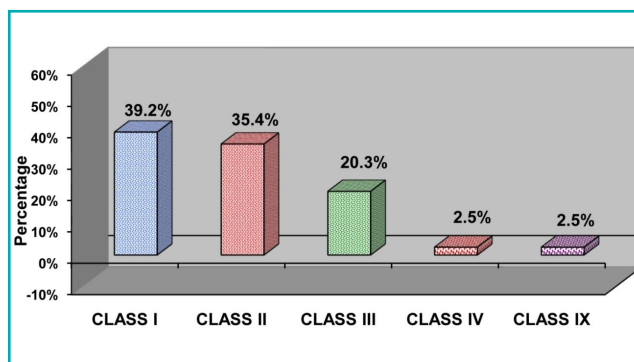


**Figure 7 : Distribution of patients according to cause of fracture**

involving dentin but not dental pulp (class II) (35.4%), Fracture of the crown involving dentin and dentinal pulp (class III) (20.3%), the traumatized teeth that becomes non-vital with or without a loss of crown structure (class IV) (2.5%) and traumatic injuries to primary teeth (class IX) (2.5%) (Fig. 8).

Maxillary central incisor (72.2%) was the most commonly affected fractured tooth followed by maxillary lateral incisor (12.7%), mandibular central incisor (7.6%), maxillary canine (5.1%), mandibular lateral incisor (1.3%) and mandibular canine (1.3%) (Fig. 9).

78.5% of the fractured teeth were untreated and only



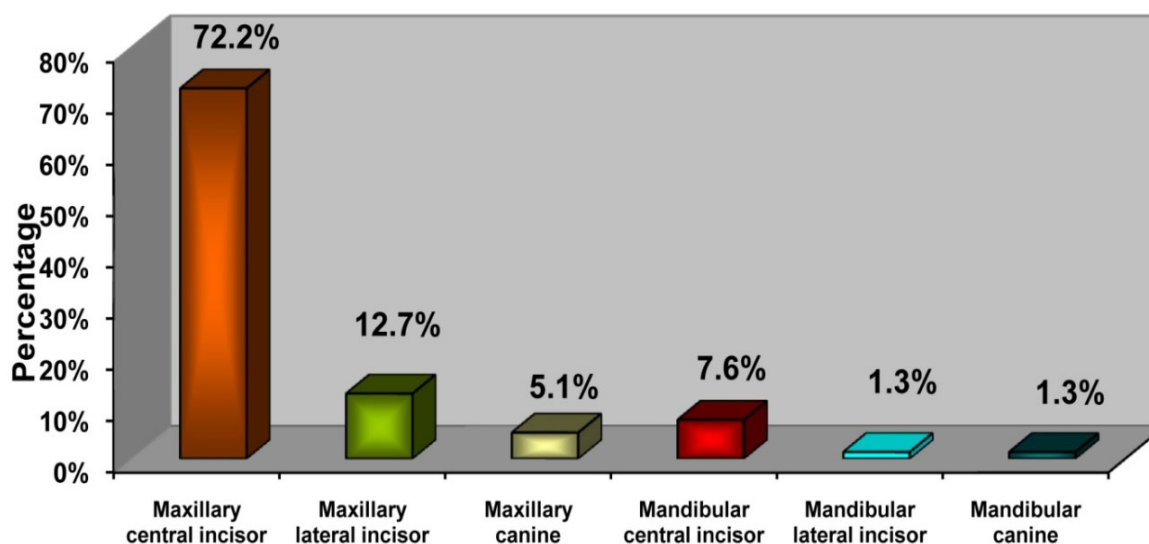
**Figure 8 : Distribution of fractured teeth according to Ellis and Davery classification of injury**

12.7% were treated by dentist and the remaining were treated by pharmacist (Fig. 10).

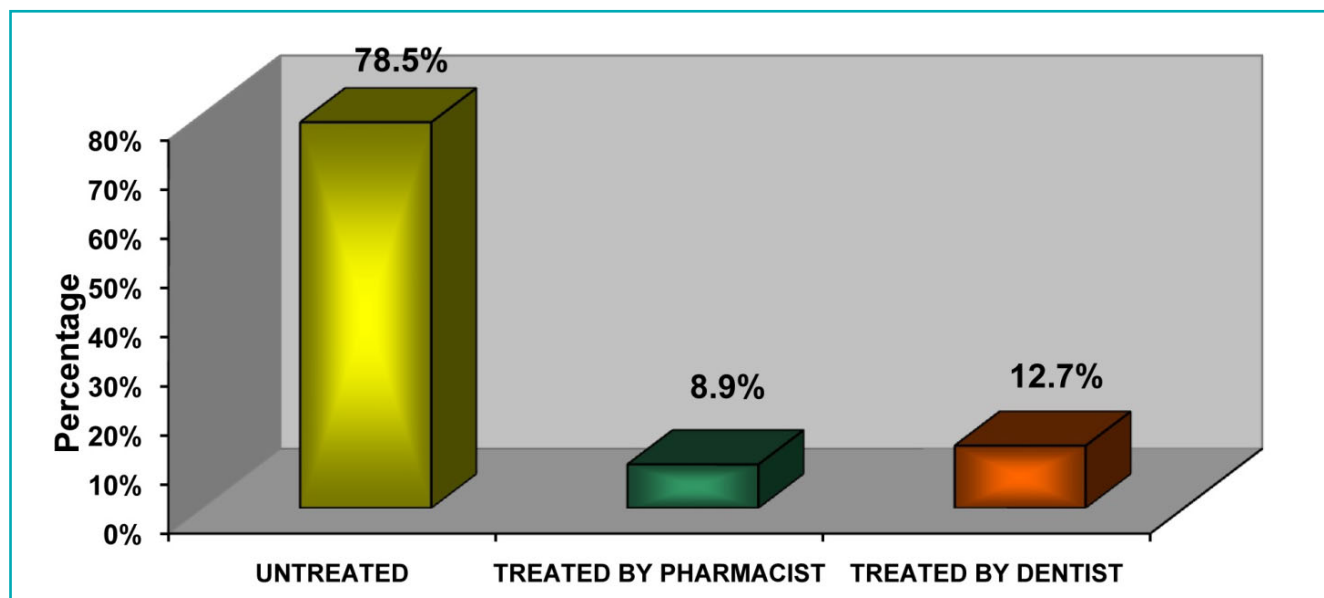
## DISCUSSION

The study found a prevalence of 11.5% of traumatic dental injuries to the permanent incisors of 11-13 year old school children in Madurvoiyal, Chennai, which was much lesser than the study done by Jafferson Trabert *et al* (2) in Florianopolis, Brazil with a prevalence of 18.7%. The study done by Adekoya *et al* (3) in sub-urban Nigerian adolescents showed a prevalence of 9% which was lesser than the present study.

In this study, a difference in the frequency of dental



**Figure 9 : Distribution of fracture according to type of teeth**



**Figure 10 : Distribution of Subjects according to mode of treatment for fractured teeth**

injuries was observed between boys and girls with a ratio of 4:1, whereas in the study done by Adekoya *et al*(3) it was found to be 2:1. It indicates that the boys of Madurvoyal are more prone to traumatic dental injuries compared to sub-urban Nigerian adolescents.

The most common injuries to permanent teeth occur as a result of falls(4,5,6) followed by sports and accidents(7,8,9). The use of protective gear including mouth guards which help distribute forces of impact thereby reducing the risk of severe injury have been encouraged.

The most frequently traumatized tooth in the present study was the maxillary central incisor and least traumatized was mandibular canine. This is an agreement with other reported studies in the literature(10).

The attitude and knowledge regarding treatment of injured tooth was not impressive. The study has shown a shocking revelation that dental awareness is very low as evident in the number of children (12.7%) who were attended by the dentist compared to children who were not treated by dental professionals. The high prevalence of self-medication and high numbers of

untreated fractured teeth call for concern. Lack of dental awareness and non affordability of the cost of the treatment were the major reason why the fractured teeth were not treated.

The Madurvoyal children obviously need information regarding dentistry. The information need of adolescent on dental matters is important in order to improve their quality of life. The concern raised in this study calls for an urgent need for dental health education to be stepped up among suburban Madurvoyal residents. Information needs of young people are important because acquisitiveness for dental information in this group has a possible implication for future pattern of seeking dental care.

## SUMMARY AND CONCLUSION

The study showed the prevalence of TDI to be 11.5%. The boys were more prone to Traumatic dental injuries compared to girls. Majority of them were affected by single tooth fracture. The most commonly affected teeth were maxillary central incisors. Fall was the most common cause for TDI. Most common type of fractures was class I. Most of the children examined were untreated. There is need to create dental awareness through dental education amongst suburban

Madurvoyal school going children to improve their quality of life regarding esthetics and discourage self medication.

## RECOMMENDATIONS

- Preventive educational programmes should be given to parents and school teachers to inform them about the TDI and importance of the benefit of immediate attendance for dental treatment.
- The knowledge of dental practitioners should be improved through continuing education in order to minimize sequelae of traumatic dental injuries.
- Usage of mouth guards should be encouraged during sports.
- Adoption of health and safety policies, improvements in the physical environment and closer supervision of children.

## REFERENCES

1. Peterson EE, Andersson L, Sorensen S, "Traumatic oral vs non-Oral injuries". *Swedish Dental Journal* 1997;21:55
2. Jefferson Traebert "Prevalence of traumatic dental injury and associated factors among 12-year-old school children in Florianopolis, Brazil". *Dental Traumatology* 2003;19:15-18.
3. Comfort Ayodele Adekoya – Sofowora, Ramat Brumiah, Eytipe Ogunbenro Ogunbodede: Traumatic Dental Injuries Experience in Suburban Nigerian Adolescents. *The international Journal of Dental Science* 2005;3(5).
4. Adekoya-Softowora C, Sote E, Odusanya S, Fagade O. Traumatic dental injuries of anterior teeth of children Nigeria. *Pediatric Dental Journal* 2000;10:33-39.
5. Caidas AF Jr, Burgos ME. A retrospective study of traumatic dental injuries in a Brazilian Dental Clinic. *Dental Traumatology* 2001;17:250-53.
6. Rai SB, Munshi AK. Traumatic injuries to the anterior teeth among south Kamara school children-a prevalence study. *Journal of Indian Soc. Pedod Prev Dent* 1998;16:44-51.
7. Sakare AB, Jacobsen I Dental Injuries in Norwegians aged 7-18 years. *Dental Traumatology* 2002;19:67-71.
8. Rocha Mjdc, Cardoso M. Traumatized Permanent teeth in Brazilian children assisted at the Federal University of Santa Catarina. *Brazil Dental Traumatology* 2001;17:245-49.
9. Tapias MA, Zimenenz-Garcia R, Lamas F, Gil AA. Prevalence of traumatic crown fracture to permanent incisors in a Childhood population, Mostoles, Spain. *Dental Traumatology* 2003;19:119-122.
10. Alonge OK, Narendran S, Williamson DD. Prevalence of fracture incisal teeth among children in Harris County, Texas. *Dental Traumatology* 1991;10:20-21.

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