

# Risk Factors Associated with Anterior Teeth Trauma in Children

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## ABSTRACT

**Introduction:** It has been claimed that the dental trauma within the foreseeable future will probably exceeds dental caries. However, Trauma is always unpredictable but a proportion of injuries could be prevented if the risk factors. Present study was done in 50 children (7-12 years) reported to outpatient Department of Paediatric and Preventive Dentistry, Buddha Institute of Dental Sciences and Hospital, with an aim to know the risk factor associated with anterior teeth trauma. **Materials and Method:** The study was carried out in 50 children, who were asked about the history of trauma, examined with IOPA radiographs, examined for lip competency and other trauma related teeth anomaly. **Results:** Results showed that more no of boys suffered traumatic injuries than girls. Maxillary central incisor is the most common teeth to get injured. Ellis class I (51%) is the most common form of injury suffered by both male and female followed by type II injury. **Conclusion:** Preventive educational program should be imparted to parents as well as children for early correction of oral habits and teeth malocclusion. Awareness should be spread regarding use of various protective devices such as mouth guard, face guard and protective helmet in sport related activities.

**KEYWORDS:** Risk Factors, Dental Trauma, Permanent Anterior Teeth

## INTRODUCTION

Accidental trauma to the dentition of a child is one of the most distressing incidents for an individual during their early years. Anterior teeth trauma not only causes alteration in physical appearance but also affects psychological well being of the child as well as their parents. Various studies revealed that prevalence of traumatic dental injuries have increased significantly in past few decades. Studies have affirmed that traumatic dental injuries is more prevalent in boys of active age range and also it increase with increasing incisal over jet and lip incompetency. Also it has been suggested that overweight subject would be more prone to injury.<sup>1</sup>

## AIM AND OBJECTIVE

Aim & Objective of the present study was to analyze the risk factors associated with the occurrence of Dental trauma in the permanent anterior teeth of 7-12 yrs old children in Patna. It included an investigation of gender, over jet, lip competency and obesity. Etiology and type of Trauma was also included in the study.

## MATERIALS AND METHOD

The study was carried out in 50 children referred to outpatient Department of Paediatric and Preventive Dentistry, Buddha Institute of Dental Sciences and Hospital, Patna, Bihar.

A general screening was done by asking questions

regarding history and cause of Trauma. Intraoral periapical radiographs were taken of all subjects to confirm the root fractures. All children were examined in dental chair in upright position with sterilized mirror. Types of injuries were classified according to Ellis classification as follows<sup>2</sup>:

- Class I: Fracture of the crown involving the enamel only.
- Class II: Fracture of the crown involving the enamel and dentin.
- Class III: Fracture of the crown involving the pulp.
- Class IV: The traumatized tooth that becomes non-vital, with or without loss of crown structure.
- Class V: Total tooth loss.
- Class VI: Fracture of root, with or without loss of crown structure.
- Class VII: Displacement of tooth, with fracture of crown or root.
- Class VIII: Fracture of the crown en masse and its replacement
- Class IX: Fracture of Deciduous teeth (Not Included)

Lip competency was judged without the subject being aware of it and teeth are at rest. Incisal over jet was measured with metallic scale by measuring the distance between the incisal edge of upper central incisor and labial surface of lower incisor, when the child closed his teeth in centric occlusion.

BMI was calculated by  $Wt / Ht^2$  in  $kg/m^2$  and results were

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compared with BMI chart provided by NCHS and it was divided into:

- Underweight: Less than the 5<sup>th</sup> percentile (BMI<14)
- Healthy weight: 5<sup>th</sup> percentile to less than 85<sup>th</sup> percentile (BMI 14-18)
- At risk of overweight: 85<sup>th</sup> to less than 95<sup>th</sup> percentile (BMI 18-22)
- Obese: Equal to or greater than the 95<sup>th</sup> percentile (BMI>22)

Cause of injury was limited to following groups:

- Group 1: Falls and Collisions
- Group 2: Playing, pushing, tripping
- Group 3: Sports injury
- Group 4: Road accident
- Group 5: Biting hard object
- Group 6: Unknown Etiology

## RESULTS & DISCUSSION

This study identified that more no of boys suffered traumatic injuries than girls, boys: girl's ratio being 2.1:1. The fact that Boys suffer more dental injuries than girls can be explained on the basis of behavior and cultural factor. As boys are more aggressive and are engaged in more contact sports. 50 children had suffered 68 teeth injury, Out of which 34 had single teeth injury. Maxillary central incisor is the most common teeth to get Injured (75%). Ellis class I (51%) is the most common form of injury suffered by both male and female followed by type II injury (Fig 1,2). This finding concurrent with finding of S Rai(1998), M Cortes(2001), K Gupta(2002) & is in contrast with Garcia Godoy(1981).<sup>3-6</sup> There was increase percentage of class IV injury, may be because it was a hospital survey and children have reported only when the teeth become nonvital or have pain. No type VI injury was identified in this study.

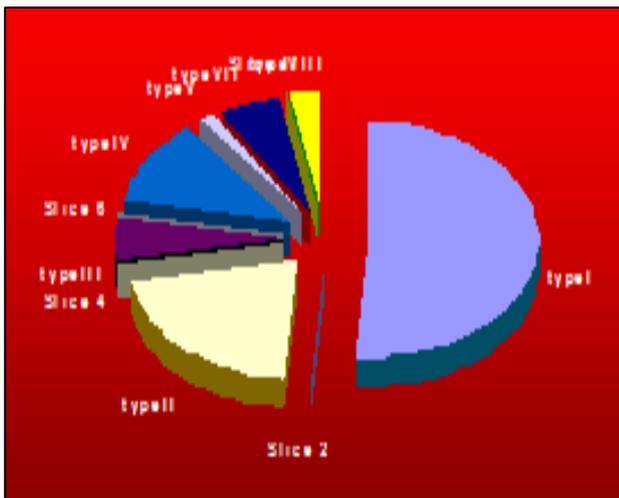


Fig no 1: Occurrence of different type of trauma

In the present study it was found that incompetent lips three times increases the chance of trauma as well as increases the severity of trauma as compared to competent lips. Of total 68 teeth injury 51(75%) were with incompetent lips (Fig No.3). This finding correlates

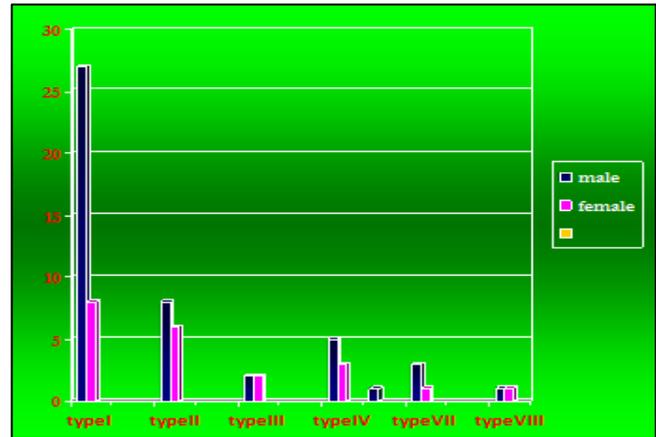


Fig No.2: Gender v/s type of injury

with the finding of W Marcenes (2001), E P Soriano (2004).<sup>7,8</sup> The majority of subjects in this sample show a normal overjet of 2-3mm (67.64 %). The result of present study shows that increased overjet was not associated with anterior teeth trauma but severity of trauma do increases with open bite(Fig No.4). This result was in accordance with study done in south Kanara dist (India) by K Gupta (1998).<sup>5</sup>

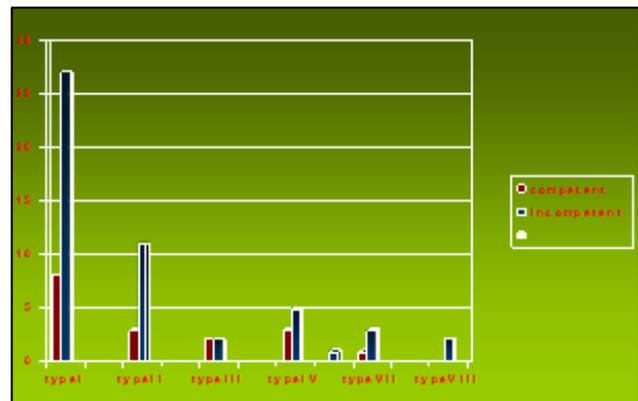


Fig No.3: Lip competency v/s Types of Injury

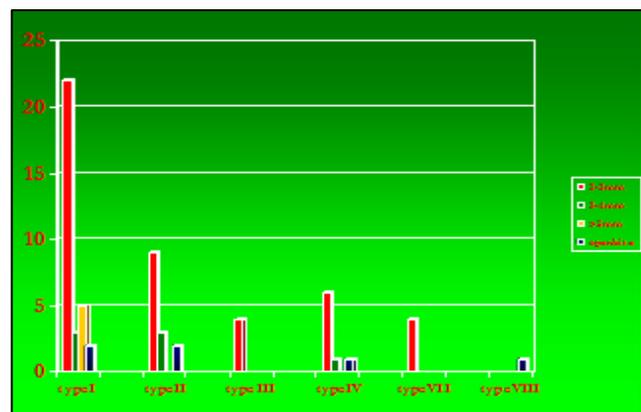


Fig No.4: Incisal overjet v/s type of injury

Obesity is an established risk factor for many diseases including diabetes, arteriosclerosis & hypertension in children abroad. However in India, where mal-nutrition rather than over-nutrition is a major health concern, this study shows that 19.1% children with traumatic dental

injuries have BMI>18(over wt), out of which only one subject showed BMI>22 (obese), which suggests that overweight/obesity is not much related to injuries (Fig No.5,6). However to draw any conclusion much bigger sample size with prevalence study is required. This result was in contrast to the study done in Italy & Brazil by S Petti (1997) & Nikolaou (2001), respectively.<sup>1,9</sup>

Fall was the main cause of Injury (34%) followed by push and sports injury and is in accordance with SB Rai (45.40%), EP Soriano (33.3%)<sup>3,10</sup> But of concern are 22% where the cause of injury was unknown, was it that the injury had occurred long time back or they really don't know that fracture had occurred (particularly when there is small enamel fracture), or the cause was violence and they avoided to mention it.

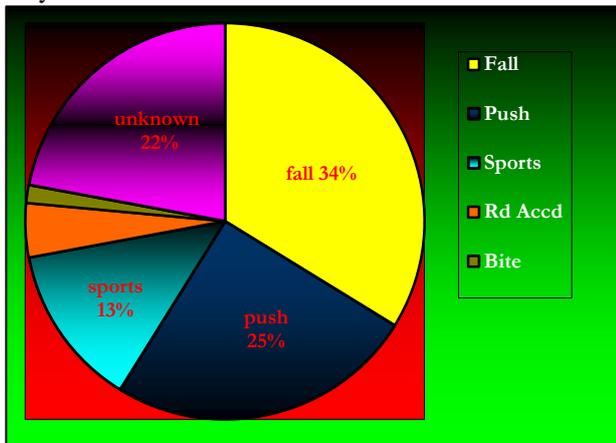


Fig No.5: BMI v/s Type of Injury

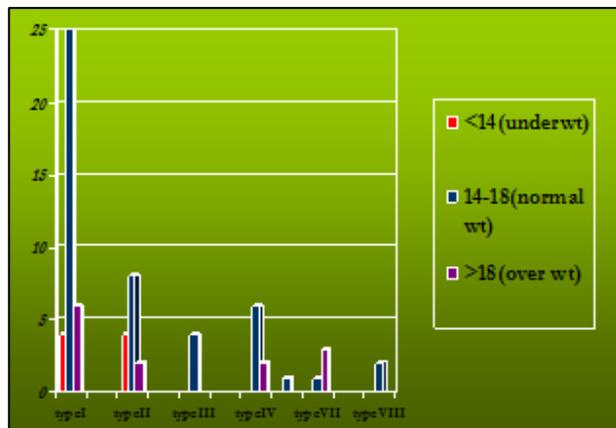


Fig No.6: Distribution of cause of injury

## CONCLUSION

However, trauma is always unpredictable but a proportion of injuries could be prevented if the risk factors were understood and public awareness is spread. Risk can be defined as probability of occurrence of the disease hence knowledge of risk factors is essential for effective prevention. Despite its increasing prevalence, emphasis is yet not placed on trauma prevention. Awareness of preventive measure can avoid many serious consequences. Hence the awareness of dental trauma, its management and prevention among parents, teachers and children at critical age is very important.

Preventive educational programme includes early correction of oral habits and teeth malocclusion. Awareness should be spread regarding use of mouth guard, face guard and protective helmet in sports activities, importance of early treatment in teeth injury which includes storage of avulsed teeth in proper medium, and to maintain vitality of pulp. Effective preventive strategies should also include advice on rounded end furniture's at home and proper lighting and railing of stairs and terraces. Proper counseling is required to reduce trauma caused due to aggressive behaviour i.e pushing/tripping.

## REFERENCES

- Petti S, Cairella G, Taristani G. childhood obesity: a risk factor for traumatic injuries to anterior teeth. *Endod Dent Traumatol* 1997; 13:285-288.
- Ellis RG. The classification and treatment of injuries to the teeth of children. 4<sup>th</sup> ed. Chicago: Year Book Publishers; 1960.
- Rai S, Munshi A K. Traumatic injuries to Anterior teeth among South Kanara school children- A prevalence study. *J Indian Soc Pedo Prev Dent* 1998; 16:2:44-51.
- Cortes MS, Marcenes W, Sheiham A. prevalence and correlates of traumatic injuries to the permanent teeth of school children aged 9-14 years in Belo Horizonte, Brazil. *Dent Traumatol* 2001; 17:22-6.
- Gupta K, Tandon S, Prabhu D, Traumatic injuries to the incisors in children of South Kanara district. A prevalence study. *J Indian Soc Pedo Prev Dent* Sept 2002;20(3):107-113.
- Garcia-Godoy, F., Sanchez, R. & Sanchez J. R: Traumatic dental injuries in a sample of Dominican school children. *Community Dent. Oral Epidemiol.* 1981;9:193-197.
- Marcenes W, Zabot NE, Traebert J. Socio-economic correlates of traumatic injuries to the permanent incisors in schoolchildren aged 12 years in Blumenau, Brazil. *Dent Traumatol* 2001; 17: 222-226.
- Soriano E P, Caldas Jr AF, Goes PSA. Risk factors related to traumatic dental injuries in Brazilian school children. *Dent Traumatol* 2004; 20:246-250.
- Nicolau B, Marcenes W, Sheiham A. prevalence, causes and correlates of traumatic dental injuries among 13 years old in Brazil. *Dent Traumatol* 2001;17:213-7.
- Soriano EP, Caldas Jr AF, Carvalho MVD, Amorim Filho HA. Prevalence and risk factors related to traumatic dental injuries in Brazilian school children. *Dent Traumatol* 2007; 23:232-240.

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