Prevalence of Traumatic Dental Injuries among Children less than 12 Years Old

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ABSTRACT

Dental trauma or traumatic dental injuries is an emerging dental problem. Several studies showed that the prevalence of dental trauma has increased in the past few decades. Dental trauma can result in fracture, displacement or loss of a tooth. Dental trauma has been seen more in children who are involved in sports. The aim of the current study was to assess the prevalence of traumatic dental injuries among children less than 12 years old. A retrospective cross-sectional study was conducted where case records were collected and analysed the data of 86000 patients between June 2019 and March 2020 from a private dental institution. The data collected included children below 12 years of age with a history of dental trauma to anterior teeth. The data was tabulated with parameters such as age, gender, fractured tooth, classification of fractured tooth based on ellis classification. Data was imported to SPSS for statistical analysis. Descriptive analysis and chi-square test were used to compare the results. All values were considered statistically significant at P value < 0.005. In this study, boys were more affected (61.5%) with dental trauma compared to girl children. The most common age group involved was 10 to 12 years (66.7%) where the common tooth involved was maxillary central incisors (71.8%), with class 3 being the most common fracture (43.6%). We suggest that educational programs should be organized for the school teachers, children, and parents to improve their knowledge and timely management of dental trauma.

INTRODUCTION

Dental trauma or traumatic dental injury (TDI) is an emerging dental problem which has been neglected in the past years (Juneja et al., 1957). It has been observed that one in ten children are affected with TDI, which require dental treatment. Trauma to an anterior tooth can affect the behaviour of a child; his progress in academics or school and majorly affects his daily life (Reddy, 2017; Swathy et al., 2015). This causes psychological problems in the child, which causes a change in their personality.

Many studies showed that the majority of dental
injuries involve the anterior teeth (Rai and Munshi, 1998; David et al., 2009; Gupta et al., 2011).

Studies showed that trauma to primary teeth might cause problems in the eruption of permanent teeth which may lead to malocclusion in the future (Bijella et al., 1990; Norton and Connell, 2012; Mahesh et al., 2014) The main etiology of TDI being accidents such as falls, fights, during sports. The predisposing risk factors are increased overjet, protrusion, open bite etc. (Bendo et al., 2012). Dental trauma does not cause only pain and possible infection, it includes alteration in physical appearance, emotional impacts, speech defects etc. (Sivaramakrishnan and Ramani, 2015)

Untreated fractured teeth that have sharp edges might lead to complications such as trauma to the oral mucosa, if left untreated chances of infection (Kumar et al., 2015) and malignant transformation increases (G Jayaraj et al., 2015; Sherlin et al., 2015; Jayaraj et al., 2015). In addition to this proper oral hygiene has to be followed to prevent the teeth from fracture, if hygiene isn’t maintained it is a risk factor for several chronic systemic diseases such as heart diseases (Swathy et al., 2015; Gupta and Ramani, 2016; Thangaraj et al., 2016), diabetes and cancer, including hepatocellular carcinoma (Gheena and Ezhilarasan, 2019; Viveka et al., 2016; Sridharan et al., 2017). Ankyloglossia and cleft lip indirectly contribute to TDI. (Shree, 2019; Sridharan et al., 2019). Studies showed that the prevalence of traumatic dental injuries has increased in the past few decades, having a prevalence rate between 6.1% to 58.6% (Juneja et al., 1957). Thus the aim of this study was to assess the prevalence of traumatic dental injuries among children below 12 years in a private dental institution, Chennai.

MATERIALS AND METHODS

A retrospective cross-sectional study was done under a university setting. This study was approved by the Institution’s review board. 2 reviewers were involved in this study. The case records were collected and analysed the data of 86000 patients between June 2019 and March 2020 from a private dental institution. The data collected included children below 12 years of age with a history of dental trauma to anterior teeth. The photographs of the oral cavity were taken perfectly, recorded and hence was able to diagnose the findings (Hannah, 2018). The data was then tabulated under parameters such as age, gender, fractured tooth, classification of the fractured tooth, which was based on Ellis and Davey classification. Total samples obtained were 39. Dependent variables were tooth involved and type of dental fracture. Independent variables were gender and age. The data was then imported to SPSS software which was used for statistical analysis where statistical tests used were chi-square and Pearson correlation, with p-value <0.05 and confidence interval-95%.

RESULTS AND DISCUSSION

TDI has been neglected in the past few years. TDI affects a child’s esthetics and their psychology. (Ningthoujam et al., 2019) Parents are not aware of the seriousness of TDI and are unaware of their management which was shown in many studies (Gurunathan et al., 2014; Gurunathan and Shanmugaavel, 2016; Vaishali and Gurunathan, 2017). There was an inconsistency in lack of knowledge regarding traumatic dental injuries of teeth among general dentists which were seen in the studies (Nandakumar and Nasim, 2017; Ravikumar et al., 2017).

Figure 1: Bar chart depicting the gender distribution of participants with traumatic dental injuries

From Figure 1, X-Axis Represents Gender and Y-Axis Represents Number of Children With Traumatic Dental Injuries. Male children (24) have a higher prevalence of traumatic dental injuries. From Figure 2, The X-Axis represents age groups of the study population and Y-Axis represents the number of children with Traumatic Dental Injuries, where 10-12 years was the most prevalent age group for traumatic dental injuries

From Figure 3, The X-Axis represents fractured teeth and Y-Axis Represents a number of teeth affected by trauma, 21 is more frequently involved tooth by these injuries (15). From Figure 4, The X-axis represents the type of fractured tooth, and Y-Axis represents a number of teeth affected by trauma, class 3

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A total of 39 patients were recorded with traumatic dental injuries, out of which 24 (61.5%) were males and 15 (38.5%) were females (Figure 1). Several studies also showed the same results (Pattussi et al., 2006; Reddy, 2017; Juneja et al., 1957). This may be due to the fact that boys tend to be more energetic and are involved in more vigorous outdoor activities, aggressive sports and violence. Within this study, the age group which was most commonly affected with trauma was 10-12 years (n=26, 66.7%) followed by 7-9 years (17.9%) then 3-6 years of age group (15.4%) (Figure 2). Previous literature suggests that as age increases, the chance of suffering from TDI increases because of the increased involvement of sports and violence, the data from these studies are in consensus with this parameter (Cavalcanti et al., 2009; Suhasini and Gheena, 2015; Saraswathi and Kumar, 2018).

The most commonly fractured tooth in this study was 21 (n=15, 38.5%) followed by 11 (n=13, 33.3%) where both are maxillary central incisors, thereby having a total of 71.8% prevalence (Figure 3). Similar findings were seen in previous studies done by Rai and Munshi (1998); Suhasini and Gheena (2015); Reddy (2017). The reason could be due to the position of the teeth, which makes them vulnerable to TDI’s. (Saraswathi and Kumar, 2018; Shree,
In this study, the commonest type of tooth fracture according to Ellis Davey classification was class 3 (n=17, 43.6%) followed by class 9 (n=9, 23.1%) (Figure 4). Most of the studies stated that class 1 was the most common fracture (Garcia-Godoy et al., 1986; Traebert et al., 2003; Juneja et al., 1957). It could be hypothesised that maxillary central incisors erupt at an early age and at the time of eruption they are more proclined, making it more vulnerable to fracture due to trauma. The correlation was done between age and the fractured tooth with p=0.001 which is less than 0.05, making it statistically significant (Figure 5). Limitations of the study were short sample size and a unicentred study.

CONCLUSION

Considering dental traumatic injuries in children, the prevalence was more among boys. Maxillary central incisors were commonly affected teeth due to trauma. Most affected age group was 10 to 12 years and the most common type of fracture seen was Ellis and Davey’s class 3. There was a significant association between the permanent maxillary central incisor fracture with the age group of 10 to 12 years. Teacher training health programs and school-based oral health programs should be organised for parents and children to improve their knowledge on the management of traumatic dental injuries and its prevention.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

Funding Support

The authors declare that they have no funding support for this study.

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