ORIGINAL ARTICLE

Pervasiveness of Traumatic Dental Injury Amongst Primary School Children in Public and Private Sector Schools

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ABSTRACT

Aim: The aim of the study was to assess the incidence of traumatic tooth injuries in primary school children.
Place and Duration: Conducted in Margalla Dental Hospital, Rawalpindi and Punjab Dental Hospital, Lahore for duration of six months from September 2019 to February 2020.
Methods: This is a cross-sectional study based on clinical trials. It was held in public and private schools of Rawalpindi and Lahore. 450 students aged 8 to 11 were selected. Traumatic Dental Injury wasrecorded using epidemiologic classification adopted by (WHO) 1992 and modified by Andreasen et al. The obtained data was collected systematically and then subjected to statistical analysis.
Results: The study found that the incidence of traumatic tooth injury (TDI) in Lahore primary schools was 15%, with the incidence being higher in public schools than in private schools (7.11% versus 6.22%), then higher in 9-year-olds (6.00%), then 8-year-olds (5.78%). The TDI incidence in the maxilla was greater than in the mandible (10.22% vs 0.89%), and the most frequently affected front teeth were the medial and lateral incisors. The most common traumatic injury was enamel fracture (45%).
Conclusion: This study reported a low prevalence of TDI among school-age children and recommended regular oral health education programs about the causes and methods of preventing TDI.
Keywords: primary school children, injuries, morbidity, teeth.

INTRODUCTION

Tooth Traumatic Injury (TDI) affects a variety of populations, including; infants, children and adolescents[1-2]. Andreasen hypothesized that dental injuries would outweigh caries and periodontal disease in the foreseeable future. TDI is an injury or trauma to the tooth and the supporting structure. Depending on its severity, it can affect all kinds of tooth structures such as enamel, dentin, and pulp; It can also affect the supporting structure, e.g., periodontium and alveolar process[3]. Traumatic tooth injuries can lead to harmful consequences, such as necrosis of a diseased tooth or sinus canal. TDI is very widespread and also influences the aesthetics, functionality, comfort, self-confidence and everyday life of a child[4-5]. These changes are more prominent in the upper front teeth than in the lower incisors and can cause difficulties that may affect the child; slurred speech, limited biting and poor appearance. Malocclusion may occur in a short time due to the loss of proximal and incisal contacts[6]. Awareness of tooth injuries in the community is very low and increases the risk of injury due to a lack of adequate information. However, some healthcare professionals, including dentists, underestimate the incidence of tooth injuries and focus on treatment rather than prevention[7-8]. There were several differences in the TDI studies, such as "type of study, trauma classification, methodological differences, limited age groups and jobs, and geographic and behavioral differences between countries[9]." Noori and Al-obaidi conducted a study of 4,015 children (6-13 years old) in Soleimani, northern Iraq, and found a low incidence of dental injuries among them (6.1%). The upper middle incisors were the teeth most affected by tooth injuries. Anokla et al. He conducted another study on 13,200 children aged 6-11 years old in Belgaum, India, and found a prevalence among them (14.74%). Men are more likely to develop TDI than women and have a high incidence of enamel fractures without pulp exposure[10]. In addition, Tasneem S et al. Conducted another study of 1,600 children 12 years of age in Kashmir, Pakistan, and found a low incidence of upper tooth injuries (9.3%), with men being more affected than women. El-Kalla et al. In his study of 11,700 school-age children (11-14 years old) in Mansoura, Egypt, he found that the TDI incidence was low (13.6%)[11]. Moreover, men were more affected than women. They found a higher incidence of enamel fractures than dentin fractures. According to WHO, TDI is a serious public health problem and research in this area is insufficient in most countries. Therefore, a study was conducted in Lahore to measure the incidence of dental trauma among primary school children.

MATERIALS AND METHODS

Based on a cross-sectional study, this study was conducted in Margalla Dental Hospital, Rawalpindi and Punjab Dental Hospital, Lahore for duration of six months from September 2019 to February 2020. A total of 450 children aged 8 to 11 were randomly selected from public and private schools in the city of Lahore. The inclusion criteria were boys with permanent anterior teeth and no systemic disease, while the exclusion criteria were boys and girls with temporary anterior teeth or people with caries or other dental defects. Parental consent was obtained prior to the study. Ethical approval was obtained from the Ethical committee. (WHO) Special overview page based on the epidemiological classification adopted in 1992 and modified by Andreasen et al was used. Over 470 exam pages were prepared and over 480 copies were printed. The inspection procedures were carried out by the same

auditor to exclude any inter-individual differences. The research of children was carried out in a school or clinic, and other appropriate rooms were used for the research. The children were examined for cross-contamination using appropriate personal protective equipment and disposable test kits. After collecting information of 450 students in schools, we classify them by type of injury, type of school and age of the students. All data was processed and analyzed using SPSS (Social Statistics Sciences Package), version 21.0. An independent test (T-Test) was used to compare Traumatic Tooth Injury (TDI) between public and private schools. The One Way Anova method was used for more than 2 samples and the Post Hoc test was used for multiple comparisons.

RESULTS

After the study, three children were excluded because they were younger than the estimated age under study. Table 1 show prevalence among different school age children (TDI).

Children in public schools (TDI) are more subjects than in private schools, but the difference is statistically insignificant (P = 0.074). 9 years is the most affected and 11 is the least affected. The difference between all age groups was statistically insignificant (p = 0.3). On the other hand, there was a large significant difference (P = 0.0001) between all the different teeth examined with the highest incidence recorded for the combination of central and lateral incisors. The highest incidence was recorded for a single tooth for the central incisor, while the dog was the tooth least affected. There was also a large significant difference (P = 0.0001) between the occurrence of the stiffness recorded for the maxilla and the maxilla and the mandible. This important difference was present in all comparisons; between maxilla and mandible, and between either and a combination of both. The incidence of severity (TDI) among affected children is shown in Table 2.

Variable		Prevalence (%)
School Types	Private N= 14	6.22%
	Public N= 22	7.11%
Ages	8- Y N= 26	5.78%
	9- Y N= 27	6.00%
	10-Y N= 8	1.78%
	11- Y N= 2	44.00%
Teeth	Central N= 22	4.89%
	Lateral N= 13	2.89%
	Central & lateral N= 24	5.30%
	Canine N= 4	0.89%
Arches	Maxilla N= 46	10.22%
	Mandible N= 4	0.89%
	Maxilla& Mandible N= 10	2.22%

Trauma scores	Enamel Fracture	En/Dentine Fracture	EN / Dentine with Pulp Exposure	Missing of Tooth Structure due to Trauma	Discoloration of Toothdue to Trauma	Sinus Tract Formation due to Trauma
Number	27	5	5	18	3	2
Prevalence (%)	45.0%	8.3%	8.3%	30.0%	5.0%	1.7%

Of all malformations, enamel fractures were first with the highest frequency (45%), and with the lowest frequency (1.7%) of sinus formation.

DISCUSSION

This could have a negative impact on children's future oral health (TDI). A full and healthy dentition has a positive effect on the aesthetics, speech and mental state of children[12]. Preventing tooth injuries, preserving healthy teeth, and restoring broken teeth should be one of the main concerns of dentists. This study was conducted on boys aged 8-11 because they are more prone to traumatic tooth injuries than girls of the same age. Boys of this age are more active than girls, engage in intense sports and play in dangerous places without protection. Few epidemiological studies have been conducted to quantify the incidence of traumatic tooth injuries in the city of Lahore, so this study was conducted to compensate for this drawback. This study showed a low incidence of traumatic tooth injuries (13.6%) among primary school children, and this was the result of El-Kalla et al[13]. Other studies also support our results because they showed a low incidence (TDI) (less than 15 %). On the other hand, the results did not agree with the incidence reporting results of Traebert et al (18.9%). Moreover, our result did not agree with Rouhani et al as they reported a prevalence rate (22.6%) and this difference could be attributed to a difference in their diagnostic criteria[14]. In addition, the nature of the area under study may influence the results. In addition, Gabriela et al. There was a high incidence of dental trauma in children 5 to 6 years of age (52.3%), a difference that can be attributed to the age of the samples as their samples were 5 to 6 years old. Most children of this age may experience unstable movement, resulting in recurrent falls and subsequent tooth fractures. Regarding age, a high incidence (TDI) was found in 9-year-old children (6.04%), and Tumen et al. And Anokla et al. However, this result was not consistent with Noori and Al-obaidi because they

reported that their children (10-11) years were older than (8-9) years. They found that increasing activity with age may result in more frequent injuries. Regarding the affected dental arch, the maxillary arches reported a higher incidence of TDI than the mandible (10.8% vs 0.76), which has been compared with many previous studies[15-16]. Since the front teeth of the lower jaw are usually covered by the teeth of the upper jaw, the cause is obvious, so the jaw acts as a protective barrier for the upper jaw. In terms of severity (TDI), the highest incidence was found only in enamel fractures without dentin involvement (**48.1%).** As enamel is the outer shell of the teeth, it is the most sensitive part of the tooth that is exposed to external injuries and is therefore the part most affected[17-18]. This result is compared with Traebert et al., Gabriela et al., El-Kalla et al[19-20]. A Tumen et al. In turn, traumatic injury with sinus formation is the lowest (1.9). This low incidence can be attributed to the low incidence of pulp exposure from dental trauma, and in such cases, prompt drug therapy may prevent the disease from progressing to sinus formation[21-22].

CONCLUSION

The incidence of traumatic tooth injuries in school-age children is low, with the incisor being the most affected central incisor. Children from 9-year-old public schools are most affected. Finally, oral health education programs should be conducted on a regular basis to increase knowledge of the causes and methods of preventing TDI among school-age children.

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