

Original Research

Predisposing factors for traumatic dental injury in primary teeth and post-trauma care

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ABSTRACT:

Background: To evaluate the predisposing factors for traumatic dental injury in primary teeth and post-trauma care.

Materials & methods: A total of 50 patients were enrolled. Out of the total, 30 were females and 20 were males. The age group included was 3 to 5 years. A complete history was taken. Overjet was measured. The classification was used for clinical diagnosis of TDI: enamel fracture, enamel-dentin fracture, complicated crown fracture, extrusive luxation, lateral luxation, intrusive luxation and avulsion. A visual assessment of tooth discoloration was also performed. Data was collected and results were analysed using SPSS software. **Results:** A total of 50 patients were enrolled. The maxillary central incisors were the most affected (84%), followed by lateral incisors (12%). The predictor for seeking dental care following TDI was parent's age >35 years. Household income and overjet were associated with TDI. **Conclusion:** Enamel fracture was the most common sign of TDI. Children with an increased overjet suffer more TDIs.

Keywords: Trauma, dental injuries, primary teeth.

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INTRODUCTION

Traumatic dental injuries (TDIs) are a public health concern with high prevalence rate in the child population. ¹ It affects from 8% to 62.1% of children between 2 and 5 years old, which is a critical time for the development of motor coordination and body balance turning TDIs very common events. ^{2,3} Moreover, their occurrences are unexpected causing negative esthetic, physical, and psychological repercussions impacting on patient's quality of life. ⁴ TDI can cause pain, have permanent esthetic and functional impacts, disturb the development of the permanent successors and exert a negative psychological effect on both children and parents. ⁵ This event is usually sudden, unexpected and accidental and often requires dental care. ⁶ In general, laypersons are unaware of the risks of trauma and possible harm to the primary and permanent dentition or what can be done to avoid such situations. ⁵ Failure to seek treatment following the occurrence of TDI has also been reported. ⁷ Some of the reasons for this include the temporary nature of primary teeth, the fact that dental trauma is not considered a disease and limited access to the dental care system, especially

among lower income groups. ⁷ However, there is a gap in the literature regarding the investigation of factors associated with the failure to seek treatment for trauma to the primary dentition.

The time elapsed between dental trauma and dental care is of paramount importance. The consequences of trauma to the primary dentition are related to the development of pulp sequelae which may vary from root resorption, ankyloses, pulp canal obliteration to pulp necrosis. ^{8,9} Crown discoloration in primary teeth may be considered an early sign of pulp degeneration. ¹⁰ Hence, this study was conducted to evaluate the predisposing factors for traumatic dental injury in primary teeth and post-trauma care.

MATERIALS & METHODS

A total of 50 patients were enrolled. Out of the total, 30 were females and 20 were males. The age group included was 3 to 5 years. A complete history was taken. Overjet was measured. The classification was used for clinical diagnosis of TDI: enamel fracture, enamel-dentin fracture, complicated crown fracture, extrusive luxation, lateral luxation, intrusive luxation and avulsion. A visual assessment of tooth

discoloration was also performed. Parents consent was taken. Socio-economic status of parents was taken under consideration. Data was collected and results were analysed using SPSS software.

RESULTS

A total of 50 patients were enrolled. The maxillary central incisors were the most affected (84%), followed by lateral incisors (12%). Only 2 affected teeth (4%) were mandibular incisors. Enamel fracture was the most common type of TDI (60%), followed by tooth discoloration (20%), more than one trauma to same tooth (10%), tooth avulsion (2%) and luxation (2%).

Table: Frequency distribution table

Variables	Frequency (n) (%)	
Type of trauma		
Enamel fracture	30	60
Enamel+ dentin fracture	3	6
Luxation	1	2
Avulsion	1	2
Tooth discoloration	10	20
More than one type of trauma	5	10
Teeth affected		
Maxillary central incisors	42	84
Maxillary lateral incisors	6	12
Mandibular incisors	2	4

Predictors for TDI in the primary dentition were household income and overjet >2 mm. The predictor for seeking dental care following TDI was parent's age >35 years. Household income and overjet were associated with TDI. Among children having suffered TDI, parent's age is a crucial determinant for seeking dental care.

DISCUSSION

The maxillary central incisors are in an exposed position in the dental arch and are more prone to be affected by traumatic injury in both the primary and permanent dentitions.¹¹ The assessment of TDI in primary dentition is important due to its high potential to cause periapical sequelae, which may adversely affect permanent teeth development.¹² Hence, this study was conducted to evaluate the predisposing factors for traumatic dental injury in primary teeth and post-trauma care.

In the present study, a total of 50 patients were enrolled. The maxillary central incisors were the most affected (84%), followed by lateral incisors (12%). Only 2 affected teeth (4%) were mandibular incisors. Enamel fracture was the most common type of TDI (60%), followed by tooth discoloration (20%), more than one trauma to same tooth (10%), tooth avulsion (2%) and luxation (2%). A study by Siqueira MB et al, investigated predisposing factors for traumatic dental injury (TDI) in the primary dentition and seeking of dental care after the occurrence of TDI. The prevalence of TDI was 34.6%. The most common type of TDI was enamel fracture (55.0%). The central

incisors were the most frequently affected teeth (87.5%). Predictors for TDI in the primary dentition were household income >US\$312.50 (PR: 1.355; 95% CI: 1.050-1.724) and overjet >2 mm (PR: 1.539; 95% CI: 1.219-1.942).¹³

TDIs in primary teeth may cause some complications from minimal effects to significant consequences to both dentitions. The most critical period for the development of disorders in central incisors ranges from 4 months to 4 years of age.¹⁴ A study performed by Lopes et al. showed that 74.1% of traumatized anterior primary teeth did not present any significant injury at the moment of trauma, requiring only clinical and radiographic follow-up.¹⁵ Health promotion programs have positive effects on oral health and patient's quality of life. Besides that, the patient can be closely monitored. In terms of clinical and cost-benefits, preventive approaches and oral health promotion programs are more efficacious than dental care.¹⁶

In the present study, predictors for TDI in the primary dentition were household income and overjet >2 mm. The predictor for seeking dental care following TDI was parent's age >35 years. Household income and overjet were associated with TDI. Among children having suffered TDI, parent's age is a crucial determinant for seeking dental care. Another study by Viegas CM et al, carried out on 388 male and female Brazilian preschool children between 60 and 71 months of age. The prevalence of TDI was 62.1%; 61.7% of the teeth were affected by enamel fracture. Statistically significant associations were found between TDI and increased overjet [OR = 2.24, 95% CI = 1.11- 4.55] and anterior crossbite [OR = 0.38, 95% CI=0.17-0.87]. No statistically significant associations were found between TDI and number of people in the household, family income, social vulnerability, parents/caregivers' schooling, lip competence, overbite, anterior open bite and dental caries (p>0.05).¹⁷ Crown discoloration is also an adverse outcome after TDIs, affecting 25.6%-52.4% of the teeth.¹⁸ TDIs in primary teeth can also affect the permanent dentition with a high risk to cause developmental disturbances in the permanent tooth. The apex of the primary tooth is in a very close relationship with the follicle of the successor permanent tooth.¹⁹ After a 6-months clinical and radiographic follow-up, the primary maxillary left central incisor presented crown discoloration and periapical bone rarefaction as late complications of the dental trauma.

CONCLUSION

Enamel fracture was the most common sign of TDI. Children with an increased overjet suffer more TDIs.

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