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ORIGINAL ARTICLE

Assessing the Knowledge of Parents and Guardians about Dental Trauma in Children During the COVID-19 Pandemic: A Pilot Study

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ABSTRACT

Objective: To evaluate the knowledge of parents or guardians about dental trauma in children during the COVID-19 pandemic. **Material and Methods:** After signing the Free and Informed Consent, the children's parents answer the online questionnaires about dental trauma during the COVID-19 pandemic. The data was analyzed using Kruskal-Wallis and Mann-Whitney tests. **Results:** Of a total of 89 questionnaires, only 84 were answered, and 75.3% experienced dentoalveolar trauma, of which 65.5% exhibited fractures. Most affected teeth (92.2%) were deciduous, and 7.8% were permanent. Furthermore, 53.73% of the trauma involved anterior teeth, only 7.46% affected posterior teeth, and 4.48% included anterior and posterior teeth. Most participants (74.2%) had never received information about dental trauma, and 25.8% had received prior instruction. Many (74%) did not take the affected tooth or fragment to the emergency room. Following the accidents, 38.2% feared brushing their children's teeth, and 28.1% did not. **Conclusion:** Dentoalveolar trauma in children is common and occurs more often at home or school. Dental trauma affected the deciduous teeth, especially the anterior teeth. Many parents lack knowledge on how to respond to and care for dental trauma in children. Providing informative guidance to parents and guardians is essential for preventing and managing childhood dental injuries, even during the COVID-19 pandemic.

Keywords: Wounds and Injuries; Dentition; Tooth, Deciduous.

Introduction

Trauma in deciduous teeth is highly prevalent, especially in young children. Dental trauma is an injury to teeth, supporting structures, and adjacent soft tissues, and it may be direct or indirect, thermal, chemical, or physical, and worsen according to the intensity, type, and duration [1]. Besides the consequences to deciduous teeth, due to the proximity of the deciduous tooth apex to the permanent tooth germ [2,3].

The primary cause of dental trauma is domestic accidents, such as falls from the stairs or baby strollers, followed by outdoor activities, such as riding a bicycle or scooter and playing tag [4,5]. Anatomical factors are also related to dental trauma, such as the absence of lip sealing, overjet, mouth breathing, anterior open bite, protrusion of upper incisors, and non-nutritive sucking habits [5-8]. Periodontal ligament injuries are the most common injuries in cases of dental trauma, varying from a simple concussion to complete tooth avulsion [6,7]. The prevalent sequelae in both dentitions reported in the literature are enamel discoloration, canal obliteration, pulp necrosis, root resorption, inflammatory resorption, ankylosis, gingival recession, and regarding the primary teeth, in some cases premature loss [7].

Depending on the severity and location of the trauma, cases in anterior teeth may harm children's quality of life, generating physical and emotional consequences that may extend into adulthood when injuries affect permanent teeth directly or through successor tooth germ damage [5,8].

Dentists are not always available in the emergency room to manage dental trauma [9]. Therefore, physicians and dentists must be prepared to deal with these cases, as they are urgent procedures due to dental involvement and the emotional experience of children and their parents and guardians [10]. The anxiety of children and their parents or guardians must be lowered after trauma while maintaining a structured approach with supportive therapies to reduce pain and the risk of infection in the affected area [11].

Therefore, it is vital to know how, when, and where these accidents occurred and the knowledge level of parents or guardians about handling accidents involving children's teeth and gingival tissue. This scenario became evident during the COVID-19 pandemic when many parents avoided taking their children to the hospital or dental office after the dental trauma, and the importance of the teledentistry service in assisting the parents immediately after the accident [12]. So, this study evaluated the knowledge of parents or guardians about dental trauma in children during the isolation measures during the COVID-19 pandemic.

Material and Methods

Study Design and Sampling

In this cross-sectional study, a total of 89 online questionnaire were forwarded to children's parents and/or guardians containing questions about childhood dental trauma. They were asked about the prevalence, sequelae and knowledge of dental trauma in childhood.

Data Collection

For research purposes, an online questionnaire of 10 questions was based on the Gonçalves et al. [8] and Ilyas et al. [12] studies and adapted by the authors to be used during the confinement period of the COVID-19 pandemic, starting from February through May 2021. The Google Forms platform was used to create the online questionnaire concerning traumatic dental injuries (TDIs) and their management in children and to assess the influence of TDI experience on parents' knowledge of emergency procedures and questions about the management of dental trauma.

Statistical Analysis

The data were analyzed using GraphPad Prism software (GraphPad Software, La Jolla, CA, USA). After the normality and homoscedasticity tests, using the Shapiro-Wilk and Levene tests, respectively, the non-normal data were submitted to the Kruskal-Wallis and Mann-Whitney tests. The significance level was 5% for all tests.

Ethical Clearance

The study was approved by the Ethical Committee of Santo Amaro University (no. 4.417.941), São Paulo, Brazil. All parents/guardians were invited to participate. Only the participants who signed the Free and Informed Consent Form were included in the study.

Results

Only 84 of the 89 parents/guardians agreed to participate, and the online questionnaires were collected from February through May 2021 during the isolation measures during the COVID-19 pandemic. The children of the evaluated participants (n=89) were four to seven years old (31.5%), eight to 11 years (29.2%), zero to three (21.3%), and twelve to 14 years (18%) (p>0.05). The locations where children most used to play were parks, friends' houses, or outside (p<0.001) (Table 1). At school, 69.7% of participants played every day, and only 30.3% played only once a week (p<0.001). At home, most children played every day, with a statistical difference from those playing once a week and only on the weekends (p<0.001).

Table 1. Places and frequency of children's play.

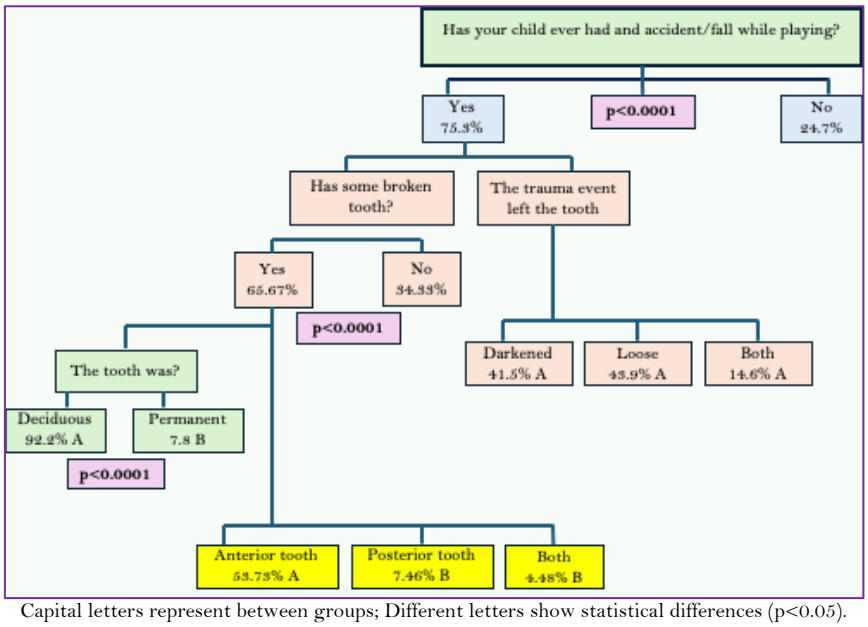
Place	Every Day %	Once a Week %	Only on the Weekend %	Don't Play %	p-value
Park	16.9^{B}	22.5^{B}	60.7^{A}	-	<0.0001
School / College	69.7^{A}	30.3^{B}	-	-	<0.0001
House of Friend or Relatives	7.87^{B}	24.72^{B}	65.17^{A}	2.25^{C}	<0.0001
At Home	95.51^{A}	3.37^{B}	1.12^{B}	-	<0.0001
Outside	7.87^{B}	39.33^{B}	52.81^{A}	-	<0.0001

Capital letters represent the comparison between the columns according to the line; Different letters show statistical differences (p<0.05).

Regarding the sequence and percentage of dental trauma events (Figure 1), 75.3% of children had suffered an accident or fell while playing, and 24.7% had never suffered an accident (p<0.0001). Of these 75.3%, more than half broke a tooth (65.3%) compared to 34.3% who had not experienced tooth fractures. Falls or accidents affected 92.2% of primary teeth and only 7.8% of permanent teeth (p<0.0001). Injuries occurred in 53.73% of anterior teeth, with a statistical difference from 7.46% in posterior teeth and 4.48% in anterior and posterior teeth (p<0.0001). The sequelae of these traumatized teeth were discoloration (41.5%), loss (43.9%), or both (14.6%).

Table 2 shows that most (74.2%) participants had not received information about dental trauma compared to 25.8% who had received prior instruction (p<0.0001). After the dental trauma, regarding both dentitions, 45.1% of participants decided to take the child to an emergency dental care service, showing a statistical difference between those who attended the hospital immediately (15.7%) (p=0.0037) and those who waited to schedule an appointment (39.2%). When questioned on the reason for choosing the described actions, 58% of respondents called a dentist, 32% had consulted neighbors/friends/relatives, 10% searched Google, and 2% referred to leaflets (p<0.0001). Most participants (74%) did not take the tooth or fragment to the emergency room, compared to 26% who remembered to collect the tooth or fragment (p<0.0001). In the follow-up after trauma, 70.8% of children used fluoride compared to 29.2% who did not (p<0.0001). Tooth brushing after dental

caused fear in 38.2% of parents or guardians, followed by 33.7% with relative fear, and 28.1% reporting no fear during tooth brushing (p>0.05).



Capital letters represent between groups; Different letters show statistical differences (p<0.05).

Figure 1. The sequence and percentage of dental trauma events.

Table 2. Management of dental trauma by parents or guardians.

Questions	%	p-value
Did you receive any information regarding dental trauma?		
Yes	74.2	<0.0001
No	25.8	
After the accident, where did you take the children?		
Hospital	15.7^{B}	0.0037
Dental Practice	45.1^{A}	
After stopping the bleeding, make an appointment with the dentist	39.2^{AB}	
Why did you take this action?		
Google it	10.0^{B}	<0.0001
Ask to a friend/ neighbor/relative	32.0^{A}	
Call a dentist	58.0^{A}	
Saw it in the flyer	2.0^{B}	
Was the broken tooth or the piece collected?		
Yes	26.0	<0.0001
No	74.0	
After the trauma event, did you use fluoride toothpaste?		
Yes	70.8	<0.0001
No	29.2	
Would you be afraid to brush your child's teeth after dental trauma?		
Yes	38.2	>0.05
No	28.1	
More or less	33.7	

Capital letters represent the comparison between the columns according to the line; Different letters show statistical differences (p<0.05).

Discussion

Domestic accidents involving dentoalveolar trauma have a higher incidence in children from zero to six years old [4,5,7], similar to this study in which ages zero to seven prevailed. This study was conducted during the confinement period of the COVID-19 pandemic. Hence, most of the children were playing at home. Ilyas et

al. [12] found the same results, showing that dental trauma in children significantly increased in domestic environments, many of whom were treated via tele dentistry to avoid going to hospitals overloaded due to the rise in COVID-19 cases.

This study found that anterior teeth were the most affected by dental trauma, which agrees with the literature [5,6,8,13,14]. Injuries involving the supporting tissues, such as dislocation, affect the deciduous dentition more often due to the more trabeculated alveolar, which can cause dental element displacement and sequelae such as losses, darkening, or both [3,15], as observed in this study.

The lack of information may delay assistance, causing pain, more severe symptoms, and a worse prognosis for the teeth involved in dental trauma [8]. Moreover, parents or guardians are not prepared to prevent or reduce future sequelae [10]. Most participants in this study had never received information about dental trauma. The behavior of the parents or guardians ranged from seeking immediate help from a dentist, attending an emergency dental care service, or contacting a private dentist. Therefore, it is crucial to inform parents or guardians about this subject so they can identify and reduce the risks of dental trauma, also teaching them first-aid procedures for the injured child to reduce or prevent sequelae [11,14].

In some cases, bonding the dental fragment after trauma is feasible for a perfect adaptation to the traumatized dental element [16]. However, many parents or guardians forget or do not know how to store the tooth or fragment [17]; the same results were found in this study.

The days following trauma showed that most participants used fluoride toothpaste in children. Still, they were divided into brushing and not brushing the children's teeth, demonstrating the relevance of dentists during and especially after the dental trauma to provide crucial information for following up the injury.

The limitations of this study included the necessity of remote data collection due to the social isolation measures imposed during the COVID-19 pandemic. This situation presented challenges in promptly addressing inquiries from parents and guardians. For future studies, a modified approach should be considered, focusing directly on the moment of trauma and the corresponding procedures.

Conclusion

Dentoalveolar trauma in children is common and occurs more often at home or school. Dental trauma affected the deciduous teeth, especially the anterior teeth. Many parents lack knowledge on how to respond to and care for dental trauma in children. Providing informative guidance to parents and guardians is essential for preventing and managing childhood dental injuries, even during the COVID-19 pandemic.

Authors' Contributions

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All authors declare that they contributed to a critical review of intellectual content and approval of the final version to be published.

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None.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

References

[1] Bendo CB, Paiva SM, Oliveira AC, Goursand D, Torres CS, Pordeus IA, et al. Prevalence and associated factors of traumatic dental injuries in Brazilian schoolchildren. J Public Health Dent 2010; 70(4):313-318. https://doi.org/10.1111/j.1752-7325.2010.00190.x

[2] Feldens CA, Borges TS, Vargas-Ferreira F, Kramer PF. Risk factors for traumatic dental injuries in the primary dentition: concepts, interpretation, and evidence. Dent Traumatol 2016; 32(6):429-437. https://doi.org/10.1111/edt.12281

[3] Costa VP, Goettems ML, Baldissera EZ, Bertoldi AD, Torriani DD. Clinical and radiographic sequelae to primary teeth affected by dental trauma: A 9-year retrospective study. Braz Oral Res 2016; 30(1):S1806-83242016000100702. https://doi.org/10.1590/1807-3107BOR-2016.vol30.0089

[4] Sanabe, EM, Cavalcante LB, Coldebella CR, Abreu-e-Lima FCB. Urgências em traumatismos dentários: classificação, características e procedimentos. Rev Paul Pediatr 2009; 27(4):447-451. https://doi.org/10.1590/S0103-05822009000400015 [In Portuguese].

[5] Patnana AK, Chugh A, Chugh VK, Kumar P, Vanga NRV, Singh S. The prevalence of traumatic dental injuries in primary teeth: A systematic review and meta-analysis. Dent Traumatol 2021; 37(3):383-399. https://doi.org/10.1111/edt.12640

[6] Zaleckiene V, Peciuliene V, Brukiene V, Drukteinis S. Traumatic dental injuries: etiology, prevalence and possible outcomes. Stomatologija 2014; 16(1):7-14.

[7] Eissa MA, Mustafa Ali M, Splieth CH. Dental trauma characteristics in the primary dentition in Greifswald, Germany: A comparison before and after German unification. Eur Arch Paediatr Dent 2021; 22(5):783-789. https://doi.org/10.1007/s40368-021-00606-5

[8] Gonçalves BM, Dias LF, Pereira CDS, Ponte MXF, Konrath AC, Bolan MDS, et al. Impact of dental trauma and esthetic impairment on the quality of life of preschool children. Rev Paul Pediatr 2017; 35(4):448-455. https://doi.org/10.1590/1984-0462/;2017;35;4;00011

[9] Keels MA, Section on Oral Health, American Academy of Pediatrics. Management of dental trauma in a primary care setting. Pediatrics 2014; 133(2): e466-476. https://doi.org/10.1542/peds.2013-3792

[10] El-Kalla IH, Shalan HM, Bakr RA. Impact of dental trauma on quality of life among 11-14 years schoolchildren. Contemp Clin Dent 2017; 8(4):538-544. https://doi.org/10.4103/ccd.ccd_428_17

[11] Day PF, Flores MT, O'Connell AC, Abbott PV, Tsilingaridis G, Fouad AF, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: Injuries in the primary dentition. Dent Traumatol 2020; 36(4):343-359. https://doi.org/10.1111/edt.12576

[12] Ilyas N, Green A, Karia R, Sood S, Fan K. Demographics and management of paediatric dental-facial trauma in the 'lockdown' period: A UK perspective. Dent Traumatol 2021; 37(4):576-582. https://doi.org/10.1111/edt.12667

[13] De Amorim L de F, da Costa LR, Estrela C. Retrospective study of traumatic dental injuries in primary teeth in a Brazilian specialized pediatric practice. Dent Traumatol 2011; 27(5):368-373. https://doi.org/10.1111/j.1600-9657.2011.01011.x

[14] Lembacher S, Schneider S, Lettner S, Bekes K. Prevalence and patterns of traumatic dental injuries in primary teeth: A 3-year retrospective overview study in Vienna. Clin Oral Investig 2022; 26(2):2085-2093. https://doi.org/10.1007/s00784-021-04190-2

[15] Goettems ML, Thurow LB, Noronha TG, da Silva Júnior IF, Kramer PF, Feldens CA, et al. Incidence and prognosis of crown discoloration in traumatized primary teeth: A retrospective cohort study. Dent Traumatol 2020; 36(4):393-399. https://doi.org/10.1111/edt.12552

[16] Garcia FCP, Poubel DLN, Almeida JCF, Toledo IP, Poi WR, Guerra ENS, et al. Tooth fragment reattachment techniques: A systematic review. Dent Traumatol 2018; 34(3):135-143. https://doi.org/10.1111/edt.12392

[17] Gunwal MK, Bagda K, Gupta S, Oak AM. Knowledge, awareness and perception amongst dental practitioners towards natural tooth fragment reattachment procedures in clinical practice: A cross-sectional survey. Dent Traumatol 2021; 37(6):779-785. https://doi.org/10.1111/edt.12699