

Original Article

Oral Health of Children and Adolescents Victims of Maltreatment Housed in Foster Care: A Case-Control Study

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Abstract

Objective: To compare the oral health condition of children and adolescents victims of maltreatment housed in foster care with that of children and adolescents that have not been victims of maltreatment. **Material and Methods:** This is a case-control study with children and adolescents that have not been victims of maltreatment. In Group 1, the population was composed of 56 children victims of abuse housed in foster care. Group 2 was composed of an equal number of children and adolescents attending pediatric dentistry clinic at UFPI. Both groups were matched for sex and age. Data collection was divided into two phases: questionnaire application to children's parents / guardians and clinical examination of the oral cavity. The questionnaire was composed of questions about socioeconomic variables, reasons for admission in the foster care and oral health-related habits. To assess the oral health condition, epidemiological indexes dmft, DMFT and Gingival Bleeding Index (GBI) were determined and soft tissues were inspected to evaluate possible maltreatment sequelae. **Results:** Neglect was reported as the major cause of entry into the foster care (84%). There were no statistically significant differences between the mean dmft ($p=0.240$), DMFT ($p=0.862$) and GBI ($p=0.275$) values between groups evaluated. No sequelae or lesions characteristic of physical aggression were found; however, all individuals have been institutionalized for more than four months. **Conclusion:** Child and adolescents victims of maltreatment showed oral health condition similar to that of individuals that have not been victims of maltreatment.

Keywords: Child Abuse; Oral Manifestations; Liability Legal; Oral Health.

Introduction

Child abuse includes neglect, physical, emotional or sexual abuse against children by older people and results in body lesions or significant emotional damage, interfering with the growth and development process [1-3].

Children victims of physical abuse may show lesions caused by physical injury [4-8]. Psychological abuse includes acts that may alter the emotional behavior of children to lead them to social isolation caused by rejection, domestic and / or social humiliations. Sexual abuse involves any kind of sexual exploitation of children and neglect refers to damage or risks from the lack of basic and essential care [7].

Child dental neglect is characterized by lack of care of parents and / or guardians to seek dental care for children with apparent oral diseases or have been through painful situations. The diagnosis of dental neglect is difficult due to the multifactorial etiology of oral diseases, involving biological, socio-economic and cultural aspects associated with the shortage of public and specialized dental services [9-11].

Children victims of abuse sheltered in foster care, for being in vulnerable situations, may be more likely to have oral health problems, aggravated by the difficulty of access to health services [12]. There are few studies addressing the oral health condition of this minority group [13,14].

The mouth is one of the face regions most affected when the child is victim of abuse and dentists should be trained and attentive to know how to interpret clinical situations like presence of bruises, lacerations of braves or flanges, lips, palates injuries, gums and tongue, persistent lesions or scars, and alveolar-dental trauma [6,15-19]. The study hypothesis was that children victims of maltreatment have worse oral health compared to those that have not been victims of maltreatment. The study aimed to compare the oral health of children and adolescents victims of abuse, sheltered in a foster home with children and adolescents who have not been victims of maltreatment.

Material and Methods

Ethical Aspects

The study started after approval by the Ethics Research Committee of the Federal University of Piauí (CAAE No. 0318.0.045.000-11). Informed Consent Forms (ICF) of children housed in foster care were signed by the legal representative of the institution and children in the control group by parents or guardians, according to the ethical principles of the Declaration of Helsinki and regulations governing research on human beings, set out in resolution 196/96 of the National Health Council.

Two study groups were composed as follows: Group 1 (case) composed of children victims of maltreatment and sheltered in foster home in the city of Teresina (PI) and Group 2 (control), composed of patients attending dental clinic at the Federal University do Piauí (UFPI). Children in both groups were matched for gender and age. The selection of children in group 2 was made by active search in child dental clinic records of UFPI that met the inclusion criteria.

Eligibility criteria were: presence of at least eight fully erupted incisors, absence of disorders or syndromes that prevented clinical examination and ICF signed by parents / guardians.

The foster home where children from group I were sheltered is linked to the Department of Social Welfare and Citizenship (SASC) of Teresina (PI) and shelters children aged 0-12 years on a temporary basis or for adoption, who were in situations of personal or social risk and / or family abandonment. Children participate in routine activities conducted by the multidisciplinary team in the psychosocial, cultural, sports, recreational, educational and religious areas. Health care is restricted to medical appointments.

Calibration and Pilot Study

All children were examined by a trained and calibrated examiner with inter-examiner agreement, kappa value of 0.89 and 0.92 for determination of dental caries and gingival bleeding index (GBI), respectively. Examinations were performed in 10 children attending the pediatric dentistry clinic, not involved in the study, and repeated after two weeks. After calibration training, pilot study was conducted to test the methods to be applied, also with 10 children attending the pediatric dentistry clinic at UFPI. Adjustments to the methodology were not needed.

Data Collection

Data collection was structured in two periods: application of questionnaire to parents / guardians and clinical examination of the oral cavity of children. The semi-structured questionnaire was designed based on literature [18-21] and adapted to the objectives of the study, containing questions on socioeconomic variables, reason for child admission in the foster home and habits related to oral health such as daily intake of sucrose. Caregivers of children from group 1 had access to socio-economic information available on child admission documentation and supervised habits regarding the oral health of children who followed the feeding and hygiene routine of the institution [20].

Clinical examinations were performed by a single examiner previously trained and calibrated, with children in knee-to-knee position, with indirect ceiling fluorescent lighting and when necessary, a flashlight was used [20]. The examiner used dental mirror, periodontal probe (CNTPI WHO - 621) recommended by the World Health Organization (WHO) and made use of personal protective equipment.

Oral health was evaluated using epidemiological indexes dmft (primary dentition) and DMFT (permanent dentition) [20], which express the sum of decayed, missing and filled teeth and Gingival Bleeding Index (GBI), which quantifies the number of bleeding gingival points after probing, in addition to the inspection of soft tissue to assess consequences of possible abuse [21]. Research data were collected between August and December 2011, during which 74 children were sheltered.

For dmft and DMFT indexes, the initial stages of the disease were not taken into account. Teeth with grooves, cracks or smooth surfaces with apparent cavity or tissue softened on the base or discoloration of the enamel or wall with temporary restoration were considered decayed [20].

The Gingival Bleeding Index (GBI) was determined with gums slightly dried with gauze pads. Probing was conducted on the buccal and lingual surfaces of all teeth at three different points (medial, central and distal) at an average depth of 1mm. Periodontal probe was positioned with 60° inclination in relation to the long tooth axis in order to avoid traumatic bleeding. The presence or absence of bleeding was evaluated thirty seconds after inspection and each tooth was considered as a measurement unit. The scores used for determining the presence of bleeding were as follows: 0- no gingival bleeding; 1- presence of gingival bleeding unit [21].

According to the amount of gingival bleeding points, children were categorized into: GBI = 0: no gingival bleeding; Mild GBI: 1 to 4 bleeding points; Moderate GBI: 5 to 9 bleeding points and Severe GBI: over 10 bleeding points [21].

After determining GBI, guardians were trained to perform or supervise children tooth brushing, and toothbrush, floss and fluoridated toothpaste were provided to each child. Clean and dry teeth were individually examined and dmft and DMFT epidemiological indexes were calculated. After clinical examination, topical application of fluoride gel was carried out in children who were at risk and / or caries activity as poor brushing and / or presence of active white spot lesions. Children from group 1 who needed restorative dental treatment were referred to the pediatric dentistry clinic at UFPI.

Data Analysis

Data were recorded in individual medical records designed for the study and processed in the Statistical Package for Social Sciences software (SPSS, version 18.0) for Windows for descriptive analysis of data using mean, deviations and frequencies. The Kolmogorov-Smirnov test was applied to verify the distribution normality, which showed non-normal distribution. To verify difference between means, the Mann-Whitney test was used. To determine the degree of association between variables, the Pearson's chi-square test and linear trend chi-square tests were applied. The significance level adopted in all tests was 5%.

Results

Of the 74 children living in the foster home in the survey period, six still had no deciduous teeth erupted and 12 had special needs. Thus, Group 1 was composed of children who met the eligibility criteria, which totaled 56. The socio-demographic data of children and adolescents of both groups are described in Table 1.

As for the reasons for admission of children from group I in the foster home, 84.0% were victims of abandonment or negligence, 7.0% for physical abuse and 9.0% for sexual abuse. Table 2

shows the dmft and DMFT indexes. There was no difference between the means of dmft ($p = 0.240$) and DMFT indexes ($p = 0.862$) between groups (Table 2).

Table 1. Socio-demographic data of children from both groups.

Variables		Group 1 N (%)	Group 2 N (%)	P ^a	Total N (%)
Sex					
	Male	33 (58,9)	32 (57,1)	0,848	65 (58,0)
	Female	23 (41,1)	24 (42,9)		47 (42,0)
Child's age (years)					
	≤ 5	21 (37,5)	21 (37,5)	1,000	42 (37,5)
	> 5	35 (62,5)	35 (62,5)		70 (62,5)
Maternal education (years of formal education) ^b					
	≤ 8	17 (100,0)	27 (50,0)	<0,001	44 (62,0)
	> 8	00 (0,0)	27 (50,0)		27 (38,0)
Family income (minimum wages) ^b					
	< 1	30 (90,9)	10 (17,9)	<0,001	40 (44,9)
	≥ 1	03 (9,1)	46 (82,1)		49 (55,1)

^a Pearson's chi-square test; ^b Total n value different from 112, as answers that did not contain information were subtracted.

Table 2. DMFT and dmft epidemiological indexes by age group and association between groups and age according to the average values of indexes.

Age (years)	Group 1		Group 2		dmft			DMFT				
	N (%)	dmft = 0 N (%)	N (%)	DMFT = 0 N (%)	Average	Group	P ^a	Average	Group	P ^a		
≤ 2	07	07 (100,0)	-	06	05 (83,3)	-	0,0	1,00	0,280	-	-	
3-4	08	04 (50,0)	-	10	01 (10,0)	-	2,00	4,60	0,096	-	-	
5-6	11	04 (36,4)	-	10	01 (10,0)	-	3,00	4,90	0,200	-	-	
7-8	09	00 (0,0)	06 (66,7)	15	02 (13,3)	06 (40,0)	5,67	3,93	0,140	0,78	1,13	0,334
9-10	13	02 (15,4)	02 (15,4)	10	02 (20,0)	06 (60,0)	3,61	4,30	0,921	1,85	0,9	0,073
11 - 12	08	01 (12,5)	05 (62,5)	05	03 (60,0)	01 (20,0)	0,37	0,20	0,237	0,63	2,6	0,062
Total	56	18 (32,1)	13 (43,3)	56	14 (25,0)	12 (40,0)	2,44	3,15	0,240	1,08	1,54	0,862

^a * Mann-Whitney test.

Preventive practices and perception of caregivers on the oral health of children are presented in Table 3.

Table 3. Preventive practices and perception of caregivers on the oral health of children.

Variables	Group 1 Age		Group 2 Age		P ^a	Total N (%)
	≤ 5 N(%)	> 5 N(%)	≤ 5 N(%)	> 5 N(%)		
Number of daily tooth brushings ^b						
1	00 (0,0)	00 (0,0)	03 (14,3)	07 (20,6)	0,001	10 (9,0)
> 1	21 (100,0)	35 (100,0)	18 (85,7)	27 (79,4)		101 (91,0)
Who performs the brushings						
Child	14 (66,7)	34 (97,1)	01 (4,8)	25 (71,4)	<0,001	74 (66,1)
Adult	07 (33,3)	01 (2,9)	17 (81,0)	02 (5,7)		27 (24,1)
Child and Adult	00 (0,0)	00 (0,0)	03 (14,2)	08 (22,9)		11 (9,8)

Gums bleed when brushing teeth ^b						
Yes	01 (4,8)	01 (3,3)	03 (14,3)	10 (28,6)	0,004	15 (14,0)
No	20 (95,2)	29 (96,7)	18 (85,7)	25 (71,4)		92 (86,0)
The child has decayed teeth ^b						
Yes	06 (28,6)	19 (63,3)	13 (61,9)	21 (60,0)	0,224	59 (55,1)
No	15 (71,4)	11 (37,7)	08 (38,1)	14 (40,0)		48 (44,9)
Child's oral health condition ^b						
Good	15 (71,4)	11 (33,3)	09 (42,9)	08 (23,5)	0,060	43 (39,3)
Regular	01 (4,8)	13(39,4)	07 (33,3)	19 (55,9)		40 (36,7)
Poor	05 (23,8)	09 (27,3)	05 (23,8)	07 (20,6)		26 (23,9)
Daily sucrose intake more then three times ^b						
Yes	21 (100,0)	35 (100,0)	07 (33,3)	16 (45,7)	<0,001	89 (79,5)
No	00 (0,0)	00 (0,0)	14 (66,7)	19 (54,3)		23 (20,5)

^a Pearson's chi-square test; ^b Total n value different from 112, as answers that did not contain information were subtracted.

The GBI values found after probing between groups are presented in Table 4. No sequelae were identified and it was not possible to diagnose probable lesions characteristic of physical abuse, as neglected children had already been institutionalized for more than four months.

Table 4. Gingival bleeding index (mild / moderate / severe GBI) per group after probing.

Variables	Group 1 N (%)	Group 2 N (%)	P ^a	Total N (%)
ISG = 0	20 (35,7)	15 (26,8)	0,275	35 (31,3)
Mild GBI	15 (26,8)	16 (28,6)		31 (27,7)
Moderate GBI	15 (26,8)	16 (28,6)		31 (27,7)
Severe GBI	06 (10,7)	09 (16,1)		15 (13,4)

^a Linear trend chi-square test.

Discussion

The Statute of Children and Adolescents (ECA) [22] provides in Article 5 that "... no child or adolescent shall be submitted to any form of negligence, discrimination, exploitation, violence, cruelty and oppression, and any attempt or omission to their fundamental rights will be punished according to the law". Many aggressive practices are carried out, justified and accepted by different cultures and societies. Heinous acts such as infanticide, abandonment of children in institutions, slave services, child labor exploitation and mutilation of members to cause compassion and facilitate mendicancy are reported in literature [23].

Negligence against children occurs in all social strata, although it is more visible in lower classes due to greater control by police authorities because they generally seek police stations more frequently [23]. Most children victims of abuse who participated in this study were from families of low income and maternal education. Although there has been a considerable decline in tooth decay in children, the disease is still considered a public health problem in preschool children and is associated with low income and maternal education [24].

The results of this study reinforce the importance of institutionalization of neglected and abused children. Comparing the average values of epidemiological indexes between groups, it was

observed that there were no statistically significant differences. When absolute values were considered, non-institutionalized children in the primary dentition phase showed poorer oral health and at the age of 11 years, the situation was reversed. The results show that institutionalized children are less prone to dental caries experience and shelters have a protective effect on the oral health of children [25].

During the phase of primary dentition, institutionalized children showed lower dmft values, with value close to that observed for the city of Teresina for children at the age of 5 years in the national survey [26]; although the difference between groups showed no statistical significance. At the foster home, participants received medical care but not dental care. It was possible to observe a routine control of diet and oral and body hygiene established by the daily protocol, a strategy that should be encouraged in families of non-institutionalized children. When the practice of oral hygiene becomes associated with other practice already established, such as time of body care, the chance of not performing the procedure for any other reason is minimized [27].

Although there was no significant difference in DMFT between groups at the age of 12 years, the value assigned to the DMFT index in the city of Teresina [26] was similar to that of the group of not victimized children, while children victims of abuse had lower DMFT index value.

When a neglected child is treated in a dental service, legal guardians must sign a document informing about the situation and commit to follow the guidance given and attend scheduled appointments. The document can also serve as a legal evidential for cases that referrals to competent bodies are necessary [17,18]. Most children treated at the pediatric dentistry clinic of UFPI live in the same house with father and mother, a situation that theoretically characterizes organized families; however, they have poor oral health condition characterized by negligence. Many guardians believe that the search for regular dental care features care for the child, but frequently do not perform the tasks they were recommended as execution and / or supervision of oral hygiene practices and control the intake of fermentable carbohydrates.

When the procedures performed in patients treated at the pediatric dentistry clinic of UFPI are evaluated by dental records, in many children with regular returns, dental caries and gingivitis remain active. Guardians neglect care that should be performed with oral health, as dental caries is a disease of bacterial origin and sugar dependent, but with an important social component. The hypothesis developed for the study that children from group 1 would have worse oral health status was denied.

The daily intake of fermentable carbohydrates was observed in all children from both groups. Guidance on diet is an item of difficult approach, especially in public service users because eating habits are associated with economic condition and family preferences. Urbanization and commercial appeals stimulate the consumption of foods rich in sucrose and hinder the development and implementation of public policies to promote healthy feeding [13].

As for gingival bleeding observed after probing, both groups showed high and similar values, which demonstrate the need for motivation of guardians as the adoption of effective measures

to remove dental biofilm. No relationship between time of institutionalization and GBI values was found after probing.

Many dentists do not report suspicions or findings of abuse or neglect. Among the reasons, there is the difficulty in preparing diagnosis, fear of talking about the problem with parents, not wanting direct involvement or fear to approach non-biological issues. Undergraduate dentistry courses must train professionals able to take ethical and legal responsibility in cases of abuse against children and adolescents [8].

Professionals should correlate clinical findings and confront the story told by parents and the child to come to a diagnosis. If in doubt, other professionals should be consulted because the child's safety should be prioritized [6,7,17,18]. There is a form to guide dentists when they suspect of abuse or neglect, proposed as guidelines for cases to be better reported [7].

The opportunity to know the routine of children in socially vulnerable conditions was enriching, and also the opportunity to observe the dynamics and routine of a foster home because the study team shared the problems faced by management and the care and concern for those children and adolescents for them not to be socially stigmatized, for example, children go to different schools so that they are not known as "the shelter children". They know the children by their names, concern with their oral health and often move with difficulty to take them to emergency care in the pediatric dentistry clinic at UFPI, reference for dental care. The main limitations of this study are related to potential biases associated with data obtained from the questionnaire and the small sample size.

Conclusion

Children victims of abuse had oral health conditions similar to those not victims of abuse.

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