# ORAL HEALTH CONDITIONS AND ACCESS TO DENTAL TREATMENT IN PATIENTS WITH CEREBRAL PALSY TREATED AT A REFERENCE CENTER IN NORTHEASTERN BRAZIL

Condições de saúde bucal e acesso ao tratamento odontológico de pacientes com paralisia cerebral atendidos em um centro de referência do nordeste – Brasil

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### **ABSTRACT**

**Purpose:** to assess the occurrence of dental caries and treatment needs in children with cerebral palsy attended in the Disabled Child Assistance Association – Recife, Pernambuco, Brazil; and the main difficulties regarding dental treatment. **Method:** a spontaneous-demand sample of 167 patients aged six to 12 years was composed. Caries experience was assessed with the criteria of World Health Organization. **Results:** the majority of children (70.7%) had spastic cerebral palsy. About the health services accessibility, 46.1% of caregivers had difficulties and 34.1% reported a lack of trained professionals. Caries prevalence in deciduous dentition was 61.1% and 26.3% in the permanent dentition. Approximately 60% of the surveyed patients required some type of treatment for dental caries. Children with cerebral palsy in the state of Pernambuco have a more caries than those in other regions of Brazil. **Conclusion:** the findings revealed the need for improvements in the dental care offered to these children in a quantitative, qualitative, multidisciplinary, and integrated fashion, especially in the inland of the state.

KEYWORDS: Cerebral Palsy; Child; Dental Caries; Health Services Accessibility

# INTRODUCTION

Society has long been preparing to receive individuals with disabilities. According to the most recent national data from the 2000 census carried

out by the Brazilian Institute of Geography and Statistics, approximately 14.5% of the population of Brazil (more than 24 million individuals) have some degree of difficulty with their vision, hearing or locomotion or have some mental impairment. Between the 1991 and 2000 censuses, there was an increase of 13 percentage points in the number of individuals with disabilities in Brazil.

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Conflict of interest: non-existent

Cerebral palsy (CP) is currently considered the main debilitating condition in childhood and is one of the major neurological diseases.<sup>2</sup> CP is a non-progressive disorder of tonus, movement and posture stemming from a lesion of the immature brain affecting the maturation of the central nervous system. This lesion causes debilitation in the coordination of muscle movements, resulting in an inability to maintain postures and perform normal movements. Any condition capable of injuring the

central nervous system, particularly the brain, between conception and infancy is considered an etiological factor of CP.3,4 The etiology of CP is the object of investigation among researchers in different countries. Interacting factors currently suggest that CP is a multifactor condition.4 The determinants may be prenatal (genetic malformations), peri-natal (neonatal anoxia, prematurity and low birth weight) or postnatal (meningitis, encephalitis, cerebral vasculitis and viral infection).5,6

With an incidence of 1.2 to 2.3 per one thousand school-aged children in developed countries, Brazil unites a number of factors that favor the occurrence of CP on a large scale.5 Among such conditions, Mancine et al.7 report precarious prenatal care and low socioeconomic status in the northeastern region of the country. According to data from the Department of Child Neurology of the *Universidade de São* Paulo, the incidence can reach as high as seven per every 1000 live births. Other studies estimate between 30 and 40 thousand new cases of CP per year in Brazil.

The difficulty in clinically assisting patients with CP has been addressed in the literature since the 1950s. The involuntary movements of the head and neck and the constant spasms hamper patient management and the accentuated rigidity often does not permit an adequate examination of the oral cavity.8 A number of studies indicate that patients with CP have greater experience with caries and periodontal disease due to difficulties involving self--care.9-15 According to some authors, the abnormal movements of the facial muscles in these patients can lead to the prolonged retention of foods in the oral cavity and impair the self-cleaning function.<sup>5,9</sup>

Depending on the severity of this disease, caregivers may encounter difficulties performing adequate oral hygiene on these patients.3,7 Besides the challenges inherent to the clinical condition of CP, socioeconomic factors can also place the oral health of this group at risk, such as low household income, the high degree of dependence of the patient regarding activities of daily living and the scarcity of both basic and specialized dental services.5 A number of authors report that there are no norms or guidelines regulating dental care for patients with disabilities and contradictory information is found in the literature regarding the incidence of oral health conditions among patients with CP.6

Considering the huge current demand for dental care among these patents, it is important to understand the oral health status and treatment needs of this population in order to broaden scientific knowledge on this issue and outline strategies for assisting such individuals. Thus, the aim of the present study was to assess the occurrence of dental caries

and treatment needs among patients with cerebral palsy treated at the dentistry sector of the Disabled Child Association of Pernambuco and determine the main difficulties these patients face regarding access to dental treatment.

## METHOD

A cross-sectional study was carried out with a sample determined by spontaneous demand for treatment, consisting of 167 patients with CP aged six to 12 years. Both male and female patients who sought treatment at the dentistry sector of the Disabled Child Association of Pernambuco from August to September 2010 were included in the study following authorization by parents/guardians through a signed statement of informed consent. Children considered to be at high risk - those with a high degree of motor and/or neurological impairment were excluded from the study.

The data were collected using the following instruments: A socioeconomic-demographic data form, clinical exam chart and the Economic Classification Questionnaire of Brazil drafted by the Brazilian Association of Research Firms [ABEP - Associação Brasileira de Empresas de Pesquisa (2003)]. The first instrument was used to record data on the child (age, gender, schooling and access to dental treatment) and caregivers (schooling, relationship to the child, marital status, profession and approximate monthly household income). This form also addressed data on eating habits, oral hygiene, previously sought dental treatment and difficulties faced by the caregivers.

The clinical exams were performed at the dental clinic of the Disabled Child Association of Pernambuco by a single calibrated examiner with the aid of a flat mouth mirror and periodontal probe recommended by the World Health Organization (WHO). The WHO criteria<sup>16</sup> were considered for the diagnosis of dental caries and treatment needs, which were also employed in the most recent oral health surveys carried out the Brazilian Ministry of Health. The dmft and DMFT indexes were used for the assessment of caries experience in the primary and permanent dentition, respectively. The dmft index represents the sum of decayed (d), missing (m) and filled (f) teeth (t) in each patient and the DMFT index represents the sum of decayed, missing and filled teeth in the permanent dentition.16

The examiner underwent a calibration process based on the specifications of the British Association for the Study of Community Dentistry, achieving a Kappa concordance coefficient of 0.97 between the examiner and the gold standard, thereby demonstrating excellent agreement. To ensure the maintenance of the same diagnostic criteria throughout the entire study, 10% of the sample was re-evaluated after a one-week interval by the same examiner for the determination of intra-examiner agreement, with kappa coefficients of 0.93 and 0.99 in the assessment of dental crown status and treatment needs, respectively, demonstrating excellent agreement.

The aim of the ABEP Economic Classification Questionnaire (2009) is to estimate the buying power of individuals and families rather than categorizing the population in terms of social classes. This instrument divides the market exclusively into economic classes. In decreasing order of buying power, families are categorized in classes A1, A2, B1, B2, C, D and E.

The present study received approval from the Ethics Committee of the Disabled Child Association (protocol: CEP-AACD 044/2010) and was carried out in compliance with the principles contained in the Declaration of Helsinki and specific legislation in Brazil for research involving human subjects. Participation of the children was voluntary and required the authorization of parents/guardians by means of a signed statement of informed consent. After participating in the study, all patients were received for dental treatment at the Disabled Child Association based on their needs and priorities.

The data were computed and analyzed using the Statistical Package for the Social Sciences (SPSS version 15). Descriptive statistical methods, the F test (ANOVA) and Student's t-test with equal and unequal variances were performed. The statistical tests were carried out with a 5.0% margin of error.

# RESULTS

A total of 167 children were examined [101 (60.5%) males and 55 (39.5%) females). One hundred eight (64.7%) were between six and nine years of age and 59 (35.5%) were between 10 and 12 years of age (mean age: 8.61). A large percentage of the children did not attend school (48.5%) (Table 1).

The majority of the children exhibited spastic CP (70.7%) and the other types (athetoid, ataxic and mixed) were each distributed among approximately 10.0% of the sample. Regarding motor impairment, a large portion of the children exhibited quadriplegia (35.3%) (Table 1).

A total of 23.4% of the children were visiting the dentist for the first time in their lives. Only 12.6% had visited the dentist before the age of three years. A total of 71.9% had previously sought treatment at other services. A total of 46.1% of the parents/guardians reported difficulties in gaining access to dental treatment and 34.1% reported a lack of trained professionals (Table 1).

Regarding the eating habits of the children examined, 37.7% were on a liquid diet or ate only pasty foods. In the majority of cases (71.2%), the utensils used for feeding were conventional cups and spoons, whereas 23.3% used these same utensils and a feeding bottle. Among 79.0% of the cases, the child's oral hygiene was performed by the caregiver and 90% reported using a toothbrush and toothpaste.

The majority of caregivers were mothers, who were either married or in a stable relationship and had a low degree of schooling. Only 16.8% of the caregivers exercised paid activities. More than 60.0% of the children were from families that received up to two times the monthly minimum salary and belonged to economic classes C. D and E. Regarding place of residence, approximately half of the sample was from metropolitan Recife and the other half came from municipalities in the interior of the state of Pernambuco (Table 2).

The prevalence of caries was 61.1% in the primary dentition and 26.3% in the permanent dentition. Regarding caries experience in the primary dentition, the children had a mean of 3.77 decayed, missing or filled teeth (mean dmft index), with a mean of 2.23 on the decayed component alone. In the permanent dentition, the children had a mean of 0.85 decayed, missing or filled teeth (mean DMFT index), with a mean of 0.66 on the decayed component alone. The decayed component was the highest in both the dmft and DMFT indexes (59.2% and 77.6%, respectively). Regarding the need for dental treatment, 38.3% needed preventive treatment (non-invasive), 34.7% needed restorative treatment alone and 26.9% needed more complex treatment involving restorations, pulp procedures and/or extractions (Table 3).

The dmft index was associated with age group and monthly household income. This index was higher among children aged six to nine years and those from families that received less than or equal to the minimum salary. The DMFT index was associated with age group and type of motor impairment. The mean values on this index were higher among children aged 10 to 12 and those with hemiplegia and diplegia (Table 4).

### DISCUSSION

In the present study, there was a greater percentage of male children with CP than females, which is also reported in previous studies. 6,8,9,11,17,18 According to an epidemiological survey carried out in 14 European countries, CP is more prevalent among

Table 1 – Distribution of children according to socioeconomic-demographic variables and variables related to access to dental treatment

Variable	n	%	Variable	n	%
Gender			History of visiting the dentist		
Male	101	60.5	First time	39	23.4
Female	66	39.5	Previous visits to the dentist	128	76.6
Age group			Age upon first visit to the dentist		
6 to 9 years	108	64.7	Up to 3 years	21	12.6
10 to 12 years	59	35.3	4 to 6 years	89	53.3
			7 years or more	57	34.1
Schooling			Sought previous care?		
Does not study	81	48.5	Yes	120	71.9
Preschool education	22	13.2	No	47	28.1
Literacy	14	8.4			
Elementary school education	50	29.9			
Muscle tone impairment			Occurrence of difficulties		
•			regarding care		
Spastic	118	70.7	Yes	77	46.1
Athetoid	16	9.6	No	43	25.7
Ataxic	18	10.8	Did not seek previous care	47	28.1
Mixed	15	9.0			
Type of motor impairment			Difficulties encountered		
Does not apply	49	29.3	Lack of trained professionals	57	34.1
Hemiplegia	19	11.4	Others	21	12.6
Diplegia	40	24.0	Did not have difficulties	42	25.1
Quadriplegia	59	35.3	Did not seek previous care	47	28.1
TOTAL	167	100.0	TOTAL	167	100.0

males, with a predominance of the spastic form of the disease over the other types. <sup>19</sup> The present study also found a greater occurrence of cases of spastic CP, characterizing the sample as having considerable motor impairment and locomotion difficulties. <sup>5,6,9-11,20</sup> There was a high percentage of children with a high degree of impairment (spastic quadriplegia), which is similar to the finding described by Guerreiro, Garcias. <sup>6</sup> This profile of considerable motor impairment likely influenced the low schooling of the children, as approximately half of the children did not attend school.

A very low percentage of patients had sought dental treatment prior to four years of age. It should be stressed that seeking dental treatment after four years of age is considered late. According to a number of authors, this may be attributed to a lack of awareness on the part of parents/guardians regarding the need for and importance of maintaining adequate oral health in these children.<sup>9</sup> Among

pediatric patients in general and especially those with CP, the primary dentition phase (from 6 months to 5 years of age) is a very important period from the dental standpoint, in which preventive actions should be instituted early with the aim of preventing harm to the permanent dentition as well as overall health.<sup>6</sup>

Most of the caregivers had a low level of schooling and low socioeconomic status, with the vast majority of families living on less than two times the minimum salary and belonging to economic classes with low buying power. These results are in agreement with findings reported for other regions of Brazil.<sup>6,8</sup> According to the literature, these factors also hinder the access to and continuity of dental treatment in this population.<sup>8,21</sup>

As reported in previous studies, the majority of caregivers interviewed were mothers and a high percentage did not exercise any paid activities.<sup>6,8</sup> This may be explained by the high percentage of

Table 2 – Distribution of caregivers according to socioeconomic-demographic data

Variable	n	%
TOTAL	167	100.0
Relationship to child		
Mother	146	87.4
Other (father, grandparent, aunt or uncle)	21	12.6
Marital status		
Single, separated or widowed	59	35.3
Married or in stable relationship	108	64.7
Schooling		
None	7	4.2
Incomplete elementary education	71	42.5
Incomplete high school education	41	24.6
Incomplete high school/university education	48	28.7
Occupation		
Yes	28	16.8
No	139	83.2
Income		
Up to 1 minimum salary	49	29.3
> 1 to 2 times the minimum salary	103	61.7
> 2 times the minimum salary	15	9.0
Economic class		
B1+ B2	3	1.8
C	85	50.9
D + E	79	47.3
Place of residence		
Metropolitan Recife	82	49.1
Interior of state	79	47.3
Other state	6	3.6

children with a high degree of motor impairment and severe limitations regarding the performance of activities of daily living, thereby making them highly dependent upon their caregivers.

Half of the children examined came from municipalities in the interior of the state of Pernambuco. which reflects the lack of trained professionals in these regions to meet the demands of the population. These data were confirmed by the fact that more than 70% of the caregivers reported having sought previous dental treatment and nearly half reported encountering difficulties, among which the lack of a trained professional was the main complaint.

The type of food consistency, sugar intake and a lack of information on oral health care are considered risk factors for dental caries.<sup>21</sup> In the present sample, a high percentage of children were on a liquid diet or consumed only pasty foods (37.7%).

This figure is higher than that reported in a survey on individuals with CP carried out in the southern region of Brazil.<sup>6</sup> In a study carried out in Sao Paulo (southeastern Brazil) comparing the eating habits of children with and without CP, Abanto et al.22 found that those with CP had a significantly higher frequency of liquid and pasty food intake as well as a greater need for assistance when eating and a greater amount of dental plaque in comparison to the control group. The authors report that pasty foods are offered to children with CP more and state that the preference for this type of food is due to abnormalities regarding orofacial muscles, which hinder the chewing and swallowing of solid foods. Pasty food, which remains in the oral cavity longer, and difficulties encountered with regard to oral hygiene in these patients lead to a greater buildup of plaque.22

Table 3 – Caries experience in primary (dmft) and permanent DMFT) dentition and treatment needs in children examined

	Statistics			
	Mean	Median	Standard deviation	% of index mean
dmft	3.77	2.00	4.58	
Decayed	2.23	1.00	3.16	59.2
Missing	0.66	0.00	1.70	17.5
Filled	0.88	0.00	1.83	23.3
DMFT	0.85	0.00	1.64	
Decayed	0.66	0.00	1.48	77.6
Missing	0.01	0.00	0.11	1.2
Filled	0.18	0.00	0.72	21.2
Treatment needs	;		n	%
Preventive, observ	vation and control		64	38.3
Restorative alone			58	34.7
Restorative, pulp	procedures and/or ex	traction	45	26.9
Total			167	100.0

These findings underscore the importance of considering dietary characteristics when planning dental treatment for individuals with CP. While eating pattern was not associated with caries experience in the present study, there is a need to institute an early program of chemical and mechanical plaque control for preventing both dental caries and periodontal disease. Moreover, it is important for these patients to receive nutritional counseling, as the difficulties regarding chewing and swallowing are also risk factors for inadequate nutritional status.<sup>11,23</sup>

Regarding the utensils used for feeding, the vast majority of the children examined used conventional cups and spoons, as also reported by Abanto et al.<sup>22</sup> However, 23.3% of the children used these utensils as well as a feeding bottle. Considering the aforementioned difficulties with chewing and swallowing, the use of a daytime and nighttime feeding bottle makes the substance, which is generally rich in carbohydrates, remain in the oral cavity for a longer period of time. This further underscores the need for individualized dietary counseling, with an emphasis on the intelligent consumption of sugars in this population.

The high degree of dependence on the part of the patients was also observed with regard to plaque removal. In the vast majority of cases (79%), oral hygiene was performed by the caregivers, as reported in previous studies.<sup>6,8,22</sup>

The prevalence of caries among children with CP in comparison to that found among children in the general population is widely discussed. A number

of authors state that CP *per se* does not predispose patients to caries or periodontal disease; however, socioeconomic and cultural factors influence the occurrence of these conditions, such as a lack of orientation regarding the ingestion of cariogenic foods and inadequate oral hygiene.<sup>24</sup> A recent epidemiological survey carried out with preschoolers in Hong Kong comparing children with and without CP found similar caries experience in both groups. Other studies also report similar caries experience or even lesser experience among children with CP in comparison to the population of children without this disease.<sup>15,25</sup>

Comparing the result of the DMFT index in the 10-to-12-year-old age group (1.3) with that found in a population of 12-year-old children in northeastern Brazil (2.7) according to recently published data from the 2010 National Oral Health Survey,26 caries experience in the permanent dentition of children with CP was much lower. However, caries experience in the primary dentition was much greater. Based on these findings, one may propose that these differences in caries experience between dentitions in populations of children with and without CP may be attributed to the fact that children with CP may experience delays in the chronology of tooth eruptions due to nutritional reasons and therefore have fewer experiences with caries. Controlled studies should be carried out comparing caries experience in the permanent dentition of children with and without CP in which the eruption chronology is taken into consideration during the pairing of the groups.

Table 4 - Results of dmft and DMFT indexes according to age group, gender, eating pattern, type of cerebral palsy and data on caregiver

	dmft	DMFT Mean ± Standard deviation	
Variable	Mean ± Standard deviation		
Age group			
6 to 9	$4.60 \pm 4.72$	$0.51 \pm 1.26$	
10 to 12	$2.24 \pm 3.90$	$1.32 \pm 2.05$	
p-value	$p^{(1)} = 0.001*$	$p^{(1)} = 0.007*$	
Gender			
Male	$3.58 \pm 4.24$	$0.62 \pm 1.45$	
Female	$4.05 \pm 5.07$	1.06 ± 1.85	
p-value	$p^{(2)} = 0.526$	$p^{(1)} = 0.107$	
Eating pattern		·	
Liquids or pasty foods	$3.90 \pm 5.51$	$0.52 \pm 1.39$	
Liquids, pasty and solid foods	$3.68 \pm 3.93$	$0.96 \pm 1.74$	
p-value	$p^{(1)} = 0.780$	$p^{(1)} = 0.075$	
Muscle tone impairment		·	
Spastic	$3.50 \pm 4.73$	$0.82 \pm 1.70$	
Athetoid	$3.50 \pm 4.31$	$0.63 \pm 1.15$	
Ataxic	$4.61 \pm 4.17$	1.00 ± 1.81	
Mixed	$5.13 \pm 4.12$	$0.53 \pm 1.25$	
p-value	$p^{(3)} = 0.496$	$p^{(1)} = 0.833$	
Motor impairment			
Hemiplegia	$3.16 \pm 3.66$	$1.68 \pm 2.33$	
Diplegia	$3.78 \pm 4.24$	1.13 ± 1.79	
Quadriplegia	$3.42 \pm 5.36$	$0.34 \pm 1.21$	
p-value	$p^{(3)} = 0.884$	$p^{(1)} = 0.004*$	
Marital status of caregiver			
Single	$4.39 \pm 5.17$	$0.86 \pm 1.89$	
Married	$3.43 \pm 4.21$	$0.76 \pm 1.47$	
p-value	$p^{(1)} = 0.194$	$p^{(1)} = 0.691$	
Paid work			
Yes	$5.18 \pm 4.51$	$0.43 \pm 1.17$	
No	$3.48 \pm 4.55$	$0.87 \pm 1.70$	
p-value	$p^{(1)} = 0.073$	$p^{(2)} = 0.100$	
Approximate monthly family income			
Up to 1 minimum salary	$4.90 \pm 5.84$	1.10 ± 2.16	
> 1 to 2 times the minimum salary	$3.57 \pm 4.00$	$0.60 \pm 1.24$	
> 2 times the minimum salary	$1.40 \pm 2.06$	1.13 ± 1.85	
p-value	$p^{(3)} = 0.027*$	$p^{(3)} = 0.146$	

<sup>(\*):</sup> Significant difference at 5.0% level

<sup>(1):</sup> Student's t-test with unequal variances

<sup>(2):</sup> Student's t-test with equal variances (3): F test (ANOVA)

A number of studies carried out in Brazil report a greater caries experience in the primary dentition of children with CP.<sup>6,10,11</sup> In the present investigation, the mean dmft index in the six-to-nine-year-old age group was 4.6, whereas the mean reported in the 2010 National Oral Health Survey<sup>26</sup> was 2.3 at five years of age. In southern Brazil, Guerreiro and Garcias<sup>8</sup> found a dmft index of 3.6.

According to the data from the last national oral health surveys, there has been a 25% decline in caries in the child population in the last seven years. These results demonstrate that prevention programs and treatment in the field of dentistry have been effective for the general population of Brail. However, considering the greater caries experience in the primary dentition of children with CP observed in the present investigation as well as in previous studies, 6,8,10-12 despite the advances of society in the development of policies of social inclusion, this population is still neglected from the oral health standpoint.

Caries in the primary dentition is considered a public health issue, as it is more severe in populations with socioeconomic and nutritional disadvantages and is a strong predictor of a future increase in caries in the permanent dentition.<sup>27,28</sup> Thus. the results of the present study draw attention to a portion of the population that requires special care regarding the primary dentition through treatment and orientation aimed at preventing possible harm to the permanent dentition and avoiding local, systemic, psychological and social complications stemming from inadequate oral health. Considering the previously discussed difficulties in this population regarding access to dental services and reaffirming the ideas proposed by other authors,6 there is a need for investments directed at the development of adequate locations and integrated public oral health programs with multidisciplinary actions for this population as well as for all individuals with disabilities.

As expected, the dmft and DMFT indexes were associated with age. Considering the development of the dentitions, the dmft index reduces and the DMFT index increases with age, as reported in surveys on caries in the general population. The dmft index was associated with monthly household income, which is in agreement with findings reported

in the literature regarding the polarization of dental caries in underprivileged populations.

A relatively novel datum observed in the present study was the finding that the DMFT index was associated with the type of motor impairment, with higher values found for children with hemiplegia or diplegia in comparison to those with quadriplegia. A possible explanation for this may be that children with hemiplegia or diplegia in the age group studied receive less supervision regarding oral health due to their lesser degree of dependence in comparison to those with quadriplegia. However, this association should be studied further in future investigations.

Comparing the data on caries experience in the primary dentition with data from previous studies carried out in the southern and southeastern regions of the country, 6,8,29 the values obtained for the northeastern region are higher. The 2010 National Oral Health Survey 2010<sup>26</sup> reaffirm the discrepancies regarding caries experience between children of the north/northeastern regions and those in the south/southeastern regions. A comparative analysis involving data from 2003 reveals that the pattern of these regional differences in dental caries has been maintained. In the northeastern region, the greater experience with caries occurs alongside the lesser access to dental services.

The percentage of children with treatment needs was high in the present study, totaling nearly 60% of the sample. Moreover, nearly 30% of the children needed more complex treatment, such as pulp procedures and extractions. These findings underscore the importance of training professionals to meet this high demand at public services in the region.

# CONCLUSIONS

The children examined in the present study had a high caries index, especially in the primary dentition, as well as a high need for treatment, including treatment of greater complexity, such as surgical and endodontic procedures. Only a small portion of the caregivers sought dental treatment for children with CP prior to four years of age. In comparison to data from the south and southeastern regions of Brazil, children with CP in the state of Pernambuco (northeastern Brazil) had a much greater caries experience.

# **RESUMO**

Objetivo: avaliar a ocorrência de cárie dentária e necessidades de tratamento em criancas com paralisia cerebral atendidas no setor de Odontologia de um centro de referência do Nordeste do Brasil (Associação À Criança Deficiente; Recife-Brasil); e conhecer suas principais dificuldades no acesso ao tratamento odontológico. Método: a amostra foi composta por livre demanda de 167 pacientes de seis a 12 anos. A experiência de cárie foi avaliada de acordo com os critérios da Organização Mundial de Saúde. Resultados: a grande maioria das crianças (70,7%) apresentava paralisia cerebral do tipo espástica. Dos que tiveram dificuldades no acesso ao tratamento (46,1%), a maioria relatou a falta de profissional capacitado (34.1%). A prevalência de cárie foi de 61.1% na denticão decídua e 26.3% na permanente. Aproximadamente 60% dos pesquisados necessitavam de algum tipo de tratamento da cárie. Observou-se que, em comparação com estudos realizados em outras regiões do Brasil, as crianças pesquisadas apresentaram experiência de cárie mais elevada. Conclusão: verificou-se a necessidade de melhorar a assistência odontológica a esses pacientes, principalmente no interior do estado, de forma quantitativa, qualitativa e integrada com ações multidisciplinares.

DESCRITORES: Paralisia Cerebral; Criança; Cárie Dentária; Acesso aos Serviços de Saúde

### REFERENCES

- 1. Instituto Brasileiro de Geografia e Estatística. Comentário dos resultados. In: Instituto Brasileiro de Geografia e Estatística. Tabulação avançada do censo demográfico 2000, resultados preliminares da amostra. Rio de Janeiro: IBGE; 2002. p.45-8.
- 2. Dougherty NJ. A review of cerebral palsy for the oral professional. Dent Clin N Am. 2009; 53: 329-38.
- 3. Castilho DPL, Bezerra FMG, Parisi MT. Estimulação motora precoce para portadores de paralisia cerebral: orientações aos pais e cuidadores. Reabilitar. 2005; 7(29):52-6.
- 4. Schwartzman JS. Paralisia cerebral. Arqu Brasil Paral Cerebr. 2004; 1(1): 4-7.
- 5. Costa MHP, Costa MABT, Pereira MF. Perfil clínico-epidemiológico de pacientes com Paralisia Cerebral assistidos em um centro de odontologia do Distrito Federal. Com Ciências Saúde. 2007; 18(2):129-39.
- 6. Guerreiro PO, Garcias GL. Diagnóstico das condições de saúde bucal em portadores de paralisia cerebral do município de Pelotas, Rio Grande do Sul, Brasil. Ciênc. Saúde Coletiva. 2009; 14 (5):1939-46.
- 7. Mancini MC, Fiúza PM, Rebelo JM, Magalhães LC, Coelho ZAC, Paixão ML et al. Comparação do desempenho de atividades funcionais em crianças com desenvolvimento normal e crianças com paralisia cerebral. Arg Neuropsiguiatr. 2002; 60 (2):446-52.
- 8. Camargo MAF. Estudo da prevalência de cárie em pacientes portadores de paralisia facial [dissertação]. São Paulo (SP): Faculdade de Odontologia da Universidade de São Paulo; 2005.

- 9. Camargo MAF, Antunes JLF. Untreated dental caries in children with cerebral palsy in the Brazilian context. Int J Paediatr Dent. 2008; 18(2):131-8.
- 10. Guare RO. Ciamponi AL. Dental caries prevalence in primary dentition of cerebral-palsied children. J Clin Pediatr Dent. 2003; 27(3): 287-92.
- 11. Santos MTR, Masiero D, Novo MF, Simionato MR. Oral Conditions in children with cerebral palsy. J Dent Child. 2003; 70(1):40-6.
- 12. Prat MJG, Jiménez JL, Quesada, JRB. Estúdio epidemiológico de las caries en un grupo de niños com parálisis cerebral. Méd Oral. 2003; 8: 45-50.
- 13. Mistsea AG, Karidis AG, Danta-Bakoyanni C, Spyropoulos ND. Oral health in Greek children and teenagers with disabilities. J Clin Pediatr Dent. 2001; 26(1):111-8.
- 14. Desai M, Messer LB, Calache H. A study of the dental treatment needs of children with disabilities in Melbourne Australia. Aust Dent J. 2001; 46(1):
- 15. Pope JE, Curzon ME. The dental status of cerebral palsied children. Pediatr Dent. 1991; 13(3):156-62.
- 16. Organização Mundial da Saúde (OMS). Levantamentos Básicos em Saúde Bucal. 4ª ed. São Paulo: Santos; 1999.
- 17. Donell DO, Sheiham A, Wai YK. Dental findings in 4-, 14-, and 25-to 35-year old Hong Kong residents with mental and physical disabilities. Spec Care Dentist. 2002; 22 (6):231-4.
- 18. Vásquez CR, Garcillan R, Rioboo R, Bratos E. Prevalence of dental caries in an adult population with mental disabilities in Spain. Spec Dental Dentist. 2002; 22(2): 65-9.

- 19. Colver A. Benefits of a population register of children with cerebral palsy. Indian Pediatric. 2003; 40:639-44.
- 20. Johnson A. Prevalence and characteristics of children with cerebral palsy in Europe. Dev Med Child Neuro, 2002; 44(9); 633-40.
- 21. Santos MT, Masiero D, Simionato MR. Risk factors for dental caries in children with cerebral palsy. Spec Care Dentist. 2002; 22(3):103-7.
- 22. Abanto J, Bortolotti R, Carvalho TS, Alves FBT, Raggio DP. Ciamponi AL. Avaliação dos hábitos alimentares de interesse odontológico em crianças com paralisia cerebral. Rev Inst Ciênc Saúde. 2009; 27(3):244-8.
- 23. Santos MT, Nogueira ML. Infantile reflexes and their effects on dental caries and oral hygiene in cerebral palsy individuals. J Oral Rehabil. 2005; 32(12):880-5.
- 24. Souza AL, Horta CAB, Silva CATM, Miranda DK. Saúde bucal de pacientes portadores de necessidades especiais com paralisia cerebral. Rev Paraense Odonto. 1997; 2:11-8.

- 25. Nielsen LA. Caries among children with cerebral palsy. Proceedings of the 9th Congress of The International Association for handicapped; 1988, Philadelphia, PA: 1988.
- 26. Ministério da Saúde (MS). Pesquisa Nacional de Saúde Bucal 2010. Nota para a imprensa. 2010 [acessado 2011 Mai 16] [PDF;4 p.]. Disponível em: http://observasaude.fundap.sp.gov.br/ BibliotecaPortal/Acervo/Sa%C3%BAde%20Bucal/ SB NI 2010dez28.pdf
- 27. O'Sullivan DM, Tinanoff N. Maxillary anterior caries associated with increased caries risk in other primary teeth. J Dent Res. 1993; 72:1530-77.
- 28. Li Y. Wang W. Predicting caries in permanent teeth from caries in primary teeth: an eight-year cohort study. J Dent Res. 2002; 81:561-6.
- 29. Previtali EF, Santos MTBR. Cárie dentária e higiene bucal em crianças com paralisia cerebral e tetraparesia espástica com alimentação por vias oral e gastrostomia. Pesq Bras Odontoped Clin Integr. 2009; 9(1):43-7.

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