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Original Article

Prevalence of dental caries in preschool children: a cross-sectional study

Prevalência da cárie dentária em pré-escolares: um estudo transversal

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Resumo

Introdução: Segundo levantamento realizado pelo Ministério da Saúde, mais da metade das crianças brasileiras apresentam experiência de cárie dentária aos cinco anos de idade. **Objetivo:** O objetivo desta pesquisa é avaliar o índice ceo-d (dentes cariados, dentes com extração indicada e dentes obturados) dos escolares matriculados na pré-escola da educação infantil da rede pública de ensino do município de Barreirinha – Amazonas. **Material e método:** Estudo transversal, com 279 pré-escolares, entre 02 e 06 anos de idade, da rede pública de ensino, Barreirinha. A avaliação da cárie dentária seguirá as recomendações da Organização Mundial da Saúde, conforme os critérios estabelecidos para as condições dentárias. **Resultado:** Participaram do estudo 279 pré-escolares com idade entre dois e seis anos. A prevalência da cárie dentária foi de 59,2%, a média ceo-d/CPO-D foi de 2,36 dentes e o Índice Significativo de Cárie Dentária (Sic Índice) foi de 5,72. **Conclusão:** Concluiu-se que os pré-escolares apresentam alta prevalência de cárie dentária e elevado valor do componente cariado (c), demonstrando a necessidade de programas de educação em saúde e promoção de saúde nos pré-escolares de Barreirinha.

Descritores: Cárie dentária; epidemiologia; criança.

Abstract

Introduction: According to a survey conducted by the Ministry of Health, more than half of Brazilian children have experienced dental caries at 5 years old. **Objective**: This research aims to assess the ceo-d Index (decayed teeth, teeth with indicated extraction, and filled teeth) of schoolchildren enrolled in preschool in the public education system in the city of Barreirinha city, state of Amazonas. **Material and method**: Cross-sectional study, with 279 preschoolers between 02 and 06 years old, from the public education system of the city of Barreirinha. Dental caries were assessed following the recommendations of the World Health Organization based on the criteria established for dental conditions. **Result**: 279 preschoolers between 2 and 6 years old participated in the study. The prevalence of dental caries was 59.2%, the average ceo-d/CPO-D was 2.36 teeth, and the Significant Index of Dental Caries (Sic Index) was 5.72. **Conclusion**: Preschool children show a high prevalence of dental caries and a high value of the decayed component (c), suggesting the need for health education and health promotion programs for preschool children in Barreirinha.

Descriptors: Dental caries; epidemiology; child

INTRODUCTION

Currently, over 600 million children worldwide are affected by Early Childhood Caries (ECC)[1]. In Brazil, the national baseline survey carried out in 2010 revealed that dental caries affects more than 50% of Brazilian children aged 5 years of age. It is worth noting that this disease is unevenly distributed across the country[2], being more frequent in the population with low socioeconomic status[3-5].

IPC is defined as the presence of one or more decayed deciduous teeth (non-cavitated or cavitated lesions), restored or lost (due to caries)[1]. It is a chronic disease resulting from an imbalance of multiple risk and protective factors over time[6]. In addition, it affects the teeth of children under six years of age[3] and is determined by biological, behavioral, and psychosocial factors linked to an individual's environment[1].

In this context, the literature has shown that sugar plays a key role in their development, making it an essential condition for the formation of dental caries[7,8]. Based on this, it is very important to adopt measures aimed at delaying the introduction of sugar into children's diets, or even to reduce the frequency of its use[8].

Furthermore, it is crucial to identify the epidemiological profile of dental caries in children to avoid future problems caused by the disease, such as lack of space in the dental arch, the development of malocclusions, and the impaction of permanent teeth[9] since deciduous teeth maintain the space for permanent teeth[1]. In addition, there is pain, difficulty chewing, limited sleep, speech problems, general health disorders, and psychological problems, all of which will harm the quality of life of children and their families[1,3,10,11]. Preventive measures aimed at parents and health professionals should therefore be encouraged as a way of avoiding the onset of IPC6 and seeking to mitigate the negative effects of dental caries on individuals, families, and society[3].

Therefore, gaining real knowledge of the problem through an epidemiological survey for dental caries is a key tool for recognizing the actual picture of the problem in this population[12], and detecting the groups with the highest number of individuals susceptible to this disease is the first step towards preventing it[10]. In this sense, the Significant Caries Index (SiC) allows us to diagnose the impact of dental caries on the groups with the highest prevalence of the disease[13].

Given the relevance of the subject, this study aimed to outline the epidemiological profile of early childhood dental caries among preschoolers in the public school system in the municipality of Barreirinha, in the state of Amazonas.

MATERIAL AND METHOD

Study Design and Ethical Matters

This study was approved by the Research Ethics Committee of the Amazonas State University, with Opinion No. 5.699.561 of 10/14/2022 (CAAE: 63227922.7.0000.5016).

This is a cross-sectional, observational study involving preschoolers from the public school system in the municipality of Barreirinha, in the state of Amazonas. This municipality is located 331 km from the capital Manaus, state of Amazonas, accessed by river, with a population of 31,051 inhabitants[14]. The local healthcare network comprises a general hospital and three Basic Health Units, totaling four Oral Health Teams. It is estimated that oral health coverage in PHC will reach 100% in the municipality of Barreirinha in 2024[15]. Development Index (HDI) is 0.574[16] and 78% of people benefit from the "Bolsa Família" program, the municipality can be considered to be highly socially vulnerable, hence the decision not to collect socio-economic information[17].

Participants

Based on the nominal list provided by the municipality's Department of Education and Culture, in 2022, the municipality's headquarters (urban area) had a total of two municipal public

preschools, totaling 628 preschoolers enrolled. Indigenous preschoolers and those undergoing orthodontic treatment were excluded. A total of 299 informed consent forms were signed by parents, representing a response rate of 47.6% of pupils in the municipal network. Of these, 20 preschoolers met the exclusion criteria. The final sample consisted of 279 preschoolers aged between 2 and 6 who agreed to take part in the dental caries test. Participants were excluded due to difficulties in contacting parents, refusal by guardians to sign the authorization form, and absenteeism on the part of the students at the time of the examination.

Training and Calibration

To standardize the techniques, nine final-year dental students were previously calibrated by a teacher with expertise in the area who was also part of the research group. The training followed WHO recommendations and consisted of theoretical sessions (4 hours) and practical training (8 hours). The Kappa value for intra-examiner and inter-examiner agreement for dental caries ranged from 0.70 to 0.89 and 0.70 to 0.86, respectively.

Epidemiological Examination

The epidemiological examination was carried out between 2022 and 2024 in the institution, under natural light, with the child sitting on the chair in front of the examiner. The data collected was recorded by a note-taker on individual forms. Suitable clothing and personal protective equipment (PPE) were used, and the examination followed the World Health Organization (WHO) standard for diagnosing dental caries in deciduous teeth and the need for treatment[18].

Indices

The diagnosis of dental caries was based on the index of deciduous teeth with caries lesions (component c), lost due to caries (component e), and restored (component o), known as the ceo-d, which is calculated individually based on the sum of the number of teeth with these conditions, while the group average is calculated using the arithmetic mean of the sum of each participant's ceo-d divided by the number of children examined[18].

The SiC index (Significant Caries Index) was also used to assess the severity of dental caries in the group of individuals with the most significant evidence of the disease. The sample was divided into two groups for the same analyses: one comprising the third of individuals with the highest caries rates – the SIC group (high caries level) – and the other comprising the remaining individuals with the lowest rates (low caries level)[13].

10% of the sample was re-examined to find the percentage of intra-examiner agreement, achieving a value above 90% for caries and need for treatment[18].

Health Education Activities

The health education activities were carried out with all the students in a space set aside by the school, through a conversation circle, addressing topics related to brushing techniques, the intelligent use of sugar, and the prevention of tooth decay.

Statistical Analysis

The statistical analysis was carried out on Microsoft Excel and SPSS, version 23.0. A descriptive analysis of the variables was carried out. The difference in the ceo-d and components between

the ages evaluated was analyzed by the Kruskall Wallis test, run on SPSS version 20.0, with a significance level of 5%.

RESULT

A total of 279 preschoolers aged between 2 and 6 years took part in the study. 157 (56.3%) of the total examined were male. A prevalence of 59.2% (165 students) of caries was found among these students from the public school system in the municipality of Barreirinha, state of Amazonas, i.e. ceo-d ≥ 1, which is considered high (Table 1).

The average ceo-d from 2 to 6 years of age showed 2.36 teeth, with a standard deviation of 2.99 affected by the disease, and a minimum of zero and a maximum of 16. Of these, the average was higher in males (2.70) than in females (1.92). The decayed component (c) was the most prevalent, at 2.16. However, there was an increase in the ceo-d among the students as their age increased, hence the highest mean ceo-d at 6 years of age. Meanwhile, the Significant Index of Dental Caries (Sic Index) reached 5.72 between the ages of 2 and 6, showing the polarization of this disease in the municipality studied. Assessing the difference in the ceo-d and components between the ages of the participating children, a statistically significant difference was found in the component tooth loss due to caries (p=0.006), as described in Table 1.

Table 1. Distribution of age and sex according to the mean ceo-d/CPO-D Index and its components, Significant Caries Index (SIC), caries-free, and standard deviation, city of Barreirinha, state of Amazonas, 2024

Age (years)	SEX	n	ceo-d/CPOD	C	E	O	SIC	Ceo-d/CPOD=0
			Mean		Mean			f (%)
	Female	2						1 (25.0)
2	Male	2						1 (25.0)
	Total	**4**	**1.25**	**1.25**	**0.0**	**0.0**	**4.0**	**2(50.0)**
	Female	18						9(23.1)
3	Male	21						10(25.6)
	Total	**39**	**1.56**	**1.49**	**0.02**	**0.05**	**3.85**	**19(48.7)**
	Female	64						30(22.7)
4	Male	68						26(19.7)
	Total	**132**	**2.39**	**2.21**	**0,.10**	**0.08**	**6.02**	**56(42.4)**
	Female	33						15(16.7)
5	Male	57						18(20.0)
	Total	**90**	**2.54**	**2.3**	**0.24**	**0.0**	**5.86**	**33(36.7)**
	Female	5						2(14.3)
6	Male	9						2(14.3)
	Total	**14**	**3.36**	**2.93**	**0.43**	**0.0**	**6.4**	**4(28.6)**
	Female	122						57(20.4)
2-6	Male	157						57(20.4)
	Total	**279**	**2.36**	**2.16**	**0.15**	**0.05**	**5.72**	**114(40.8)**
	p		0.215	0,.268	0.006*	0.158		

*p<0.05 – statistically significant difference.

More than half of the preschoolers examined – 203 (72.7%) – needed dental treatment. Of these, the greatest need was for restorative treatment, accounting for 150 of the preschoolers (53.7%), followed by pulp treatment, with 28 of the preschoolers (10.0%), and extraction, found in 25 of the preschoolers (8.9%). 120 preschoolers (43.0%) showed no need for dental treatment (Table 2).

Table 2. Need for treatment, according to age, city of Barreirinha, state of Amazonas, 2024

Age (years)	Not required	Restoration	Pulp treatment and restoration	Exo
2	2 (0.72%)	1 (0.36%)	1 (0.36%)	-
3	20 (7.17%)	19 (6.81%)	1 (0.36%)	3 (1.1%)
4	59 (21.14%)	71 (25.44%)	10 (3.58%)	11 (3.9%)
5	34 (12.19%)	49 (17.56%)	12 (4.30%)	11 (3.9%)
6	5 (1.79%)	10 (3.58%)	4 (1.43%)	-
2-6	120 (43.0%)	150 (53.7%)	28 (10.0%)	25 (8.9%)

DISCUSSION

Our findings show that the target set by the World Health Organization of 50% of children between 5 and 6 years free of caries by the year 2000[19] has not been met. Even after twenty-four years, this goal has yet to be achieved in the country (53.4%)[2], as well as in this study (59.2%). Previous studies have also found similar results, such as Costa et al.[12], Assis et al.[20], and Silva et al.[4]. The high prevalence of dental caries found in Barreirinha could be linked to its small size and high social vulnerability; according to the Ministry of Development and Social Assistance, 24,893 people living in this municipality benefit from the "Bolsa Família" program[17]. In addition, the literature shows that dental caries is associated with low socioeconomic conditions[3-5,21-23].

Although this study could not establish a cause-effect relationship, given its cross-sectional nature, it made relevant contributions by investigating dental caries in preschoolers in the public school system in the municipality of Barreirinha, state of Amazonas. In addition, according to Costa et al.[12], knowing the epidemiological profile of dental caries in preschoolers is a key tool for identifying the real problem in the population studied and developing strategies for planning and implementing actions in local Primary Care.

It is worth highlighting that the average ceo-d in Barreirinha was high, corroborating Costa et al.'s[12] study, which found an average ceo-d of 4.48 at five years, and Assis et al.'s[20] study, which found an average ceo-d of 2.7 in preschoolers between four and six years. By comparing the average ceo-d score found here with that of the Brazilian population survey carried out in 2010 for five-year-olds (ceo-d of 2.43)[2], a worrying result is observed in Barreirinha, given that the nationwide epidemiological survey carried out by the Ministry of Health took place more than ten years ago. This effect could be attributed to the study having been carried out in a municipality with a low HDI of 0.574[16] and without fluoridation of the public water supply since a reduction in dental caries is expected with the use of this measure[11,24].

In addition, component c (decayed deciduous teeth) remains high, accounting for approximately 91% of the total value of the ceo-d index. In addition, restorative treatment (53.7%) was the most common need for dental treatment, showing that the difficulty of accessing services to restore teeth remains a challenge in the municipality, corroborating the study by Brasil[2], Narvai et al.[24], and Costa et al.[12]. These results point to the need to strengthen health education and health promotion actions for preschoolers in the municipality through the Health at School Program (PSE) and expand access to treatment by primary health care oral health teams.

A statistically significant difference also emerged in the component lost due to caries (p=0.006), with no teeth lost at the age of 2 and an increase in the average of this component as children got older, reaching 0.43 at the age of 6. This result reinforces the importance of oral health education activities with children's parents or guardians since children in this age group depend on their care and supervision for oral hygiene practices and access to health services.

The SiC Index found here shows an unequal distribution of the disease, with the highest prevalence concentrated in a smaller proportion of students, suggesting polarization of the disease, i.e. a lower percentage of children concentrating a greater burden of the disease in this group, corroborating the study carried out in the city of Barcelos, state of Amazonas, which found a ceo-d

index of 4.23 and a Significant Caries Index of 7.55 at the age of six[25], while the study carried out in the city of Barreirinha, state of Amazonas, found a ceo-d index of 3.12 and a Significant Caries Index of 6.90 at the age of six[26]. Although the municipality has 100% ESB coverage in the Family Health Strategy[15], the high severity of the disease in this group could be linked to the low number of preventive actions implemented by the ESB of the School Health Program in the municipality, as well as the lack of knowledge on the importance of oral health by parents.

According to Nunes et al.[10], this lack of information may lead parents to only visit the dentist when their child has painful symptoms. Programs aimed at providing schoolchildren with tooth brushing and fluoride toothpaste, as well as guidance on healthy eating habits, the etiology of tooth decay, raising awareness of oral health care among parents and schoolchildren and the relevance of longitudinal monitoring by the oral health team, are important and effective strategies for improving children's oral health over time[3,7-9,23].

CONCLUSION

Our findings point to a high prevalence and severity of dental caries in the preschoolers studied. An unequal distribution of this disease was also observed, as a smaller proportion of students had a higher concentration of the disease, suggesting the existence of a polarized group with a high incidence of caries that needs attention, both in terms of oral health education and access to treatment.

These results reinforce that oral health prevention and care for preschool children remain a challenge for primary oral health care in the municipality studied, highlighting the need to reinforce oral health education and prevention actions with both children and their parents or guardians, thus helping to improve the oral health of these preschoolers.

AUTHORS' CONTRIBUTIONS

Lauramaris de Arruda Regis Aranha: Research design and planning, Data collection, Draft manuscript, Critical review of the manuscript, Approval of final manuscript definite version.
Ângelo Esmael da Silva Maklouf: Data collection, Approval of the final manuscript definite version.
Luiz Augusto Belém Júnior: Data collection, Approval of the final manuscript definite version.
Guilherme Regis-Aranha: Draft manuscript, Critical review of the manuscript content, Approval of the final manuscript definite version.
Ângela Xavier Monteiro: Data analysis and interpretation, Critical review of the manuscript content, Approval of the final manuscript definite version.
Shirley Maria de Araújo Passos: Data analysis and interpretation, Approval of final manuscript definite version.
Adriana Beatriz Silveira Pinto: Data analysis and interpretation, Critical review of the manuscript content, Approval of the final manuscript definite version.

ETHICAL STATEMENT

Approved by the Resesrch Ethics Committee of the Amazonas State University No. 5.699.561 of 10/14/2022.

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REFERENCES

1. Pitts NB, Baez RJ, Diaz-Guallory C, Donly KJ, Feldens CA, McGrath C, et al. Early childhood caries: IAPD Bangkok Declaration. Int J Paediatr Dent. 2019 May;29(3):384-6. http://doi.org/10.1111/ipd.12490. PMid:31099129.

2. Brasil. Ministério da Saúde. Departamento de Atenção Básica. Projeto SB Brasil 2010: principais resultados. Ministério da Saúde. Brasília: Ministério da Saúde; 2012.

3. World Health Organization – WHO. Ending childhood dental caries: WHO implementation manual. Geneva: WHO; 2019.

4. Silva CHF, Ié MFC, Lima KER, Joaquim DC, Leite ACRM. Saúde bucal de pré-escolares: do processo carioso aos fatores determinantes e moduladores. Rev Fac Odontol (Univ Passo Fundo). 2020 Maio/Ago;25(2):175-83. http://doi.org/10.5335/rfo.v25i2.10616.

5. Santos GNA, Lima CCB, Pereira AS, Lima MD, Moura LFAD, Moura MS. Timing of sugar introduction in diet and early childhood caries: a population-based study in preschoolers. Rev Odontol UNESP. 2021;50:e20210007. http://doi.org/10.1590/1807-2577.00721.

6. American Academy of Pediatric Dentistry – AAPD. Policy on Early Childhood Caries (ECC): Consequences and preventive strategies. Ref Man Pediatr. 2024;89-92.

7. Beraldi MIR, Pio MSM, Codascki MD, Portugal MEG, Bettega PVS. Cárie na primeira infância: uma revisão de literatura. Rev Gestao Saude. 2020;22(2):29-42. http://doi.org/10.17648/1984-8153-rgs-v2n22-3.

8. Luz S, Botton G, Rocha RO, Oliveira MDM, Ortiz FR. Early Childhood caries and sugar: relationships and suggestions for prevention. RGO Rev Gaúch Odontol. 2021;69:e20210055. http://doi.org/10.1590/1981-86372021000552020027.

9. Antunes LAA, Ornellas G, Fraga RS, Antunes LS. Oral health outcomes: the association of clinical and socio-dental indicators to evaluate dental caries in preschool children. Cien Saude Colet. 2018 Fev;23(2):491-500. http://doi.org/10.1590/1413-81232018232.21022015. PMid:29412407.

10. Nunes GP, Morais-Silva P, Pirovani BO, Nunes LP, Butarelo AV, Silva HG, et al. Evaluation of dental caries behavior in childhood: health promotion and control. J Health Sci. 2019;21(5):500-3. http://doi.org/10.17921/2447-8938.2019v21n5p500-503.

11. Moimaz SAS, Santos LFP, Saliba TA, Saliba NA, Saliba O. Prevalência de cárie dentária aos 12 anos: a importância da fluoretação e da tradição em levantamentos. Arch Health Invest. 2022;11(1):82-8. http://doi.org/10.21270/archi.v11i1.5321.

12. Costa EVS, Freitas CASL, Ximenes Neto FRG, Silva MAM, Lourenção LG. Epidemiologia da cárie dentária em crianças pré-escolares de um município do nordeste brasileiro. Enferm. Foco. 2020 Jul;11(2):146-53. http://doi.org/10.21675/2357-707X.2020.v11.n2.3361.

13. Sousa MLR, Rando-Meirelles MPM, Tôrres LHN, Frias AC. Dental caries and treatment needs in adolescents from the state of Sao Paulo, Brazil. Rev Saude Publica. 2013 Dec;47(Supl 3):50-8. http://doi.org/10.1590/S0034-8910.2013047004340. PMid:24626581.

14. Instituto Brasileiro de Geografia e Estatística – IBGE. Recenseamento Geral do Brasil no ano de 2022 (para unidades da federação e municípios). Rio de Janeiro: IBGE; 2022.

15. Brasil. Ministério da Saúde. Informação e Gestão da Atenção Básica (e-Gestor). Cobertura de Saúde Bucal [Internet]. 2024 [citado 2024 Nov 28]. Disponível em: https://egestorab.saude.gov.br/paginas/acessoPublico/relatorios/relHistoricoCoberturaSB.xhtml.

16. Atlas do Desenvolvimento Humano no Brasil – Atlas BR. Ranking [Internet]. 2010 [citado 2024 Nov 28]. Disponível em: http://www.atlasbrasil.org.br/ranking

17. Brasil. Ministério do Desenvolvimento e Assistência Social, Família e Combate à Fome. Secretaria Nacional de Renda e Cidadania. Secretaria de Avaliação, Gestão da Informação e Cadastro Único. Programa Bolsa Família e Cadastro Único no seu Município [Internet]. 2024 [citado 2024 Nov 28]. Disponível em: https://aplicacoes.cidadania.gov.br/ri/pbfcad/relatorio-completo.html

18. World Health Organization – WHO. Oral health surveys: basic methods. Geneva: WHO; 2013.

19. Brasil. Ministério da Saúde. Departamento de Atenção Básica. Projeto SB Brasil: Condições de Saúde Bucal da População Brasileira 2002-2003 – Resultados Principais. Brasília: Ministério da Saúde; 2004.

20. Assis WC, Silva YS, Brito FR, Nunes LA, Ribeiro IJS, Casotti CA. Dental caries and associated factors in preschoolers in a small city. Rev Bras Odontol. 2019;76:e1552. http://doi.org/10.18363/rbo.v76.2019.e1552.

21. Aguiar BD, Frota Fernandes ME, Aguiar MHR, Torquato DSA, Peres EC, Teixeira AKM. Nutritional status and dental caries of schoolchildren from Sobral – Ceará. RGO Rev Gaúch Odontol. 2019;67:e20190049. http://doi.org/10.1590/1981-86372019000493499.

22. Barreto KA, Colares V. The social status associated with dental experience among Brazilian children. Cien Saude Colet. 2020 Oct;25(10):3913-9. http://doi.org/10.1590/1413-812320202510.32312018. PMid:32997023.

23. Andrade LS, Torres ACS, Almeida NR, Mendonça MPR, Bezerra GL. Relação da prática de alimentação, higiene oral e fatores socioeconômicos com cárie precoce em escolares. Actas de Saude Colet. 2019 Set;13(3):139-52. http://doi.org/10.18569/tempus.v13i3.2498.

24. Narvai PC, Frazão P, Roncalli AG, Antunes JLF. Cárie dentária no Brasil: declínio, polarização, iniqüidade e exclusão social. Rev Panam Salud Publica. 2006 Jun;19(6):385-93. http://doi.org/10.1590/S1020-49892006000600004. PMid:16968593.

25. Régis-Aranha LA, Santos STC, Magalhães WOG, Pinto ABS, Passos SMA, Monteio AX. Dental caries and visual acuity of students in a town in West Amazon. Braz J Oral Sci. 2018 Oct;17:e18159. http://doi.org/10.20396/bjos.v17i0.8653816.

26. Régis-Aranha LA, Meneghim MC, Maklouf AES, Aranha GR, Pinto ABS, Passos SMA, et al. Condições de Saúde bucal e acuidade visual dos estudantes em um município do Baixo Amazonas. Esc Anna Nery. 2021;25(3):e20200244. http://doi.org/10.1590/2177-9465-ean-2020-0244.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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