

# PREVALENCE OF TOOTH DECAY IN THE RIVERINE POPULATION OF THE MAMIRAUÁ SUSTAINABLE DEVELOPMENT RESERVE, AMAZONAS.

## PREVALÊNCIA DE CÁRIE EM POPULAÇÕES RIBEIRINHAS DA RESERVA DE DESENVOLVIMENTO SUSTENTÁVEL MAMIRAUÁ, AMAZONAS.

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### KEYWORDS

Caries;  
Prevalence;  
Oral health.

### ABSTRACT

This study aims to evaluate the prevalence of tooth decay in the riverine population of Mamirauá Sustainable Development Reserve - MSDR, Amazonas, Brazil, as well as, to contribute to a better planning and implementation of public policies for oral health in those communities. The 2001 study examined 8 MSDR's communities with a population sample of 486 residents, between 1 and 70 years of age, divided into four age groups. For measuring the experience of tooth decay in permanent and deciduous teeth DMFT (decayed, lost and filled teeth) and deft indexes (decayed, extraction indicated and filled teeth) were used respectively. As a result, a 7.54 average DMFT and a 3.48 deft were observed. The age group with the fewest people free from tooth decay was that above 19 years, only 1.4% was free. And the largest component to the DMFT index contribution was loss by caries (68.90%), while decayed teeth for the deft index (90.54%). This data is disturbing concerning tooth decay in the communities of MSDR. The study stresses a need for a more effective public policies involving dental health for that population.

### PALAVRAS-CHAVES:

Cárie;  
Prevalência;  
Saúde bucal.

### RESUMO

O objetivo deste trabalho foi avaliar a prevalência da doença cárie em uma população ribeirinha da Reserva de Desenvolvimento Sustentável Mamirauá - RDSM, Amazonas, Brasil, assim como contribuir para ações de planejamento e políticas públicas de saúde bucal nessas comunidades. A coleta dos dados foi feita em 2001 em oito comunidades da RDSM, com uma população amostral de 486 moradores, entre um a 70 anos de idade, divididos em quatro faixas etárias. Para medir a experiência de cárie na dentição permanente e decídua foram utilizados os índices CPO-D (dentes cariados, perdidos e obturados) e ceo-d (dentes cariados, extração indicada e obturados) respectivamente. Como resultado foi observada a média CPO-D de 7,54, e a de ceo-d 3,48. A faixa etária que apresentou o menor número de pessoas livres de cárie foi acima de 19 anos, onde apenas 1,4 % estavam livres da doença. O componente do CPO-D com maior percentual de ocorrência foi o perdido por cárie (68,90%), enquanto do índice ceo-d foi o componente cariado (90,54%) Esses dados são bastante preocupantes em relação à doença cárie nas comunidades da RDSM. O estudo ressalta a necessidade de políticas públicas de saúde bucal mais efetivas para essa população. estuarinas do ponto de vista de conservação de sua integridade ecológica e do aproveitamento dos recursos descartados, uma vez que este complexo estuarino está inserido na Reserva de Desenvolvimento Sustentável Caeté-Taperaçu.

## INTRODUCTION

To be aware of the epidemiological situation of the population is essential for both the level of planning and the implementation of dental services, forming the correct way to solve health problems and diseases within each community (MENEQUIM et al., 2007; PINTO, 2000).

Epidemiology in oral health in Brazil does not present expressive data, despite the occurrence of a sensitive growth during the last few years, especially from the point of view of production of data at the municipal level (RONCALLI et al., 2000). Thus, considering that epidemiological data on Brazilian riverine population is too scarce, this study aims not only to evaluate the indices of decayed, lost and filled teeth in permanent and deciduous dentition (DFMT and dmt-f), but also to encourage studies in these localities.

In Brazil, tooth decay is the most prevalent mouth disease, and the greatest reason for teeth losses. According to the National Research on Oral Health, the Brazilian Oral Health Brazil 2010, despite a reduction on the decayed, lost and filled teeth index from 2.8 in 2003 to 2.1 in 2010, there are still regions, such as the Northern Region, where an increase in the index has occurred. This shows that there is an urgent need to implement more effective public policies in that region (BRASIL, 2010).

The DFMT index has been largely used in epidemiological surveys of oral health. It is an index recommended by the World Health Organization (WHO) to measure and to compare the experience of tooth decay in populations, and its values

show the average of decayed, lost and filled teeth index in a group of individuals. (WHO, 1997).

Considering the doctrinary principles of the Brazilian Unified Health System (SUS) – universality, integrality and more relevantly equity, which aims to decrease inequalities by investing most where scarcity and needs are greater - the determination of individuals with the greatest needs of attention, through an epidemiological survey, and among them, - those requiring more immediate concern due to social inequalities, would enable a more adequate organization for the demand of services. (MENEQUIM et al., 2007).

This study shows data concerning basic indicators of oral health of population from different age groups, residents of small riverine villages in the Mid-Solimões region, the state of Amazonas. These small villages located inside the Mamirauá Sustainable Development Reserve - MSDR, like other rural localities in the region have a history of lack of assistance concerning basic oral health, both in its preventive and remedial aspects.

Since 1990, when MSDR was created, socio-epidemiological studies have been used to evaluate the educational and preventive work done by community health agents (BRASIL, 2010). These agents are responsible for a continuous health and prevention program in each community of the reserve, using educational pamphlets and lectures. These actions form the policies set up by Mamirauá Sustainable Development Reserve - MSDR to promote, in association with municipal health secretaries, conditions for better access to public services responsible for education and health.

Thus, the aim of this study was to make an epidemiological survey concerning caries in children and adults of MS DR to evaluate ongoing strategies in both preventive, and educational and remedial areas.

## MATERIAL AND METHODS

This study was done in eight localities of MS DR, located in the Mid-Solimões region in the state of Amazonas, Brazil. The survey occurred between January 13 and 18, 2011. From a total of 788 local residents, a sample of 486 individuals between 1 and 70 years of age, divided into four age brackets, were examined.

It was a convenience sample; the subjects were those who freely accepted to participate, after hearing a detailed explanation on the objectives of the research during meetings held in each of the eight localities. During the meetings the respective association president or a community health agent was also present. There were no situations of exclusion, neither refusal to participate in the research. All local residents who attended the meetings received information on oral health care, and those cases considered serious received dental assistance from an Army professional who went to the field with the research team, as shown on the MS DR activity report.

The exams done by three dental examiners pre calibrated under natural light using a flat mirror, disposable wood spatula, gauze and gloves, following bio safety criteria. In the 1 to 5 and 6 to 12 age bracket, it was observed both dmft and DMFT indices. For the 13 to 18 age bracket and above 19, only the DMFT was analyzed,

disregarding an eventual presence of deciduous teeth.

The dental caries index, originally formulated by Klein and Palmer in 1937, known by the initials DMFT continues to be frequently used as the basic point of reference for dental condition diagnosis, and to formulate and evaluate oral health programs.

Lesions caused by caries were identified based on criteria established by the World Health Organization (WHO, 1997). Before the oral exam was performed a form was filled containing the patients' personal data sheet and oral health habits

The Bioestat 4.0 program was used for the data statistics. The data were organized in descriptive form in charts and tables.

## RESULTS

A sample was examined containing 486 people, in the 1 to 5, 6 to 12, 13 to 18 age bracket, as well as those above 19, being 45.47 % males and 54.53 % females. In the 1 to 5 age bracket the prevalence of caries found was 62.5%; for those between 6 and 12, 93.8 %; between 13 and 18, 91.89 %, while for people above 19 the prevalence of caries was 98.65%. The age bracket with the highest number of caries-free people was the 1 to 5 (37.5 %); while for those above de 19, only 1,4 % were free of the disease (Table 1 and 2).

The dmft found for those between 1 and 5 years of age was 2.84 while for 6 to 12 years was 4.23 (Table 2).

The highest dmft index component was caries (90.54 %). The missing/ extraction component was 9.06 % and fillings 0.40 % of the total (Figure 1).

In relation to gender, for children between 1 and 5 and between 6 and 12 years of age, males were the ones who were the most affected by dental caries with a dmft index of 2.88 and 4.66 respectively (Table 2).

The DMFT index for those between 6 and 12 years of age was 1.91. For the 13 to 18 age bracket was 4.3, and above 19 was 13.66 (Table 1).

From all DMFT components, caries was the most prevalent (68.90 %), followed by tooth decay (30.76%) and fillings (0.34%). (Figure 2).

Table 1 – Average DMFT by sex, percentage of people who are caries-free and the number of people examined in the 6 to 12, 13 to 16 and above 19 bracket ages, 2001.

Age (years)	DMTF			Caries-free people (%)	# of examined people (N)
	Females	Males	M + F		
6 a 12	2,2	1,61	1,91	6,2	129
13 a 18	5,16	4,4	4,3	8,1	74
19 +	14,07	13,12	13,66	1,4	148

Table 2 – Average dmft by sex, percentage of people who are caries-free and the number of people examined in the 1 to 5 and 6 to 12 age bracket, 2001.

Age (years)	ceo-d			Caries-free people (%)	# of examined people (N)
	Females	Male	M + F		
1 a 5	2,80	2,88	2,84	37,5	120
6 a 12	3,77	4,66	4,23	6,2	129

Table 3 – Number of examined people; DMFT index; DMFT average; number and percentage of tooth caries, losses, filled and the number of caries-free people at the age of 12, 2001.

Sex	# of people examined	CPO-D	Tooth caries		Tooth Loss		Filled tooth		Caries-free people	
			n	%	n	%	n	%	n	%
Female	7	4	18	64,29	10	35,71	0	0	1	14,29
Male	6	3	13	72,22	5	27,78	0	0	0	0
F + M	13	3,54	31	67,39	15	32,61	0	0	1	7,69

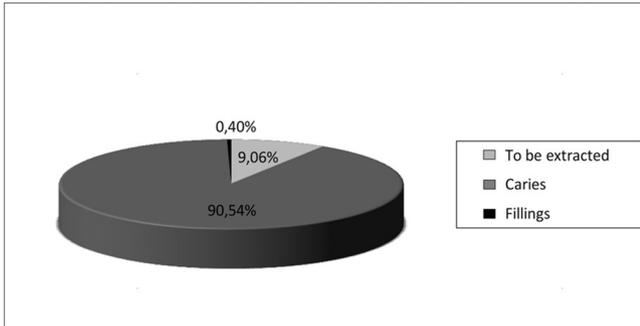


Figure 1 - Percentage of contribution of each dmft component.

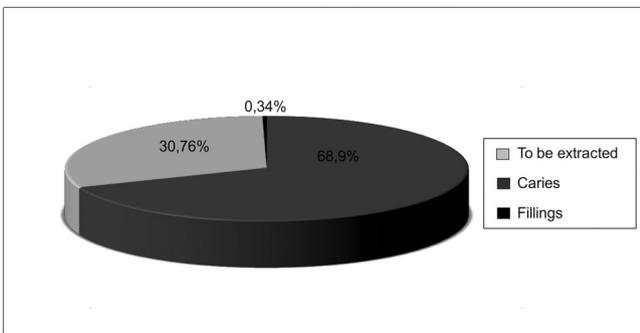


Figure 2 - Percentage of contribution of each DMFT component.

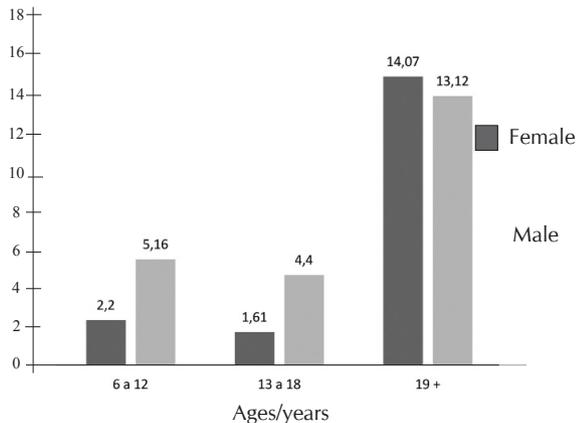


Figure 3 - Distribution of DMFT in the age brackets surveyed in relation to sex.

The DMFT index for gender in the 6 to 12, 13 to 18 and above 19 age bracket showed a greater occurrence in females with values of 2.20; 5.16 and 14.07 respectively. (Figure 3).

Table 3 shows for those at the age of 12, the DMFT index is 3.54 and the rate of caries is the highest, and none of the examined people showed a single filling.

## DISCUSSION

Dentition is fundamental for Mastication or chewing, phonetics and orofacial aesthetics. Therefore, conserving its integrity is of great importance (SOUZA, 2007). Dental caries is considered a world endemic, despite its control in several countries (TICKLE et al., 2000).

It is known that, in the beginning of the third millennia, the average DMFT, for a 12 years old child is between 1 and 3 in most developed countries, with many cities in several countries with levels below 1 (PEREIRA, 2003). According to the last national survey on oral health – SB Brazil 2010, countries with low prevalence of caries have DMFT indices between 1.2 and 2.6 according to the World Health Organization – WHO classification.

According to that survey, the DMFT index for Brazil decreased for 12 years old children, a decline of 26% in the last seven years, falling from 2.8 to 2.1 in 2010. That result placed Brazil in the group of countries with little prevalence of caries. However, this rate is rather unequal among the micro regions of the country, while the DMFT index for the Southeast region was 1.7 in 2010, in the Northern region it was 3.2.

According to Cypriano (2005) and Souza (2007), when DMFT alternates from 0 to 1.1 the prevalence is considered very low; when it moves between

1.2 and 2.6 it is considered low; when the interval is from 2.7 to 4.4 it is considered moderate; from 4,5 to 6,5 high; equal or above 6.6 very high. The analyzed data concerning the residents of MSDR showed a low prevalence of caries for people of both sexes in the 6 to 12 age bracket, Between 13 and 18, there is moderate prevalence of caries for men and high for women; as for those above 19, the prevalence was very high for both sexes.

In countries without efficient national public health care where the population have no access to regular odontological services, which is the case of Brazil and most Latin American nations, there is an index growth during adolescence, but it occurs mainly in adulthood when the component "M" (missing) widely predominates over "D" (decayed) and "F" (filled teeth) (SESI, 1996). It should be noted that component missing is responsible for about 66% of the index in the 35 to 44 age bracket, and almost 93 % between those between 65 and 74 years of age (BRASIL, 2004). These data confirm what was observed in MSDR communities in relation to the DMTF components, where the component missing, due to caries, was the most prevalent (68.90 %), followed by carries (30.76 %) and filled teeth (0.34 %).

In Brazil the prevalence of dental caries is still worrisome (GUEREIROS, 2003). According to a report from project SB Brazil 2003, on the subject of caries, Brazil has achieved the goals set by WHO for 2000 only for 12 years old people, which occurred somewhat due to better living standards of children from both South and Southern Brazil (BRASIL, 2004). The last National Survey on Oral Health – SB shows that the Northern and

Northeastern regions continue to be those with the highest averages of caries, missing and restored teeth, (3.2 and 2.7 respectively) when compared to other Brazilian regions such as: Center- West: 2.6; South: 2.0 and Southeast: 1.7) (BRASIL, 2010).

It should be stressed that there is a strong inverse relation between dental caries and access to primary health care. A better distribution of this health care, a process which is currently taking place in Brazil, is fundamental to obtain more reliable health indicators. (TICKLE et al., 2000). Studies indicate that, population under unfavorable social conditions, with low levels of education, poor income, and precarious housing conditions tend to have more dental caries (MENEHIM et al., 2007). Furthermore, population analysis show that conditions in smaller municipalities are even more unfavorable (BRASIL, 2004), which is probably due to lack of odontological services. All these factors together explain why the communities under study present worrisome oral health indicators, a factor which is intensified because these populations live far from urban areas where most basic dental care services are located.

Even countries with large populations, such as China, achieved excellent DMTF indices for 12 year olders (1.0) through prevention and education programs (WANG et al., 2002). The retrospective epidemiological studies show that, 30 to 40 years ago, countries such Norway, Finland and Sweden, among others, had as much as, or even more caries than Brazil, in terms of lesion severity. However, through preventive and educational programs, they achieved control of the disease and reached

indices close to 1 even before 2000, the same goals set by WHO for 2010 (PEREIRA, 2003).

Studies have stressed that through small investments in preventive actions it is possible to save many curative actions due to a reduction in the prevalence of caries and the great amplitude provided by this method (NUNES et al., 2004). Preventive actions activities, such as, education and motivation are directed to people concerning their oral hygiene habits (DITTERICH et al., 2007). Also included as prevention methods, are water fluoridation of public water supply (MARINHO et al., 2006; PEREIRA, 2003; NUNES et al., 2004)), as well as salt (WARPEHA et al., 2001), and the use of fluoridated dentifrice (PEREIRA, 2003).

The establishment of oral hygiene habits in the mechanical domestic control of the dental biofilm must be a practice always encouraged by the dentist or community (BRASIL, 2010), because that is how the individual will realize that dental caries is a reflex of his/her attitudes, or a disregard toward his/her oral health. The professional must inform that treatment is not permanent if the individual does not realize that he/she is the one responsible for maintenance and prevention of one's dental care. (DITTERICH et al., 2007).

Another aspect to be stressed in the studies is the importance of administrators and health professionals in the formulation of public policies which must not be restricted to aspects, such as clinical consultations and preservation, but also to encourage the population to fight for better life conditions, enabling equality in health services and developing a collective management of health activities (NORO, 2009).

The inquiry on personal and collective needs direct the data collection for later analysis and decision making when planning individual assistance. It is an instrument of epidemiological vigilance and must be used to plan dental activities by helping the programming of individual consultation (SÁ, 2005).

The residents from eight MSDR communities who participated in the survey showed worrisome conditions of oral health involving the amount of decayed and missing teeth, as well as the low rate of tooth restoration indicating that there is a need to establish public policies that may attend to the needs and control those conditions we found, in order to achieve good standards of oral health.

#### ACKNOWLEDGMENTS

We would like to thank Maria Mercês Bezerra da Silva, Otacílio Soares Brito and Isabel Soares de Sousa who contributed with the collection of data and Carmem Antonieta Trindade da Silva who organized this collection data bank.

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