

Tooth loss and need of denture in Pataxó Natives

Perda dentária e necessidade de prótese na população indígena Pataxó

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ABSTRACT

Objective

This study determined the prevalence of missing teeth and need of denture in Pataxó Natives from the city of Carmésia, Minas Gerais, Brazil.

Methods

A descriptive study was done in 2006 using secondary data collected by a team of interns attending the rural internship program available during the ninth semester of a school of dentistry. The entire population older than 14 years was examined according to the World Health Organization criteria, totaling 152 individuals from three villages. The data were analyzed by the SPSS 15.0 software, tabulated and expressed as means and percentages according to age group.

Results

Tooth loss in the sample began between 15 and 19 years of age and increased over time, reaching a mean of 18.71 ± 13.19 missing teeth per individual in the 65-74-year age group. The mean number of missing teeth for the entire population was 5.51 ± 8.47 teeth per individual. Most individuals aged 35-44 years needed a partial denture in the upper (73.07%) and lower (76.92%) arches. Some individuals in this same age group also needed full dentures in the upper (11.53%) and lower (7.69%) arches.

Conclusions

The study community suffers from early tooth loss and edentulism. Tooth loss and need of denture are higher among the Pataxó Natives than among the general Brazilian population.

Indexing terms: Health of indigenous peoples. Oral health. Tooth loss.

RESUMO

Objetivo

Conhecer a prevalência da perda dentária e necessidade de prótese da população indígena Pataxó, município de Carmésia, Minas Gerais, Brasil.

Métodos

Estudo descritivo realizado a partir de dados secundários, coletados por alunos de uma Faculdade de Odontologia, no segundo semestre de 2006. Toda a população acima de 14 anos foi examinada, sendo realizado um censo das 152 pessoas acima dessa idade segundo critérios da Organização Mundial da Saúde. Os dados foram analisados através do programa SPSS 15.0, tabulados e apresentados conjuntamente, em valores absolutos e percentuais, por faixa etária.

Resultados

A perda dentária inicia-se entre 15 e 19 anos. Cresce com o aumento da idade chegando à média de $18,71 \pm 13,19$ dentes perdidos por pessoa na faixa etária de 65-74 anos. Nas três aldeias cada indivíduo perdeu em média $5,51 \pm 8,47$ dentes. A necessidade de prótese parcial na faixa etária de 35-44 anos é de 73,07 % no arco superior e 76,92% no inferior. A necessidade de prótese total nessa mesma faixa etária é de 11,53% no arco superior e 7,69% no inferior.

Conclusão

A comunidade pesquisada caracteriza-se por ser uma população acometida precocemente pela perda dentária e pelo edentulismo. Ocorre uma transição da necessidade de prótese parcial para a de prótese total à medida que a população envelhece, devido ao aumento do número de dentes perdidos por pessoa. Os índices de perda dentária e de necessidade de prótese são maiores que na população do Sudeste e brasileira.

Termos de indexação: Saúde de populações indígenas. Saúde bucal. Perda de dente.

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INTRODUCTION

The amount of qualitative and quantitative information on the oral health of Brazilian Natives is scarce¹.

The population of Brazilian Natives is estimated to be approximately 434,816 individuals belonging to more than 210 nations and speaking more than 170 languages, with a great diversity of sociocultural organizations².

The National Native Healthcare Policy includes the National Health Policy, which combines the determinations of Organic Health Laws and the Federal Constitution, recognizing Natives' ethnicities, cultural specificities and territorial rights. This policy was then regulated by Decree n. 156, passed on August 27, 1999, which established the healthcare conditions for Natives and by the Interim Measure n. 911-8, which established the organization of the presidency and federal departments, including the transfer of human and material resources to the healthcare services of the National Natives' Foundation (FUNAI) and to the National Health Foundation (FUNASA), and by the Law n. 9.836/99, passed on September 23, 1999, which established the Native Healthcare Subsystem in the scope of the Unified Healthcare System³.

Assistance to the Natives was then organized and decentralized by creating 34 Special Sanitary Indigenous Districts⁴ throughout the country. These districts constitute a healthcare subsystem coordinated by the Unified Healthcare System and their function and responsibility are to provide quality and full healthcare to the entire indigenous population of the country, including oral healthcare. However, this goal has not yet been reached. On the contrary, the acculturation imposed on the Natives living in Brazil was often marked by forced homogenization, resulting in loss of cultural identity, modification of the social sustenance structures and induction of biological changes that facilitated the onset of diseases, such as caries, which were formerly unknown or of low prevalence.

Although many studies have documented the deterioration of Natives' oral health, Arantes⁵ showed that this problem should be better investigated because of the deep socioeconomic and environmental changes that Native nations have been undergoing, including subsistence activities and diet, factors known to change oral health.

The oral health of the Xavantes in eastern Mato Grosso was studied by different authors⁶⁻⁷. One study found almost no cavities in individuals who lived in the Indigenous Post of São Domingos; the other found relatively low decayed, missing and filled teeth (DMFT) indices (1.6

for men and 3.2 for women), with 33% of the caries-free individuals living in the Indigenous Post Simões Lopes. The significantly different prevalence of caries between the two posts was explained by the introduction of refined sugar by the Natives' Protection Service.

The oral health of Natives from 3 Yanomámi villages, with different degrees of acculturation, located on the border of Brazil and Venezuela was studied⁸. Of the study areas, those with religious missions presented the greatest caries index and the most isolated area the lowest.

A study of caries prevalence⁹ in Natives from upper Xingu aged 3 to 14 years that aimed to subsidize the implementation of a preventive program found a sudden increase in the number of carious surfaces of deciduous teeth when compared with a previous study¹⁰.

Rigonatto et al.¹¹ assessed the oral health of Upper Xingu Natives and found a high prevalence of lost teeth in individuals aged more than 20 years, irregularities and low implementation of the dental services planned for these communities and changes in their eating and cultural practices, reinforcing the urgent need of health-promoting programs in these communities.

A study with Guarani Natives that live in the suburbs of São Paulo city found that their oral health is better than expected, considering their poor life conditions and limited access to preventive and healthcare programs⁵.

Social conditions and hegemonic dental practices forces individuals from low socioeconomic groups to treat pain with extractions. In Brazil, mass extraction begins at age 30 and is the most practical and economic solution for accumulated oral health problems. Brazilian adults' loss of teeth and no access to dentures result in functional and psychosocial disorders, such as poor mastication, speech and employment difficulties and dissatisfaction with looks, among others¹².

The Pataxós who live in Carmésia, a municipality located 200km from Belo Horizonte, Minas Gerais, came from the south of Bahia and, since the 1970's, have inhabited a 3,270-hectare reservation. They rely on subsistence farming and handcraft sales. Like their ancestors, the Pataxós express their culture by painting their bodies, dancing, composing music and performing other traditional activities. The Pataxós are proud of their past and their memory is the greatest asset of their people.

The need of knowing more about Natives' oral health and providing care encouraged the Federal University of Minas Gerais School of Dentistry (FO-UFMG) to conduct a study and include in its public health internship oral care to Natives.

In October of 2005, the FO-UFGM signed an agreement with Carmésia city hall and the National Health Foundation to implement an internship in Carmésia to provide, among other things, dental care to the Pataxós. The Pataxós have been demanding dentures insistently since the first meeting between the school's team and their community. This demand shows that more studies on Native edentulism are needed to determine the dimension of the problem and guide future remedial actions.

The present study aims to assess tooth loss and need of partial and full dentures in Pataxó Natives. It also compares the results to those of the Oral Health Conditions of the Brazilian Population (SB 2003), an epidemiological survey on oral health done by the Federal Department of Health¹³.

METHODS

The study was done in the Pataxó community located in the Guarani Farm Indigenous Land, in the municipality of Carmésia, Minas Gerais, where roughly 273 individuals live in three villages: Guarani, Imbiruçu and Retirinho. Although they belong to the same ethnic group, they have distinct recent histories and have never been politically associated¹⁴.

This descriptive study done in the first semester of 2006 and was based on secondary data collected by public health interns of the FO-UFGM. The objective of the study was to obtain enough information to meet the oral care needs of this group of Natives. The examinations were calibrated (Kappa= 0.82) and done by two interns at the Natives' homes using ambient lighting, latex gloves and disposable wooden spatulas. Everyone older than 14 years (n=152) was examined according to the World Health Organization (WHO) criteria, and forms created for this purpose were filled out.

The following data were included in the forms: a) age and village; b) number and mean number of missing teeth by age group; c) need of partial or full denture by age group.

The present study was not concerned with the reason for tooth loss, such as dental caries, periodontal disease or trauma, only the number of missing teeth and need of denture.

The fourth edition of the WHO's manual of primary oral health surveys does not define the diagnostic criteria for the need of denture, therefore it is difficult to standardize and compare studies³.

In the SB 2010¹³, empty spaces determined the need of denture, so even individuals with dentures but still having empty spaces were considered as needing denture. Individuals

with all teeth, natural or not, were considered not in need of denture. Since the Pataxós have never had access to dentures, any missing tooth translated into the need of denture, even though not every lost tooth needs replacement.

The prevalence of missing teeth and need of partial or full dentures by the Pataxós were tabulated, analyzed and expressed as absolute number and percentages according to age group. Dispersion was determined by standard deviation. The software SPSS version 15.0 was used for the statistical treatment of the data. Missing teeth and need of denture were compared with those of SB 2003¹, especially of the Brazilian Southeast, where the state of Minas Gerais is located. This study was approved by the Research Ethics Committee of the Federal University of Minas Gerais, protocol number 0371/06.

RESULTS

Table 1 shows the population in the three villages by age group. Age ranged from 15 to 79 years, and most individuals aged 15 to 34 years.

Table 2 shows the increasing number of missing teeth over time.

Tooth loss begins during late adolescence, that is, between the ages of 15 to 19 years. A total of 10 teeth were missing in a universe of 39 people from this age group. The next age group, 20-34 years, had a mean of 3.16 ± 4.36 missing teeth per person. The age group 35-44 years had a mean of 8.18 ± 7.93 missing teeth per person and the mean continued to increase in the age group 45-64 years, reaching a mean of 11.70 ± 11.46 missing teeth per person. For individuals aged more than 65 years, the mean was 23.25 ± 9.5 missing teeth per person. The mean tooth loss in Carmésia's Pataxós was 5.51 ± 8.47 teeth. The village Guarani has 140 individuals, 91 aged more than 14 years; 38 have full dentition; the mean number of missing teeth is 6.86 ± 9.42 . The village Retirinho has 67 people, 29 aged more than 14 years; 10 have full dentition; the mean number of missing teeth is 4.55 ± 7.87 . The village Imbiruçu has 66 individuals, 32 aged more than 14 years; 18 has full dentition; the mean number of missing teeth is 2.56 ± 4.56 .

Table 3 shows the need of partial or full denture according to age group. Of the entire sample, 86 individuals (56.6%) need dentures and 66 (43.4%) do not.

Table 4 shows how many partial and full dentures are needed by the Pataxós.

Finally, Table 5 compares the percentages of full and partial dentures needed, according to age group, by the Pataxós and general Brazilian Southeast and Brazilian populations.

Table 1. Absolute and relative frequency of the age distribution of Pataxó Natives older than 14 years living in three villages in the municipality of Carmésia, Minas Gerais (2006).

Villages	Age groups (years)											
	15-19 years		20-34 years		35-44 years		45-64 years		65+ years		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Guarani	17	18.7	36	39.6	17	18.7	12	13.2	9	9.9	91	100.0
Retirinho	10	34.5	9	31.0	5	17.2	3	10.3	2	6.9	29	100.0
Imbiruçu	12	37.5	14	43.8	4	12.5	2	6.3	0	0.0	32	100.0
Total	39	25.7	59	39.8	26	18.1	17	11.7	11	4.7	152	100.0

Table 2. Number of missing teeth per Pataxó Native older than 14 years living in three villages in the municipality of Carmésia, Minas Gerais according to age group (2006).

Villages	Age group	Age groups (years)											
		15-19 years		20-34 years		35-44 years		45-64 years		65+ years		Total	
		n	%	n	%	n	%	n	%	n	%	n	%
Guarani (n= 91)	3	0.48	133	21.28	170	27.2	132	21.12	187	29.92	625	100.0	
Retirinho (n=29)	5	3.73	20	14.92	16	11.94	56	41.79	37	27.61	134	100.0	
Imbiruçu (n=32)	2	2.43	34	41.46	35	42.68	11	13.41	0	0.0	82	100.0	
Total	10		187		221		199		224		841	100.0	

Table 3. Absolute and relative frequency of the need of denture by age group in Pataxós living in the municipality of Carmésia, Minas Gerais (2006).

Age groups	Need of denture				Total	
	Need		No need		n	%
	n	%	n	%		
15-19	8	20.5	31	79.5	39	100.0
20-34	35	59.3	24	40.7	59	100.0
35-44	23	88.5	3	11.5	26	100.0
45-64	11	64.7	6	35.3	17	100.0
65+	9	81.8	2	18.2	11	100.0
Total	86	56.6	66	43.4	152	100.0

Table 4. Absolute and relative frequency of the need of partial and full dentures by age group in Pataxós living in the municipality of Carmésia, Minas Gerais (2006).

Age groups	Number of partial dentures				Number of full dentures			
	Upper arch		Lower arch		Upper arch		Lower arch	
	n	%	n	%	n	%	n	%
15-19	2	4.34	7	10.0	0	0.00	0	0.00
20-34	19	41.3	34	48.57	2	10.52	0	0.00
35-44	19	41.3	20	28.57	3	15.78	2	15.38
45-64	5	10.86	7	10.0	6	31.57	4	30.76
65+	1	2.2	2	2.86	8	42.13	7	53.86
Total needed	46	100.0	70	100.0	19	100.0	13	100.0

Table 5. Percentage of Pataxós from Carmésia, Minas Gerais, Southeast Brazilians and Brazilians in need of partial or full dentures according to age group (2006).

		15 to 19 years		35 to 44 years		65 to 74 years	
		Upper	Lower	Upper	Lower	Upper	Lower
		%	%	%	%	%	%
SB Brazil	Full denture	0.02	0.02	2.52	2.88	16.15	23.81
2003	Partial denture	9.24	23.39	33.32	68.12	16.25	32.25
Pataxós	Full denture	0.00	0.00	11.53	7.69	71.42	57.14
2006	Partial denture	5.12	17.94	73.07	76.92	0	14.28
SB Southeast	Full denture	0.00	0.00	2.81	3.85	16.73	28.54
2003	Partial denture	5.45	16.32	30.29	61.33	10.08	22.17

Source: SB Brazil 2003¹³.

DISCUSSION

The number of missing teeth found by the present study (Table 2) is in agreement with Rigonato et al.¹¹ who studied Natives from Upper Xingu and reported a high percentage of missing teeth in individuals older than 20 years.

The Guarani village has the highest missing teeth mean. According to FO-UFGM employees who work in the region, of the three study villages, this village experiences the greatest outsider influence, greatest miscegenation and greatest acculturation. Studies are needed to better understand the influence of outsiders on Natives' tooth loss.

According to Niswander⁷, Donnelly et al.⁸ and Parizotto¹⁵, there is a positive correlation between contact with outsiders and higher disease prevalence in Natives. The severe tooth decay found in more acculturated Brazilian Natives also stems from the modes of dental intervention offered to them¹⁵.

The need of partial or full denture in the age group 15 to 19 years was also reported by another study¹⁶ that found a higher number of missing teeth in the lower arch in individuals of similar age. In the present study, no individual in this age group needed a full denture. These data are similar to those of Southeastern Brazilians and Brazilians in general in the same age group. In 2003, need of full denture by this group was small (0.02%). However, the need of partial dentures by Natives and the general population in this age group is very high. Early tooth loss should be considered a predictor of future edentulism. There are significant correlations between early tooth loss and social variables, such as human development index, skin color, education level, income under one minimum salary, absence of piped water fluoridation and living in cities with less than 10,000 inhabitants, that have already been reported in other studies¹⁷.

Many sudden and extensive body changes happen during adolescence. In Natives, adolescents become adults very quickly through marriage, pregnancy and work. No study has yet investigated if these factors have any influence on the psychosocial aspects of adolescence. However, regardless of the characteristics of their adolescence, tooth loss is always very relevant.

In the age group 20-34 years, almost 60% of the individuals need dentures, so the prevalence of missing teeth is almost triple that of the previous age group. This suggests that early tooth loss usually leads to edentulism, which also occurs early in this population.

However, it is difficult to compare studies on tooth loss and need of denture by the Native and general Brazilian population because of the few relevant studies, different methodologies used and different age groups.

The need of dentures in both arches by individuals aged 35- 44 years is very high. In the general Brazilian population¹³, lower denture is needed much more often than upper denture. However, Pataxós have a much higher need of upper dentures than the general Brazilian population but no study has yet investigated the cause.

Aesthetics may be one of the reasons why Natives have a higher need of upper arch dentures. It is possible that many people who only seek to replace missing teeth on this arch are only concerned with aesthetics. However, it is not possible to state if the Natives' higher need of upper arch dentures stems from aesthetic reasons or from the lack of access to oral healthcare, either because they do not have the financial means or because the government does not yet provide universal oral care for this population.

Qualitative studies on health actions, access to healthcare and social context of this population are needed to elucidate the causes of this bad and worrisome situation. In Brazil, access to secondary care is extremely limited and the demand is growing¹². Secondary care is not available in the municipality of Carmésia, which may in part explain the very high rates of tooth loss in this community and the difficulty of obtaining remediation. The healthcare model available in Carmésia is also in need of assessment to determine if it has contributed to improve the oral health conditions of the Pataxós. A reflection may help to redirect, consolidate or make better investments on health-promoting actions.

According to SB Brasil 2003¹³, municipalities with less than 10,000 inhabitants have worse oral health than larger cities. Carmésia has a population of approximately 2500 individuals. Therefore, health-promoting actions are needed in this community to prevent the current situation from happening to future generations.

One finding for the age group 45-64 years merit mention: contrary to expectation, the percentage of people who do not need dentures is greater than that of the previous age group (12%). Although the absolute numbers are small, hence of relative significance, it is not less interesting or intriguing. This may be explained by a smaller demand for partial dentures. When the demand for full and partial dentures are analyzed separately and compared with those of the younger age group, there is a higher demand for full dentures, proving that edentulism in this population is basically unavoidable.

Once again these findings reflect the oral healthcare available to this population. Groups that do not have regular access to oral health-promoting actions and professional services usually have to rely on tooth extractions for treating pain¹⁷.

Like younger age groups, with the exception of the 45-64 age group, individuals aged 65 years or more had a greater demand for dentures. Finally, all individuals aged more than 75 years needed dentures.

The need of partial upper and lower dentures by Pataxós and the general population aged 35-44 years decreases. This decrease in fact reflects a higher need of full dentures. In this age group, the need of full upper denture increases from 11.53% to 71.42%, that is, 6.19 times. The last epidemiological survey done in Brazil shows that individuals aged 65-74 years have already lost 93% of their teeth. The component "missing" is responsible for 93% of the DMFT index¹³. This number reflects the poor oral health of the Brazilian elderly and the poor care given to these individuals throughout their lives.

The low demand for partial dentures by people aged more than 65 years also reflects the high number of missing teeth in this age group, leading most of them to require full dentures. Rodrigues et al.¹⁸ reported that the elderly lose most of their teeth because of the scarcity of programs for this age group. The problem is even worse for Natives, since the present results show that their situation is worse than that of the general Brazilian population. Parizotto¹⁵ reports severe tooth decay, especially in Natives that have more contact with urban populations, once again reflecting the poor oral healthcare model available to them. According to Escobar et al.¹⁹, the marginalization of Natives results in low health indicators and quality of life.

The neglect to which Natives are subject is not only visible in their mouths. They have the highest rates of childhood mortality, malnutrition and suicide, all indicators of very poor life conditions^{15,20}.

The results of this study show that the study population has significant edentulism rates, but they were based on secondary data. Studies on specific ethnicities, minorities and immigrants with more thorough designs are needed to increase knowledge on the multiple caries etiologies, etiologies of other types of oral diseases and their consequences, and ways of access to the goods and services available to these groups. Hence, new studies with different quantitative and qualitative methodologies are needed for a better understanding of poor oral health.

The results of this study indicate that the primary healthcare available needs urgent reflection, since it is highly mutilating and lacking in secondary care. Furthermore, more levels of care are needed to protect this mostly young population from the consequences of early tooth loss, and improve their oral health and quality of life.

CONCLUSION

This study found that Pataxó Natives start losing teeth during adolescence and continue to do so throughout their lives. Among the three study villages, Guarani has the highest mean number of missing teeth per person, probably because it is the most acculturated. The study

population has higher indices of missing teeth than the general Brazilian population. This is a very worrisome fact because the missing teeth index of the general population is already high. As the population ages, the need of partial dentures transitions to a need of full dentures, indicating that the oral healthcare services available to the population needs to be reviewed.

Collaborators

E ULHÔA NETTO and TFL FERREIRA designed the study, collected data and helped to write the manuscript. MM DRUMOND and HF SANCHEZ helped to analyze the results and write the manuscript.

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