

DENTAL LOSS IN ADOLESCENTS FROM A PUBLIC INSTITUTION

PERDA DENTÁRIA EM ADOLESCENTES DE UMA INSTITUIÇÃO PÚBLICA
PÉRDIDA DE DIENTES EN ADOLESCENTES DE UNA INSTITUCIÓN PÚBLICA

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ABSTRACT

Describe the prevalence of tooth loss in adolescents in the city of Fortaleza, Ceará. This is a descriptive, observational, cross-sectional, quantitative study, having as its population 59 adolescents from a public school. Data were collected by means of oral exams and questionnaire, tabulated in Microsoft Excel 2010 and statistically analyzed using SPSS 22.0 software. Pearson's chi-square and Fisher's exact tests were used with a 5% significance level. The prevalence of tooth loss was 28.8%, not being associated with gender or brushing frequency. The maxillary second molars were the most affected (16.67% and 13.3%, respectively). The prevalence of tooth loss was high when compared to the last national epidemiological survey. Public health policies that contribute to changing this reality are needed.

Keywords: *Tooth loss; Adolescent; Oral health.*

RESUMO

Descrever a prevalência da perda dentária em adolescentes de Fortaleza, Ceará. Pesquisa descritiva, observacional, transversal, de natureza quantitativa, tendo como população de estudo 59 adolescentes de uma escola pública. Os dados foram coletados mediante exames bucais e questionário sobre dados demográficos, histórico ortodôntico e hábitos de higiene bucal. Posteriormente, foram tabulados no Microsoft Excel 2010 e analisados estatisticamente pelo software SPSS 22.0. Foram empregados os testes “Qui-quadrado de Pearson” e “Exato de Fisher”, com o nível de significância de 5%. A prevalência de perda dentária foi de 28,8%, não estando associada ao sexo ou frequência de escovação. Os segundos molares superiores foram os mais afetados (16,67% e 13,3%, respectivamente). A prevalência de perda dentária entre os adolescentes mostrou-se elevada, comparada aos resultados do último levantamento epidemiológico nacional, o que remete à necessidade de se implementarem políticas públicas de saúde que contribuam para modificar esta realidade.

Palavras-Chave: *Perda de dente; Adolescente; Saúde bucal.*

RESUMEN

Describir la prevalencia de la pérdida dentaria en adolescentes de la ciudad de Fortaleza (Ceará). Investigación descriptiva, observacional, transversal y cuantitativa, que tuvo como población de estudio 59 adolescentes de una escuela pública. Los datos fueron obtenidos a través de exámenes bucales y cuestionario, tabulados en Microsoft Excel 2010 y analizados estadísticamente utilizando el software SPSS 22.0. Se emplearon las pruebas de chi-cuadrado de Pearson y exacta de Fisher, con el nivel de significación del 5%. La prevalencia de pérdida dentaria fue del 28,8%, sin asociación con el sexo o la frecuencia de cepillado. Los segundos molares superiores fueron los más afectados (el 16,67% y el 13,3%, respectivamente). En suma, la prevalencia de pérdida dentaria se reveló elevada, en comparación con la última encuesta epidemiológica nacional. Se necesitan políticas de salud pública que contribuyan a cambiar esta realidad.

Palabras Clave *Pérdida dentaria; Adolescente; Salud bucal.*

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INTRODUCTION

The adverse effects of dental caries can negatively interfere in the development of children and adolescents, as well as in the performance of their daily activities. Pain, infections, early tooth loss and masticatory disorders can cause aesthetic, functional, psychological and social damage^{1,2}.

During adolescence, behaviors and lifestyles are established that can influence the pattern of morbidity and future health care³. It is at this stage that tooth decay, dental trauma and periodontal disease, especially gingivitis, have shown significant prevalence⁴.

According to the national epidemiological survey on oral health, the SB BRASIL 20105, there was a marked reduction in tooth loss (prevalence of 17.4%) when compared to the 38.9% recorded in the epidemiological survey of 200. This reduction is due to changes in the criteria for identifying tooth decay, in addition to protective measures or factors, such as the expansion of fluoridation in public water supplies and the introduction of fluoridated toothpaste on the market, among other factors^{2,6,7}.

The goal established by the World Health Organization (WHO)⁸ for young people aged 18 years, for the year 2000, is that 85% of individuals should have all teeth present in their mouth, however, Silveira et al.⁹ found that 83.7 % of adolescents had all teeth present in the mouth, a percentage lower than that established by the WHO.

Despite being considered a public health problem, tooth loss has been little investigated among Brazilian adolescents. The aim of this study was to describe the prevalence of tooth loss in adolescents from a public educational institution in the city of Fortaleza, Ceará.

METHODS

This is a descriptive, observational, cross-sectional, quantitative research, with students from the Monsenhor Linhares Municipal School, located in the Amadeu Furtado neighborhood, in the city of Fortaleza, Ceará, as the study population.

From a population of 82 students regularly enrolled and attending the 9th year of elementary school in 2018 (inclusion criteria), a sample of 59 adolescents was obtained, whose parents or guardians agreed with their participation in the research. It is important to clarify that there was a delay in obtaining approval from the Research Ethics Committee of the Federal University of Ceará, and, therefore, data collection was only possible from March to May 2019 that the study population was preserved (students who attended the 9th grade in 2018). Twenty-three students did not participate in the research, 21 of whom were parents/guardians refusing or uninterested in signing the Informed Consent Form and two because they were selected to participate in the pre-test. The latter was carried out in order to improve the data collection instrument.

Information was obtained through oral examinations and the application of a structured questionnaire. The exams were performed by a single researcher, in a school room, under ambient light, using a mask, gloves and wooden spatulas. While the principal investigator examined the students, the assistant filled out the structured questionnaire, including demographic data, orthodontic history and oral hygiene habits. The questionnaire was designed based on other instruments published in the relevant literature.

Data were tabulated in Microsoft Excel 2010 and statistically analyzed using SPSS 22.0 software for Windows (SPSS Inc., Chicago IL, USA). In the analysis, the "Pearson's Chi-square" and "Fisher's exact" tests were used, adopting a significance level of 5% ($p < 0.05$).

Following the precepts of CNS Resolution No. 466, of December 12, 2012, which governs research with human beings, the study was submitted to the Research Ethics Committee of the Federal University of Ceará, having been approved under Opinion No. 2,607,104.

RESULTS

Among the 59 adolescents participating in the study, 29 were male (49.2%) and 30 female (50.8%), aged between 13 and 17 years, as shown in Table 1.

With regard to the number of missing teeth, it was found that, among the 59 students, 30 dental units were lost (which corresponded to an average of 0.51 missing teeth per individual), with a variation from 1 to 7 teeth lost, per student. Among the causes that led to tooth loss, caries was the reason most reported by adolescents (83.33%), with extraction for orthodontic reasons accounting for 16.67%.

Table 1 - Sociodemographic profile of students and behavioral factors related to oral health. Fortaleza (CE), May 2019.

| Oral Hygiene | N | % |
|---|----|--------|
| Age | | |
| 13 years | 1 | 1,69% |
| 14 years | 12 | 20,34% |
| 15 years | 34 | 57,63% |
| 16 years | 8 | 13,56% |
| 17 years | 3 | 5,09% |
| Total | 59 | 100% |
| Ethnicity | | |
| Black | 12 | 20,3% |
| White | 11 | 18,7% |
| Yellow | 2 | 3,4% |
| Brown | 34 | 57,6% |
| Total | 59 | 100% |
| Flossing | | |
| Yes | 20 | 33,9% |
| No | 39 | 66,1% |
| Total | 59 | 100% |
| Flossing Frequency | | |
| Everyday | 5 | 8,47% |
| Some days of the week | 6 | 10,17% |
| Once a week | 2 | 3,39% |
| No regularity | 7 | 11,87% |
| Did not answer | 29 | 66,1% |
| Total | 59 | 100% |
| Extracted due to orthodontic treatment | | |
| Yes | 2 | 3,4% |
| No | 57 | 96,6% |
| Total | 59 | 100% |

Source – Made by the authors, 2021.

Among the lost dental units, the upper second molars on the right side (Tooth 17) were the most prevalent (16.67%).

There was a prevalence of 28.8% of missing teeth, the highest percentage among adolescents (18.6%), although there was no statistical significance in this association (Table 2).

Table 2 - Association between tooth loss and sex among students at Escola Monsenhor Linhares. Fortaleza (CE), May 2019.

| Variables | Tooth Loss | | <i>p=0,176</i> |
|---------------|------------|-----------|----------------|
| | Yes (%) | No (%) | Total |
| Gender | | | |
| Male | 6 (10,2) | 23 (39,0) | 29 (49,2) |
| Female | 11 (18,6) | 19 (32,2) | 30 (50,8) |
| Total | 17 (28,8) | 42 (71,2) | 59 (100) |

Source – Made by the authors, 2021.

Regarding the existence of a correlation between tooth loss and toothbrushing frequency, statistically significant differences were not evidenced (Table 3).

Tabela 3 - Association between tooth loss and brushing frequency among students at Escola Monsenhor Linhares. Fortaleza (CE), May 2019.

| Variables | Tooth Loss | | <i>p=0,245</i> |
|---------------------------|------------|-----------|----------------|
| | Yes (%) | No (%) | Total (%) |
| Brushing frequency | | | |
| Twice a day | 3 (5,1) | 14 (23,7) | 17 (28,8) |
| Three times a day | 13 (22) | 21 (35,6) | 34 (57,6) |
| Up to three times a day | 0 | 4 (6,8) | 4 (6,8) |
| There is no regularity | 1 (1,7) | 3 (5,1) | 4 (6,8) |
| Total | 17 (28,8) | 42 (71,2) | 59 (100) |

Source – Made by the authors, 2021.

However, there was a statistically significant association ($p=0.027$) between tooth loss and visit to the dentist, as shown in Table 4

Table 4 - Associação entre perda dentária e visita ao dentista entre os estudantes da Escola Monsenhor Linhares. Fortaleza (CE), maio de 2019.

| Variables | Tooth Loss | | <i>p= 0,027</i> |
|----------------------|------------|-----------|-----------------|
| | Yes (%) | No (%) | Total (%) |
| Dentist Visit | | | |
| Yes | 17 (28,8) | 32 (54,2) | 49 (83) |
| No | 0 | 10 (17) | 10 (17) |
| Total | 17 (28,8) | 42 (71,2) | 59 (100) |

Source – Made by the authors, 2021.

When verifying associations between visits to the dentist and variables such as gender ($p=0.184$) and ethnicity ($p=0.463$), no statistically significant differences were observed. Furthermore, there was no correlation between tooth loss and the variables flossing ($p=0.258$), and “frequency of flossing ($p=0.512$).

DISCUSSION

In Brazil, tooth loss among adolescents is unevenly distributed according to regions and social groups. In all epidemiological surveys carried

out nationwide, there was a disadvantage for the North, Northeast and Midwest regions¹⁰. Barbato and Peres¹¹ highlight the association between the lack of fluoridated water in the Northeast region and tooth loss. With regard to the state of Ceará, Xavier et al.¹² draw attention to the fact that 82.43% of the municipalities analyzed in their study receive fluoridated water at levels classified as satisfactory, meeting the standards established in current legislation.

Despite being a public health problem, tooth loss has been little investigated among Brazilian adolescents⁹. The results of the present study showed a prevalence of tooth loss of 28.8%, a percentage higher than that indicated in the 2010 national epidemiological survey (17.4%). For methodological reasons (cross-sectional study), it was not possible to test hypotheses, however, this high percentage, among students at the municipal school, may be the result of the lack of access to oral health services. Opposing these results, Melo et al.¹³ and Silveira et al.⁹ pointed, in their studies, to rates close to those of the national survey: 17.2 and 16.3%, respectively.

In the Brazilian historical series, a downward trend in the prevalence of tooth loss can be observed through national epidemiological surveys. In 1986 and 2003, the averages of missing teeth per teenager were 1.2 and 0.9, respectively^{14,15}. In the present research, 0.51 missing teeth was the average obtained among adolescents, being lower than that of the last national epidemiological survey. It is emphasized, therefore, that, although the participants in this study had a higher prevalence of tooth loss, compared to the national survey, the mean of missing teeth was lower and ranging from one to seven dental units, which suggests heterogeneity among students regarding aspects related to oral health or even access to dental services.

According to Peres et al¹⁶, tooth loss among adolescents and adults found in the last survey is possibly due to the sum of some factors, such as the improvement of socioeconomic conditions

(especially education) and the health system, such as the exposure to water fluoridation and the expansion of the use of fluoridated toothpastes. These two measures resulted in large population coverage in the 1980s and 1990s and largely explain the reduction in the prevalence and extent of tooth decay in Brazil, the main cause of tooth loss.

In the present study, no statistically significant association was observed between tooth loss and the gender of adolescents ($p=0.176$), unlike other studies, in which there was a higher prevalence of loss among females^{11,15,17}. Although it seems nonsense, a hypothesis for such difference, cited in these studies, was the greater use of dental services by women, induced by aesthetic reasons or by health care. It is believed that the excess of invasive procedures, within a curative-restorative model, can constitute an important factor for tooth loss, with a tendency to overexposure to invasive treatment, or to extraction, if there is no condition for a specialized procedure of greater complexity^{13,18}.

In this study, the upper permanent second molar on the right side (tooth 17) was the most prevalent tooth in terms of tooth loss, a result different from other studies, which indicate the lower permanent first molar as the tooth most affected by tooth loss in adolescents^{11,13,19}. Among the hypotheses cited by these authors to explain the higher prevalence of loss of first molars are: the difficulty in cleaning, due to the location and favorable conditions for plaque accumulation. The fact that the second molar was more affected by tooth loss than the first molar, in the present study, may have been due to its eruption period being one of the last in the transition phase from pre-adolescence to adolescence, that is, the transition from maternal care to self-care.

Corroborating other studies^{9,13,20} in the present research there was no association between tooth loss and toothbrushing frequency ($p=0.245$). It is observed that, despite 57.6% of students brushing their teeth three times a day, 22% suffered tooth loss. This high percentage may be associated with

poor eating habits, as well as poor brushing quality. Here, the importance of health education in the process of formation of eating habits suitable for good oral and general health is highlighted²¹. In this sense, oral health prevention programs aimed at adolescents and their families should be implemented continuously.

It was found that more than 80% of students had already been to the dentist's office, however, given the high prevalence of tooth loss, these visits may not have been regular. On the other hand, Ely et al.²² consider that the expansion of access to dental services can, on the other hand, result in an increase in mutilating procedures.

Due to restrictions on access to specialized dental services within the Unified Health System (SUS), especially for endodontic treatments, extraction can be configured as an inevitable outcome, especially when caries is in an advanced stage of tissue destruction, especially for lower-income groups⁵. Costa et al.¹⁰ point out that, apparently, there is no lack of resources for accessing dental services when it comes to tooth extraction, compared to other procedures. Bulgareli et al.²³ highlight the difficulty of preserving teeth in the context of dental services, even among the youngest.

The prevalence of tooth loss was also investigated by Tôrres et al.²⁴, who analyzed the influence of socioeconomic and demographic factors, the use of dental services and pain, in the last six months, based on data from the São Oral Health Survey Paulo 2008, in adolescents aged 15 to 19 years old. The independent variables that showed an association with tooth loss were: caries, toothache, low level of education of the father and family income of less than half the minimum wage per capita. The results suggest that socioeconomic factors may contribute to the increase in early tooth loss among adolescents.

The national health policy advocates universal access as a principle of the Unified Health System (SUS), however, universal access to oral health services still seems to be a difficult reality to

achieve. Although oral health is recognized for its importance, a significant portion of the Brazilian population does not have access to dental services. Although schoolchildren have been the target of oral health policies for decades, data from the epidemiological survey of the Ministry of Health - SB Brasil 2003, revealed that 13% of young Brazilians between 15 and 19 years of age had never visited the surgeon. dentist^{25,26}.

Aiming at preventing tooth loss in adolescence, Spezia²⁷ recommends the implementation of effective public policies, given that these losses in themselves lead to high expenditures on oral rehabilitation for public health. The author emphasizes the importance of preventive treatment to improve the quality of life of these individuals, to the detriment of valuing curative or rehabilitative treatment through prostheses.

Due to the small sample size and design, the results of this study cannot be generalized, which constitutes a limitation, however, studies on the prevalence of tooth loss should be encouraged, as they contribute to fostering debate on the topic and provide subsidies for the implementation of public policies aimed at different target audiences.

FINAL CONSIDERATIONS

The prevalence of tooth loss among the adolescents participating in this study was high, compared to the results of the last national epidemiological survey, which points to the need to implement public health policies that contribute to modifying this reality



EDITORIAL INFORMATION

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