EVALUATION OF ACCESS TO ORAL HEALTH AND THE NEED FOR TREATMENT IN ADOLESCENTS IN A FULL-TIME SCHOOL SYSTEM

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Abstract

This study evaluated the self-perception of adolescents' oral health and their oral conditions and the need for treatment in relation to dental caries. An epidemiological survey was carried out in the municipality of Belém, Pará, Brazil, in 2018. The sample consisted of 200 students, aged 11 to 16 years old, from a full-time public school. The data were collected through a questionnaire where their self-perception of their oral health was assessed and an intra-oral examination was carried out to assess oral health conditions in relation to dental caries, using the Dental Caries Index and need for treatment (ICDNT). The data analysis was based on the Chi-square test, and when the npq <5 restriction occurred, Fisher's exact test was applied. The comparison between quantitative variables was performed using the Student's t test. The average DMFT index was 3.57, with only 17% of the studied population free of caries. The carious

component was the one with the greatest significance (3.14) and the need for treatment with the highest prevalence was the restoration of one face (47.5%). A percentage of 88.5% of the adolescents evaluated answered that they did not take a toothbrush to school. The studied sample had a moderate prevalence of caries compared to the parameters recommended by the WHO, but above the standard obtained in the national survey carried out in 2010. Therefore, it is necessary to implement measures aimed at improving the quality of oral health of these adolescents and a full-time system would be a ideal for implementing good habits and routines for the adolescent's oral health.

Keywords: epidemiological research; dental caries; adolescent; oral health.

1. Introduction

Adolescence is a phase of biopsychosocial growth between childhood and adulthood, characterized by body changes and adaptations to new psychological and environmental structures. During this period, behaviors and lifestyles are being formed that may influence the pattern of morbidity and future health care [1,2].

The adolescent, therefore, shows himself to be more vulnerable to the affliction of certain diseases, since he is no longer benefited by the care and attention given to children nor does he enjoy the protection associated with the maturity of adulthood [3]. Oral diseases, such as dental caries and periodontal disease, have shown significant prevalence, with factors such as economic level, behaviors, age and care of the oral cavity, being pointed out as the main responsible ones [4]. These conditions can negatively impact self-esteem and the daily lives of individuals, causing pain, aesthetic changes and functional limitations [5,6].

Risk factors for chronic diseases can begin in adolescence, so this stage of life is considered fundamental in interventions and changes in habits and behavior. Oral hygiene is of great importance in preventing periodontal diseases and caries [7]. Procedures such as tooth brushing, control of sugar consumption, proper use of fluoride, flossing and periodic visits to the dentist are crucial in preventing and controlling these health problems [8,9].

The Ministry of Health (Brazil, 1997) considers that the school represents an educational and social environment conducive to working on knowledge and behavior changes. The World Health Organization (WHO) also recommends the training of multiplying adolescents, with a view to promoting quality of life and comprehensive health for adolescents [9].

The relationship between education and health sectors has many affinities in the field of public policies because they are based on the universalization of fundamental rights and, thus, favoring greater proximity to citizens in different corners of the country [10].

In 1996 was created the law n° 9394 of Basic Guidelines (LDB) of Education which concerns full-time education. In full-time education, it is possible to establish a wide range of diversified activities that, integrated into the school curriculum, enable a more complete training for human beings. In this sense, these activities are practices that include general knowledge, culture, the arts, health, sports and work [11]. Thus, the implementation of the full-time school by the State Department of Education (SEDUC), in Pará, is an offshoot of the national policy of basic education, foreseen in the National Education Plan. The

purpose of this action is to increase the student's effective time at school, in order to improve learning, strengthen social life and improve the quality of teaching.

One of the great challenges of dentistry is to work together with full-time schools, promoting information necessary for the development of habits to maintain health and prevent oral diseases in a change in attitude towards these diseases that are often considered inevitable in the phase of adolescence [12].

The objective of this study was to evaluate the adolescents' self-perception of oral health and to estimate the prevalence and treatment needs in relation to dental caries in students enrolled in a full-time elementary school, which currently works full time for around 200 students that enter the school at 7:30 am and leave at 5 pm, making two snacks and lunch during this period.

2. Methodology

This research was of a descriptive, observational, cross-sectional character. Initially, for the development of this study, 225 adolescents of both genders were invited, regularly enrolled in the academic year of 2018 in a full-time school in the metropolitan area of the municipality of Belém, Pará, Brazil. Being selected adolescents in the pre-established age range of 11 to 16 years, regularly enrolled, who were authorized by their parents to participate in the research through the Informed Consent Term, who answered a questionnaire and participated in the intra-oral examination. Those who did not express interest in participating in the study, incomplete questionnaires and adolescents who did not obtain parental authorization to participate in the study were excluded.

This study was carried out at E.E.E.F.M. Benjamin Constant, who currently works full time for elementary school, from August to October 2018, with prior authorization from the school and the Research and Ethics Committee (CAAE 37552114100005169). After signing the Informed Consent Form by parents and /or guardians ensuring the confidentiality of their identities and the use of information exclusively for research purposes, data collection was carried out.

3. Data collection and analysis procedure

Through a previously prepared questionnaire and clinical record, the adolescents' perception of oral health was evaluated, as well as their access to dental treatment. Then, oral health conditions were evaluated in relation to dental caries through an intraoral dental examination, following the criteria proposed by the World Health Organization (WHO, 1997) [12], which currently recommends the use of the Dental Condition Index and Need for treatment (ICDNT), which works as a modification of the traditional DMFT (decayed, missing and filled teeth). Subdivisions have been added for the filled item (with caries and without caries) and for lost items (for caries or other reasons), in addition to including treatment needs.

Data collection was carried out by 2 examiners and 2 annotators trained and previously calibrated. The clinical examination was performed with the aid of artificial light (portable torch), with the examiner and patients sitting face to face and with the aid of disposable wooden spatulas to remove the oral tissues and gauze for drying. All students who participated in the study received an oral hygiene kit (brush, cream and dental floss) before the exam for prior brushing. After the exam, topical fluoride was applied in disposable

trays. To evaluate the oral health characteristics of the sample of students, descriptive and inferential statistical methods were applied. Quantitative variables were presented by measures of central tendency and variation. Qualitative variables were presented by distribution of absolute and relative frequencies. The comparison between qualitative variables was performed using the Chi-square test, and when the npq <5 restriction occurred, Fisher's Exact test for independent samples was applied (Ayres et al, 2007, p.135). The comparison between the quantitative variables was performed by the Student's t test (to compare two independent samples) and by the Analysis of Variance (when there were more than two samples to be compared). The level of significance was set at alpha = 0.05 for rejection of the null hypothesis. Statistical processing was performed using GrafTable software version 2.0 and BioEstat version 5.3 [13].

4. Analysis of results

In the study carried out, a total of 200 individuals were examined, 42.5% (n = 85) of the male gender and 57.5% (n = 115) of the female gender. The age group ranged from 11 to 16 years old, the response rate was 95%. Of those examined 9% still had some deciduous element and when examined they were all healthy and without risk of caries. The DMFT index equal to zero was 17% (n = 34).

In the evaluation of the data from the self-perception questionnaire on oral health (Table 1), it was found that 88.5% of the adolescents had already gone to the dentist, and 11.5% answered that they had never been to the dentist. In the related item on where the consultation was held, there was a greater incidence of access to private services (39.5%), followed by care by public health system (SUS) (25.5%) and care through health plans (23.5%). Prevention (45%) was the reason for the greatest demand for dental care among adolescents. Toothache (19.5%) was in second place, followed by the need for orthodontic braces (14%) and other reasons (10%). Regarding self-perception of how they would classify their oral health status, 36.5% of the adolescents surveyed considered it excellent, 40.5% as good, 9.5% said they were regular, 2.5% rated it as poor and 11.5% declared it to be terrible. A considerable portion of the adolescents studied, 88.5% reported not bringing a toothbrush to school and 59.5% responded that they did not have an appropriate place for brushing.

Regarding the importance of having healthy teeth, 4.5% were responsible for aesthetics 52% for hygiene, 32.5% for health and 6% for chewing. When evaluating the self-perception questionnaire by age, we found that there were no statistically significant differences in relation to the questions.

Table 1: Self-perception of oral health among students enrolled in a full-time school in 2018 classified according to age, Belém, Pará, Brazil.

	Total Sample (n=200)	**11 to 14 years (n=169)**		**15 to 16 years (n=31)**		
	%	**N**	**%**	**N**	**%**	**p-value**
Gender						**0.7063**
Male	42,5	73	43.2	12	38.7	
Female	57,5	96	56.8	19	61.3	
Have you been to the dentist?						**0.7876**

Yes	**85,5**	**149**	88.2	**28**	90.3	
No	11,5	20	11.8	3	9.7	
Where was the attendance?		(n=149)		(n=28)		**0.0338***
Public health system	25,5	42	28.2	9	32.1	
Particular	39,5	62	41.6	17	60.8	
Health plan	23,5	45	30.2	2	7.1	
What was the reason for the attendance?		(n=149)		(n=28)		**0.0996**
Prevention	45	73	49	17	60.7	
Toothache	10	37	24.8	2	7.1	
Use of orthodontic appliance	14	21	14.1	7	25	
Other reason	10	18	12.1	2	7.1	
How is your oral health?						**<0.0001***
Great	35,5	70	41.4	3	9.7	
Good	40,5	68	40.2	13	41.9	
Regular	9,5	7	4.1	12	38.7	
Bad	2,5	2	1.2	3	9.7	
Lousy	11,5	22	13.0	0	0.0	
Do you bring toothbrush to school?						**<0.0001***
Yes	14,5	3	1.8	20	64.5	
No	85,5	166	98.2	11	35.5	
Is there a suitable place for brushing?						**0.1492**
Yes	40,5	64	37.9	17	54.8	
No	59,5	105	62.1	14	45.2	
Importance of maintainig oral health						**0.3255**
Aesthetics	4,5	6	3.6	3	9.7	
Hygien	52	87	51.5	15	48.4	
Health	32,5	69	40.8	10	32.3	
Chewing	6	7	4.1	1	3.2	

*Chi-square of independance

Table 2 shows the conditions of dental caries by dividing the sample by age. In the 11-year-old age group, the DMFT corresponded to 2.53, followed by 3.0 for the age of 12 years, 4.23 in the 13-year-old adolescents, 3.72 at the age of 14. For 15-year-old students, DMFT was equivalent to 2.82, on the other hand, the index in 16-year-old students was the highest 5.14. Note the progression of the DMFT according to age. The overall average for DMFT was 3.57.

Table 2: Number of schoolchildren examined (n), average DMFT and its components according to age. School in the municipality of Belém, Pará, Brazil, 2018.

Age (years)	N	Decayed	Lost	Filled	DMFT
11	19	2.26	0.00	0.26	2.53
12	55	2.67	0.11	0.22	3.00
13	47	3.49	0.49	0.26	4.23
14	46	3.30	0.15	0.26	3.72
15	17	2.76	0.00	0.06	2.82
16	14	4.36	0.21	0.57	5.14
Total	**198**	**3.14**	**0.16**	**0.27**	**3.57**

DMFT-D = index of decayed, lost and restored teeth per individual.

* p-value <0.0001, ANOVA with Tukey post-test

Regarding the need for treatment for dental caries (Table 3), there was a need for dental restoration of one face in 47.5% of those evaluated. Secondly, the application of sealant (24.7%), followed by restoration of two or more faces (13.6%), pulp therapy (3%) and extraction (1%). When separating the treatment needs in relation to the age group, we observed that there were statistically significant differences in relation to the need for restoration of a face and extraction.

Table 3: Percentage of treatment needs of students classified according to age: 11 to 14 years old (n = 169) and 15 to 16 years old (n = 31). School in the municipality of Belém, Pará, Brazil, 2018.

	11 to 14 yeas		15 to 16 years			Total	
	%	CI95%	%	CI95%	p-value	%	CI 95%
DMFT	3.49	2.7 a 4.4	3.87	1.3 a 5.2	0.9280	3.55	2.4 a 4.6
Dental restoration one face	45.9	43.8 a 48.5	69.6	65.9 a 76.1	0.0111*	47.5	44.4 a 50.6
Dental restoration two faces	13.5	12.0 a 15.2	17.4	12.0 a 20.2	0.7102	13.6	11.5 a 15.7
Pulp therapy	2.9	---	4.3	1.1 a 5.2	0.9361	3.0	---
Sealant	25.9	23.9 a 28.1	21.7	17.9 a 27.2	0.6850	24.7	22.0 a 27.4
Tooth extraction	0.6	---	4.3	1.3 a 5.2	<0.001*	1.0	---

* p-value <0.0001, ANOVA with Tukey post-test

5. Discussion

Education is at the heart of any health program. Their results are significant when they manage to promote positive changes in people's behavior. The implementation of oral health education programs in schools provides children with knowledge about effective ways to prevent oral diseases. Motivation is also an indispensable requirement for learning. It is a personal, internal process that determines the direction

and intensity of human behavior. Learning is only accomplished by unleashing motivating forces. It is noteworthy that an ideal and appropriate place for the introduction and development of oral health education is found in primary schools [14].

People's attitude about their health, particularly oral health, is shaped by their personal experiences. These will act as determinants of behaviors and perceptions, fundamental in the adoption of oral health habits and in the development of a pattern of behavior related to them. It is known that the needs of the population, as well as disease / health conditions are verified through epidemiological surveys [15]. However, studies show that people are able to perceive their oral condition with certain precision, using different criteria than professionals. For individuals, symptoms and functional and social problems resulting from oral diseases are important. Various instruments available in the literature can be applied to obtain subjective data on oral health [16]. They are questionnaires with the purpose of unveiling the individual's perception of how oral health interferes in their daily lives and in their quality of life. This new study model is fundamental for oral health education, as it is able to develop in people a critical awareness of the real causes of their problems [17]. Although oral health education is gradually being introduced into the lives of Brazilians, many do not have access to places where it can be transmitted or there is simply no opportunity, due to the lack of means of disseminating health knowledge in their communities [18].

An multicentric study evaluate the potential support of the school environment for the promotion of oral health and associated factors in Brazilian capitals. Data from 1,339 public and private schools in the 27 Brazilian capitals were obtained from the National School Health Survey (PeNSE). The analysis resulted in a model with three dimensions: D1. intra-school aspects (sale of food with added sugar in the canteen and health promotion actions), D2. aspects of the school environment (selling food with added sugar at alternative points) and D3. prohibitive policies at school (prohibition of alcohol and tobacco consumption). Of the total schools studied, 51.2% had a more favorable environment for oral health. In the capitals, this percentage varied from 36.6% in Rio Branco to 80.4% in Florianópolis. Among Brazilian regions, it varied from 45.5% in the North to 67.6% in the South [19].

In the present study, most adolescents reported having gone to the dentist (85%), this percentage is lower than the data found in other articles. In the study presented by Silveira et al. 2009, in Montes Claros/ MG [20] it was found that 93.9% of the interviewees reported having gone to the dentist. In another study carried out in the city of São Paulo, it was observed that 92.1% of the adolescents had already used the dental service. Therefore, in the comparison of the data, we realized that although the sample of the city of Belém was below the average of other cities, it still has a percentage above the last survey on oral health conditions of the Brazilian population SB- Brazil 2010 [21] in which 86% of Brazilian adolescents stated that they had used dental services at least once.

A study in Sergipe/Aracajú [22], showed that 40% of respondents used health insurance, 23% private and 30% public service. Analyzing the data from the present study, there was a higher prevalence of private care (39.5%), due to socioeconomic factors and the easy access to popular clinics, demonstrating the inefficiency of SUS in the provision of oral health to the low-income population. The main reason for the last visit to the dentist reported by the adolescents was for prevention, with 45%, in line with the results found in other Brazilian studies [15,20]. In this reaserch, it was found that 40.5% of those investigated rated their oral health as good. Similar frequencies were found in a study carried out in Pelotas-RS [15], who

report a high percentage regarding self-perception of oral health as good / very good, corresponding to a total of 68.8% of the interviewed. In the study by Silveira et al. 2008 [20] it was also found that 65.6% of the adolescents rated their oral health as good or excellent.

As the Benjamin Constant school did not have epidemiological data previously collected, the results obtained in this study, in addition to providing relevant information on the prevalence and severity of dental caries, identified the main treatment needs and contributed with motivational lectures on the importance of oral hygiene. It was observed in this study that the prevalence of dental caries increased with age, and the values found among 12-year-old adolescents (DMFT-3 = 3) can be classified as average using the WHO table for the classification of DMFT- Give to 12 nos. This value was above the national value found in the last survey carried out at SB Brasil 2010 (CPO-D = 2.7 to 12 years old) and slightly below the value found specifically in the northern region (CPO-D = 3.06). However, the value found in our findings is well above that recommended by WHO for the year 2010 (DMFT = or less than 1 to 12 years old) [21].

In a work carried out in Rio Preto da Eva in the Amazon [23], the average DMFT in both rural and urban areas was evaluate and the results were 3.6 and 3.9 respectively. In the present study, the average DMFT was 3.57, in line with data from studies carried out in other regions of the country, such as the South and Southeast. A study carried out in Lages Santa Catarina (caries free 55%) 2010 [24] showed a DMFT = 1.02 and in the same year a study carried out in the state of São Paulo (caries free 53%) the DMFT index = 1.37. In the data found in our research, the DMFT was superior to that found in other articles in the south and southeast regions. We attribute this value to the index of decayed components, at all ages, which was more significant than the lost and filled components, which may be revealing a general situation of lack of access to assistance services for this population.

Regarding the needs of dental treatment, the results showed a high concentration in easy-to-solve and low-cost restorative treatments that can be performed in Primary Care Units in Oral Health, by general practitioners. Need for more complex treatment such as endodontics and prosthetic treatment, were in the minority. According to a research in Montes Claros - Minas Gerais [25] the percentage of pulp treatment + restoration needs was 9.9% and extraction 5.6%. These numbers are higher than the findings in the present study.

In Itirapina - São Paulo, a study showed the need for restorative treatment of a surface was the most prevalent (74.2%)[26], as well as in Montes claros – Minas Gerais [25], demonstrated that 50, 3% of adolescents needed restorative treatment on one face, so our result is equivalent to the treatment needs of other regions of the country.

In relation to the high rate of application of sealant (24.7%), we assume that due to the high rate of decayed components, the other elements are at risk of caries, so the indication of sealant would be to preserve the integrity of the others elements that are still without caries or are in the initial stages. However, it is worth mentioning that although the vast majority of students consider their oral health to be excellent or good, only 17% of them were free of caries and without the need for treatment.

School works as an extra-family environment that allows reinforcing social responses learned at home, representing new ones and even restricting or excluding incorrect habits. An integrative action between education and dentistry, introducing oral health content into the curriculum of early childhood and elementary education through programs, has justification: to teach children and adolescents to teach oral

health. As long as it is based on evidence and well trained, the teacher can be a multiplying agent in this context [27,28].

6. Conclusions

In view of the analysis and discussion of the results obtained in the present study, we can conclude that the target population of the study has moderate values in relation to the DMFT indexes and the need for restorative treatment of a face. The percentage of adolescents who do not take a toothbrush to school is quite significant for the 11 to 14 years old age group and the majority reported not having an appropriate place to brush at school. These poor brushing practices are probably one of the factors attributed to the high rate of caries observed. Therefore, it is necessary to implement measures aimed at improving the quality of oral health for these adolescents. We suggest the elaboration of a project for the construction of a brush track in the school together with measures of preventive and educational actions such as cycles of lectures to reinforce and motivate hygiene for these adolescents. Despite the recent advances, the results of this study indicate that there is still a need to increase the coverage of public dental services for adolescents, as well as point to the necessary revision of public policies regarding the availability of health promotion actions, including health education for adolescents. Teenagers and the full-time system would be a ideal for implementing good habits and routines for the adolescent's oral health.

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