



Evaluation of a program of oral health promotion in public daycare centers: Longitudinal study

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Abstract

Objective: To evaluate the oral health of children who participated in a preventive/educational program applied in eight years before.

Methods: The study was conducted for 12 months in public day care centers. Children were located by telephone for clinical examinations (DMFT, caries white spot), dental erosion index (BEWE) and filling a questionnaire. Data were analyzed using chi-square and t-student tests, with 5% significance level.

Results: 33 children with a mean age of 10.5 ± 1.3 years were recovered, the majority being female (54.5%, $n=18$). Considering the caries activity in 2011, there was no statistically significant difference regarding age, sex, average family income, frequency of brushing per day and presence of cariogenic diet ($p>0.05$). The mean \pm SD of CEO (2003) and DMFT (2011) was 1.97 ± 2.37 , there being statistical difference ($p<0.05$). For night hygiene, it was observed that most performed brushing before sleeping and had no dental caries in 2011 (73.7%, $p=0.02$). Considering the presence of dental erosion in permanent teeth, there was association with erosive diet (soft drinks and juices) ($p=0.001$).

Conclusion: The preventive/education program performed in 2003 was effective, since most of children remains without tooth decay.

Key words: DMF index; Program evaluation; Dental caries

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Avaliação de um programa de promoção de saúde bucal em creches públicas: Estudo longitudinal

Resumo

Objetivo: Avaliar a saúde bucal de crianças que participaram de um programa preventivo / educativo aplicado em oito anos antes.

Métodos: O estudo foi conduzido por 12 meses em creches públicas. As crianças foram localizadas por telefone para exames clínicos (CPOD, cárie mancha branca), índice de erosão dental (BEWE) e preenchendo um questionário. Os dados foram analisados por meio de testes de qui-quadrado e t-student, com nível de significância de 5%.

Resultados: 33 crianças com uma idade média de $10,5 \pm 1,3$ anos foram recuperados, sendo a maioria do sexo feminino (54,5%, $n=18$). Considerando a atividade de cárie em 2011, não houve diferença estatisticamente significativa em relação à idade, sexo, renda média familiar, frequência de escovação por dia e presença de dieta cariogênica ($p>0,05$). A média \pm DP de CEO (2003) e CPOD (2011) foi de $1,97 \pm 2,37$, não havendo diferença estatística ($p<0,05$). Para a higiene diária, observou-se que a maior parte realizada escovação antes de dormir e não tinha cáries dentárias em 2011 (73,7%, $p=0,02$). Considerando a presença de erosão dentária em dentes permanentes, houve associação com dieta erosiva (refrigerantes e sucos) ($p=0,001$).

Conclusão: O programa de prevenção / educação realizado em 2003, foi eficaz, já que a maioria das crianças permanece sem cáries.

Palavras-chave: Índice CPO; Avaliação de programas e projetos de saúde; Cárie dentária

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Introduction

Dental caries is defined as a common chronic disease in childhood [1]. Although the relationship with diet has some controversy, dietary counseling plays an important role in preventing and controlling disease, especially in the first year of life where eating patterns are established [2]. There are factors that predispose to the appearance of carious process; these are represented by consumption of cariogenic products and becoming substrates for microorganisms, especially when eaten among the main meals [3].

According to the criteria of the World Health Organization (WHO) to conduct epidemiological surveys, only cavitated lesions are considered and thus counted in the calculation of decay index. Thus, teeth with active white spot lesions, early stage of the disease, are considered healthy teeth. However, an indirect measure, performed routinely in epidemiological surveys that can identify children with caries activity would be the verification of treatment needs, where recommendation of enamel remineralization can address the matter [4].

Along with caries, tooth erosion is becoming a major oral health problem found in the population. Erosion is considered a superficial loss of dental hard tissue caused by a chemical process not involving bacteria. Due to the need to establish a suitable index to evaluate the presence of dental erosion, the authors Bartlett, Lussi and Ganss [5] created an index called BEWE. The BEWE recommends the sum of highest scores for each sextant of oral cavity in order to determine the risk level, which will correspond to suitable clinical procedures for solving the patient's condition [6]. Prevention programs for oral health become important as ways of enabling the population to improve the oral situation. For the proper functioning of programs is indispensable to take into account the popular knowledge, cultures and beliefs, as well as economic and social factors [7]. It is necessary the knowledge about socio-cultural conditions of families with which it intends to work on so that strategies to promote oral health are planned based on their reality. It is essential to know the target population and thus having well defined the limits and difficulties of the educational process [8]. Instructions for oral hygiene, topical fluoride use, among others are parameters for health promotion [4]. Clarification of the population that carious lesions appear before the painful symptoms is also important for the early prevention, thus avoiding the tooth rehabilitation treatment [7].

In this context, it is important to implement prevention programs in the entire population, as well as childcare. Thus, justifying the need for longitudinal studies and research, which allow analyzing the long-term effectiveness of actions performed.

This study aimed to evaluate the outcome of a preventive/educational program through the incidence of caries in children from daycare centers in Joao Pessoa in 2003.

Methods

Subjects

The research involved 33 children of both genders who were located through the 03 municipal daycare centers in the city of Joao Pessoa, during the evaluation of a preventive/educational program in 2003. The children's parents gave their consent to participate in this study and ethical approval was given by the Federal University of Paraíba Research Ethics Committee (number of the protocol approval:105/2010). The study was conducted at the Clinic of Cariology UFPB. Children were located through the phone numbers shown in medical records and invited to participate in this study. After acceptance, children were asked to address, along with parents and/or guardians, to the Clinical of Cariology/UFPB, at day and time scheduled to complete the questionnaire and completion of clinical examination.

Data collection

The preventive/education program lasted 12 months in 2011. During this period, preventive/educational measures were performed addressing the importance of oral health, etiology, prevention of dental caries, and orientation with respect to the ideal time to clean the oral cavity, especially at night before sleeping. For this, posters, flyers, macromodels and illustrative albums were used.

Prophylaxis was carried out using prophylaxis paste and rubber cup prior to the clinical examination. Clinical examination was performed in the Clinical Cariology-UFPB under natural light source in compliance with biosecurity standards: with gloves, mask, cap, and gown. Plan dental mirror with no increase, WHO probe, clinical tweezers tongue depressor, gauze and nebulizer to the drying of teeth and evidence of white spots were used. Children were examined by a single examiner. On the examination was used the BEWE index, the DMFT index and revealed the presence of active or inactive white spot.

Parents and/or guardians filled out a medical record containing information on the child's identification, age, grade, socioeconomic status, telephone number, diet and oral hygiene.

Statistical analysis

Data were organized and analyzed using the SPSS (Statistical Package for Social Science) 13.0 statistical software package. Chi-square tests and t-Student test were used. Significance level was 5%.

Results

We examined 33 children, mean age 10.5 ± 1.3 years, being female genre the most prevalent (54.5%) and the most common ages were 10 to 11 years with 33.4%. The highest percentage frequency of average family income for children evaluated is between 1 to 3 minimum wages (57.6%) (Table 1).



Of the children examined, a total of 60.6% brushed their teeth three times or more a day and 57.6% report nocturnal hygiene. The highest frequency of dental visits was equivalent to two times a year, thus corresponding to 45.5% (Table 2).

Of the total children examined, 21.2% had cariogenic diet with no statistically significant association ($p=0.37$) with caries activity. Considering the presence of dental erosion in permanent teeth, there was association with erosive diet (beverages and juices) ($p=0.001$) (Table 3).

Table 1. Relationship between age, gender and family income and caries activity.

Variable	n	%	Caries activity in 2011	
			With caries	No caries
			n (%)	n (%)
Age				
8 and 9	10	30.3	6 (42.8)	4 (21.1)
10 and 11	12	33.4	5 (35.7)	7 (36.8)
12 and 13	11	33.3	3 (21.5)	8 (42.1)
Total	33	100.0	14 (100.0)	19 (100.0)
Gender				
Male	15	45.5	8 (57.2)	7 (36.8)
Female	18	54.5	6 (42.8)	12 (63.2)
Total	33	100.0	14 (100.0)	19 (100.0)
Family Income				
< 1 legal minimum wage	4	12.1	3 (21.5)	1 (5.3)
1 legal minimum wage	4	12.1	1 (7.1)	3 (15.8)
1 to 3 times the legal minimum wage	19	57.6	9 (64.3)	10 (52.6)
> 4 times the legal minimum wage	6	18.2	1 (7.1)	5 (26.3)
Total	33	100.0	14 (100.0)	19 (100.0)

Table 2. Relationship between preventive oral habits and caries activity.

Variable	n	%	Caries activity in 2011	
			With caries	No caries
			n (%)	n (%)
Tooth brushing				
1x or 2x a day	13	39.4	8 (57.2)	5 (26.3)
3x or more	20	60.6	6 (42.8)	14 (73.7)
Total	33	100.0	14 (100.0)	19 (100.0)
Nocturnal Dental Hygiene				
Yes	19	57.6	5 (35.7)	14 (73.7)
No	14	42.4	9 (64.3)	5 (26.3)
Total	33	100.0	14 (100.0)	19 (100.0)
Number of visits to the dentist/year				
No	7	21.2	3 (21.5)	4 (21.1)
1x	11	33.3	7 (50.0)	4 (21.1)
2x	15	45.5	4 (28.5)	11 (57.8)
Total	33	100.0	14 (100.0)	19 (100.0)

Table 3. Relation between cariogenic diet and caries activity and relation between erosive diet and presence of dental erosion.

Variable	n (%)	Caries activity in 2011		P value
		With caries	No caries	
		n (%)	n (%)	
Cariogenic Diet				
Yes	7 (21.2)	4	3	0.37
No	26 (78.8)	10	16	
Total	33 (100.0)	14 (100.0)	19 (100.0)	
Dental erosion in 2011				
Variable	n (%)	With erosion	No erosion	P value
		n (%)	n (%)	
		n (%)	n (%)	
Erosive Diet				
Yes	17 (51.5)	12 (85.7)	5 (26.3)	0.001
No	16 (48.5)	2 (14.3)	14 (73.7)	
Total	33 (100.0)	14 (100.0)	19 (100.0)	

Table 4. Relationship between CEO in 2003 and CPOD in 2011.

	Paired Differences				
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval	
				Lower	Upper
Ceo in 2003 and CPOD in 2011	1.97	2.378	0.414	2.813	1.126

The average CEO (2003) was 0:36 and average DMFT (2011) was 2.33. The mean \pm SD (2003) of CEO and DMFT (2011) were 1.97 ± 2.37 , there being statistical difference ($p < 0.05$) by the t-Student test (Table 4).

The active white spot was found in 16 children (48.50%) and the inactive white spot was found in 8 children (24.20%).

Discussion

The social cost of dental caries in pre-scholar and scholar children is considerable. According to Vallejos-Sanchez et al. [9], decay is a dental public health problem due to its high prevalence and incidence. Several factors, such as high mutans streptococci counts, teeth and host susceptibility, availability of fermentable carbohydrates in the diet as well as various socio-demographic, socioeconomic and behavioral factors have been associated with dental caries and it has been observed higher concentration mainly among people with low socio-economic level.

Despite caries indices have decreased, differences in the distribution of oral diseases are notable in the country. According to the SB Brazil Project 2003, Brazil has achieved the goals of WHO for the year 2000 only at the age of 12 years and in part it only happened due to children from South and Southeast regions [10]. Thus, the importance of health promotion services targeted at the most vulnerable groups and/or more exposed to risk factors for caries development is emphasized [11].

Childhood is the period that can be considered the most important for the future of oral health of the individual, since notions and habits of health care begin to form at this phase, thus enabling the educational activities implemented later are based on the strengthening of already established routines. Therefore, the great challenge of dentistry nowadays is acting educationally for child population, providing them the information needed to develop habits to maintain health and prevent oral diseases, a change of attitude towards these diseases that often are seen as inevitable by the population [12].

In this study, we found a higher prevalence of caries in male children, aged between 8 and 9 years, supporting the findings of Cypriano et al. [13] who found a comparatively higher percentage of children free of caries at 5 and 12 years old than at 8, 9 and 10 years old, in which children had mixed dentition, indicating a trend of decrease in caries-free children at the mixed dentition phase and consequently, a greater caries prevalence, demonstrating that even in this

group receiving more targeted dental care, there are periods of high prevalence, emphasizing then, the importance of this information, a good indicator to assess the effectiveness of oral health programs.

With respect to the socioeconomic status, it was perceived a higher prevalence of dental caries in children with lower family income, which is consistent with the results of Meneghim et al. [14], who showed that the set (lower income, less educated and not own habitation), constituents of lower social classes, have a relationship with higher prevalence of dental caries. Through the results obtained is assumed that the higher prevalence of caries is found in the intermediate social class (family income between 1 and 3 minimum wages) due to ease access to cariogenic diet associated with the low frequency of visits to the dentist.

Brushing using fluoride toothpastes showed great potential for reducing tooth decay, being considered by Chaves and Vieira-da-Silva [15], the main impact factor in caries reduction among the preventive measures evaluated in their study. Moreover, the lack of nocturnal hygiene proved to be a major risk factor for development of dental caries, confirming the findings of Smith et al, 2010, who found a relationship between poor nocturnal hygiene and the presence of active white spot on children aged 0 to 4 years.

The prevalence of dental erosion found in this study is directly related to the presence of erosive diet, based on the consumption of acidic foods or drinks, extrinsic factors considered by Hoepfner et al. (16) to which children are inserted, there may be strong influence of socioeconomic factors, according to Manguiera et al. [17].

Comparing the results obtained in 2003 and 2011, it was observed that the average CEO-D was 0.36 in 2003 and the average DMFT was 2.33 in 2011. This value is considered low compared to that presented in the study of Cortelli, et al. [18], whose average DMFT was 5.1 in the age between 6 and 11 years.

Thus, it is noted the importance of preventive and educational programs, through longitudinal studies, based on motivation for oral health, guidelines for hygiene, and diet control and fluoride application in reducing the incidence of dental caries in children [19].

Conclusion

It is concluded that the preventive/educational program performed in 2003 was effective, since most of children remains without tooth decay.



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