Influence of socioeconomic, clinical and demographic variables on caries experience of preschool children in Piracicaba, SP

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RESUMO

OBJETIVO: Avaliar a influência de variáveis socioeconômicas, clínicas e demográfica na experiência de cárie em pré-escolares de 5 anos de idade da cidade de Piracicaba. **METODOLOGIA**: A amostra consistiu de 728 crianças matriculadas em 22 pré-escolas públicas (n=428) e 18 pré-escolas privadas (n=300). A cárie dentária foi avaliada pelos índices ceo-d e ceo-s e pela detecção de lesão inicial (LI). Outras variáveis clínicas como gengivite, apinhamento, espaçamento, fluorose e respiração bucal também foram coletadas. As variáveis socioeconômicas (renda familiar mensal, número de residentes na mesma casa, escolaridade do pai e da mãe, habitação e posse de automóvel) foram obtidas por meio de um questionário semi estruturado enviado aos pais. **RESULTADOS**: As médias (desvio-padrão) do ceo-d e ceo-s foram de 1,30 (2,47) e 3,08 (7,55), respectivamente, sendo que 62,2% da amostra estava livre de cárie. As médias (desvio-padrão) do ceo-d+LI e ceo-s+LI foram de 1,72 (3,36) e 3,45 (7,94), respectivamente e 59,7% era livre de cárie. Por meio da análise de regressão logística múltipla, crianças com fluorose (Odds Ratio-OR=0,40) ou de famílias com renda superior a 4 salários mínimos (OR=0,49) apresentaram menor probabilidade de ter experiência de cárie. Aquelas com gengivite (OR=1,87) tiveram maior chance de ter a doença. Para o critério de diagnóstico de cárie com a inclusão de LI, crianças com fluorose (OR=0,39) ou de famílias com renda superior a 4 salários mínimos (OR=0,52) tiveram menor chance de ter cárie. Aquelas com gengivite (OR=1,80), apinhamento (OR=2,63 e OR=1,01) ou respiração bucal (OR=1,37) apresentaram maior probabilidade de ter a doença. **CONCLUSÃO**: Os pré-escolares que apresentaram gengivite, apinhamento, respiração bucal ou renda familiar mensal inferior a 4 salários mínimos tiveram maior probabilidade de ter experiência de cárie. Assim, o planejamento de ações de prevenção e intervenção direcionadas a este público seria essencial para o controle da doença.

Palavras-chave: Cárie Dentária, Pré-Escolar, Fatores Socioeconômicos

ABSTRACT

AIM: To evaluate the influence of socioeconomic, clinical and demographic variables on caries experience in 5-year-old preschool children in Piracicaba. **METHODOLOGY**: The sample consisted of 728 children attending 22 public (n=428) and 18 private (n=300) preschools. Dental caries was measured using the dmft/dmfs indexes and by detecting initial caries lesion (IL). Gingivitis, crowding, spacing, fluorosis and mouth breathing were also recorded. The socioeconomic variables (monthly family income, number of people living in the household, parents' educational level, home ownership and car ownership) were collected by means of a semi structured questionnaire answered by the children's parents. **RESULTS**: The mean (standard deviation) values for dmft and dmfs indexes were 1.30 (2.47) and 3.08 (7.55) respectively; and 62.2% of the children were caries-free. The mean (standard deviation) values for dmft+LI and dmfs+LI were 1.72 (3.36) and 3.45 (7.94), respectively and 59.7% were caries-free. By means of multiple logistic regression analyses, children with fluorosis (OR=0.40) or family income > 4 minimum wages (OR=0.49) presented lower probabilility of having caries experience. Those with gingivitis (OR=1.87) were more prone to having the disease. Considering the diagnostic threshold including IL, the multiple logistic regression analyses showed that children with fluorosis (OR=0.39) or family income > 4 minimum wages (OR=0.52) were less prone to having caries. Those with gingivitis (OR=1.80), crowding (OR=2.63 e OR=1.01) or mouth breathing (OR=1.37) presented more probability of having the disease. **CONCLUSION:** The preschool children who presented gingivitis, crowding, mouth breathing or monthly family income £ 4 minimum wages had more probability of having caries experience. Thus, it would be essential to plan preventive and operative caries control actions targeting these children.

Keywords: Dental Caries, Preschool, Socioeconomic Factors

INTRODUCTION

Since 1970, there has been a significant reduction in the prevalence of dental caries in the majority of developed countries[1,2,3,4]. This has also been observed in Brazil, according to the reports of national studies conducted in 1986, 1996 and 2002[5,6,7] and epidemiological surveys in some regions of Brazil[8,9]. Although some authors admit improvement in oral health conditions over the lest few decades [10,11,12], dental caries continues to be considered a serious public health problem, both in Brazil[5,7,13] and in the greater part of the world[10,14,15].

Concomitantly with the decline in the disease, a series of changes in the distribution pattern and speed of caries progression have been observed over the last few decades, among them: Reduction in the speed of progression of the lesion[16], modifications in the distribution pattern, with the concentration of lesions in communities and individuals at high risk, especially on the occlusal surfaces[17,18,19,20], in addition to an increase in the number of lesions restricted to enamel. Denominated initial lesions (IL), these present a macroscopic loss of dentinal structure, which may be seen clinically by the naked eye, or with the aid of magnifying lenses [18,21] and are worthy of attention, not only from the general clinician, but also epidemiologists and health service planners.

Scientific studies on calibration[21,22,23,24], clinical trials[25,26,27] and epidemiologic studies[17,20,28,29] with the adoption of the differential diagnostic criteria of the World Health Organization, in which exam of lesions in initial stages have been performed, and have presented reliable and accurate results in recording these lesions.

Another important aspect in the epidemiology of caries is the study of variables that may influence its occurrence and severity. Fejerskov & Manji[30] pointed out the importance of modifying or modulating factors in the lower or higher probability of an individual developing caries lesions, such as: income, education, behavioral factors, knowledge, schooling and attitudes. Thus,

studies have been conducted to evaluate the influence of these variables on caries disease. Nevertheless, there is a scarcity of reports on this type of study in the literature, considering the inclusion of the initial stages of caries lesions in the codification of caries in primary teeth and its relationship with modifying variables of the disease.

Therefore, the aim of this study was to evaluate the influence of socioeconomic, clinical and demographic variables on caries experience in 5-year-old preschool children in the city of Piracicaba, Brazil.

MATERIALS AND METHODS

Ethical aspects

This study was approved by the Research Ethics Committee of FOP/UNICAMP, in accordance with Resolution 196/ 96 of the National Health Council of the Ministry of Health, Process No.147/2003.

Sample

From a list provided by the Municipal Secretary for Education, it was possible to identify the number of public (n=38) and private (n=69) registered preschools in Piracicaba. In the municipality, approximately 38% of the 5-year-old children frequent preschools, with a total of 952 at public preschools and 1040 at private preschools. The sample size was calculated based on the caries experience of previous studies[31] and the numbers of public and private preschools were proportionally contemplated. A probabilistic sampling technique by conglomerates was applied, considering a sampling error of 0.36 in decayed, missing and filled teeth, mean dmft of 2.64 with a standard deviation of 3.4 and confidence level of 95% with a sample loss of 20%.

Thus, 22 public and 18 private preschools were randomly selected. At each preschool drawn, all the children that had attained their 5th birthday were invited to participate in the study, totaling 814 individuals (481 from public and 333 from private preschools). There was a loss of 86 (10.57%) children from the sample initially selected, due to absence on the day of the exam (n=55; 6,.76%) or parents not authorizing their participation in the study (n=31; 3.81%), so that the final sample was composed of 728 children of both sexes, who were examined (428 from public and 300 from private preschools).

Codes and criteria adopted in the exams

In the dental caries exam the following indexes were used: dmft (mean number of decayed, missing, and filled primary teeth) and dmfs (mean number of decayed, missing and filled surfaces for primary teeth) based on the World Health Organization criteria[32]. In addition to this, the presence of non-cavitated active initial lesions in enamel (IL) were detected, according to the criteria of Nyvad et al.[21] and Fyfee et al.[22], who defined IL as an active caries in which, by means of visual exam, indicates an intact surface, without clinical loss of tooth tissue, with yellowed/whitened color, and growing opacity and roughness (when the CPI probe was lightly passed over the surface of the lesion). The unit of measure used in the exam was the tooth and the surface. The gingival condition was evaluated by the gingival bleeding index of Ainamo & Bay[33], the presence of bleeding being recorded for all dental surfaces after probing with the CPI probe. Dento-facial anomalies (crowding and spacing) were evaluated according to the DAI (Dental Aesthetic Index) [34] and the breathing characteristic was evaluated in accordance with the national oral health survey[7]. The diagnostic criterion adopted for the clinical variable fluorosis was its absence or presence, using the Dean Index[32].

Calibration

The calibration process of the only examiner of the study was conducted by a "Gold Standard" examiner with previous experience in epidemiological surveys, and a theoretical discussion was initially

developed as regards guidance about the codes and diagnostic criteria for dental caries, gingival condition, initial lesion, crowding and spacing, fluorosis and mouth breathing. Afterwards a practical stage followed, with techniques for the clinical exam, collecting and analyzing the results, with mean Kappa inter-examiner values of 0.88 being obtained for the diagnostic criterion WHO+IL (dental caries exam with the inclusion of initial lesions in enamel), 0.95 for the WHO diagnostic criterion and 0.95 for the gingival condition exam. The total time taken for the calibration process was 28 hours. While still in the practical stage, around 10% of the children in the sample were re-examined by the only examiner that participated in the research, to verify that the diagnostic criteria were maintained and to check the intra-examiner error[32], with mean Kappa values of 0.96 being obtained for the gingival condition, 0.89 for the WHO+IL criterion and 0.96 for the WHO criterion. For the variables fluorosis, crowding, spacing and mouth breathing, the percentage of inter- and intra-examiner agreement was measured, and values of 82% and 95.5%, respectively were obtained.

Conditions for performing the epidemiological exams

The exams were performed by a single examiner (previously calibrated, assisted by a note-taker), in the preschool yard, under natural light, with the child seated on a chair, with the help of drying preceded by brushing to help to remove biofilm or food remainders from the tooth, to facilitate visual diagnosis. For each exam, the periodontal CPI probe and flat clinical mirror No.5 were used[32].

Questionnaire

A semi-structured, pre-tested questionnaire was sent to the children's parents or guardians, containing questions with reference to the respective socioeconomic variables: Monthly family income, number of residents in the same house, mother's and father's educational level, type of home and car ownership.

Statistical analysis

To analyze the results, two dependent variables were considered: Dental caries (presence and absence) and dental caries with inclusion of IL (presence and absence). The cut-off point established for dichotomization of dental caries and caries with the inclusion of IL was the median in the value of zero (dmft=0 and dmft>0; dmft+LI=0 and dmft+LI>0). All the independent variables were dichotomized, except for the variable tooth crowding, which was categorized in 3 levels in order to find out the degree of crowding necessary for identifying the individuals with greater probability of caries. The Chi-square test or Fisher's exact test at a level of significance of 5% were used to test the association of the independent variables with the dependent variables (caries and caries with the inclusion of IL). The variables that presented statistical significance at the level of 15% or less in the bivariate analysis were included in the multiple logistic regression analysis with stepwise procedure. The Odds Ratio (OR) and the respective intervals of confidence of 95% (IC) were estimated for the variables that remained in the multiple regression model, at the level of 5%. All the statistical tests were performed with the SAS program[35].

RESULTS

The means (standard deviation) of the dmft and dmfs indexes were 1.30 (2.47) and 3.08 (7.55), respectively, with 62.2% being caries-free. With the inclusion of initial lesion, the means (standard deviation) of the dmft+LI and dmfs+LI indexes were 1.72 (3.36) and 3.45 (7.94), respectively, with 59.7% being caries-free.

Table 1 shows the sample distribution according to the type of preschool and sex. Of the total of 728 preschool children exa-

Table 1. Sample distribution according school and sex. Piracicaba. Brazil. 2005

Type of School	Sex				Total
	Boys		Girls		
	n	%	n	%	n
Private Preschools	136	45.33	164	54.67	300
Public Preschools	230	53.74	198	46.26	428
Total	366	50.27	362	49.73	728

mined, 366 were boys, (50.27%) and 362 girls (49.73%). The response rate obtained in the study was 89.5%.

The bivariate analysis by the Chi-square test showed inverse association ($p<0.05$) between dental caries and monthly family income (OR=0.45), father's education (OR=0.46) and mother's education (OR=0.60), type of school (OR=0.55), fluorosis (OR=0.38) and car ownership (OR=0.68). The clinical variables gingivitis (OR=2.05) and dental crowding in 1 segment (OR=2.64) and in 2 segments (OR=1.30) were directly associated with dental caries (Table 2).

By means of multiple logistic regression analysis, children with fluorosis (OR=0.40) or families with income exceeding 4 minimum wages (OR=0.49) presented lower probability of experiencing caries. Whereas those with gingivitis (OR=1.87) had a greater chance of having the disease (Table 3).

For the criterion dental caries diagnosis with the inclusion of initial lesion, monthly family income (OR=0.46), father's education (OR=0.51) and mother's education (OR=0.63), type of school (OR=0.59) and fluorosis (OR=0.40) were inversely associated ($p<0.05\%$) with dental caries and the clinical variable gingivitis (OR=2.10) was directly associated with the disease (Table 4).

The multiple logistic regression analysis showed that children with fluorosis (OR=0.39) or families with income exceeding 4 minimum wages (OR=0.52) had lower probability of having caries with the inclusion of IL. On the other hand, those with gingivitis (OR=1.80) and dental crowding in 1 segment (OR=2.63) and in 2 segments (OR=1.01) and mouth breathing (OR=1.37) presented greater probability of having the disease (Table 5).

DISCUSSION

Preventive strategies such as public water supply fluoridation, the dissemination of fluoridated dentifrices, greater emphasis on preventive-educational programs, among others, caused a reduction in dental caries at world level, over the last few decades[1,2,3,7,8,9].

On the other hand, an increase in lesions in their initial stages has been reported, as a result of cavitation occurring more slowly and at a later stage[16,20]. Nevertheless, the diagnostic criterion adopted has still preferably been the one recommended by the World Health Organization[32], in which only those that are fully cavitated and attain dentin (D3) are recorded as caries lesions.

Within this context, the literature has demonstrated that the diagnostic threshold from the cavitated lesion does not inform the epidemiologist and health management entities about which lesions/individuals need preventive and not invasive treatment. Therefore, one still comes up against the old view of the disease being treated by public services only as a result of its sequela, the cavity, instead of understanding caries as a multifactorial disease, with it early signs clinically evident by the demineralization in enamel, with the appearance of a white stain lesion[36,37]. Researches have demonstrated that it is feasible to adopt more sensitive dental caries diagnostic criteria, thus originating a more faithful picture of the oral health status of a certain population[23,24,38].

Indeed, in the present study, which

Table 2. Bivariate analysis for association among dental caries (dichotomized by median = 0) and socioeconomic, demographic and clinical variables. Piracicaba, Brazil, 2005.

Variables	Dental caries					
	Absence		Presence			
	n	%	n	%	OR (IC95%)	P
Sex						
Girls	231	63.81	131	36.19	Ref.	0.3798
Boys	222	60.66	144	39.34	1.14 (0.85-1.54)	
Monthly Family Income						
≤ 4 Minimum Wages*	232	54.85	191	45.15	Ref.	<0.0001
> 4 Minimum Wages	185	73.12	68	26.88	0.45 (0.32-0.62)	
Number of persons resident in the same house						
≤ 4 persons	287	63.64	164	36.36	Ref.	0.1528
> 4 persons	140	58.09	101	41.91	1.26 (0.91-1.73)	
Father's Education						
≤ 8 years of schooling	121	52.38	110	47.62	Ref.	<0.0001
> 8 years of schooling	209	70.61	87	29.39	0.46 (0.32-0.65)	
Mother's education						
≤ 8 years of schooling	159	54.83	131	45.17	Ref.	0.0012
> 8 years of schooling	259	67.10	127	32.90	0.60 (0.43-0.81)	
Residence						
Own	219	62.93	129	37.07	Ref.	0.5158
Not owned	207	60.53	105	39.47	1.16(0.84-1.60)	
Type of School						
Public Preschool	242	56.54	186	43.46	Ref.	0.0002
Private Preschool	211	70.33	89	29.67	0.55 (0.40-0.75)	
Gingivitis						
Absence	298	69.14	133	30.86	Ref.	<0.0001
Presence	155	52.19	142	47.81	2.05 (1.51-2.79)	
Fluorosis						
Absence	361	58.99	251	41.01	Ref.	<0.0001
Presence	92	79.31	24	20.69	0.38 (0.23-0.60)	
Dental Crowding						
No crowding	337	64.68	184	35.32	Ref.	0.0352
1 segment crowded	9	40.91	13	59.09	2.64 (1.10-6.30)	
2 segments crowded	107	58.47	76	41.53	1.30 (0.92-1.83)	
Dental spacing						
Absence	18	48.65	19	51.35	Ref.	0.0804
Presence	435	62.95	256	37.05	0.56 (0.29-1.08)	
Mouth Breather						
No	240	65.40	127	34.60	Ref.	0.0753
Yes	213	59.00	148	41.00	1.31 (0.97-1.77)	
Car Ownership						
No	166	56.85	126	43.15	Ref.	0.0143
Yes	287	65.83	149	34.17	0.68 (0.50-0.93)	
Use of Dentifrice for tooth brushing						
No						
Yes	3	33.33	6	66.67	Ref.	0.0780
	424	62.08	259	37.92	0.30 (0.08-1.23)	

**Brazilian minimum wage @* US$ 101.02 in force at the time of data collection.

Table 3 Multiple logistic regression for dental caries. Piracicaba, Brazil, 2005.

Variables	OR	IC95%	p
Gingivitis			
Absence	Ref.		
Presence	1.870	1.340-2.611	0.0002
Monthly Family Income			
≤ 4 Minimum Wages*	Ref.		
> 4 Minimum Wages	0.494	0.347-0.703	<0.0001
Fluorosis			
Absence	Ref.		
Presence	0.408	0.246-0.678	0.0004

**Brazilian minimum wage @* US$ 101.02 in force at the time of data collection.

had the aim of evaluating the influence of socioeconomic, clinical and demographic variables in caries experience in preschool children, the inclusion of initial caries lesion in the diagnostic criteria allowed an increase in the number of explanatory variables that remained in the logistic regression models, these variables being dental crowding and mouth breathing (Table 5).

Therefore, children who presented dental crowding in 1 segment (OR=2.63) and in 2 segments (OR=1.01) had greater probability of having caries with the inclusion of IL (Table 5). Other studies in the literature have shown that poor positioning of the teeth, such as dental crowding that favors bacterial colonization due to the difficulty of removing it during oral hygiene[40,41], has been associated with dental caries[39]. However, there are still few studies that associate these two public health problems (caries and malocclusion), which deserve the attention of other researches to elucidate the theory in the field of the relationship between dental caries, fluoride and occlusal pathologies, and the belief that a progressive history of high prevalence of dental caries may contribute as a predisposing factor to the development of malocclusions [42].

Whereas children with mouth breathing present 1.37 times more chance of having caries with the inclusion of initial lesion (Table 5), corroborating the study conducted by Nascimento Filho et al.[43] in which they reported that the number of surfaces with initial caries lesion (white stain) is higher in children who are mouth breathers and in those that breathe through the nose, and therefore early diagnosis, as from three years of age is necessary, as well as the establishment of control measures to prevent alterations in the gingival tissues and diminish the risk of caries disease.

On the other hand, some of the clinical (gingivitis and fluorosis) and socioeconomic (monthly family income) variables remained in the logistic regression model for the two studied diagnostic criteria (Tables 3 and 5).

Some of the studies in the literature[44,45] have shown that there is a direct association between dental caries and gingivitis, corroborating the results of this study, in which children with gingivitis had more chance of having caries (Table 3) and caries with the inclusion of IL (Table 5). An important aspect to consider is that dental caries develops in a site with dental biofilm accumulation, which may favor the development of gingival inflammation. Thus, the detection of incipient caries lesions in epidemiological surveys would help to identify the greatest or least needs for preventive and operative procedures[38] in an endeavor to reduce the prevalence of caries and gingivitis in the future.

In this study, it was observed that children with fluorosis had less chance of having caries than those who did not have it for the two diagnostic criteria used (Tables 3 and 5). A possible explanation is the hypothesis that there is greater access to

Table 4. Bivariate analysis for association among dental caries + initial lesion (IL) (dichotomized by median = 0) and socioeconomic, demographic and clinical variables, Piracicaba, Brazil, 2005.

Variables	Dental caries + Initial Lesion					
	Absence		Presence			
	n	%	n	%	OR (IC95%)	p
Sex						
Girls	223	61.60	139	38.40	Ref.	0.3115
Boys	212	57.92	154	42.08	1.16 (0.87-1.57)	
Monthly Family Income						
≤ 4 Minimum Wages*	222	52.48	201	47.52	Ref.	<0.0001
> 4 Minimum Wages	179	70.75	74	29.25	0.46 (0.33-0.64)	
Number of persons resident in the same house						
≤ 4 persons	274	60.75	177	39.25	Ref.	0.2703
> 4 persons	136	56.43	105	43.57	1.20 (0.87-1.64)	
Father's Education						
≤ 8 years of schooling	118	51.08	113	48.92	Ref.	0.0002
> 8 years of schooling	199	67.23	97	32.77	0.51 (0.36-0.72)	
Mother's education						
≤ 8 years of schooling	154	53.10	136	46.90	Ref.	0.0035
> 8 years of schooling	248	64.25	138	35.75	0.63 (0.46-0.86)	
Residence						
Own	212	60.92	136	39.08	Ref.	0.3752
Not owned	197	57.60	145	42.40	1.15 (0.85-1.55)	
Type of School						
Public Preschool	234	54.67	194	45.33	Ref.	0.0008
Private Preschool	201	67.00	99	33.00	0.59 (0.44-0.81)	
Gingivitis						
Absence	289	67.05	142	32.95	Ref.	<0.0001
Presence	146	49.16	151	50.84	2.10 (1.55-2.85)	
Fluorosis						
Absence	346	56.63	265	43.37	Ref.	<0.0001
Presence	89	76.72	27	23.28	0.40 (0.25-0.63)	
Dental Crowding						
No crowding	328	62.72	195	37.28	Ref.	0.0751
1 segment crowded	7	31.82	15	68.18	3.60 (1.44-8.99)	
2 segments crowded	100	54.64	83	45.36	1.39 (0.99-1.96)	
Dental spacing						
Absence	17	45.95	20	54.05	Ref.	0.0751
Presence	418	60.67	271	39.33	0.76 (0.56-1.02)	
Mouth Breather						
No	232	63.22	135	36.78	Ref.	0.0668
Yes	203	56.55	156	43.45	1.32 (0.98-1.78)	
Car Ownership						
No	162	55.48	130	44.52	Ref.	0.0743
Yes	241	62.27	146	37.73	0.75 (0.55-1.02)	
Use of Dentifrice for tooth brushing						
No						
Yes	3	33.33	6	66.67	Ref.	0.1121
	406	59.53	276	40.47	0.33 (0.08-1.37)	

**Brazilian minimum wage @* US$ 101.02 in force at the time of data collection.

Table 5 Multiple logistic regression for dental caries+ initial lesion, Piracicaba, Brazil, 2005.

Variables	OR	IC95%	p
Gingivitis			
Absence	Ref.		
Presence	1.806	1.322-2.469	<0.0001
Monthly Family Income			
≤ 4 Minimum Wages*	Ref.		
> 4 Minimum Wages	0.528	0.377-0.738	<0.0001
Fluorosis			
Absence	Ref.		
Presence	0.393	0.240-0.644	<0.0001
Mouth Breather			
No	Ref.		
Yes	1.378	1.013-1.874	0.0416
Dental Crowding			
No crowding	Ref.		
1 segment crowded	2.631	1.165-5.917	0.0255
2 segments crowded	1.015	0.694-1.484	0.0199

**Brazilian minimum wage @* US$ 101.02 in force at the time of data collection.

the various forms of fluoridated products available on the market today, capable of leading to those that have higher power of acquisition and consequently better oral health status to developing dental fluorosis, particularly in small children who are in the period of dental enamel maturation[46].

When dealing with the socioeconomic variables, children from families with a monthly income exceeding 4 minimum wages had less probability of having caries (Table 3) and caries with the inclusion of IL (Table 5) than those from families with an income equal to or lower than 4 minimum wages. Some of the socioeconomic variables have been used in epidemiological studies on dental caries, and family income has been considered a good indicator of disease, since children belonging to families with different income levels present important differences in the levels of the disease[47,48,49].

Generally speaking, this study was able to show that with the inclusion of the initial lesions in caries disease records, the number of variables that remained in the logistic regression model increased. Thus, the detection of these lesions for evaluations, for example, comprising the scope of the community, with the intention of establishing programmatic dental actions linked to the local assistance units (Basic Health units and Family Health Units), as well as for use in researches into the evaluation of the natural history of caries, could be feasible and advantageous, since it allows a larger number of children at risk of experiencing caries to be identified, and thus to plan appropriate preventive measures.

On the other hand, in large scale surveys, for example, national surveys, the simpler criteria, such as the WHO criterion (WHO, 1999) with caries lesion in dentin, must still be considered.

CONCLUSION

The preschool children that presented gingivitis, crowding, mouth breathing or monthly family income of less than 4 minimum wages had the greatest probability of experiencing caries. Therefore planning actions of prevention and intervention directed to this public will be essential for controlling the disease.

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