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Association between familial risk and caries risk in 5 year old scholars

Associação entre risco familiar e de cárie em escolares de 5 anos

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ABSTRACT

Objective: This study aimed to evaluate the association of familial social risk and caries risk in 5-year-old school students from the municipality of Coari. Methods: The sample consisted of 361 students from 3 schools in the city. Data were collected from file A of the Basic Attention Information System and from records of families enrolled in Family Health Units for the classification of families according to Family Social risk and caries risk was classified according to the Secretary of Health of São Paulo. A descriptive data analysis and a multiple logistic regression were performed to verify the possible association of family social risk with family social risk and demographic variables. Results: The results showed that 51% of the sample were female, the prevalence of caries was 67.6%; and dmf-t 3.16. There was an association of high social risk with prevalence, and high risk of caries. Conclusion: Therefore, children at high risk of caries were more likely to belong to families with higher social risk. Thus, this research indicates that the present tool for assessing family social risk can be used in other studies related to planning, organization and access to oral health services.

Indexing terms: *Dental caries. Family health. Risk assessment.*

RESUMO

Objetivo: Este estudo teve objetivo de avaliar a associação do risco social familiar com risco de cárie em escolares de 5 anos de idade do município de Coari. Métodos: A amostra foi de 361 escolares provenientes de 3 escolas do município. Os dados foram coletados da ficha A do Sistema de Informação da Atenção Básica e dos prontuários das famílias cadastradas nas Unidades de Saúde da Família para a classificação das famílias de acordo com risco Social Familiar e o risco de cárie foi classificado de acordo com a Secretária de Estado de Saúde de São Paulo. Foi realizada uma análise descritiva dos dados e regressão logística múltipla para verificar a possível associação dos riscos social familiar com o risco social familiar e variáveis demográficas. Resultados: Os resultados mostraram que 51% da amostra foram do sexo feminino, a prevalência de cárie foi 67,6%; e o ceo-d 3,16. Verificou-se associação do risco social alto com a prevalência, e alto risco à cárie. Conclusão: Crianças de alto risco à cárie apresentaram mais chances de pertencer a famílias de maior risco social. Assim, essa investigação indica que o presente instrumento de avaliação de risco social familiar pode ser empregado em outros estudos relacionados ao planejamento, organização e o acesso aos serviços de saúde bucal.

Termos de indexação: *Cárie dentária. Saúde da família. Medição de risco.*

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INTRODUCTION

The Family Health Program, currently denominated Family Health Strategy (ESF), emerged as an important strategy to reorganize primary attention in the context of health surveillance. Knowledge of the reality of the families which the teams are responsible for, with focus on social, economical, cultural, demographic and epidemiological characteristics, it is fundamental for families and individuals with greater vulnerability to be identified and admitted with priority while planning health actions [1], seen that social vulnerability is related to risks, towards general health and oral health [2].

With regards to oral health it is known that higher caries prevalence is associated to more vulnerable social strata and economically [3-5] demonstrating that life conditions are factors that interfere in general health care, and consequently in oral health [6]. In this sense, specific instruments are being utilized by ESF teams to classify family risk with base on data collected by community health agents (CHA) [7], aiming to organization of demand in order for families with greater risk to be called with priority for consults. According to the Coelho scale, Cheachire et al. [1] presented the "Family Risk Score", an instrument developed by the technical group from the city of Santo André and other than the information collected by the CHA, many variables extracted from file A, SIAB and from the health pact indicators were incorporated, aiming to assure that the establishment of priorities for the service and attention to the assigned population would not be determined in a subjective form.

The application of these scales have presented controversial results with regards to oral health, where some studies show that the risk of caries and the prevalence of the disease were associated to elevated familial social risk [3,8] while other studies, this association was not found [1]. The majority of the studies that use risk classification tools were conducted in the southeast region of Brazil [1,3,8] and no studies conducted in the northern region evaluated the association of social vulnerability with oral health risk in children with 5 years of age, making it important to evaluate in the available criteria for classification of families/users, could be used for oral health planning of the population from this present study.

METHODS

The objective of this study was to evaluate the association of the Family Risk Score with caries risk and demographic variables in 5 year old schoolchildren from the municipality of Coari, Amazonas. It is a transversal study with a quantitative nature developed according to resolution 466/2012 of the National Health Council/MS and evaluated by the research Ethics Committee with approval number 795.604.

Characterization of the location of the study

The municipality of Coari-Amazonas is located 365 km from Manaus and has an estimated population of 83,078 inhabitants, being the fourth most populated in Amazonas countryside [9]. It is characterized by low levels of human development (0.586), precariousness of public sanitation, with coverage of 69.2% [10] and the absence of artificial fluoridation of tap water [11]. Basic health attention has 11 Basic Health Units (BHU), with 11 Family Health Teams (FHT), the teams are composed of 11 dentists and 11 dentist assistants, which provide coverage for 50% of the population of the municipality [12].

Study population and sample

The sample universe corresponded to 972 5 year old children of both genders, regularly enrolled in one of the 3 public elementary schools from Coari, denominated as schools A, B and C for the purpose of the study. School A is located in the central region, with great access and with the best social-economical condition, were 568 students were enrolled. In schools B and C located in the country side 291 and 113 children respectively studied, where the majority of the students came from neighborhoods of poor social-economical conditions [12].

For the calculation of the sample size the average of the dmft was used (dmft=3,73) and standard deviation (sd=2.28) obtained from a national study [13], considering that that the northern region is mainly countryside, therefore the trust level of 95% and precision of 10% were adopted. After adjustment to finite population, 20% was added to the total, in order to compensate eventual losses and refusals, resulting in a sample size of 361 children. The students were drawn in a proportional manner to the number of students enrolled in each school.

Clinical exams

The clinical exams were conducted by an examiner that was calibrated by a gold-standard examiner, and an

assistant that took notes of the collected data. The intra-examiner agreement level was evaluated with use of Kappa statistics of caries and caries risk.

The evaluation of prevalence and severity of caries was based on the methods advocated by the World Health Organization [14] for the performance of epidemiological exams. The volunteers were examined at a location with natural light, seated in school chairs with use of wood spatulas. The prevalence of caries was estimated by the dmf-t value and the severity measured by the average number of baby teeth with caries, restorations or extracted [14].

To evaluate the risk of caries, the A to F classification proposed by the Coordination of Oral Health of the Secretary of the State of São Paulo was used [15].

Table 1. Familial risk score and source of data acquisition.

Variable	Score	Source of data
Child below 1 year old	1	File A
Child below 1 year old with low weight at birth	1	Record
Child below 4 months, without exclusive breastfeeding	1	Record
Pregnant	1	File A
Teen pregnant (from 10 to 19 years of age)	1	File A
Death of women (from 10 to 49 years of age)	2	Record
Hypertensive	1	File A
Diabetic	1	File A
Tobacco use	1	Record
Alcohol use	1	File A
Tuberculosis	2	File A
Leprosy	1	File A
Bedridden	3	File A
Mental Illness	3	File A
Physical and sensory deficiency	3	File A
Psychiatric	3	Record
Elder above 60 years of age	1	File A
Elder above 60 years of age who lives alone	3	File A
Non-masonry house	1	File A
Number of residents greater than the number of rooms	3	File A
Address without basic sanitation (water, sewage and garbage)	3	File A
Some member of the family unemployed	2	File A
Illiteracy (any age)	1	File A
Child up to 14 years of age	2	File A
Receives Bolsa-Família	1	Record
Total	48	

Source: Cheachire et al. [1].

Classification of the familial social risk

Data referring to familial social risk of the participating children were collected by the researcher at the 11 Family Health Units, they derived from file A of SIAB and the family folder, as can be observed in Table I.

After collecting information, the families were classified in: low risk (sum of the scores less than or equal to 1); medium risk (sum of the scores between 2 and 6); high risk (sum of the scores between 7 and 9) and very high risk (sum of the scores ≥10) [15].

Data analysis

The high and very high familial social risk categories were grouped into a single category of high risk. The classification of caries risk was dichotomized in low/medium risk, children classified in groups A, B and C and high risk, children classified in groups D, E and F. With regards to caries prevalence, ceo=0 was adopted (children free of caries) and dmf-t≥1 (children with experience of caries). Descriptive analysis of the data were performed by means of descriptive statistics with trust interval of 95%. For multivariable analysis, the caries risk variable was dichotomized (low/medium risk and high risk) and multiple logistic regression was used to analyze the independent variables that reached a significance value less than or equal to 0.20, controlled by possible factors of confusion (OR adjusted). For all the analyses significance level (α) of 5% was adopted. All statistical tests were performed by Stata Corporation [16].

RESULTS

In this study the sample loss was 1.7% (n=6) them being two children from school B and four children from school A, which did not accept being examined.

Table 2. Descriptive analysis of the prevalence and severity of caries in deciduous dentition, Coari (AM), 2014.

5 years old N= 361	Average	Standard deviation	Maximum value	Minimum value	Confidence interval 95%
dmf-t	3.16	± 3.5	15	0	2.79 - 3.52
caryatid	2.92	± 3.4	15	0	2.37 - 3.27
extracted	0.24	± 0.6	6	0	0.18 – 0.30
restored	0.11	± 0.5	5	0	0.06 – 0.16

Fonte: Autoria própria.
Source:Self-authorhip.

Table 3. Absolute and relative frequencies of the Familial Social Risk variable (RSF) and Dental Caries Risk (RCD). Coari, Amazonas, 2014.

INDEX	CATEGORY	N	%
RSF	Low	66	18.3
	Medium	126	34.9
	High	169	46.8
RCD	Low/Medium Risk	228	63.1
	High Risk	133	36.9

361 children were part of the study, the majority feminine (51%), belonging to school A (58.9%).

The average dmf-t index was 3.16(± 3.5) (IC95%=2.79 – 3.52) with predominance of the caryatid component which corresponded to 92% of the composition of the index. Only 32.4% of the children were free of caries (dmf-t=0) at the moment of the exam (table 2).

Table 2. Descriptive analysis of the prevalence and severity of caries in deciduous dentition, Coari (AM), 2014.

Table 3 shows the sample classification according to familial social risk and caries risk. It can be seen that the greatest frequency is located at the high familial social risk (46.8%) and low/medium caries risk (63.1%).

As can be observed on table III, both the caries risk and caries prevalence were associated with high familial social risk.

DISCUSION

The comprehension that family should be understood and noticed from the physical and social environment [17] makes the employment of social risk evaluation tools evident, allowing the identification of high risk families and the consequent priority in planning of dental service offerings [1].

Considering the comparison with data from the most recent epidemiological collection of data performed in the country [13] both the values of prevalence (32.4% free of caries) and of caries severity (dmf-t=3.16; IC95%=2.79 - 3.52) verified in Coari, were better than the values from the countryside of the northern region (29.8% free of caries/ dmf-t=3.73; IC95%=3.10 - 4.37). Currently, Coari is the fourth most rich city in the northern region; falling behind only of the capitals Manaus, Belém and Porto Velho [9]. This fact can be related with the improvement in economic conditions that the municipality underwent after going from an economy based on the production of bananas to the production of petroleum and natural gas which elevated investments in urban infrastructure. Allied to that, the construction of new FHUs, the regional hospital, other than new health professionals hired and the expansion of the UFAM university can be related the improved conditions of access to health and education.

Although the city presents better oral health indicators than the other cities in the country side of the region, the caryatid component was what contributed the most for the dmf-t index, demonstrating the grand necessity of dental treatment for the evaluated schoolchildren. The

Table 4. Bivariate and multiple analysis for the association of Familial Social Risk with gender, School, Caries Risk, and Prevalence of caries. Coari, Amazonas, 2014.

Variables	Risk Social Familiar						OR (IC95%)	p	adjusted OR (IC95%)	P
	Low		Medium		High/Very high					
	N	%	N	%	N	%				
Gender										
Feminine	41	62.1	55	43.7	88	52.1	Reference		Reference	
Masculine	25	37.9	71	56.3	81	47.9	1.03(0.96;1.10)	0.443	0.99(0.93;1.05)	0.724
School										
School A	47	71.3	76	60.3	88	52.0	Reference		Reference	
School B	16	24.2	38	30.2	54	32.0	1.07(0.99;1.16)	0.071	1.02(0.95;1.09)	0.645
School C	3	4.5	12	9.5	27	16.0	1.17(1.07;1.28)	0.000	1.07(0.99;1.16)	0.086
Risk of caries										
Low/Medium Risk	61	92.4	95	75.4	26	15.4	Reference		Reference	
High Risk	5	7.6	31	24.6	46	27.2	1.31(1.24;1.39)	0.000	1.27(1.19;1.36)	0.000
Prevalence										
Free of caries	31	47.0	51	40.5	35	20.7	Reference		Reference	
dmf-t ≥ 1	35	53.0	75	59.5	134	79.3	1.18(1.10;1.28)	0.000	1.08(1.00;1.17)	0.040

guarantee of universal and equal access to dental treatment is a public health concern due to high demand for this service in primary attention. This way, classification of the population according to the risk of caries is an important strategy which aims to organize the demand in order to prioritize the population that really needs dental treatment in primary attention [18].

In the present study it was observed that approximately 1/3 of the evaluated children (36.9%) presented carious activity, classifying them as high risk of caries, with increased chance of belonging to a high social risk family. This association can also be observed in the studies by Silva et al. [3] and Kobayashi et al. [8] reinforcing the idea of using tools and risk criteria to guide oral health planning.

Other than that, the urgent implantation of more adequate health promotion strategies is suggested, to obtain more significant reductions of caries, having in mind that the experience during childhood can be an important predictor of caries risk in permanent teeth [19,20]. Reformulations of the dental service in Coari are necessary making use of the social risk classification to prioritize treatment and to plan preventive actions appropriate for the social reality of the families, optimizing health assistance and health education, aiming to improve the presented conditions.

Preventive strategies such as tap water fluoridation, widespread of toothpastes with fluoride, more emphasis in educational and preventive programs made for a widespread decrease in dental caries around the world [21]. A very important action, which could improve this case would be the access to fluoride in fluoridated water because it benefits mainly the vulnerable, because the prevention power of fluoride is relatively more powerful in situations of bigger economical and social inequality [22] other than the use of toothpaste with fluoride [23]. However, so that the population can have access to the treated water there is necessity of implantation of basic sanitation in the whole city to increase the coverage, guaranteeing better quality of life for the population [24]. Yet, it is suggested that educational programs for students, parents and educators are developed with greater emphasis on families with greater risk aiming to establish healthy oral habits and diet.

The results obtained in the present investigation should be analyzed with caution due to the limitations inherent to the research tool. All data collection done with files requires that they are up-to-date so that they represent the real situation at the moment of the survey. Conservation of user data up-to-date is a responsibility of the whole team, but, this action is usually done by the communitarian health agents as they register the families, but is the files are not up-to-date there is risk of the data not being the real information at the time, which could influence the familial social risk classification proposed in this study. Another fact that should be pondered is the familial social risk scale developed by the health secretary technical group from the city of Santo André, however it allowed for the classification of the individuals so that the oral health indicators showed to be significant, must be adequate to the reality of each place being studied, taking into consideration the epidemiological character of the diseases that are mostly found in the population. At the Coari region, for example, malaria which is a tropical disease characteristic of the northern region, influenced by the social-economical condition [25], is not present as a risk variable, because the proposed scale was applied in another state with another population profile. In any event, the social risk scale evaluated, being applied in home visits, would be adequate to prioritize the access to dental services.

CONCLUSION

The familial social risk evaluation scale can be employed as an important tool to organize dental treatment demand by the dental teams once children at high risk for caries present greater chances to belong to families at higher social risk.

Collaborators

CR SANTOS, design and planning of the project, Obtaining of data and elaboration of the content of the work. FM FLÓRIO, participation in the analysis and interpretation of the data, elaboration and critical revision of the content and participation in the approval of the final version of the article. L ZANIN. Design and planning of the project, interpretation of statistical data, elaboration and critical revision of the content and participation in the approval of the final version of the article.

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