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Original Article

Factors Associated with Dental Anxiety in Brazilian Children of 5 to 8 years

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Abstract

Objective: To test the agreement between the evaluators index oral health, to conduct a preliminary analysis possible associated factors to dental in children, and show the prevalence of dental anxiety in children and their parents. **Material and Methods:** It is a pilot study composed for sample with 100 children (5-8 years) from Recife, Pernambuco state. The dates were collected by a questionnaire administered in a face to face interview with the parents. The anxiety were available through the Dental Anxiety Question and with the oral health measured by index CPOD , and others 26 variables associate were available. **Results:** The prevalence of dental anxiety in children was 46% and 28% in parents. Association was observed between dental anxiety with their satisfaction with friends ($p < 0.005$). We identified 10 possible associated factors to child dental anxiety ($p < 0.25$). **Conclusion:** The satisfaction with friends are inversely associated with dental anxiety in children and those new studies analyzing dental anxiety in children should include the investigation of other variables to test for associations.

Keywords: Dental anxiety; Child; Association; CPO-D index; Epidemiology.

Introduction

Despite significant improvements in dental equipment and procedures over the years, dental treatment is still often associated with anxiety and stress. Such behavioral aspect is transferred onto children in different ways, leading to their increased negative behavior in dental visits and escape of treatment [1]. The etiology of dental anxiety is multifactorial, influenced by individual and/or environmental factors and by aspects of the treatment itself [2,3].

Worldwide, there is still little knowledge about the associated factors and determinants of dental anxiety [4-7]. As far as we know, there are no studies that have evaluated the possible association of dental anxiety in children with issues that may be related to the phenomenon such as children's emotional or behavioral problems, parents risk behavior or children's level of physical activity.

Regarding the prevalence of dental anxiety in children, European studies show lower percentage in comparison to Brazilian investigations [8,9]. In 5-year-old children living in Recife (Brazil), the prevalence of fear and/or dental anxiety was 41.1% [10]. In 6- to 8-year-old children living in Denmark (2003), the prevalence was 5.7% [11]. The disparities among the results disrupt the comparisons. Although there is a range of studies about dental anxiety in European countries, up to what extent are their results comparable to those observed in our population? [12]. In addition, research about dental anxiety in Brazil usually use unrepresentative samples which do not reflect either regional or national reality of the population [13,14].

The inconsistencies mentioned above may stem from immutable aspects such as the subjectivity and complexity of anxiety which render its measure and evaluation difficult. Inconsistency may also result from social and cultural differences found in studies made in different countries [15]. In addition, other aspects often neglected by researchers that can cause inconsistencies in the results are the lack of representativeness in the sample [11,16] and the lack of standardization in the use of questionnaires, both making comparisons between the results [9,17] and the choice of variables to be included in the association analysis [5,6] difficult.

In Brazil, because dental anxiety has not yet been much studied, consistent information regarding the subject is still lacking [7]. In this context, the objective of our study was to conduct a preliminary analysis of possible factors associated with dental anxiety in the city of Recife, PE, Brazil, as well as show its prevalence in 5-8 year- old children and their parents or guardians.

Material and Methods

This is a pilot study for the "Longitudinal Study of Health and Well-being of Children in Preschool" (Pre-ELOS) subproject. Data collection was conducted from August to December 2012 at schools in the city of Recife, Pernambuco. The research protocol was approved by the Ethics Committee on Human Research of the University of Pernambuco (CAAE 0096.0.097.000-10). All parents/guardians signed the consent form (ICF).

The study included 100 children between five and seven years of age, registered in six public and private schools. This population size is sufficient to conduct exploratory statistical analysis and check the applicability of the methodological procedures that will be used in longitudinal follow-up.

The dependent variable 'dental anxiety in children', was measured by the Dental Anxiety Question (DAQ) [18]. The question "Is your son (daughter) afraid of going to the dentist?" was asked. There were four possible answers: "No", "Yes, a little," "Yes, He (she) is afraid" and "Yes, he (she) is very afraid". Children whose parents answered affirmatively were considered to be in the risk group for dental anxiety.

The questionnaire proposed by the group responsible for the "Study of Childhood Obesity in Florianopolis" was adapted to be used in a face to face interview with parents to obtain pertinent demographic and behavioral data

The variables related to parental factors potentially associated with dental anxiety were: I) degree of kinship (natural parents; adoptive parents); II) family income (≤ 2 minimum wages; > 2 minimum wages); III) number of child (1 child; 2 children; 3 or more children); IV) level of maternal education (≤ 8 years; > 8 years of education); V) type of childbirth (normal; cesarean); VI) breastfeeding (not breastfed; < 6 months and 6 or more months); VII) excessive consumption of alcohol on the same occasion (< 5 doses; ≥ 5 doses); VIII) smoking (yes; no), IX) parental dental anxiety (yes; no).

Factors related to the child and the environment were also tested for associations with dental anxiety. They were: I) child's age (5-6 years; 7-8 years); II) gender (male; female); III) time playing outdoors during the week (0 minutes; < 1 hour; 1 or more hours); IV) time playing outdoors during the weekend (0 minutes; < 1 hour; 1 or more hours); V) time spent on TV watching during the week (0 minutes; < 1 hour; 1 or more hours); VI) time spent on TV watching during the weekend (0 minutes; < 1 hour; 1 hour or more); VI) going to the dentist in the past 12 months (yes; no), VII) presence of any disease (yes; no); VIII) body satisfaction (yes; no).

Parents were asked about psychological and behavioral aspects of their children. The variable 'physical health problems' was collected by posing the question: "During the past four weeks, has your child had to limit activities with friends or the performance of school tasks because of physical health problems?" The answer was dichotomized into children with some physical health problem and children without physical health problems. The variable 'child's emotional or behavioral problems' was collected through the question "During the past four weeks, has your child had to limit doing homework or activities with friends because of some emotional or behavioral problems"? The children whose parents replied affirmatively were considered to be at risk for dental anxiety. Child's satisfaction with life and with friends was obtained by posing the question: "During the past four weeks, what degree of satisfaction do you think your child has regarding his own ability to be friends with other children?" Children who somehow were said to be dissatisfied were considered to be at risk for dental anxiety. Finally, the variable 'sad or upset child' was obtained by asking: "During

the past four weeks, how long you think your child was upset or sad?" Children who most often were found to be sad or upset were considered to be at risk for dental anxiety.

Oral examination on each child was performed to obtain the DMFT / dmft indices. The diagnostic criteria for DMFT/dmft are in accordance with the recommendations of the Brazilian Ministry of Health (1986): Tooth with caries (C); Missing tooth (P); Teeth indicated for extraction (e); Obturated tooth (O). According to WHO criteria, oral health was classified as: very low (0 to 1.1); low (1.2 to 2.6 points); medium (2.7 to 4.4 points); high (4.5 to 6.5) and very high (more than 6.6 points).

We use disposable wooden spatulas, and the procedure was done under artificial light. When necessary, before the examination, the teeth were cleaned with lint or the child was asked to wash their mouth with water to remove dental plaque. Recommendations for biosafety procedures were properly observed.

Data analysis was performed using SPSS software (version 17). It is presented the mean, standard deviation and frequencies (absolute and relative) to characterize the sample. The chi-square test was used to evaluate the associations between categorical variables. Variables with p values <0.25 were considered possibly associated with dental anxiety in children factors.

Results

Of the 100 children monitored, 56 were boys. The average age of the sample is 6.4 (± 0.9) years. Over half of the families (66%) earn up to two minimum wages and 86% of the children live with one of their parents. The prevalence of dental anxiety in children was 46%, of whom 42% (n = 19) are very afraid of going to the dentist. The prevalence of dental anxiety in parents was 28%.

Before performing dental examination in children, examiners underwent some training and obtained an index Kappa of 0.89 (s.e. = 0.059) which indicates a very good agreement [19].

Factors associated with dental anxiety in children

Despite the small number of children included in this study, an association between children's dental anxiety and children's satisfaction in relation to friends was observed. Over half of children (58.1%) who were satisfied with their friends did not show dental anxiety. It was identified that 61.5% of children had emotional problems and 76.9% were not satisfied with their lives also had dental anxiety. Table 1 shows the prevalence of child-related variables based on the presence or absence of dental anxiety.

Parental factors

Table 2 shows the association of parental factors with dental anxiety in children. It was found that 52.8% of parents without dental anxiety had children without anxiety. Likewise, 54.8% of children whose family income was higher than two minimum wages do not have dental anxiety.

Table 1.Factors associated with dental anxiety in 5 – 7- year- old children residents of Recife, PE.

Variables		Dental Anxiety				P
		No		Yes		
		n	%	n	%	
Age (years)	5-6 years	33	66.1	21	38.9	0.098
	7-8 years	20	44.4	25	55.6	
Gender	Male	31	56.4	24	43.6	0.528
	Female	22	50.0	22	50.0	
Going to the dentist (12 months)	Yes	13	44.8	16	55.2	0.264
	No	40	57.1	30	42.9	
DMFT	Low	49	55.7	39	44.3	0.226
	High	4	36.4	7	63.6	
Presence of systemic disease	Yes	10	58.8	7	41.2	0.631
	No	43	52.4	39	47.6	
Physical health problems	Yes	15	65.2	8	34.8	0.200
	No	38	50.0	38	50.0	
Emotional or behavioral problems	Yes	5	38.5	8	61.5	0.242
	No	48	55.8	38	44.2	
Satisfaction with friends	Yes	50	58.1	36	41.9	0.018
	No	3	23.1	10	76.9	
Satisfaction with life	Yes	48	55.8	38	44.2	0.242
	No	5	38.5	8	61.5	
Sad or upset	Yes	3	42.9	4	57.1	0.557
	No	50	54.3	42	45.7	
Time playing outdoors (within 1 day of the week)	0 minutes	6	33.3	12	66.7	0.145
	≤ 1 hour	8	66.7	4	33.3	
	> 1 hour	39	56.5	30	43.5	
Time playing outdoors (1 Day weekend)	0 minutes	4	57.1	3	42.9	0.362
	≤ 1 hour	4	100.0	0	0.0	
	> 1 hour	44	50.6	43	49.4	
Time watching TV (within 1 day of the week)	0 minutes	1	25.0	3	75.0	0.191
	≤ 1 hour	8	47.1	9	52.9	
	> 1 hour	44	56.4	34	43.6	
Time watching TV (within 1 day of the weekend)	0 minutes	6	54.5	5	45.5	0.780
	≤ 1 hour	3	37.5	5	62.5	
	> 1 hour	43	54.4	36	45.6	
Body satisfaction	Yes	12	54.5	10	45.5	0.833
	No	39	52.0	36	48.0	

Possible factors associated with dental anxiety in children

The bivariate analysis showed ten possible factors associated with dental anxiety in 5-7-year-old children ($p < 0.25$) (Table 3).

Discussion

In this study, the prevalence of dental anxiety in children living in Recife was just slightly higher (46%) in comparison to studies performed in the same region (39.4%) [6] and in Brazil (39.1%) [20], but much higher than that found in studies conducted in Asian countries (19.5%) and in the U.S. (30.6%) [21-23]. The disparity is even bigger comparing the results of this research with those in northern European countries such as Sweden, Finland and Denmark, where the prevalence is around (5.7% - 6.7%) [9,11,23,24]. Differences in the sampling processes, oral health systems and

mostly in culture could explain this finding. Yoghurts and milk beverages in current analysis have low pH, or rather, 3.91+0.09) for G1, and 4.04+0.04 for G2. In fact, these rates may be compared to the pH of any other acid beverage that causes DE. Low pH in the analyzed samples may perhaps be due to lactic acid, especially in yoghurts which are fermented beverages [17]. However, results show that yoghurt and milk beverages have similar pH levels, perhaps due to compounds that warrant their preservation for a longer time span[18].

Table2. Parental factors associated with dental anxiety in 5 - 8 year- old children residents of Recife, PE.

Variables		Dental Anxiety				P
		No		Yes		
		n	%	n	%	
Degree of kinship	Birth parents	45	52.3	41	47.7	0.535
	Adoptive parents	8	61.5	5	38.5	
Family income	≤ 2 SM	36	54.5	30	45.5	0.978
	> 2 MW	17	54.8	14	45.2	
Number of children	1 children	14	58.3	10	41.7	0.547
	2 children	24	53.3	21	46.7	
	children ≥ 3	15	50.0	15	50.0	
Level of education of mother	≤ 8 years	16	50.0	16	50.0	0.459
	> 8 years	32	58.2	23	41.8	
Type of birth	normal	21	45.7	25	54.3	0.167
	cesarean	31	59.6	21	40.4	
	not breastfed	2	100.0	0	0.0	
Breast-feeding	<6 months	25	55.6	20	44.4	0.303
	≥ 6 months	26	50.0	26	50.0	
Excessive consumption of alcoholic beverages	<5 doses	40	50.6	39	49.4	0.540
	≥ 5 doses	10	58.8	7	41.2	
Smoking	yes	8	66.7	4	33.3	0.227
	not	31	47.7	34	52.3	
Dental Anxiety	yes	15	55.6	12	44.4	0.805
	not	38	52.8	34	47.2	

Table 3. Possible factors associated with dental anxiety in 5-8 -year- old children in the city of Recife, PE.

Variable	Order of input in the multiple model
Satisfaction with friends	1st
Age	2nd
Time playing outdoors (week)	3rd
Type of birth	4th
Time watchingTV (week)	5th
Physical health problems	6th
DMFT	7th
Smoking	8th
Emotional or behavioral problems	9th
Satisfaction with life	10th

A limitation of this study lies in that the questionnaire used to investigate dental anxiety (DAQ) was applied to children's parents/guardians. Thus, the data obtained concerning the children were not reported by the children themselves (proxy). This might have caused a response bias. Another limitation concerns the oral health index used, DMFT. Actually, DMFT values do not provide any indication as to the number of teeth at risk; indices give equal weight to missing, untreated decay, or well-restored teeth; [25-27], however the index is widely used in oral health surveys and is valid for the characterization of oral health in epidemiological studies.

To evaluate factors associated with a determined phenomenon, first, one resorts to bivariate tests to identify possible associated factors. Then, one tests them in multivariable models, getting results closer to the reality of the phenomenon. In epidemiological studies, the criterion for inclusion of variables in the multivariate model such as the binary logistic regression are variables with $p < 0.20$ or $p < 0.25$ [28]. In the present study, the variables to be incorporated in the model and should be analyzed in future research are: satisfaction with friends, age physical health problems; emotional or behavioral problems, life satisfaction, oral health, time playing outdoors during the week, time watching TV , type of birth and mother's smoking .

Most articles focused on the factors associated with dental anxiety of children have not included most of the variables included at the present survey. In addition, the results of this research suggest that these publications may be failing to include important facts in the perception of this phenomenon [4-7]. This decreases the overall understanding of dental anxiety in children and may compromise the comprehension of the factors commonly assessed. Studies of factors associated with dental anxiety of children have usually included some of the following variables: gender, age, going to the dentist, parental dental anxiety, presence of dental pain, mother's education, income, and oral health. However, not all at one time, in addition, results have failed to converge which may be masking the identification and magnitude of associations [4-7].

In this study, association between dental anxiety in children and dissatisfaction with friendship was found. The anxiety is related to the disturbance of the well-being of the individual, and is often related to feelings of loneliness and abandonment. Social support plays here an important role since it is defined by the individual's perception of how much may be depend on others for emotional support [29,30]. The results of this investigation suggest that this association should be further evaluated in a larger sample and then followed by a longitudinal study.

Conclusion

The variable 'satisfaction with friends' show to be inversely associated with dental anxiety in 5- to 8-year-old children. The studies to be developed with focus on dental anxiety in children should include the investigation of several variables to test their possible associations. Moreover, longitudinal studies that investigate how oral health associates with dental anxiety in children should be implemented.

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