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Chapter

Behavioral and Psychosocial Factors as Mediators of the Oral Health Impact on Adolescents Quality of Life

Samuel Veras, Verônica Kozmhinsky, Paulo Goes and Mônica Heimer

Abstract

The goal of this study was to evaluate the association of behavioral and psychosocial factors as mediators of the oral health impact conditions related to the adolescents quality of life. Cross-sectional study with 1417 students, both sexes, 15–19 years old in a Brazilian city. The impact of oral diseases related to the quality of life was assessed by Oral Impact on Daily Performances (OIDP), dental caries by the decay-missing-filled teeth index (DMFT index), periodontal disease by the Community Periodontal Index (CPI index) and the pain at endpoint. Information on the behavioral and psychosocial factors was collected. Statistical analysis was performed using the chi-square test and multiple logistic regression, with 5% significance level. The majority of adolescents considered that the oral health conditions produced high impact on the quality of life (66.1%). It was evidenced that caries, pain of dental origin, birth order, regular dental care, and high sugar consumption significantly associated with high impact on quality of life related to oral health. The decay and the dental origin pain produce a high impact on the quality of life related to oral health, and these impacts are associated with both behavioral and psychosocial factors.

Keywords: oral health, adolescents, quality of life, epidemiology, caries, impact

1. Introduction

Oral health problems have been increasingly recognized as having significant negative impacts on the daily performance and quality of life of individuals and society. In addition to causing pain, oral diseases cause suffering, psychological embarrassment, social deprivation, difficulties in food and well-being, causing individual and collective damages [1, 2].

Caries is still the most common cause of tooth pain [3–5], and the association between untreated caries and toothache is more frequent in populations with lower access, in groups with lower socioeconomic status and in populations where caries is not widely treated, leading to impact on daily activities [6]. Despite the multifactorial nature of caries, more recent studies have shown a strong association between caries and sociodemographic factors [7–11]. It is also important to highlight the

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role of socioeconomic, behavioral, and environmental factors as a determinant of self-care and oral complaints [12].

Since the World Health Organization (WHO) changed the concept of quality of life adding social domains on the definition instead of only the absence of disease, oral health has also been included as one of the contributing factors to general health. Thus, oral health is also perceived as an important aspect of quality of life, which includes a variety of aspects or consequences that oral health can have in the physical, social, and psychological domains. Among these aspects, the ability to eat, talk, smile and the occurrence of pain and discomfort are considered, respectively, the positive and negative aspects most related to the mouth and quality of life [13].

At present, great importance has been given to research involving the impact of oral diseases on the quality of life of individuals [1, 4, 14–17], and measuring instruments have been developed and tested that allow oral health status and dental treatment needs are investigated in order to assess the impact of oral health on the lives of children and their families [18].

Studies have shown that there is no linear association between clinical conditions and indicators of quality of life related to oral health. Therefore, these indicators that evaluate not only clinical aspects are associated with personal, social, and environmental factors [19–21]. Socioeconomic status, age, general health perception, and oral health conditions are some of the factors identified as significantly associated with the impact related to the quality of life [22–25].

Adolescents are constantly developing biologically, psychologically, and socially, with negligible behaviors with their health care. Therefore, it is considered a period of increased risk for caries and other oral diseases, due to the precarious plaque control and less care with brushing [26, 27], increased sugar intake, smoking [28], and alcoholic beverages [27, 29].

Considering that studies have shown that oral diseases affect the daily life of adolescents and the need to identify the factors associated with greater or lesser impact on the quality of life of adolescents, the present study aimed to evaluate the association of behavioral and psychosocial factors, such as mediators of the impact of oral health conditions related to adolescents' quality of life.

2. Methods

A cross-sectional study was carried out with adolescents of both sexes aged 15–19 enrolled in public schools (municipal and state) from São Lourenço da Mata (PE), excluding those with systemic diseases, cognitive, auditory, or visual difficulties that compromised their participation in the research.

The sample was calculated using the two-ratio comparison formula, a ratio of 1:1 in the comparison groups, with a power of 80% to detect differences when an odds ratio of 1.5 is observed, with a random error of 2.5% and a confidence interval (CI) of 95%. As part of an oral health survey, the prevalence of 20% nonexposed toothache observed in a previous study was used as a parameter for the sample calculation [30]. The Epi Info 6 calculation program and the Fleiss bibliographic database were used [31]. In this way, a minimum sample of 1380 adolescents was obtained, with a 20% increase to compensate for possible losses and increases the effect of the study, resulting in a total sample of 1656 students.

Regarding the schools participating in the survey, seven were state schools and four municipal schools; they were selected because the students were aged between 15 and 19 in the group of interest and provided the list of students. The list of 15- to 19-year-old students enrolled in the 11 schools totaled 3604 students, from which

the draw of the students was carried out with a selected interval of 2.17, thus obtaining the proposed sample of 1656 adolescents.

Before starting to collect data, the five researchers were calibrated, obtaining an inter-examiner agreement that ranged from 0.86 to 0.99, showing an excellent degree of agreement, and the intra-examiner had a concordance greater than 92%.

Data collection was performed from August to November 2012, through clinical and nonclinical data. Nonclinical data were obtained through a self-administered questionnaire, after a previous explanation of the objectives and method of the study, and all the doubts that emerged at the moment of the research were removed.

The dependent variable on the study "impact on the quality of life-related to oral health" was evaluated through the Oral Impact on Daily Performances (OIDP) index [32]. The independent variables were as follows: dental caries evaluated through the DMFT index; periodontal disease evaluated through the PDI index (behavior variables: tooth brushing, flossing, sugar consumption, smoking, alcohol use, and dental care standard); and psychosocial variables (birth order, history of school failure, and family structure).

Data were analyzed through the SPSS program version 17.0. The descriptive analysis was performed for the categorical variables, through simple frequencies, and for the continuous variables, and measures of central tendency and variability. For analytical statistical analysis of OIDP [32], the scores produced were dichotomized, regarding the median to create a binary variable: low and high impact. Inferential analysis was performed using association and correlation tests (Pearson's Chi-square and Multiple Logistic Regression). For regression analysis, only the variables that showed significance in the bivariate analysis were considered, except for sex. The variables entered the block model by the ENTER method, and the consistency of the models was evaluated by the Hosmer-Lemeshow test, and the unadjusted and adjusted estimates were presented with their respective 95% CI. The project was approved by the Research Ethics Committee of the University of Pernambuco, under opinion 105/12 in June 2012.

3. Results

The present study obtained a response rate of 85.5%, resulting in a final sample of 1417 adolescents with a mean age of 16.03 years (SD = 1.16), being 56.2% (797) of the sex female. Among the adolescents surveyed, 66.1% (936) presented at least one of the impacts studied.

Regarding the psychosocial factors, 49.4% (697) of the adolescents had been disapproved, 53% (751) was part of the traditional family, 42% (595) reported being the first child, and 11% (1559) were the fourth child or beyond.

Regarding the behavioral factors, the majority performed regular brushing 95.1% (1348), only 38.7% (549) were using dental floss, and in 57.8% (805), high sugar consumption was observed. Alcoholic beverages had already been tried daily by 59.4% (842) of the adolescents, and of these, 40.8% (344) made regular use, representing 24.2% of the total. Regarding cigarette smoking, 20.5% (291) had already tried it, 30.6% (89) of whom were considered regular smokers, representing 6.3% of the total sample. Only 17% (248) presented a pattern of regular dental care.

Regarding the oral conditions of the adolescents, a caries prevalence of 51.29% (711) was found, with an average DMFT score of 2.72 (SD = 3.10). Regarding the periodontal condition, the prevalence of gingival bleeding was 49.60% (703), the presence of calculus 48% (680) and shallow periodontal pockets 5.4% (77). Toothache in the last 6 months was reported in 73.6% (1042) of adolescents.

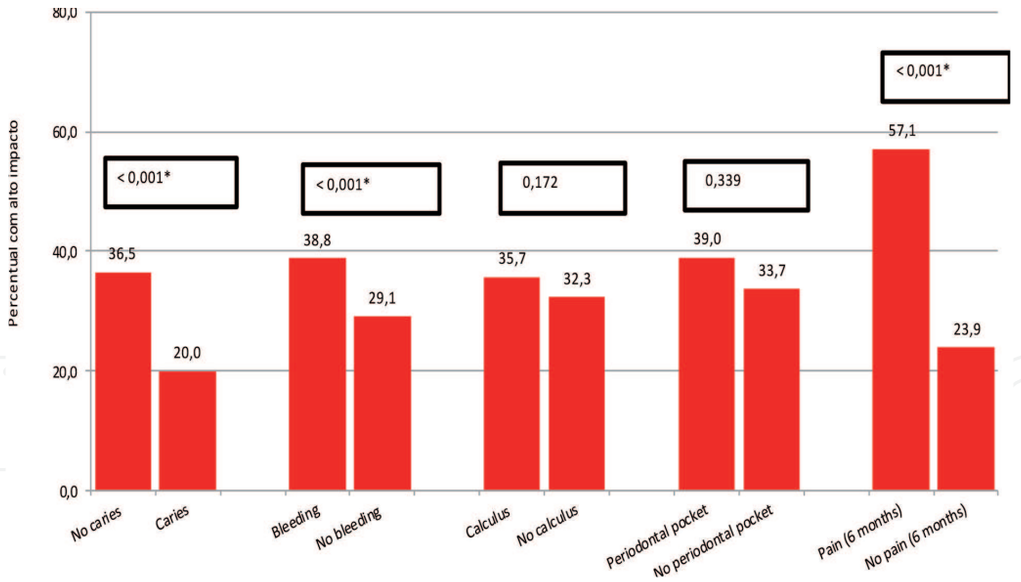


Figure 1.
Impact on quality of life and the oral health status of adolescent students, São Lourenço da Mata/PE, 2014.

Behavioral variables	Impact on quality of life				Total		X^2	P
	Low		High					
	n	(%)	n	(%)	n	(%)		
Brushing								
Regular	901	66.8	447	33.2	936	100.0	6.824	*0.009
Irregular	35	51.5	33	48.5	68	100.0		
Flossing								
Yes	566	65.2	302	34.8	868	100.0	0.718	0.397
No	370	67.4	179	32.6	549	100.0		
Smoking								
Yes	185	63.6	106	36.4	291	100.0	0.906	0.341
No	736	66.5	370	33.5	1106	100.0		
Alcohol consumption								
Yes	541	64.3	301	35.7	842	100.0	2.421	0.120
No	381	68.3	177	31.7	558	100.0		
Has been to the dentist								
Yes	794	65.4	420	34.6	1214	100.0	1.868	0.172
No	140	70.4	59	29.6	199	100.0		
Consultation pattern								
Regular consults	197	79.4	51	20.6	248	100.0	34.07	*≤0.001
Irregular consults	511	60.0	341	40.0	852	100.0		
Do not go to dental consults	162	69.2	72	30.8	234	100.0		
Sugar consumption								
Yes	431	70.4	181	29.6	612	100.0	11.4	*≤0.001
No	368	61.2	233	38.8	601	100.0		

**Statistically significant.*

Table 1.
Impact on quality of life and behavioral variables in adolescent students, São Lourenço da Mata/PE, 2014.

Psychosocial variables	Impact on the quality of life				Total		X2	P
	Low		High					
	n	(%)	n	(%)	n	(%)		
Birth order								
First born child	432	71.6	171	28.4	603	100.00	21.877	*≤0.001
Second child	272	65.7	142	34.3	414	100.00		
Third	120	62.2	73	37.8	193	100.00		
Fourth or more	84	54.2	71	45.8	155	100.00		
Do not know/do not recall	26	55.3	21	44.7	47	100.00		
Failure								
Yes	440	63.1	257	36.9	697	100.0	12.16	*0.002
No	478	70.1	204	29.9	682	100.0		
Do not know/do not recall	16	48.5	17	51.5	33	100.0		
Family structure								
Traditional (father and mother)	476	66.2	243	33.8	719	100.0	1080	0.782
Uniparental (father or mother)	277	64.7	151	35.3	428	100.0		
Other	61	67.0	30	33.0	91	100.0		

Table 2.
Impact on quality of life and psychosocial variables in adolescent students, São Lourenço da Mata/PE, 2014.

There was an association between the impact on quality of life and dental caries variables ($p \leq 0.001$), gingival bleeding ($p \leq 0.001$) and pain ($p \leq 0.001$) (**Figure 1**); tooth brushing ($p = 0.009$), dental care standard ($p \leq 0.001$), and sugar consumption ($p \leq 0.001$) (**Table 1**); birth order ($p \leq 0.001$) and history of disapproval ($p = 0.002$) (**Table 2**).

Variables associated with the impact on the quality of life related to oral health were taken to the multiple logistic regression model. After adjusting the variables for dental brushing, dental care standard, sugar consumption, birth order, and failure history, the statistical significance of birth order ($p < 0.01$), irregular dental care standard ($p < 0.01$), and high sugar consumption ($p < 0.01$) (**Table 3**).

4. Discussion

The data of the present study help to clarify how the association of psychosocial and behavioral factors in determining the impact on the quality of life related to oral health happens. It was evidenced that, in this population of schoolchildren of the public network, a greater impact was reported by female adolescents, who are younger children of families that have more than one child, presenting an irregular behavior of dental care and high consumption of sugar.

The reports of impacts on the quality of life related to oral health have been the subject of several investigations, being universally accepted that the impact of the oral and dental condition on the daily life of the people [1, 3, 15–17, 33]. The present study ratifies these results and brings us to the reflection on the factors involved in this process.

Variables	Not justified Odds (95% IC)	Value P	Adjusted Odds (95% IC)	Value P
Brushing				
Irregular	1		1	
Regular	0.71 (0.43–1.17)	0.18	0.53 (0.25–1.11)	0.095
Birth order				
First born child	1		1	
Second	1.31 (1.00–1.72)	0.44	1.22 (0.90–1.65)	0.198
Third	1.53 (1.09–2.16)	0.13	1.49 (1.01–2.22)	0.045
Fourth or more	2.13 (1483–3.06)	<0.01	2.30 (1.49–3.54)	<0.01
Do not know/do not recall	2.04 (1.11–3.72)	0.20	2.07 (1.01–4.28)	0.047
Failure				
Yes	1		1	
No	0.73 (0.58–0.91)	<0.01	0.48 (0.20–1.11)	0.087
Do not know/do not recall	1.81 (0.90–3.66)	0.09	0.35 (0.15–0.81)	0.015
Consultation pattern				
Regular	1		1	
Irregular	2.57 (1.84–3.61)	<0.01	2.47 (1.71–3.57)	<0.01
Do not go to dental consults	1.71 (1.13–2.59)	0.01	1.55 (0.97–2.48)	0.06
Sugar consumption				
High	1		1	
Low	1.50 (1.18–1.91)	<0.01	1.38 (1.07–1.78)	0.012

Table 3.
Results of the multiple logistic regression, São Lourenço da Mata/PE, 2014.

It was demonstrated in this research that the impact related to oral health in this group of adolescents was associated with sex, where the girls reported a greater impact than the boys. It was noticed, based on this findings, that girls are more attentive, perceiving, and enhancing oral health [1, 4, 34, 35] feel more comfortable in reporting their health-related concerns or emotional problems [36] and are more sensitive to the perception of his appearance [4].

Most of the interviewees had gone to the dentist at least once in their lifetime, and a considerable percentage consulted the dental services in less than a year. Similar data were found by other authors [37–39].

In the present study, the pattern of regular dental care was associated with the impact, which is in agreement with the findings of a study conducted in northern Tanzania [38] in which the frequency of having any oral impact had a directly proportional increase with the visit to the dentist. Likewise, another study verified an association of the impact with the recent use of dental services [39]. Studies have found that a greater proportion of participants who had never visited a dentist reported less impact [40, 41]. The possible explanation for this fact may be associated with the pattern of symptomatic dental care, since most adolescents visit the dentist only when they have toothache, have a mouth problem, or their oral health is poor, and statistically, these are more likely to have more regular dental care, according to the results of some studies [3, 4, 7, 37, 42, 43].

In the present study, adolescents with high sugar consumption showed a greater impact on quality of life related to oral health. Sugar consumption has long been

reported as one of the relevant factors in the etiology of caries [5, 44] also, lack of access to dental services is generally associated with low socioeconomic status [45, 46]. Untreated caries and its immediate consequence, the pain of dental origin, are the main causes of impacts related to the quality of life in adolescents [47, 48, 53]. Thus, improving behavior among dental visits of low socioeconomic groups would have a greater effect on improving oral health, reducing the impact on quality of life related to oral health [38].

A relevant finding was the fact that behavioral factors related to oral health, especially concerning a higher prevalence of dental caries, such as the pattern of irregular dental care and high sugar consumption were minimized when adjusted for psychosocial factors. This effect may be related to the fact that psychosocial factors seem to act at a level above the determinant chain [39, 41, 42, 49].

Another important finding of the present study was the association between the impact of oral health related to quality of life and the order of birth of school children. Previous studies have shown that younger children in families with more than two children report more pain [1]; they have more caries and more risk behaviors for oral health [50]. One possible explanation for this is the fact that, in socially disadvantaged families, parental care is hampered by the availability of time for the care of the youngest children.

These findings point to the strengthening of the theoretical models of the social determinants of the disease, in which the psychosocial factors point to a strong mediation of these factors with chronic diseases among them oral health [51, 52, 54].

The results of this study should be interpreted in light of its limitations; since it is a cross-sectional study, a cause-and-effect relationship cannot be established. However, the aspects related to its validity should be emphasized, since it is based on other studies, derived from a population sample, and used a universally accepted methodology.

5. Conclusion

The present study demonstrated the independent association between behavioral and psychosocial factors in determining the impact on the quality of life related to oral health. This demonstrates that health promotion actions should be directed not only to specific actions such as tooth brushing and fluoride application but should include broader actions directed at contextual factors where the individual lives and their family structure.

The study also found that oral diseases have an impact on the studied population, mainly in female adolescents, younger children of families with more than one child, an irregular pattern of dental care, and high consumption of sugar. Thus, these results indicate that the vulnerability of social conditions is represented by families with several children, in which oral health becomes more likely to report impact.

Conflict of interest

The authors declare no conflict of interest.

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