



Pesquisa Brasileira em Odontopediatria e
Clínica Integrada

ISSN: 1519-0501

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Brasil

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Pesquisa Brasileira em Odontopediatria e Clínica Integrada, vol. 16, núm. 1, 2016
Universidade Estadual da Paraíba
Paraíba, Brasil

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Original Article

Sociodemographic Factors and Oral Health Conditions Related to the Impact on the Quality of Life of Adolescents

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Academic Editors: Alessandro Leite Cavalcanti and Wilton Wilney Nascimento Padilha

Received: 08 March 2015 / Accepted: 17 November 2015 / Published: 22 February 2016

Abstract

Objective: To identify the sociodemographic factors and the oral health conditions related to the impact on the quality of life of adolescents. **Material and Methods:** Cross-sectional study with 1,417 students of both sex aged 15-19 years in São Lourenço da Mata - PE, Brazil. The collected information comprised sociodemographic data (gender, age, race / color), oral health status (dental caries, periodontal disease and pain) and impact on oral health-related quality of life of adolescents through the OIDP test. Statistical analysis used the Pearson's chi-square test and multiple logistic regression, with 5% significance level. **Results:** High impact on oral health-related quality of life was evidenced in 66.1% of adolescents. The prevalence of dental caries, gingival bleeding and pain was respectively 51.29%, 49.60% and 73.6%. The multiple regression analysis found that the high impact on the quality of life was related to the oral health condition and sex of teenagers, showing that girls, who had higher prevalence of dental caries and pain, had greater impact related to oral health. **Conclusion:** Dental caries and pain of dental origin cause a high impact on the quality of life of adolescents, being higher among girls.

Keywords: Oral Health, Adolescents, Quality of life.

Introduction

In the last two decades, the assessment of quality of life has attracted the attention of health researchers, being no longer a focus centered on biological determinants of disease considering the health multidimensionality. Thus, the evolution of the health-disease process has established its association with quality of life [1].

This change was also observed in dentistry, leading to the development of various instruments for assessing quality of life related to oral health, encouraging researches on the impact of oral health problems in individuals [2-5]. These instruments are generically called socio-dental indicators and, among them, the Oral Impacts on Daily Performances (OIDP) stands out, which focuses on assessing the frequency and severity of the impact of oral health problems in the performance of the daily living activities of individuals [6]. So, the measurement of the quality of life related to oral health should be an essential component of studies aimed at assessing oral health needs [5].

Oral health has a significant impact on physical, social and psychological well-being [7] and problems related to it are known to cause significant negative impact on the daily performance and quality of life of individuals and society [8,9]. Poor oral health is related to quality of life presents socioeconomic factors, dental situation, use of dental services and dental self-care as risk indicators [10].

The degree to which dental disorders can change the quality of life is one of the main challenges for public health [11]. Considering the peculiarities of the context involving adolescence, where intense biological, psychological and social changes occur, the risk to oral diseases increases due to poor plaque control, less care with brushing, increased sugar intake, smoking [12] alcohol consumption [13].

Some researchers have observed that high levels of dental caries [8], malocclusion [14], gingivitis, oral ulcers and toothache are major causes perceived of impact of oral health conditions on quality of life of adolescents [15]. Dental caries and periodontal diseases affect people worldwide, especially those in socially disadvantaged societies [16]. Studies with adolescents have shown that dental caries and progressive forms of periodontal diseases were associated with significant impact on oral health-related quality of life [9,15]. As dental caries is significantly associated with impact on quality of life of adolescents [17,18], the same is observed with untreated dental caries [4,18,19] and severe dental caries [15,18], in addition to the fact that untreated caries may cause toothache [2,4,19,20].

Toothache estimates are recognized as indicators of oral health status and a measure of quality of life [21]. Levels of untreated dental caries and toothache vary according to oral health behavior and sociodemographic factors [20]. The association between dental caries and toothache is more common in populations with less access to dental services, groups with lower socioeconomic status and populations where dental caries is not widely treated, leading to impact on daily activities [19].

Considering that oral diseases impact the daily lives of adolescents, interfering with their quality of life and that socio-demographic factors can interfere with this process, the aim of this study was to identify sociodemographic factors and oral health conditions related to the negative impact on the quality of life of adolescents.

Material and Methods

This is an observational cross-sectional study conducted with students of both sexes aged 15-19 years enrolled in public schools of São Lourenço da Mata, Brazil. Students with cognitive, hearing or visual impairments that prevented the application of instruments were excluded.

The sample size was calculated using the formula for comparing two proportions of 1: 1 ratio in the comparison groups, with 80% power to detect differences when Odds ratio of 1.5 is observed, with random error of 2.5% and a 95% confidence interval. For being part of an oral health survey, the prevalence of toothache of 20% among those unexposed observed in a previous study [22] was used as a parameter for sample size calculation. The Epi Info software was used [6]. Thus, minimum sample of 1,380 adolescents was obtained, increased by 20% to compensate for possible losses and enhance the study effect, resulting in a total sample of 1,656 students.

Seven state schools participated in this study (one was excluded for being under renovation), and four municipal schools that had students in the age group of interest and provided the list of students. The list of students aged 15-19 years enrolled in 11 schools totaled 3,604 students, from which the draw for students with 2.17 selection interval was held, obtaining a sample of 1,656 adolescents, in which clinical examinations were performed.

Data collection took place from August to November 2012 by five calibrated researchers. Kappa test was performed to give an inter-examiner concordance ranging from 0.86 to 0.99, showing excellent degree of concordance, with agreement greater than 92%. Clinical data used the DMFT and CPI indexes for evaluation of caries and periodontal disease [23]. Non-clinical data were obtained through a self-administered questionnaire after prior explanation of the study objectives and methods, clearing all doubts that arose at the time of the survey.

The dependent variable "impact on quality of life related to oral health," was evaluated by the Oral Impact on Daily Performances index (OIDP) [6]. For the analytical phase of the study data analysis, scores produced by OIDP were dichotomized with median as reference so as to create a binary variable: low and high impact. The independent variables were: dental caries as measured by the DMFT index; periodontal disease as measured by the CPI index; pain [20] assessment criteria and socio-demographic conditions (sex, age and race / color).

The SPSS software 17.0 was used to perform descriptive statistical analyses for categorical variables using simple frequencies. Inferential analysis was performed using association and correlation tests (Chi-square test and multiple logistic regression). Significance level of 5% was used for all analyses.

The research project was approved by the Research Ethics Committee of the University of Pernambuco under protocol No. 105/12 of June 2012. The Informed Consent Form was signed by adolescents over 18 years and by parents when younger than 18 years.

Results

This research achieved a response rate of 85.5%, representing 1,417 adolescents surveyed. Among students, the average age was 16.03 years (SD = 1.16), of these, 56.2% (797) were female and 49.1% (696) of brown color. The survey was conducted in public schools, so the sample was considered homogeneous from the socioeconomic point of view.

Of adolescents surveyed, 66.1% (936) had some type of impact on their daily activities. As for the oral conditions of adolescents, prevalence of dental caries of 51.29% (711) was found, with average DMFT score of 2.72. Regarding the periodontal condition, the prevalence of gingival bleeding was 49.60% (703), calculus of 48% (680) and shallow periodontal pockets of 5.4% (77). Toothache in the last six months was reported by 73.6% (1042) of adolescents.

The bivariate analysis of the impact on quality of life of adolescents with sociodemographic variables showed significant association with sex ($p = 0.01$) (Table 1).

Table 1. Bivariate analysis between impact on quality of life and socio-demographic variables in adolescent students.

| Socio-demographic variables | Impact on quality of life | | | | Total | | X² | P-value |
|-----------------------------|---------------------------|------|------|------|-------|-------|-------|---------|
| | low | | high | | | | | |
| | n | (%) | n | (%) | n | (%) | | |
| Sex | | | | | | | | |
| Male | 432 | 69.7 | 188 | 30.3 | 620 | 100.0 | 6.451 | *0.011 |
| Female | 504 | 63.2 | 293 | 36.8 | 797 | 100.0 | | |
| Age | | | | | | | | |
| ≤ 16 years | 626 | 67.0 | 309 | 33.0 | 935 | 100.0 | 0.986 | 0.321 |
| > 16 years | 310 | 64.3 | 172 | 35.7 | 482 | 100.0 | | |
| Race/Color | | | | | | | | |
| White | 274 | 68.7 | 125 | 31.3 | 399 | 100.0 | 3.818 | 0.431 |
| Black | 119 | 65.4 | 63 | 34.6 | 182 | 100.0 | | |
| Brown | 447 | 64.2 | 249 | 35.8 | 696 | 100.0 | | |
| Yellow | 28 | 73.7 | 10 | 26.3 | 38 | 100.0 | | |

By analyzing the impact on quality of life of adolescents with oral health status significant association with dental caries ($p \leq 0.001$), gingival bleeding ($p \leq 0.001$) and pain was observed ($p \leq 0.001$) (Table 2).

The variables associated with impact on quality of life related to oral health were used in the multiple logistic regression model. After adjusted for sex, dental caries, presence of bleeding and pain maintained statistical significance with dental caries and pain ($p \leq 0.001$) (Table 3).

Table 2. Bivariate analysis between impact on quality of life and oral health status of adolescent students.

| Variables Heath condition | Impact on quality of life | | | | Total | | X ² | P-value |
|----------------------------------|---------------------------|------|-----------|------|-------|--------|----------------|---------|
| | low n | (%) | high n | (%) | n | (%) | | |
| Dental caries | | | | | | | | |
| No | 360 | 80.0 | 90 | 20.0 | 450 | 100.0 | 25.378 | *≤0.001 |
| Yes | 197 | 63.5 | 113 | 36.5 | 310 | 100.0 | | |
| Periodontal disease | | | | | | | | |
| Bleeding | | | | | | | | |
| No | 506 | 70.9 | 208 | 29.1 | 714 | 100.0 | 14.870 | *≤0.001 |
| Yes | 430 | 61.2 | 273 | 38.8 | 703 | 100.0 | | |
| Calculus | | | | | | | | |
| No | 499 | 67.7 | 238 | 32.3 | 737 | 100.0 | 1.869 | 0.172 |
| Yes | 437 | 64.3 | 243 | 35.7 | 680 | 100.0 | | |
| Pocket | | | | | | | | |
| No | 889 | 66.3 | 451 | 33.7 | 1340 | 100.0 | 0.914 | 0.339 |
| Yes | 47 | 61.0 | 30 | 39.0 | 77 | 100.0 | | |
| Pain in the last 6 months | | | | | | | | |
| No | 745 | 76.1 | 234 | 23.9 | 979 | 100.00 | 145.24 | *≤0.001 |
| Yes | 182 | 42.9 | 242 | 57.1 | 424 | 100.00 | | |

Table 3. Results of the multiple logistic regression.

| Variables | Unadjusted Odds (CI 95%) | P-value | Adjusted Odds (CI 95%) | P-value |
|--------------------------|-----------------------------|---------|---------------------------|---------|
| Socio-demographic | | | | |
| Sex | | | | |
| Female | 1.34(1.07-1.68) | 0.009 | 1.17 (0.89-1.55) | 0.247 |
| Male | 1 | | 1 | |
| Health condition | | | | |
| Dental caries | | | | |
| Yes | 2.7(2.0-3.5) | <0.01 | 1.74(1.27-2.39) | *0.001 |
| No | 1 | | 1 | |
| Bleeding | | | | |
| Yes | 1.5(1.2-1.9) | <0.001 | 1.19(0.91-1.56) | 0.194 |
| No | 1 | | 1 | |
| Pain | | | | |
| Yes | 4.2(3.3-5.3) | <0.01 | 3.88(2.93-5.14) | *≤0.001 |
| No | 1 | | 1 | |

Discussion

The results found in this study collaborate to consolidate the evidence that the oral health of adolescents has negative impacts on their daily activities, being significantly higher among females [5,7,9,24].

The report of greater impact for girls may be related to the greater attention, perception and appreciation of females with oral health [2,5,24]. One possible explanation for this fact is that girls feel more comfortable in reporting their concerns related to health or emotional problems [26]. On the other hand, it was also observed that girls are more sensitive to the perception of their own appearance than boys [5].

In this study, age was not found to be an impact factor in quality of life related to oral health of adolescents, which was also observed in previous studies [3,5,9]. However, it has been shown that

older students had more impact than younger ones, demonstrating a clear relationship between age and impact on quality of life of adolescents [24].

Another socio-demographic factor investigated was race, which showed no significant association with impact on quality of life of adolescents [3]. This may be related to the fact that adolescents evaluated in this study were homogeneous from the socioeconomic point of view. Oral disorders are likely to have a negative effect on the quality of life of adolescents and a significant association of dental caries with impact on quality of life of students was observed in the present study. This association was also reported by several studies [4,15,18].

Dental caries is still highly prevalent and a major cause of impact on the quality of life of children and adolescents in some countries, including Brazil [2,9]. Studies have also shown a significant increase in number of impacts per untreated carious teeth [4,15,17-19,] and with deep caries [15,18].

Untreated caries and its immediate consequence, pain of dental origin, are the main causes of impacts related to quality of life in adolescents [8]. Thanks to investments made in public policies related to oral health in recent years, which showed improvements in the oral health of adolescents, the results of the last two national epidemiological surveys showed a significant decrease in DMFT (6.17 to 4.2) in adolescents aged 15-19 years [22,27]. Given the observed increase in the prevalence of dental caries in individuals aged 12 years and 15-19 evaluated by recent national oral health surveys [22,27], effective strategies should be implemented to control dental caries in these age groups. In addition, the accumulation of untreated dental caries over time increase the pain reported by this population.

This study showed a significant association between pain of dental origin and impact on quality of life of adolescents, as several works [2,4,5,19,24]. Although pain of dental origin is not the only cause of orofacial pain, it is usually reported as the most frequent cause of impact on quality of life [5]. Studies have indicated that dental caries and its main consequence, pain, is the major complaint among patients [7].

The results of this study should be interpreted in light of its limitations; as it is a cross-sectional study and cannot establish a cause and effect relationship. However, we must highlight aspects related to its validity, since it was developed based on other studies, is derived from a population sample and has adopted a universally accepted methodology.

Conclusion

Dental caries and pain of dental origin cause a high impact on the quality of life of adolescents, which prevalence is higher among girls, demonstrating that the presence of oral diseases do not explain all the impact of oral health on the quality of life of adolescents and future studies should explore psychosocial factors and or factors that differentiate gender perceptions about health problems, which should be addressed by public policies.

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