IMPACT OF UNTREATED DENTAL CARIES AND MALOCCLUSION IN BRAZILIAN ADOLESCENTS ON THE QUALITY OF LIFE OF THEIR FAMILIES

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Palavras-chave: Cárie Dentária. Má oclusão. Qualidade de Vida. Adolescente.

RESUMO

Objetivo: O objetivo do presente estudo foi avaliar o impacto da cárie dentária e da má oclusão em adolescentes brasileiros na qualidade de vida relacionada à saúde bucal (QVRSB) de suas famílias. **Métodos**: Foi realizado um estudo transversal representativo com 1168 adolescentes de Belo Horizonte, Minas Gerais, Brasil, e suas famílias. Os pais/responsáveis responderam à versão brasileira da *Family Impact Scale* (B-FIS) para avaliar o impacto das condições bucais na QVRSB das famílias. A má oclusão foi diagnosticada pelo Índice de Estética Dental e a cárie dentária pelo índice CPOD. Três examinadores calibrados realizaram exames clínicos. Sexo, idade e vulnerabilidade social dos adolescentes foram coletadas como variáveis de confusão. A análise dos dados foi realizada por meio de análise de regressão de Poisson bivariada e multivariada com variância robusta (p<0,05). Resultados: Resultados ajustados por sexo, idade e vulnerabilidade social demonstraram que famílias de adolescentes com cárie dentária não tratada tiveram 29% mais impacto na Atividade Parental/Familiar (IC95% = 1,11-1,50), 28% nas Emoções Parentais (IC95% = 1,09-1,51) e 34% em Conflito Familiar (IC 95% = 1,09-1,65) do que aqueles sem cárie. Quando ajustada para sexo e idade, a má oclusão foi associada ao Encargo Financeiro (RP = 1,39; IC95% = 1,01-1,65); entretanto, perdeu significância quando a vulnerabilidade social foi incluída no modelo multivariado (RP = 1,27; IC95% = 0,99-1,64). **Conclusão**: A cárie dentária não tratada em adolescentes exerceu impacto negativo na QVRSB de suas famílias. A vulnerabilidade social influenciou a ausência de impacto da má oclusão na QVRSB das famílias.

Keywords: Dental Caries, Malocclusion, Quality of life, Adolescent

ABSTRACT

Objective: The aim of the present study was to evaluate the impact of dental caries and malocclusion in Brazilian adolescents on the oral health-related quality of life (OHRQoL) of their families. **Methods**: A representative cross-sectional study was conducted with 1168 adolescents from Belo Horizonte, Minas Gerais, Brazil, and their families. Parents/caregivers answered the Brazilian version of the Family Impact Scale (B-FIS) to assess the impact of oral conditions on the OHRQoL of the families. Malocclusion was diagnosed using the Dental Aesthetic Index. Dental caries was diagnosed using the DMFT index. Three examiners who had undergone training and calibration exercises performed the clinical examinations. Sex, age and social vulnerability of the adolescents were considered confounding variables. Data analysis was performed using bivariate and multivariate Poisson regression analysis with robust variance (p<0.05). **Results**: The analysis adjusted by sex, age and social vulnerability demonstrated that families of adolescents with untreated dental caries had 29% more impact on Parental/Family Activity (95% CI: 1.11-1.50), 28% on Parental Emotions (95% CI: 1.09-1.51) and 34% on Family Conflict (95% CI: 1.09-1.65) than those without caries. When adjusted for sex and age, malocclusion was associated with Financial Burden (PR=1.39; 95%CI=1.01-1.65), but this variable lost its significance when social vulnerability was included in the multivariate model (PR=1.27; 95% CI: 0.99-1.64). **Conclusion**: Untreated dental caries in adolescents exerted a negative impact on the OHRQoL of their families. Social vulnerability exerted an influence on the impact of malocclusion on the OHRQoL of the families.

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INTRODUCTION

Understanding the perceptions of individuals with regards to their health and quality of life (QoL) is essential to understanding the extent to which oral problems affect their daily lives.[1] Adolescence is characterized by rapid physical and psychological development and appearance is important in this stage of life.[2] The evaluation of oral health-related quality of life (OHRQoL) is essential to understanding how the main oral conditions that affect individuals in this age group impact their daily lives and the lives of their families. The emotional and social well-being of adolescents as well as physical and financial aspects of their oral problems can affect family well-being.[3]

Studies have shown that dental caries and malocclusion affect the OHRQoL of adolescents.[4,5] Untreated dental caries on permanent teeth affects 2.4 billion people worldwide[6] and results in pain, difficulties chewing and speaking, sleep disorders and psychological problems, implying a negative impact on OHRQoL.[7] The prevalence of malocclusion in adolescents ranges from 17.3 to 31.3% throughout the world[8-10] and the impact on dental esthetics plays an important role in the psychological well-being of adolescents in terms of self-esteem, acceptance and social interactions. Therefore, the psychosocial effect of malocclusion on dental esthetics can lead to a reduction in OHRQoL.[8]

Families play a central role in adolescent health, healthcare concerns, needs and interventions.[3] As parents are the main decision makers regarding their children's health, their perceptions exert considerable influence on treatment choices.[11] Adolescents affected by oral problems often turn to their families for assistance with treatment and the relief of symptoms.[1,12] Thus, families can be indirectly affected by the oral problems of their children[3] and it is important to assess how such problems in adolescents affect familial OHRQoL.

However, few studies in the literature have addressed the impact of these oral problems in adolescents on the OHRQoL of their families[1,3,13] and no representative studies were found assessing the association between malocclusion in adolescents and family OHRQoL. Two previous representative studies assessed the impact of dental caries in adolescents on the OHRQoL of their families,[14,15] but neither study was conducted in Brazil.

Therefore, the aim of the present study was to evaluate the impact of dental caries and malocclusion in adolescents on the OHRQoL of their families in a representative sample from Brazil. The hypothesis was that dental caries and malocclusion in adolescents impact the OHRQoL of their families.

MATERIALS AND METHODS

Study design and eligibility criteria

A population-based, cross-sectional study was conducted following the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement.[16] The study was conducted in Belo Horizoante, Minas Gerais, Brazil. Belo Horizonte has a population of 2,375,151 residents and is divided into nine administrative districts.[17] The Human Development Index (HDI) is 0.810, placing the city in twentieth place in the HDI ranking among Brazilian municipalities.[17]

The study was conducted with adolescents aged 11 to 14 years randomly selected from public and private schools in Belo Horizonte. In 2017, 99.2% of individuals aged 6 to 14 years were enrolled in the Brazilian educational system.[18] Therefore, a representative sample of schoolchildren in this age group enables the results to be extrapolated to children and adolescents. Adolescents absent on the days scheduled for the clinical examinations and those with down syndrome and autism spectrum disorders were excluded.

Sampling strategy

The present study offers unprecedented statistical analyses of a database used in previously published studies[1,5,10]. Specifically, the impact of dental caries and malocclusion in adolescents on the OHRQoL of their families has not previously been reported using this database and is the focus of the current set of analyses.

As the data had already been collected, the power of the sample was calculated. A 95% confidence interval and the comparison of means of the total score on the Family Impact Scale (FIS) between adolescents with and without dental caries were used. The power was determined to be 92.45%.

To ensure the representativeness to the sample, one public and one private school were selected at random from each of the nine administrative districts of Belo Horizonte. A classroom was randomly selected from each school. The parents/guardians of the selected adolescents received a letter explaining the study and requesting their authorization for the participation of the adolescents by signing the statement of informed consent. The adolescents also agreed to participate by signing a statement of informed consent. This study received approval from the Human Research Ethics Committee of the Federal University of Minas Gerais (Ethics Committee approval number: 110/08) and was conducted in accordance with the Declaration of Helsinki.

Dependent variable

The Brazilian version of the Family Impact Scale (B-FIS) was used, which has been validated for use in the Brazilian culture.[19] This instrument is part of the Child Oral Health Quality of Life Questionnaires (COHQoL) and its aim is to measure the impact of the oral health status of children/adolescents on their family's OHRQoL according to the view of parents/guardians.[19] The B-FIS consists of 14 items distributed among four domains: Parental/Family Activity, Parental Emotions, Family Conflict and Financial Burden. Each item addresses the frequency of events in the previous three months. The following are the scored response options: "Never" = 0; "Once/twice" = 1; "Sometimes" = 2; "Often" = 3; and "Every day/almost every day" = 4. The total B-FIS score is the sum of all item scores. Scores can also be computed for each of the four domains. Higher scores denote a greater negative impact of the child's/adolescent's oral problems on the family's OHRQoL.[19]

Independent variables of interest

Malocclusion

Malocclusion was measured using the Dental Aesthetic Index (DAI), which was calculated using a regression equation: (missing visible teeth x 6) + (crowding) + (spacing) + (diastema x 3) + (largest anterior maxillary irregularity) + (largest anterior mandibular irregularity) + (anterior maxillary overjet x 2) + (anterior mandibular overjet x 4) + (vertical anterior open bite x 4) + (anteroposterior molar relation x 3) + 13. The DAI value is the sum resulting from this equation, which is used to classify the need for treatment and the severity of malocclusion. DAI ≤ 25 defines an occlusion with no abnormalities or mild malocclusion and no need or mild need for treatment; DAI 26 to 30 defines definite malocclusion for which treatment is elective; DAI 31 to 35 defines severe malocclusion for which treatment is highly desirable; and DAI ≥ 36 defines very severe or disabling malocclusion for which treatment is fundamental.[20] In this study, malocclusion was dichotomized as absent/mild (DAI ≤ 25) or present (DAI > 25).

Dental caries

Dental caries was measured using the Decayed, Missing and Filled Teeth (DMFT) index, which is recommended by the World Health Organization (WHO) to measure and compare dental caries experience in populations of different countries.[21] For statistical purposes, only the D component was considered in the present study and was dichotomized as absence of untreated caries (D component = 0) or presence of untreated caries (D component ≥1).

Confounding independent variables

Some socioeconomic characteristics were collected due to the potential interference in the association between malocclusion/dental caries and family OHRQoL. The confounding variables were social vulnerability, type of school in which the adolescent was enrolled (public or private), age and sex of the adolescent.

The Social Vulnerability Index (SVI), developed by the city of Belo Horizonte, was used to measure vulnerability to social exclusion and was considered a socioeconomic indicator, as it enables the determination of the social reality of the city with the aim of providing efficient management based on the development of each community. The 81 planning units of the municipality were analyzed according to five dimensions: Environmental – access to housing and basic infrastructure; Cultural – access to schooling; Economic – access to income and work; Legal – access to legal assistance; and Survival Security – access to health, food security and social security.[22] The SVI is divided into five different classes ranging from Class I, which comprises the most socially vulnerable families, to Class V, which comprises the least socially vulnerable families.[22] In the present study, the SVI was dichotomized as high social vulnerability (Classes I and II) or low social vulnerability (Classes III, IV and V).

Training and calibration exercises

Three dentists underwent training and calibration exercises prior to performing the clinical examinations. The training exercises were first performed, followed by clinical calibration based on the criteria proposed by the DAI (malocclusion) and WHO (dental caries). Training (discussions on theory) involved the use of plaster models for the DAI and photographs for dental caries. The training and calibration exercises were conducted by an expert in the field (gold standard). For the clinical calibration, 44 adolescents who were not part of the main study were examined by each of the three dentists separately to determine inter-examiner agreement. After one month, 10 adolescents were re-examined to calculate intra-examiner agreement. Mean kappa values were 0.84 for inter-examiner agreement and 0.90 for intra-examiner agreement.

Pilot study

To test the methods (clinical examination and administration of questionnaires) and prepare the examiners, a pilot study was conducted with a sample of 66 adolescents who did not participate in the main study.

Data collection

The adolescents were examined at school in a predetermined order during class hours. The examiners used appropriate personal protective equipment and artificial lighting (Petzl Zoom head lamp, Petzl America, Clearfield, UT, USA). The clinical examinations were performed with the aid of disposable mouth mirrors (PRISMA®, São Paulo, SP, Brazil) and millimeter probes (WHO-621 Trindade, Campo Mourão, PA, Brazil).

The B-FIS was self-administered by the parents/guardians to measure the impact of untreated dental caries and malocclusion in the adolescents on family OHRQoL. The adolescents delivered the B-FIS to their parents/guardians, who completed the questionnaire at home and sent it back to the research team at the school.

Data analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS, version 22.0, IBM Corp., Armonk, NY, USA). The data were analyzed using descriptive statistics (frequency, mean and standard deviation), Spearman's correlation coefficients as well as bivariate and multivariate Poisson regression analyses with robust variance. The multivariate analysis was performed to determine the impact of malocclusion and untreated dental caries in adolescents on family OHRQoL adjusted by socioeconomic and clinical characteristics. In addition, the model fit through the deviance test was observed. The level of significance was set at 5% (p<0.05).

RESULTS

The sample of this study comprised 1,168 adolescents and their parents/caregivers. This sample is representative of 11-to-14-year-old adolescents who live in the city of Belo Horizonte, Brazil. Girls accounted for the majority of the sample (59.8%) and mean age was 12.37 years (±1.11). Most of the adolescents lived in regions of low social vulnerability (60.0%). The prevalence of untreated dental caries and malocclusion was 29.1% and 30.9%, respectively (Table 1).

The results of the bivariate Poisson regression analysis revealed statistically significant associations between untreated dental caries and the Parental/Family Activity (p<0.001), Parental Emotions (p=0.002) and Family Conflict (p=0.004) domains as well as with B-FIS total score (p<0.001). Malocclusion was only associated with the total B-FIS score (p = 0.036). High social vulnerability was also significantly associated with the Parental/Family Activity, Parental Emotions and Family Conflict domains (p<0.001, p=0.003 and p=0.015, respectively) and with B-FIS total score (p<0.001). Adolescent's age was associated with the Financial Burden domain (p=0.042) (Table 2).

Thus, untreated dental caries and malocclusion were incorporated together into the multivariate Poisson regression (Table 3). Model 1 was further adjusted by age; Model 2 was adjusted by age and sex; and Model 3 was adjusted by age, sex and SVI. In all models, the presence of untreated dental caries was significantly associated with the Parental/Family Activity, Parental Emotions and Family Conflict domains as well as the B-FIS total score. Malocclusion was significantly associated with the Financial Burden domain and B-FIS total score only in Models 1 and 2. However, these associations lost their significance (p > 0.05) when SVI was included in the adjustment (Model 3).

***Table1**: Categorization of sample.*

Variables	N (%)
Sex	
Male	470 (40.2%)
Female	698 (59.8%)
Age[1]	12.37 (1.112)
SVI	
High Vulnerability	467 (40.0%)
Low Vulnerability	701 (60.0%)
Untreated dental caries	
Present	340 (29.1%)
Absent	828 (70.9%)
Malocclusion	
Present	361 (30.9%)
Absent/mild	807 (69.1%)

Note: SVI = social vulnerability index. [1] mean (standard deviation).

***Table 2**: Descriptive and bivariate analyses of associations between independent variables and B-FIS domains/total score.*

	Parental/Family Activity		Parental Emotions		Family Conflict		Financial Burden		Total Score	
	Mean (SD)	**PR (95%CI)**	**Mean (SD)**	**PR (95%CI)**	**Mean (SD)**	**PR (95%CI)**	**Mean (SD)**	**PR (95%CI)**	**Mean (SD)**	**PR (95%CI)**
Sex										
Male	2.38(2.999)	1.02 (0.88-1.18)	1.84(2.516)	0.94(0.81-1.12)	1.33(2.276)	1.06(0.86-1.29)	0.43(0.830)	1.10(0.87-1.40)	5.98(7.058)	1.01(0.88-1.16)
Female	2.34(3.051)	1.00	1.94(2.780)	1.00	1.27(2.173)	1.00	0.39(0.840)	1.00	5.93(7.381)	1.00
Age	0.013[1]	1.03 (0.97-1.10)	-0.004	1.01(0.94-1.08)	0.018	1.02(0.94-1.11)	0.065*	1.11(1.00-1.23)*	0.011	1.03(0.97-1.09)
SVI										
High	2.82(3.311)	1.38(1.19-1.60)***	2.19(2.857)	1.03(1.09-1.51)**	1.49(2.339)	1.28(1.05-1.55)*	0.45(0.893)	1.20(0.95-1.53)	6.94(7.916)	1.31(1.14-1.51)***
Low	2.05 (2.785)	1.00	1.71(2.532)	1.00	1.16(2.119)	1.00	0.37(0.795)	1.00	5.29(6.694)	1.00
Malocclusion										
Present	2.60(3.075)	1.16(0.99-1.35)	2.10(2.713)	1.16(0.98-1.37)	1.43(2.283)	1.16(0.95-1.43)	0.48(0.922)	1.28(1.00-1.64)	6.61(7.405)	1.17(1.01.1.35)*
Absent/mild	2.25(3.003)	1.00	1.81(2.656)	1.00	1.23(2.181)	1.00	0.37(0.793)	1.00	5.66(7.164)	1.00
Untreated dental Caries										
Present	2.82(3.268)	1.30(1.12-1.52)***	2.26(2.775)	1.30(1.10-1.53)**	1.59(2.498)	1.35(1.10-1.66)**	0.45(0.876)	1.18(0.92-1.52)	7.12(7.765)	1.130(1.13-1.51)***
Absent	2.17(2.906)	1.00	1.75(2.621)	1.00	1.17(2.076)	1.00	0.38(0.818)	1.00	5.47(6.975)	1.00

*Note: Poisson regression; [1] Spearman correlation coefficient; * p <0.05; ** p <0.01; *** p <0.001. SD = standard deviation; PR = prevalence ratio; CI = confidence interval; SVI = social vulnerability index.*

***Table 3**: Multivariate models of associations between untreated dental caries/malocclusion and B-FIS domains/total score.*

	Parental/Family Activity Adjusted PR (95% CI)	Parental Emotions Adjusted PR (95% CI)	Family Conflict Adjusted PR (95% CI)	Financial Burden Adjusted PR (95% CI)	Total Score Adjusted PR(95% CI)
Model 1 **Untreated dental Caries**					
Present	1.30 (1.12-1.52)***	1.30 (1.10-1.53)**	1.35 (1.10-1.66)**	1.18 (0.92-1.52)	1.30 (1.13-1.51)***
Absent	1.00	1.00	1.00	1.00	1.00
Malocclusion					
Present	1.16 (1.00-1.35)	1.17 (0.99-1.38)	1.17 (0.95-1.43)	1.29 (1.01-1.65)*	1.17 (1.02-1.36)*
Absent/mild	1.00	1.00	1.00	1.00	1.00
Model 2 **Untreated dental Caries**					
Present	1.31 (1.12-1.52)***	1.30 (1.10-1.53)**	1.36 (1.10-1.67)**	1.19 (0.92-1.52)	1.31 (1.13-1.51)***
Absent	1.00	1.00	1.00	1.00	1.00
Malocclusion					
Present	1.001.16 (1.00-1.35)	1.001.17 (0.99-1.38)	1.17 (0.95-1.43)	11.39 (1.01-1.65)*	1.001.17 (1.02-1.35)*
Absent/mild	1.00	1.00	1.00	1.00	1.00
Model 3 **Untreated dental Caries**					
Present	1.29 (1.11-1.50)***	1.28 (1.09-1.51)**	1.34 (1.09-1.65)**	1.18 (0.92-1.52)	1.29 (1.12-1.49)*
Absent	1.00	1.00	1.00	1.00	1.00
Malocclusion					
Present	1.001.14 (0.98-1.33)	1.001.15 (0.97-1.36)	1.001.15 (0.93-1.41)	11.27(0.99-1.64)	1.001.15 (1.00-1.33)
Absent/mild	1.00	1.00	1.00	1.00	1.00

*Note: Multivariate Poisson regression adjusted for age, sex, SVI; PR = prevalence ratio; CI = confidence interval. Model 1 adjusted for age; Model 2 adjusted for age and sex; Model 3 adjusted for age, sex and SVI. Note: * p<0.05; ** p<0.01; *** p<0.001; Deviance test Model #1 (3.79), Model #2 (3.79) and Model #3 (3.74).*

DISCUSSION

In the present study, untreated dental caries in adolescents exerted a negative impact on the OHRQoL of their families, which is in agreement with data reported in previous studies[3]. However, it is important to note that these studies employed other methods, such as the use of a convenience sample and a younger age group[3,23] or a sample of adolescents with sickle cell disease[13] and were not performed in Brazil.[14,15] Thus, studies with representative samples are needed and the present investigation fills this gap in the literature with a representative sample of adolescents aged 11 to 14 years enrolled to public and private schools in a large Brazilian city.

One of the possible explanations for the impact of dental caries on the OHRQoL of families may be due to the fact that parents/guardians often feel guilty about their children's oral problems.[23] Moreover, children may require more attention from their parents to relieve the discomfort stemming from untreated dental caries, which can affect parental emotions.[24] Dental caries can also result in parents missing days of work because they have to stay home to take care of their children or take them to a dental appointment. Parents may have difficulties carrying out daily family activities, resulting in expenditures of time and money in order to access dental care.[23] However, no association was found between untreated dental caries and the Financial Burden domain in the present study.

Another important aspect of the present study was the finding that the fully adjusted model demonstrated that malocclusion did not exert an impact on the OHRQoL of the family. As malocclusion does not involve pain symptoms, it may not be perceived by families as an oral problem. On the other hand, the literature points out that malocclusion negatively impacts the OHRQoL of adolescents, especially with regards to emotional and social aspects.[5] One may therefore conclude that malocclusion in adolescents is related to the perception of beauty, since it can affect dental esthetics, which is of considerable importance to social acceptance, especially in the school environment.[2] The family, however, may not perceive that physical appearance plays such an important role in the construction of an adolescent's personal identity. This suggests that adolescents do not share their feelings with their families, such as embarrassment or concern about what other people think about their oral condition.

However, it is interesting to note that malocclusion in adolescents impacted the Financial Burden domain and total B-FIS score when adjusted only for sex and age (Models #1 and #2). When adding SVI to the model (Model #3), these associations lost their significance. The SVI is a local socioeconomic index that enables measuring the vulnerability of the population in a specific way considering five dimensions. In other words, it is a measure of social exclusion. As free orthodontic treatment is offered in Brazil in a very limited way and families with high social vulnerability have virtually no access to this treatment through private services because they cannot afford the cost[25]. Moreover, studies have shown an association between a better socioeconomic status of the family and greater demand for orthodontic treatment[25] as well as an association between a worse socioeconomic status and greater need for orthodontic appliances.[26]

There are several reasons for measuring family impact, especially the central role families play in the health of adolescents due to the relationship of dependence between child and caregiver, with the caregiver being responsible for decisions regarding treatment.[11] To date, however, few studies have addressed this issue in the age group analyzed in the present investigation.[1,12,14,15] The first study evaluated both dental caries and malocclusion, but these variables were not incorporated into a multivariate model, since the main objective was to assess the impact of dental trauma in adolescents on the OHRQoL of their families.[1] The second analyzed the impact of malocclusion on family OHRQoL in a sample selected by convenience.[12] The last two studies determined the impact of dental caries on family OHRQoL in a probabilistic sample but were not performed in Brazil.[14,15] Thus, the present study makes an important contribution to the literature, as studies using multivariate models are important for controlling for confounding factors. Moreover, this is a population-based study conducted at public and private schools, which enables the data to be extrapolated to the entire population of schoolchildren and even adolescents in Belo Horizonte, as nearly all (99.2%) adolescents in the city are part of the Brazilian educational system.[18]

It is necessary for more comprehensive future research to be carried out with a longitudinal design to obtain an understanding of how this impact influences the OHRQoL of the families of adolescents over time. The present study has a cross-sectional design, which does not enable the establishment of causal relations between dental caries or malocclusion and the impact on family OHRQoL. However, the sample was large and representative of adolescents in the city of Belo Horizonte and, therefore, we can extrapolate the data to the entire population. It is possible that there is a memory bias, due to the use of FIS, a questionnaire that addresses the frequency of events in the previous three months. Thus, the respondent may not have remembered a specific item. Moreover, the results underscore the importance of developing public policies aimed at oral health,

such as measures to prevent the occurrence of dental caries as well as reduce risk factors for caries and malocclusion. To improve the OHRQoL of families, it is essential to invest in public policies aimed at reducing social inequalities by expanding access to health, education, housing and work.[27] It is also important for dentists to understand how affected individuals face oral problems, with a focus on patient-centered outcomes. Thus, dentists should inform patients regarding the diagnosis, explain the problem, provide treatment options and offer a prognosis while enabling them to participate in decisions regarding their treatment.[28]

CONCLUSION

In conclusion, this study demonstrated that untreated dental caries in adolescents exerted a greater negative impact on the OHRQoL of the families. Parental/Family Activity, Parental Emotions and Family Conflict were the most affected domains. Regarding malocclusion, its negative impact on the OHRQoL of families is influenced by social vulnerability.

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