ANITA CRUZ CARVALHO DUARTE

MALOCLUSÃO, QUALIDADE DE VIDA E VULNERABILIDADE SOCIAL EM CRIANÇAS BRASILEIRAS: ESTUDO DE BASE POPULACIONAL

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ANITA CRUZ CARVALHO DUARTE

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Tese apresentada ao Colegiado do Programa de Pós-Graduação em Odontologia da Faculdade de Odontologia da Universidade Federal de Minas Gerais, como requisito parcial à obtenção do título de Doutor em Odontologia, área de concentração Odontopediatria.

Orientadora: Profa. Dra. Isabela Almeida Pordeus
Co-orientador: Prof. Dr. Saul Martins de Paiva

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ANITA CRUZ CARVALHO

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Belo Horizonte, 25 de julho de 2014.

UNIVERSIDADE FEDERAL DE MINAS GERAIS

PROGRAMA DE PÓS-GRADUAÇÃO EM ODONTOLOGIA

ATA DA DEFESA DE TESE DA ALUNA
ANITA CRUZ CARVALHO

Realizou-se, no dia 25 de julho de 2014, às 14:00 horas, Sala 3418, Faculdade de Odontologia, UFMG, da Universidade Federal de Minas Gerais, a defesa de tese, intitulada *QUALIDADE DE VIDA E VULNERABILIDADE SOCIAL EM CRIANÇAS BRASILEIRAS: ESTUDO DE BASE POPULACIONAL*, apresentada por ANITA CRUZ CARVALHO, número de registro 2010719373, graduada no curso de ODONTOLOGIA, como requisito parcial para a obtenção do grau de Doutor em ODONTOLOGIA, à seguinte Comissão Examinadora: Prof(a). Isabela Almeida Pordeus - Orientador (UFMG), Prof(a). Saul Martins de Paiva (UFMG), Prof(a). Ana Flávia Granville-Garcia (UEPB), Prof(a). Luciano José Pereira (Universidade Federal de Lavras), Prof(a). Sheyla Marcia Auad (UFMG), Prof(a). Júnia Maria Cheib Serra-Negra (UFMG).

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Belo Horizonte, 25 de julho de 2014.

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A todas as crianças que participaram deste estudo.

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"Apesar dos nossos defeitos, precisamos enxergar que somos pérolas únicas no teatro da vida e entender que não existem pessoas de sucesso e pessoas fracassadas. O que existem são pessoas que lutam pelos seus sonhos ou desistem deles."

Augusto Cury

LISTA DE ABREVIATURAS

B-ECOHIS: Brazilian Version of Early Childhood Oral Health Impact Scale

CI: Confidence Interval

CNPq: Conselho Nacional de Desenvolvimento Científico e Tecnológico

COEP: Comitê de Ética em Pesquisa

ECOHIS: Early Childhood Oral Health Impact Scale

FAPEMIG: Fundação de Amparo à Pesquisa do Estado de Minas Gerais

HRQoL: Health-Related Quality of Life

IBGE: Instituto Brasileiro de Geografia e Estatística

IC: Intervalo de Confiança

IVS: Índice de Vulnerabilidade Social

MG: Minas Gerais

OHRQoL: Oral Health-Related Quality of Life

OMS: Organização Mundial de Saúde

PR: Prevalence Ratio

QoL: Quality of Life

QVRSB: Qualidade de Vida Relacionada a Saúde Bucal

RP: Razão de Prevalência

SD: Standard Deviation

SEE-MG: Secretaria de Estado de Educação de Minas Gerais

SME-BH: Secretaria Municipal de Educação de Belo Horizonte

SPSS: Statistical Package for the Social Sciences

SVI: Social Vulnerability Index

TCLE: Termo de Consentimento Livre e Esclarecido

UFMG: Universidade Federal de Minas Gerais

UP: Unidade de Planejamento

WHO: World Health Organization

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RESUMO

Maloclusão, Qualidade de vida e vulnerabilidade social em crianças brasileiras: estudo de base populacional

O presente estudo, apresentado na forma de dois artigos científicos, teve como objetivos avaliar em pré-escolares brasileiros: 1) a associação entre a malolcusão e a qualidade de vida relacionada à saúde bucal (QVRSB); e 2) a associação entre vulnerabilidade social, hábitos de sucção e sobressaliência. No artigo 1, foi realizado um estudo caso controle em uma amostra de 425 crianças (5 anos de idade) na cidade de Belo Horizonte. 85 crianças pertencentes ao grupo caso (crianças que apresentaram impacto negativo na QVRSB) e 340 crianças incluídas no grupo controle (crianças que não apresentaram impacto negativo na QVRSB). Este estudo foi aninhado a um estudo de base populacional e, para cada criança identificada como caso, foram selecionadas 4 crianças para o grupo controle, pareadas de acordo com o gênero e renda mensal familiar. QVRSB foi determinada utilizando a versão brasileira do ECOHIS (B-ECOHIS) e os exames clínicos foram realizados por um examinador calibrado. Análises descritivas, bivariadas e regressão logística condicional foram realizadas. A frequência de crianças com maloclusão foi maior no grupo caso (52,9%) do que no grupo controle (46,8%). Observou-se uma associação significativa entre a presença de cárie dentária (OR=2,43; 95%IC=1,49-3,94) e a avaliação da saúde bucal relatada pelos pais/responsáveis (OR=2,96; 95%IC=1,78-4,93) com QVRSB, resultados estes confirmados através da regressão múltipla, que mostrou significante associação entre avaliação de saúde bucal relatada pelos pais/responsáveis (OR=2,26; 95%IC=1,31-3,91) e OHRQoL ao nível de significância de 5%. No artigo 2, um estudo transversal foi realizado em uma amostra de 1069 crianças (5 anos de idade, de Belo Horizonte, MG), pertencentes a escolas públicas e privadas. A avaliação clínica da sobressaliência foi realizada por um dentista calibrado. Os pais e responsáveis responderam a um questionário contendo dados sócio-demográficos. Para determinação sócio-economômica foi utilizado o IVS (Índice de Vulnerabilidade Social). Análises descritiva e regressão de Poisson foram realizadas. As crianças que apresentaram sobressaliência acentuada pertenciam a regiões com menor vulnerabilidade social quando comparado àquelas crianças com sobressaliência normal (p= 0,006, tamanho do efeito= 0,19). Crianças cujo pais/responsáveis relataram usar mamadeira e chupeta apresentaram melhor status social (p= 0,082, tamanho do efeito= 0,19 e p= 0,001 e tamanho do efeito= 0,19 respectivamente). Entre pais que recebiam 5 ou mais salários mínimos e tinham mais que 8 anos de estudo, observou-se que suas crianças apresentaram maior prevalência de hábitos de sucção como mamadeira e chupeta. Os achados indicam que a maloclusão não provoca impacto na QVRSB das crianças avaliadas e, menor vulnerabilidade social está associada a crianças que apresentaram sobressaliência acentuada e cujos pais relataram que as mesmas utilizaram mamadeira e chupeta.

Descritores: saúde bucal, qualidade de vida, crianças, maloclusão, fatores socioeconômicos, vulnerabilidade social.

ABSTRACT

Malocclusion, Quality of life and social vulnerability in Brazilian preschool children: a population-based study.

The present study, presented in the form of two manuscripts, aimed to access in Brazilian preschool children: 1) the association between the malocclusion and oral health-related quality of life (OHRQoL); and 2) the association between social vulnerability, sucking habits and overjet. In the first paper, a population-based case-control study was carried out, in a sample of 425 preschool children (5 years old) in Belo Horizonte. 85 children in the case group (children with negative impact on OHRQoL) and 340 children in the control group (children without negative impact on OHRQoL). This study was nestled in a population-based cross-sectional study. Each preschool child identified as a case was matched to four controls preschool children according to the matching factors: gender and monthly household income. OHRQoL was the outcome variable and was determined using the Child Impact Section of the Brazilian Early Childhood Oral Health Impact Scale (B-ECOHIS) and clinical exams by a calibrated examiner. Descriptive, bivariate and conditional logistic regression analyses were carried out. The results showed that the frequency of children with malocclusion was greater in the case group (52.9%) than the control group (46.8%). The unadjusted conditional logistic regression analysis revealed that were significant association between the presence dental caries (OR=2.43; 95%CI=1.49-3.94) and assessment of parents/caregivers on the child's oral health (OR=2.96; 95%CI=1.78-4.93), results confirmed by the application of multiple conditional logistic regression analysis which demonstrated a significant association between assessment of parents/caregivers on the child's oral health (OR=2.26; 95%CI=1.31-3.91) and OHRQoL, in a significance level of 5%. In the second paper, a population-based cross-sectional study was carried out with 1069 preschool children (5 years old in the city of Belo Horizonte, MG), at public and private preschools. Oral examinations of the children were performed by a single examiner, previously calibrated for the assessment of overjet. Parents/caregivers were asked to complete a form on sociodemographic data. To determine the social conditions the Social Vulnerability Index (SVI) were used. Descriptive and univariate Poisson regression analyses were performed. It was observed that children with accentuated overjet had lesser social vulnerability than those with normal overjet (p= 0.006, effect size= 0.19). Preschool children that parents/caregivers related used bottle feed and pacifier had better social status (p= 0.082, effect size= 0.19, p=0.001, effect size=0.19, respectively). Children whose parents/caregivers reported receiving 5 or more times the monthly minimum wage and have more prevalence of habits of bottle feed (PR: 1.08; 95% CI: 1.02-1.15) than those whose parents/caregivers receive lesser wage. Children whose caregivers' present highest level of education (ie. more than eight years of schooling) have more prevalence of habits of bottle feed (PR: 1.11; 95% CI: 1.03-1.20) and pacifier (PR: 1.27; 95% CI: 1.10-1.46) than their counterparts. The findings suggested that malocclusion did not provoked impact on the OHRQoL of preschoolers, and, less social vulnerability were associated with children that present accentuated overjet and whose caregivers' related the use of pacifier and bottle feed.

Keywords: oral health – quality of life – preschool children – malocclusion- socioeconomic factors - vulnerable populations.

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CONSIDERAÇÕES INICIAIS

A expressão qualidade de vida (QoL) é definida como a percepção do indivíduo em relação a sua posição na vida, dentro do contexto de culturas e valores no qual está inserido e em relação a seus objetivos, expectativas, valores e preocupações (WHOQOL, 1993). Assim essa concepção abrange a saúde física, o estado psicológico, o nível de independência, os relacionamentos sociais, as condições ambientais e os interesses espirituais (Cardoso *et al*., 2005).

Qualidade de vida relacionada à saúde (HRQoL) é um termo utilizado para mostrar que experiências como dor e desconforto físicos, psicológicos e funções sociais afetam o bem estar (WHOQOL, 1993; Liu *et al*., 2009). O impacto da saúde e da doença na qualidade de vida é, portanto, conhecido como qualidade de vida relacionada à saúde (HRQoL) Historicamente, a avaliação da HRQoL foi desenvolvida por várias razões: avaliação de conceitos positivos de saúde, comparação dos sistemas de saúde, melhoria de acesso e avaliação dos resultados das intervenções em saúde (Cunningham e Hunt, 2001).

O impacto da saúde bucal na qualidade de vida é denominado qualidade de vida relacionada à saúde (OHRQoL) (Geels *et al*., 2008). OHRQoL é definido como impacto dos sintomas funcionais e psicológicos advindos das doenças e desordens bucais (Locker *et al*., 2002[a]). As crianças são sujeitas a alterações bucais e orofaciais, incluindo a cárie dentária, a maloclusão, o traumatismo dentário e as anomalias craniofaciais. Essas condições têm um potencial significativo de impactar a QoL de crianças (Locker *et al*., 2002[b]).

A maloclusão é uma desordem de desenvolvimento do complexo craniofacial, que afeta os maxilares, língua e músculos da face (Peres *et al*., 2007). A etiologia da maloclusão é primariamente genética com influências do meio ambiente (Vig e Fields, 2000). O padrão de crescimento facial é um importante fator genético que contribui para o desenvolvimento de maloclusões e pode influenciar também no tratamento de algumas anomalias (Heimer *et al*., 2008).

A maloclusão pode resultar em alterações estéticas e funcionais, tais como dificuldade na fala, mastigação e deglutição, causando assim impacto negativo na QoL (Thomaz *et al*.,

2012). A compreensão dos efeitos da maloclusão na QoL é essencial (Cunningham e Hunt, 2001). As condições ortodônticas estão associadas à estética e são assintomáticas, deixando de causar desconforto e dor (O'Brien *et al*., 1998).

Hábitos são definidos como ações ou condições que, por repetição, tornam-se espontâneos (Calisti *et al*., 1960). Os hábitos bucais são muito comuns e um importante problema para pediatras e odontopediatras, uma vez que podem causar anomalias e efeitos nocivos ao sistema orofacial (Rajchanovska e Zafirova-Ivanovsk, 2012).

Hábitos de sucção não nutritiva apresentam fatores de risco para o desenvolvimento de problemas oclusais, alterando o padrão de crescimento e desenvolvimento craniofacial e a relação dentária (Viggiano *et al*., 2004; Thomaz *et al*., 2012). Estes hábitos, por sua vez, podem ser influenciados, assim como outros comportamentos, por alguns fatores sociais, como ocupação da mãe, tipo de aleitamento, tempo em que a criança permanece na escola, renda familiar, doenças respiratórias, problemas de fala, entre outros (Infante, 1976).

Condições que afetem a saúde bucal ocorrem em todas as regiões do mundo, sendo que as doenças bucais acometem mais as populações vulneráveis (Mattheus 2010). Populações vulneráveis são definidas como grupos sociais susceptíveis a resultados adversos de saúde. Um claro entendimento do conceito de vulnerabilidade relacionada à saúde bucal na infância torna-se um importante passo para o entendimento de causalidade de alterações multifatoriais (Mattheus, 2010).

Para se obter resultados consistentes nas pesquisas sobre vulnerabilidade, é importante que os estudos utilizem indicadores sócio-econômicos mais completos, compostos pela associação de diversas variáveis, possibilitando uma expressão real da condição de vida de uma população (Bendo *et al*., 2009). No município de Belo Horizonte, um indicador de base local busca definir a condição sócio-econômica da população, é o Índice de Vulnerabilidade Social (IVS) (Nahas *et al*., 2000).

O trabalho foi desenvolvido junto ao Programa de Pós-Graduação em Odontologia da Faculdade de Odontologia da Universidade Federal de Minas Gerais. Optou-se pela apresentação da tese em forma de dois artigos científicos. O primeiro artigo apresentado

refere-se à avaliação do impacto da maloclusão na qualidade de vida de pré escolares brasileiros através de um estudo caso controle e o segundo artigo avaliou a associação entre vulnerabilidade social, hábitos de sucção e sobressaliência entre crianças brasileiras.

ARTIGO 1

Periódico: Community Dentistry and Oral Epidemiology

Impact of malocclusion on oral health-related quality of life among Brazilian preschool children: a case-control study

Impact of malocclusion on oral health-related quality of life among Brazilian preschool children: a case-control study

Impact of malocclusion on quality of life

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Abstract

Objective: The aim of the present study was to assess the association between malocclusion and oral health-related quality of life (OHRQoL) among Brazilian preschool children. **Methods:** This case-control study was carried out in preschools of Belo Horizonte, Brazil, and was nested in a school-based cross-sectional study. The sample was composed of 425 five-year-old preschool children: 85 in the case group (preschoolers with negative impact on OHRQoL) and 340 in the control group (preschoolers without negative impact on OHRQoL). Each preschool child identified as a case was matched to four control children according to gender and monthly household income. OHRQoL was the outcome variable and was determined using the Child Impact Section of the Brazilian Early Childhood Oral Health Impact Scale (CIS-B-ECOHIS). Independent variables were analyzed as being of interest to the study (malocclusion) or acting as potential confounding variables (traumatic dental injury – TDI and dental caries). Oral examinations of the children were performed by a previously calibrated examiner. Descriptive, bivariate and conditional logistic regression analyses were carried out ($p<0,05$). **Results:** The frequency of children with malocclusion was greater in the case group (52.9%) than the control group (46.8%). The unadjusted conditional logistic regression analysis revealed significant association between the presence of dental caries (OR= 2.43, 95% CI= 1.49–3.94) and the negative assessment of parents/caregivers as to the impact on the child's oral health (OR= 2.96, 95% CI= 1.78–4.93). These results were confirmed by the multiple conditional logistic regression analysis, which demonstrated a significant association between a negative assessment of parents/caregivers on the child's oral health (OR= 2.26, 95% CI= 1.31–3.91). **Conclusions:** Children with malocclusion did not have a negative impact on their OHRQoL. Parents/caregivers of children with poor oral health had a greater chance of reporting a negative OHRQoL.

Introduction

Oral Health-Related Quality of Life (OHRQoL) is a construct which corresponds to the impact of oral disorders in an individual’s daily functioning, well-being or overall quality of life (Locker, 1988). Oral disorders can have a negative impact on the functional social and

psychological well-being of young children and their families (Pahel et al., 2007; Do and Spencer, 2007; Jokovic et al., 2003). Clinical parameters represent only one dimension of the complex nature of oral health status (Locker, 1988). Even though clinical parameters are important, the physical and psychosocial consequences of oral disorders cannot be determined by these parameters alone (Allen, 2003). It is necessary to consider subjective assessments of oral health when assessing oral health status (Lee et al., 2009). OHRQoL's approach can help in assessing the effectiveness of interventions upon the patient's well-being (Goettems et al., 2011).

Malocclusion is defined as a disorder of the craniofacial complex which affects the jaws, tongue and muscles of the face (Peres et al., 2007). Environmental and genetic factors are the mains causes of malocclusion (Peres et al., 2007; Heimer et al., 2008).

The impact of oral disorders and dental treatment on psychological and functional well-being has drawn increasing attention from clinicians and researchers, especially in childhood and adolescence. Malocclusion has been especially addressed since it negatively impacts personal appearance (Kiyak, 2008). Great emphasis on personal appearance is observed in modern society (Kiyak, 2008). Studies show that malocclusion negatively affects the quality of life of adolescents (Bernabé et al., 2008; Sardenberg et al., 2013).

Knowledge of the impact of malocclusion on OHRQoL contributes to public strategies, minimizing social inequalities and improving the quality of life of children. Brazilian cross-sectional studies, assessing the relationship between OHRQoL and oral disorders such as malocclusion and dental trauma, have been performed using convenience samples of preschool children (Aldrigui et al., 2011; Abanto et al., 2011). Knowledge of the impact of malocclusion on OHRQoL contributes to public strategies, minimizing social inequalities and improving the quality of life of children. Given the lack of population-based case-control studies addressing this subject, the purpose of the present study was to assess the association between malocclusion and oral health-related quality of life (OHRQoL) among Brazilian preschool children.

Methods

Sample characteristics and study design

The study was approved by the Human Research Ethics Committee of the *Universidade Federal de Minas Gerais*, Brazil. Informed consent forms were signed by parents/guardians allowing their children to participate in the study. All participants' rights were protected (ETIC 159.08).

The study was conducted in the city of Belo Horizonte, capital of the state of Minas Gerais, in southeast Brazil. The city has an urban population of 2,375,151 inhabitants and is geographically divided into nine administrative districts (IBGE, 2014).

A school-based case-control study was carried out with 425 preschool children, 85 in the case group and 340 in the control group. This case-control study was nested to a cross-sectional study (Carvalho et al., 2011), and 1069 children randomly selected from private and public institutions in Belo Horizonte were eligible for allocation in the case and control groups. Five-year-old children regularly enrolled in preschools were included in the sample. The exclusion criteria were the presence of permanent teeth, loss of any primary teeth and presence of dental caries which affected the integrity of the mesiodistal diameter.

Calibration of the examiner

The calibration consisted of two steps. In the theoretical step, a specialist in pediatric dentistry (gold standard) instructed the examiners on how to perform the clinical examination and discussed the criteria for the diagnosis of the clinical variables. Two examiners then evaluated 55 photographs and 16 dental cast models on two occasions with an interval of 7 to 14 days for the determination of intra-examiner agreement. Inter-examiner agreement was tested by comparing each examiner with the gold standard. For Examiner 1, kappa coefficients for intra-examiner and inter-examiner agreement were respectively 0.89 and 0.89 for TDI, 0.98 and 0.93 for dental caries experience, and 0.99 and 0.91 for malocclusion. For Examiner 2, kappa coefficients for intra-examiner and inter-examiner agreement were respectively 0.91 and 0.89 for TDI, 0.98 and 0.95 for dental caries experience, and 0.97 and 0.87 for malocclusion. The second step was clinical evaluation. The dentist with the better

level of intra-examiner and inter-examiner agreement in the theoretical step was considered the gold standard in the clinical step. The examiner and the gold standard evaluated twenty-eight previously selected 5-year-old children from a convenient sample. Inter-examiner agreement was tested by comparing the examiner with the gold standard. The interval between evaluations for the determination of intra-examiner agreement was 7 to 14 days. Cohen's kappa statistic for TDI, dental caries experience and malocclusion was calculated on a tooth-by-tooth basis. Kappa coefficients for intra-examiner and inter-examiner agreement were respectively 0.91 and 0.92 for TDI, 0.96 and 0.96 for dental caries experience, and 0.97 and 0.87 for malocclusion.

To assess the reproducibility of the diagnostic criteria, 10% of the sample was re-examined during the data collection. The interval between the exams was 7 to 14 days.

Pilot study

A pilot study was conducted to test the methods and the understanding of the instruments, and to perform calibration of the examiner. The pilot study was carried out at a daycare center with 88 preschoolers, who were not included in the main sample. The results of the pilot study demonstrated that it was not necessary to alter any item on either instrument or modify the data collection process.

Sample Size Calculation

The parameters needed to perform the sample size calculation for the main study were defined through statistical analysis of the pilot study. The calculation was performed given a power of 80.0% and a standard error of 5.0% (Type I error). The probability of exposure among the controls used was 0.50% and the correlation coefficient for exposure between matched cases and controls used was 33.33%. Logistical condition regression revealed an odds ratio for OHRQoL in exposed subjects relative to unexposed subjects was 2.00. The sample size required was 85 children in the case group and 340 children in the control group (one case per four controls). The sample size was calculated using the Power and Sample Size Calculation software (Dupont WD, version 3.0, Plummer WD, Nashville, TN, USA).

Definition of case and control groups

The children eligible to be included in this case-control study were five years old and regularly enrolled in preschools.

The outcome variable 'negative impact on child's OHRQoL' was determined using the Brazilian Early Childhood Oral Health Impact Scale – Child Impact Section (B-ECOHIS – CIS) (Pahel et al., 2007). As in the original English-language instrument (Pahel et al., 2007), response options of 'never' (code 0) and 'hardly ever' (code 1) were considered as having 'no negative impact on OHRQoL' and responses of 'occasionally' (code 2), 'often' (code 3) and 'very often' (code 4) were considered as having a negative impact on OHRQoL.

Preschool children with negative impact on OHRQoL were defined as cases. Children with 'no negative impact on OHRQoL' were identified as controls. The controls were selected from five-year-olds enrolled in the same class and/or at the same school as the cases. The examiner was blinded to the children's impact on OHRQoL data.

Each child identified as a case was pitted against four controls matched for gender and monthly household income. The choice of the latter two variables was based on previous studies (Locker, 2007; Goettems et al., 2011), as these aspects appear to influence healthy choices, behavior and, consequently, children's quality of life. When more than four controls matched one case, simple random selection was performed.

Data collection

Parents/caregivers self-completed a form at home, addressing socio-demographic data such as child's date of birth, parents/caregivers' age, relationship to children, place of residence, monthly household income (categorized based on the minimum wage used in Brazil – roughly equal to US$258.33) and parents/caregivers' schooling (categorized as years of study). The B-ECOHIS was self-administered by the parents. This instrument was developed in the United States of America and cross-culturally adapted and validated for use in Brazil (Pahel et al., 2007). The B-ECOHIS was used to assess the impact of oral health conditions on the quality of life of the preschoolers (Tesch et al., 2008, Scarpelli et al., 2011, Martins-Júnior et al., 2012).

The B-ECOHIS is made up of a total of 13 items and consists of two sections: the child's section, with 9 items which measure the impact of oral disorders on the child, and the family section, with 4 items on the family. The items related to children include: symptoms (one question), function (four questions), psychology (two questions) and self-image/ social interaction (two questions). The items addressed to the family include: distress (two questions) and family functions (two questions). The scale has six rated response options for recording how often an event has occurred during the child's life: 0= never, 1= hardly ever, 2= occasionally, 3= often, 4= very often, 5= don't know. The answers "don't know" are not added to the total, meaning "missing" questions.

The total score for the child and family sections varies from 0 to 36 and from 0 to 16, respectively. Higher scores indicate greater impacts and/or more problems (Pahel et al., 2007). Since the objective of this study was to evaluate the impact of malocclusion on childhood OHRQoL, the family section was not used in this study.

Clinical data collection

The clinical examination was performed after the return of the questionnaires. The previously calibrated dentist performed an oral examination on each child at the preschools. The visual inspection of the participant's teeth was carried out with the aid of a flashlight and in the knee-to-knee position. The examiner used individual cross-infection protection equipment and all the materials used were packaged and sterilized. For the examination, a mouth mirror (PRISMA®, São Paulo, SP, Brazil), a WHO probe (Golgran Ind. e Com. Ltda., São Paulo, SP, Brazil) and dental gauze were used.

The oral examinations followed a standard sequence for all children. Overbite, overjet and crossbite were clinically assessed. No radiography was used for the diagnosis. The criteria used to diagnose occlusion were based on findings from Foster and Hamilton [1969], Grabowski et al. [2007] and Oliveira et al. [2008]. Overbite was considered vertical overlap of the incisors when the posterior teeth were in occlusion and was considered normal when at least one of the upper incisors overlapped the lower incisor by 2 mm (Grabowski et al.,

2007). Deep overbite was characterized by the maxillary teeth covering more than 2 mm of the vestibular surface of the mandibular teeth (Grabowski et al., 2007). Anterior open bite was considered the absence of vertical overlap covering the lower incisors (Grabowski et al., 2007). Horizontal overlap of the incisors was considered overjet. Normal overjet was considered when positive incisor overjet did not exceed 2 mm measured on the primary upper central incisors (Foster and Hamilton, 1969). Accentuated overjet was recorded if the upper incisor was at a distance greater than 2 mm from the lower incisor (Foster and Hamilton, 1969; Grabowski et al., 2007). Anterior crossbite was recorded when the lower incisor was observed in front of the upper incisor (Foster and Hamilton, 1969; Oliveira et al., 2008).

To measure overbite and overjet, the examiner applied the WHO probe from the labial surface of the most anterior lower central incisor to the labial surface of the most anterior upper central incisor, parallel to the occlusal plane.

Posterior crossbite was recorded when the upper primary molars occluded in lingual relationship to the lower primary molars in centric occlusion (Foster and Hamilton, 1969). Deep overbite, anterior crossbite, accentuated overjet, anterior open bite and posterior crossbite were considered malocclusions. Preschool children with at least one of these conditions were classified as having malocclusion (Oliveira et al., 2008). Children who were diagnosed with malocclusion were directed for treatment.

Statistical analysis

The data organization and statistical analysis were carried out using the Statistical Package for the Social Science Software (SPSS for Windows, version 19.0, SPSS Inc, Chicago, IL, USA) with the level of significance set at 5%.

Data analysis was carried out utilizing descriptive statistics of the frequencies of malocclusion and characteristics of the sample. Associations between OHRQoL and independent variables were tested through bivariate analysis and using chi-square test.

The results were submitted to conditional logistic regression. Independent variables were introduced into the model based on their statistical significance ($p < 0.20$). The variables TDI and dental caries were selected as potential confounding factors.

Results

The sample was composed of 425 five-year-old preschool children. Boys accounted for 55.3% of the sample. The majority of children were enrolled in public school (77.6%, n=260) and the distribution of the preschool children according to household income varied from 0, 1, 2 or 3 times the minimum wage and more than 3 times the minimum wage. The majority of the families received at least 3 times minimum wage (90.4%). Most of the parents/caregivers were 18 to 33 years of age (53.9%).

The frequency distribution of the preschool children according to independent variables is displayed in Table 1. The mother was the most common parent/caregiver, accounting for 84.9% of the sample, while other caregivers accounted for 15.1% (n=64) (father, babysitter, brother, sister and grandparents). Regarding parents/caregivers' schooling, 46.8% (199) had 9 to 11 years of study. The majority of the families had 2 or more children at home (67.5%). The age of the parents/caregivers varied from 18 to 63 and the mean age of parents/caregivers was 33 years old. According to the assessment of parents/caregivers about the child's health, 84.9% of the parents considered the general health of their children as good, while 94.6% of parents/caregivers assessed the oral health of their children as good. Concerning the oral characteristic diagnosed during the clinical examinations, malocclusion was observed in 52.0% of the sample. Deep overbite was present in 20.0% of the children. A total of 8.7% of the sample exhibit anterior open bite, and 12.2% presented accentuated overjet (> 2mm). Anterior crossbite was present in 5.4% of the sample and posterior crossbite in 15.8% of the sample.

Table 2 displays the frequency of negative impact on OHRQoL by items and domains of B-ECOHIS among preschool children in the case group. The most frequent domain in the B-ECOHIS was the function domain (63.5%). The items addressing "related to pain" (51.9%),

“difficulty drinking” (34.1%) and “difficulty eating” (32.5%) were the most frequently reported by the parents/caregivers.

The unadjusted conditional logistic regression analysis revealed that malocclusion and the type of malocclusion were not statistically associated with negative impact on OHRQoL ($p>0.05$) (Table 3). This analysis also revealed that children with poor assessment by parents/caregivers as to the child’s oral health had a greater chance of experiencing a negative impact on OHRQoL than those who were given a good assessment (OR= 2.96, 95% CI= 1.78-4.93). Analyzing the clinical conditions evaluated, there were no statistically significant differences between the case and control groups for TDI ($p> 0.05$). Differences were seen between the case and control groups considering dental caries experience (OR= 2.43, 95% CI= 1.49–3.94).

In the multiple conditional logistic regression analysis, the independent variables were maintained in the model based on their significance ($p< 0.20$). Only the variable assessment of parents/caregivers as to the child’s oral health were kept in the final model (OR= 2.26, 95% CI= 1.31–3.91) (Table 4).

Discussion

This study evaluated the association between the OHRQoL and the impact of malocclusion on Brazilian preschool children. The present study is a population-based case-control study representative of the preschool children of Belo Horizonte, Brazil. The randomness of the selection ensured the representativeness of the sample. An attempt was made to assess the impact of oral diseases on quality of life within the context of the daily life of families rather than at a dental office or hospital. The examiner was blinded to the children’s impact on OHRQoL data. This was a strength of the study’s methodology. This case-control study is nested in a cross-sectional study. A nested case-control study is a valid and efficient design for diagnostic studies (Biesheuvel et al., 2008) and identifies details for potential use in prevention of possible future cases (Machin and Campbell, 2005).

Previous studies were performed through cross-sectional studies, with either representative samples (Scarpelli et al., 2013, Kramer et al., 2013) or convenient samples

(Abanto et al., 2011; Aldrigui et al., 2011). This epidemiological study chose to apply a case-control design at a 1:4 proportion, pairing the groups by gender and monthly household income, which provided a homogenous sample, a strong point in the methodology applied in this study. The main purpose of matching is to permit the use of efficient analytical methods to control for confounding variables which might influence the case-control comparison.

Analyzing the negative impact of malocclusion on OHRQoL, the present study showed that these variables were not associated. This result is in accordance with other Brazilian studies which found that malocclusions did not affect the OHRQoL of preschool or their families (Aldrigui et al., 2011; Abanto et al., 2011; Scarpelli et al., 2013; Souza el at., 2014). Recently, a cross-sectional study with a representative sample of preschool in Canoas, Brazil found an association between malocclusion and negative impact on OHRQoL. The criteria used to determine malocclusion were not described in the study, which makes comparison of the results difficult (Kramer et al., 2013).

The items in the child section of the B-ECOHIS for the case group addressing “related to pain”, “difficulty drinking” and “difficulty eating” were the most frequently reported by the parents/caregivers. These results were similar to the results found in the study of development using the ECOHIS which showed the most frequently reported items by parents/caregivers on the child impact section were “pain”, “irritation”, and “difficulty eating and smiling” (Pahel et al., 2007). Comparing these results with recent studies in the literature, similar results can be found (Lee et al., 2009; Martins-Junior et al., 2012; Scarpelli et al., 2013; Kramer et al., 2013; Souza et al., 2014). It is interesting to emphasize that malocclusion, in most cases, did not cause pain, difficult in eating or drinking. We presume this explains the fact that the results did not find an association between malocclusion and OHRQoL. At the same time we can ask if ECOHIS is sensitive enough to detect impact of malocclusion.

The unadjusted conditional logistic regression and multiple conditional logistic regression analysis revealed that children with a poor assessment by the parents/caregivers of the child’s oral health had a greater chance of experiencing a negative impact on OHRQoL

than those who were assessed positively. When measuring the OHRQoL of children it is important to obtain reports from parents and caregivers (Jokovic et al., 2004). Children may be incapable of filling out a questionnaire or providing comprehensive information and, therefore, parents/caregivers are often used as a proxy (Jokovic et al., 2004). These considerations are essential for preschool children because of their difficulty in expressing their emotions. Parental characteristics and beliefs must thus be considered in attempts made to improve preschool children's oral health (Talekar et al., 2005). The nature and extent of the family impact resulting from oral and orofacial conditions in children, such as dental caries, gingivitis, trauma, amelo/dentinogenesis imperfecta, malocclusion, oligodontia and craniofacial anomaly, affect parents and family activities, impact parental emotions and can result in conflict in the family (Locker et al., 2002). The orthodontic group (malocclusion and oligodontia) had the highest score for the item relating to financial difficulties (Locker et al., 2002).

There were no differences between the case and control groups for TDI, as shown in previous studies performed in the country (Abanto et al., 2011; Scarpelli et al., 2013). Furthermore, another Brazilian study showed that complicated TDI had a negative impact on quality of life of children aged 2–5 years old (Aldrigui et al., 2011). It is necessary to emphasize that complicated TDI was generally associated with pain. This point of "pain" becomes evident where the results showed a statistical difference in dental caries experience between case and control groups.

The present study also has a particular limitation which should be recognized as information bias. OHRQoL measures (B-ECOHIS – CIS) was filled out by proxy rather than by the person concerned. A disadvantage of proxy reports is that they do not take into account that QoL is highly dependent on how a person perceives his or her own situation (Eiser et al., 2000). Parents tend to overestimate children's own perceptions and, in many cases, they tend to disagree with their children's OHRQoL (Zhang et al., 2007).

It is concluded that children with malocclusion in this sample did not have a negative impact on their OHRQoL. However, new studies using specific instruments for malocclusion

should be performed aimed at improving knowledge on this subject. The results of these studies contribute to an increased understanding of the negative impact of malocclusion on OHRQoL and can help clinicians and researchers in their efforts to improve oral health outcomes for preschoolers, prevent the impacts of this condition on early life, and improve general health and well-being.

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Tables

Table 1. Frequency of preschool children according to independent variables; Belo Horizonte, Brazil.

Variables	Frequency n	%
Malocclusion		
No	221	52.0
Yes	204	48.0
Overjet		
No	373	87.8
Yes	52	12.2
Anterior open bite		
No	388	91.3
Yes	37	8.7
Deep bite		
No	340	80.0
Yes	85	20.0
Posterior crossbite		
No	358	84.2
Yes	67	15.8
Anterior crossbite		
No	402	94.6
Yes	23	5.4
TDI		
No	221	52.0
Yes	204	48.0
Dental caries		
dmft = 0	249	58.6
dmft ≥ 1	176	41.4
Assessment of parents/caregivers on the child's general health		
Good	361	84.9
Bad	64	15.1
Assessment of parents/caregivers on the child's oral health		
Good	402	94.6
Bad	23	5.4
Parental relationship to children		
Mother	361	84.9
Others	64	15.1
Number of children		
Only child	138	32.5
Others	287	67.5
Parents'/caregivers' schooling		
≥ 12 years of study	70	16.5
9-11years of study	199	46.8
≤ 8 years of study	156	36.7
Type of school		
Private	95	22.4
Public	330	77.6
History of dental visits		
No	222	52.2
Yes	203	47.8

TDI: Traumatic Dental Injuries; dmft: decayed, missing and filled teeth

Table 2. Frequency of impact of oral health on quality of life among preschool children in the case group; Belo Horizonte, Brazil

ECOHIS	Case group (n = 85)		
	Prevalence of Impact		
Domains, Items	n	(%)	Don't know
Symptom Domain	42	49.4	-
Related to pain	42	51.9	4
Function Domain	54	63.5	-
Had difficulty drinking hot or cold beverages	28	34.1	3
Had difficulty eating some foods	27	32.5	2
Had difficulty pronouncing words	15	17.6	0
Missing preschool, daycare or school	14	16.5	0
Psychological Domain	22	25.9	-
Had trouble sleeping	12	14.1	0
Been irritable or frustrated	17	20.0	0
Self-image/social interaction Domain	5	5.9	-
Avoided smiling or laughing	5	6.0	1
Avoided talking	2	2.4	0

Table. 3 Conditional logistic regression analysis of independent variables by study group; Belo Horizonte, Brazil.

Variable	Study group: Case (n = 85) n	(%)	Control (n = 340) n	(%)	p-value*	Unadjusted OR [95% CI]
Malocclusion						
No	40	(47.1)	181	(53.2)	0.309	1
Yes	45	(52.9)	159	(46.8)		1.281 [0.80,2.06]
Overjet						
No	73	(85.9)	300	(88.2)	0.554	1
Yes	12	(14.1)	40	(11.8)		1.23 [0.62, 2.47]
Anterior open bite						
No	77	(90.6)	311	(91.5)	0.796	1
Yes	8	(9.4)	29	(8.5)		1.11 [0.49, 2.53]
Deep bite						
No	65	(76.5)	275	(80.9)	0.364	1
Yes	20	(23.5)	65	(19.1)		1.30 [0.74, 2.30]
Posterior cross bite						
No	74	(87.1)	206	(83.1)	0.426	1
Yes	11	(12.9)	42	(16.9)		0.75 [0.38,1.51]
Anterior cross bite						
No	80	(94.1)	322	(94.7)	0.830	1
Yes	5	(5.9)	18	(5.3)		1.12[0.40,3.10]
TDI						
No	43	(50.6)	178	(52.4)	0.771	1
Yes	42	(49.4)	162	(47.6)		1.07[0.67,1.73]
Dental caries						
dmft = 0	35	(41.2)	214	(62.9)	**< 0.001**	**1**
dmft ≥ 1	50	(58.8)	126	(37.1)		**2.43 [1.49,3.94]**
Assessment of parents/caregivers on the child's general health						
Good	81	(95.3)	321	(94.4)	0.748	1
Bad	4	(4.7)	19	(5.6)		0.83 [0.28,2.52]
Assessment of parents/caregivers on the child's oral health						
Good	50	(58.8)	275	(80.9)	**< 0.001**	**1**
Bad	35	(41.2)	65	(19.1)		**2.96 [1.78,4.93]**
Parental relationship to children						
Mother	76	(89.4)	285	(83.8)	0.201	1
Others	9	(10.6)	55	(16.2)		0.61[0.29,1.30]
Number of children						
Only child	27	(31.8)	111	(32.6)	0.877	1
Others	58	(68.2)	229	(67.4)		1.04[0.63,1.73]
Parents'/caregivers' schooling						
≥ 12 years of study	11	(12.9)	59	(17.4)		1
9-11years of study	45	(52.9)	154	(45.3)	0.224	1.57 [0.76,3.23]
≤ 8 years of study	29	(34.1)	127	(37.4)	0.601	1.23 [0.57,2.62]
Type of school						
Private	15	(17.6)	80	(23.5)	0.246	1
Public	70	(82.4)	260	(76.5)		1.44[0.78,2.65]

TDI: Traumatic Dental Injuries; DMFT: Decayed, Missing and Filled Teeth
Results in bold type significant at 5% level

Table 4. Multiple conditional logistic regression model explaining independent variables; Belo Horizonte, Brazil

	Study group	
	Case (n = 85)	**Control (n=340)**
Variables	**p-value**	**Adjusted OR* [95% CI]**
Assessment of parents/caregivers of the child's oral health		
Good		**1**
Bad	**0.003**	**2.26[1.31,3.91]**

**Conditional logistic regression adjusted by dental caries and traumatic dental injuries.
Results in bold type significant at 5% level

ARTIGO 2

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Social Vulnerability, sucking habits and overjet in Brazilian preschool children

Social Vulnerability, sucking habits and overjet in Brazilian preschool children

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Abstract

Objectives: The purpose of the present study was to assess the association between social vulnerability, sucking habits and overjet in a sample of Brazilian preschool children.

Methods: A population-based cross-sectional study was carried out with 1,069 five-year-old preschool children aged five years in the city of Belo Horizonte, Brazil. The study was conducted at public and private preschools, involving preschoolers and their parents/caregivers. They were randomly selected using a multi-stage sampling technique. Oral examinations of the children were performed by a single examiner, previously calibrated for the assessment of overjet. Parents/caregivers were asked to complete a form on sociodemographic data. Sucking habits among the children were reported by their parents. The Social Vulnerability Index (SVI) was used to determine the social classification of the families. Descriptive and univariate Poisson regression analyses were performed, with the significance level set at 5%.

Results: Children with accentuated overjet were from districts with less social vulnerability (p= 0.006, effect size= 0.19). Preschool children reported by parents/caregivers as being bottle-fed (p= 0.082, effect size= 0.19) and using a pacifier (p=0.001, effect size=0.19) had smaller overall SVI scores, indicating better social status. Children whose parents/caregivers reported receiving five times or more the monthly minimum wage had a higher prevalence of bottle-feeding (PR= 1.08, 95% CI= 1.02–1.15) than those whose parents/caregivers received lower wages. Children whose caregivers presented the highest level of education (i.e. more than eight years of schooling) also had a higher prevalence of bottle feeding (PR= 1.11, 95% CI= 1.03–1.20) and pacifier use (PR= 1.27, 95% CI= 1.10-1.46) than their counterparts.

Conclusion: Children with accentuated overjet who used a pacifier and were bottle-fed tended to have less social vulnerability.

Key Words: oral health, socioeconomic factors, children, vulnerable populations, malocclusion.

Introduction

Socially vulnerable populations are at risk of poor health (physical, psychological and social health) and greater susceptibility to adverse health outcomes [1,2]. The concept of vulnerability in the health literature indicates the possible risk of developing diseases or suffering from environmental hazards [3]. The risk of injury and neglect are expected to be higher for people who are in poor health and have few economic, psychological or social resources to assist in coping with illness [1].

Children are a vulnerable population and generally have limited power, education, income and ability to provide self-care, which increases their chances for poor health outcomes [4]. A child depends on its parents to protect them and to provide her/his most basic needs. Their state of health is dependent on their parents' ability to care for them, which is indirectly affected by the parents' state of vulnerability [4]. The consequences of increased vulnerability and the development of oral disease contribute negatively to a child's well-being [4].

It is reported that population health is determined by a combination of individual (e.g., genetic background, gender, culture and ethnicity) and environmental factors (e.g. support networks, social and physical environment) [5]. Social, economic and environmental factors have a fundamental impact on oral health [6,7,8,9]. Socially disadvantaged individuals also experience disadvantages with regard to health in general [10]. Low socioeconomic status, educational level and monthly household income are associated with poorer access to dental services, and poor knowledge regarding oral health and oral hygiene [11,12]. Conditions which promote poor oral health affect the entire world, with oral diseases being the greatest burden in vulnerable populations [4].

Non-nutritive sucking habits, with or without genetic factors, can play a fundamental role in developing malocclusions [13]. The presence of deleterious oral habits can interfere with normal occlusal and orofacial development [14]. Environmental factors such as the presence of deleterious oral habits and social class play an important role in identifying

children with malocclusion. A higher prevalence rate of children with accentuated overjet who had sucked their finger or thumb has been reported [13]. Furthermore, pacifiers have a negative impact on dentition development, such as overjet, posterior cross bite and open bite [15,16,17,18]. The type of institution and family income also reflect the economic situation of the children [19]. Children who studied in private institutions who are from families with high income were also associated with a higher frequency of non-nutritive sucking habits [19].

The lack of studies regarding the relationship between social vulnerability and sucking habits demonstrates the need to encourage research on this subject. The aim of the present study was to evaluate the association between sucking habits, accentuated overjet and social vulnerability in a population of five-year-old children.

Methods

Sample characteristics and study design

The study was approved by the Human Research Ethics Committee of the *Universidade Federal de Minas Gerais*, Brazil (ETIC 159/08). Informed consent forms were signed by parents/caregivers allowing their children to participate in the study. All participants' rights were protected. This cross-sectional study was conducted in the city of Belo Horizonte, capital of the state of Minas Gerais, in southeast Brazil. The city has an urban population of 2,375,151 inhabitants and is divided geographically into nine administrative districts [20].

A pilot study was first performed from April 2008 to July 2008 using a convenient sample of 87 preschool children at a public school. The main population-based study was carried out from August 2008 to July 2009 on a sample of five-year-old preschool children.

The sample size was calculated to give a standard error of 5.0%. A 95.0% confidence interval (CI) and a 36.5% prevalence rate of malocclusion [21] were used for the calculation. The necessary sample size was estimated to be 671 children. As multi-stage sampling was employed, a correction factor of 1.4 was applied to increase precision, leading to a minimum sample size of 939 individuals. The sample was then increased by 20% to compensate for

possible losses during the data collection process, leading to a minimum sample size of 1,127 individuals. A total of 1,069 children participated in this survey.

Sample distribution was proportional to the total population enrolled in private and public preschools for each of the nine administrative districts in the city. The subjects were randomly selected using a two-stage sampling method. Preschools were randomly selected in the first stage and classrooms were randomly selected in the second stage.

Children aged five years old and regularly enrolled in preschools were included in the sample, with no systemic disease according to information from parents/caregivers. The following were the exclusion criteria: presence of permanent teeth; loss of any primary teeth; dental caries affecting the integrity of the mesiodistal diameter; and having previously undergone orthodontic treatment.

Pilot study

A pilot study was carried out at a public preschool with a convenient sample of 87 preschool children, in order to test the methodology of the study and comprehension of the instruments. The results demonstrated that there was no need to modify the questions or the methodology proposed. Based on the reports of the individuals tested, additional items (neighborhood of residence and monthly household income) were added to the form. Children in this pilot study were not included in the main study.

Calibration of the examiner

The calibration exercise consisted of theoretical and clinical steps. The theoretical step involved a discussion of the criteria for diagnosing malocclusion and the analysis of 16 orthodontic dental models and photographs. A specialist in orthodontics (gold standard in the theoretical framework) coordinated this step, instructing a general dentist on how to perform the examination and diagnose the different parameters of malocclusion. The clinical step was performed in a public preschool and consisted of examination by the dentist of 28 previously selected five-year-old children by the gold standard. Inter-examiner agreement was assessed by comparing the examiner with the gold standard. The interval between evaluating the models and the children to test the intra-examiner agreement was 7 days; all

28 children returned for re-examination in this step. Cohen´s kappa coefficient was used for data analysis on an alteration-by-alteration basis (e.g., overjet) to test the agreement between examiners and exams.

Clinical data collection

The previously calibrated dentist performed the oral clinical examination on each child at the preschools. The visual inspection of the participants' teeth was performed in the knee-to-knee position. The examinations followed a standardized sequence for all the children. The examiner used individual cross-infection protection equipment and all the materials were packaged and sterilized. A mouth mirror (PRISMA®, São Paulo, SP, Brazil), WHO probe (Golgran Ind. and Com. Ltd., São Paulo, SP, Brazil) and dental gauze were used for the examination. Aspects of overjet were recorded. No radiography was used for the diagnosis.

The criteria for the diagnosis of overjet were based on Grabowski et al. [2007]. Overjet was considered horizontal overlap of the incisors. Accentuated overjet was recorded when a distance of more than 2 mm was found between the upper and lower incisors [22]. To measure overjet, the examiner applied the WHO probe from the labial surface of the most anterior lower central incisor to the labial surface of the most anterior upper central incisor parallel to the occlusal plane.

Non-clinical data collection

Following the clinical examination, a questionnaire addressing sociodemographic data, such as child's date of birth, child's gender, parents'/caregivers' schooling, place of residence, type of school, history of breast-feeding and bottle feeding, and history of sucking habits, was sent to the parents/caregivers.

The following socioeconomic indicators for the determination of socioeconomic status were used: monthly household income (categorized based on the minimum wage in Brazil = US$ 258.33) and parents'/caregivers' schooling (categorized as years of study). Monthly household income was dichotomized as less than five times the minimum wage and five or

more times the minimum wage. The Social Vulnerability Index (SVI) was also used to characterize the families with regard to socioeconomic status [23].

Social Vulnerability Index (SVI)

The SVI is an area-based index measuring social exclusion in the city of Belo Horizonte and is based on cultural, social and demographic contexts. Area-based measures of deprivation offer a number of advantages, which accounts for their increasing importance in improving healthcare planning and policies [24].

According to the theoretical framework which supported the development of this index, social vulnerability measures the vulnerability of the population to social exclusion through determination of neighborhood infrastructure, access to work, income, sanitation services, healthcare services, education, legal assistance and public transportation [25]. Thus, the SVI measures social access and determines to what extent the population in each region of the city is vulnerable to social exclusion. The index is made up of five dimensions: environmental, cultural, economic, legal and security/survival. The scores for the overall SVI and each dimension of the index were calculated for each district of Belo Horizonte in a previous study [23]. For the overall SVI, higher scores denote worse conditions and greater social vulnerability. However, the analysis of the scores for each dimension function is opposite, with higher scores denoting better conditions and less social vulnerability [23,26]. As children usually live near their schools and study in a social environment similar to that of their homes, school districts were used for this vulnerability classification [24,25].

Statistical analysis

Statistical analyses were performed using the Statistical Package for the Social Sciences software (SPSS for Windows, version 19.0, SPSS Inc., Chicago, IL, USA). Descriptive statistics involved frequency distribution, mean, and standard deviation (SD) values. Principal component analysis was performed to investigate whether the five dimensions of the SVI measure a unidimensional construct. The Kolmogorov-Smirnov test demonstrated that the data followed a non-normal distribution. Thus, the Mann-Whitney test

was used to determine the statistical significance of associations between the outcome variables (overjet and sucking habits) and the independent variables (overall SVI and its dimensions). Effect sizes for differences in means were designated as small (0.20), medium (0.50) and large (0.80) in magnitude [27]. Univariate Poisson regression was used to determine the statistical significance of associations between the outcome variables (overjet and sucking habits) and the independent variables (family income and parents'/caregivers' level of education). The significance level was set at 5%.

Results

The Cohen's Kappa coefficient for inter-examiner and intra-examiner agreement was determined by comparing the values of the examiner with the gold standard. In the theoretical step, the kappa coefficients for the examiner were 0.99 (intra-examiner) and 0.91 (inter-examiner). For the second examiner, kappa coefficients for intra-examiner and inter-examiner agreement were respectively 0.97 and 0.87. In the clinical step, kappa coefficients for intra-examiner and inter-examiner agreement were 0.97 and 0.87 respectively.

The sample was composed of 1,069 preschool children, aged 5 years old. The response rate was 94.9%. The 5.1% loss was due to absences from school on the day of the oral exam and refusals to be examined. About 570 preschool children (53.3%) were boys and 704 children were enrolled in public schools (65.9%). Fifty-two percent of the parents/caregivers (n=556) were between 18 and 33 years of age and 48.0% (n=513) were between 34 and 71 years of age. Most of the repondents were mothers (86.2%; n=922), whereas 13.8% (n=147) were fathers, grandparents, uncles, aunts, brothers, sisters or nannies. The majority (68.9%) of the parents/caregivers had more than eight years of schooling and 67.9% reported receiving less than five monthly minimum wage.

Table 1 displays the loadings of the five dimensions of the SVI and confirms the single component of the index. The results showed that the five SVI dimensions measured a unidimensional construct, indicating that the five dimensions of the SVI measure the same construct. In the analysis, overall SVI accounted for 86.2% of the variance in the set of five dimensions.

Tables 2, 3 and 4 display the mean, standard deviation (SD), minimum, maximum, p-value and effect sizes of the associations between overjet and sucking habits and independent variables regarding social vulnerability. Preschool children with accentuated overjet belonged to districts with a smaller overall SVI (indicating less social vulnerability) than those with normal overjet (p= 0.006, effect size= 0.19). Concerning the five dimensions of the SVI, all of them were statistically associated with the presence of accentuated overjet, i.e., the environmental dimension (p= 0.011), cultural dimension (p= 0.005), economic dimension (p= 0.002), legal dimension (p= 0.018) and security/survival dimension (p= 0.026) (Table 2). Preschool children whose parents/caregivers reported that they were bottle-fed also had smaller overall SVI scores, indicating better social status (p= 0.082, effect size= 0.19). The same preschool children had higher scores for the environmental dimension (p= 0.027), indicating less social vulnerability (Table 3). Preschool children whose parents/caregivers related that they used a pacifier had smaller overall SVI scores, indicating better social status (p= 0.001, effect size= 0.19). These children also had higher scores for all five SVI dimensions, i.e., the environmental dimension (p= 0.001), cultural dimension (p= 0.007), economic dimension (p= 0.003), legal dimension (p= 0.020) and security/survival dimension (p= 0.003) (Table 4).

The association between accentuated overjet, bottle-feeding and pacifier use with socioeconomic factors was confirmed by other socioeconomic factors (such as family income and parents' level of education). Children whose parents/caregivers reported receiving five times or more the monthly minimum wage had a greater prevalence of bottle-feeding (PR= 1.08, 95% CI= 1.02–1.15,) than those whose parents/caregivers receive smaller wages. Furthermore, children whose parents/caregivers presented the highest level of education (i.e. more than eight years of schooling) reported a higher prevalence of bottle-feeding (PR= 1.11, 95% CI= 1.03–1.20) and pacifier use (PR= 1.27, 95% CI= 1.10–1.46) than their counterparts (Table 5).

Discussion

The present study is a representative study of preschoolers in the city of Belo Horizonte, MG, Brazil. It was conducted in a population-based sample using a two-stage sampling method, and the subjects were randomly selected to ensure a representative sample. A large sample size allowed more precise parameter estimates and a greater ability to meet the aims of the study [28].

Malocclusion is the third most common public health problem in dentistry, according to the World Health Organization [29]. Sucking habits and associated malocclusion have been studied [30]. Most types of malocclusion, such as anterior open bite and posterior crossbite, are due to breathing abnormalities and deleterious oral habits, such as non-nutritive sucking habits [30,31].

Evidence has consistently shown that health outcomes are associated with individual socioeconomic position [32], primarily affecting those in the lower social strata [33, 34, 35]. Sucking habits appear to be related to socioeconomic status as well as cultural features [30,36].

The findings of this study showed that preschool children with accentuated overjet belonged to districts with a smaller overall SVI, i.e., with greater social status. The same result was found for preschool children whose parents/caregivers reported bottle-feeding and the use of a pacifier. The highest income families and schooling level of parents had also show a greater association with pacifier and sucking habits [19]. A possible explanation is that families with less vulnerability had more resources to buy pacifiers and to bottle-feed [19].

The association of accentuated overjet, bottle-feeding and pacifier use with social vulnerability was confirmed by such socioeconomic factors as family income and parents' level of education. Higher socioeconomic groups have significantly more deleterious oral habits than middle and low socioeconomic groups [37]. Further, deleterious oral habits are significantly associated with malocclusion, but there is no significant association of high socioeconomic groups with malocclusion [37]. Older maternal age, higher maternal

education and being a first-born child were reported to be significant predictors of non-nutritive sucking habits in preschool children [38].

Social condition also influences the prevalence and duration of non-nutritive sucking habits [39]. Children from higher socioeconomic groups have an increased prevalence of thumb/finger sucking and factors such as older age of the mother, high level of maternal education and absence of older siblings are associated with prolonged non-nutritive sucking habits [39].

Information on the influence of socioeconomic determinants on oral health and the prevalence of deleterious oral habits are limited and contradictory, which makes the role of social class in oral habits unclear [14].

This paper has some limitations. The SVI is a local measure and cannot be applied to places without previous cross-cultural adaptation. Therefore, this index was developed based on the cultural, social and demographic context of the city of Belo Horizonte and it is difficult to compare the results with other studies around the world. However, area-based measures of deprivation have advantages, which accounts for their increasing importance in improving health care planning and policies [40]. As each country, region and city has its own peculiarities, such indices give an understanding of associations between socioeconomic status and health [25].

The cross sectional design makes it difficult to establish temporal relationships [41] and this limits the ability to assess the causality between the independent variables and vulnerability. Therefore cross sectional study show association, not causality. Another limitation of the present study is the presence of memory bias. In this study, we can observe memory bias, a characteristic bias of retrospective studies because the information collected depends upon memory. Caution should be taken in order to avoid bias when interpreting the results [42]. This subject is new in the literature and the association between social vulnerability and sucking habits is unclear. It is difficult to establish comparisons with other populations.

Our study is one of the first in Brazil to provide evidence connecting social vulnerability and sucking habits, suggesting that more research is necessary. The results will help health planners to establish health priorities [43]. The effects of socioeconomic inequalities on health are not only becoming important, but are also becoming accepted as necessary for economic development [44].

Conclusion

In conclusion, our findings provide evidence that children who present accentuated overjet and used a pacifier and were bottle-fed tended have low social vulnerability. However, this evidence needs to be evaluated further.

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TABLES

Table 1: Principal component analysis (Varimax), loadings and single components generated by five dimensions of social vulnerability.

Dimensions	*Component label*
	Social vulnerability
Environmental dimension	0.909
Cultural dimension	0.977
Economic dimension	0.898
Legal dimension	0.907
Security/survival dimension	0.949

Table 2: Association between overjet (n = 1069) and independent variables regarding social vulnerability; Belo Horizonte, Brazil, 2009

Subscales	Overjet								p-value*	Effect size
	Normal				Accentuated					
	Mean	SD	Min	Max	Mean	SD	Min	Max		
Overall SVI	0.45	0.15	0.12	0.77	0.42	0.16	0.12	0.76	0.006	0.19
Dimension										
Environmental dimension	63.11	14.73	15.25	87.17	65.05	15.92	19.20	87.17	***0.011***	0.17
Cultural dimension	41.13	19.07	3.72	79.50	46.29	19.70	7.81	79.50	***0.005***	0.26
Economic dimension	43.55	18.59	20.64	90.06	49.12	19.11	20.80	90.06	***0.002***	0.30
Legal dimension	59.28	21.10	19.97	100.0	64.07	22.07	19.97	100.0	***0.018***	0.22
Security/survival dimension	68.12	12.47	34.18	96.52	69.93	14.07	34.18	96.52	***0.026***	0.14

*Mann-Whitney test; results in bold type significant at 5% level
SVI: Social Vulnerability Index; SD: standard deviation; Min: Minimum; Max: Maximum

Table 3: Association between bottle feeding (n = 1069) and independent variables regarding social vulnerability; Belo Horizonte, Brazil, 2009

Subscale	Bottle feeding								p-value*	Effect size
	No				Yes					
	Mean	SD	Min	Max	Mean	SD	Min	Max		
Overall SVI	0.47	0.15	0.12	0.77	0.44	0.16	0.12	0.77	0.082	0.19
Dimension										
Environmental dimension	61.25	15.79	15.25	87.17	63.87	14.56	15.25	87.17	**0.027**	0.17
Cultural dimension	39.96	19.16	3.72	79.50	42.13	19.19	3.72	79.50	0.152	0.11
Economic dimension	41.95	17.28	20.64	90.06	44.72	19.05	20.64	90.06	0.103	0.15
Legal dimension	57.70	21.93	19.97	100.0	60.34	21.04	19.97	100.0	0.147	0.12
Security/survival dimension	67.25	13.02	34.18	96.52	68.60	12.55	34.18	96.52	0.420	0.11

*Mann-Whitney test; results in bold type significant at 5% level
SVI: Social Vulnerability Index; SD: standard deviation; Min: Minimum; Max: Maximum

Table 4: Association between pacifier use (n = 1069) and independent variables regarding social vulnerability; Belo Horizonte, Brazil, 2009

Subscales	**Pacifier**								p-value*	Effect size
	No				Yes					
	Mean	*SD*	*Min*	*Max*	*Mean*	*SD*	*Min*	*Max*		
Overall SVI	0.46	0.16	0.12	0.77	0.43	0.15	0.12	0.77	**0.001**	0.19
Environmental dimension	61.97	15.35	15.25	79.50	64.65	14.25	15.25	87.17	**0.001**	0.18
Cultural dimension	39.99	19.20	3.72	87.17	43.33	19.06	3.72	79.50	**0.007**	0.17
Economic dimension	42.50	18.23	20.64	90.06	45.76	19.06	20.64	90.06	**0.003**	0.17
Legal dimension	58.11	21.56	19.97	100.00	61.46	20.82	19.97	100.00	**0.020**	0.16
Security/survival dimension	67.17	12.98	34.18	96.52	69.44	12.23	34.18	96.52	**0.003**	0.18

*Mann-Whitney test; results in bold type significant at 5% level
SVI: Social Vulnerability Index; SD: standard deviation; Min: Minimum; Max: Maximum

Table 5: Association between overjet, bottle feeding and pacifier use (n = 1069) and independent variables regarding socioeconomic indicators; Belo Horizonte, Brazil, 2009

Variables	*Overjet*			*Bottle feeding*			*Pacifier*		
	Normal N (%)	**Accentuated N (%)**	***PR (95% CI)***	**No N (%)**	**Yes N (%)**	***PR (95% CI)***	**No N (%)**	**Yes N (%)**	***PR (95% CI)***
Family income									
≥ 5 minimum wage	301 (87.8)	42 (12.2)	1.27 (0.89 1.82)	58 (16.9)	285 (83.1)	**1.08 (1.02-1.15)**	157 (45.8)	186 (54.2)	1.12 (0.99-1.27)
< 5 minimum wage	656 (90.4)	70 (9.6)	1	169 (23.3)	557 (76.7)	**1**	375 (51.7)	351 (48.3)	1
Parent's level of education									
> 8 years of study	661 (89.7)	76 (10.3)	0.95 (0.65-1.38)	138 (18.7)	599 (81.3)	**1.11 (1.03-1.20)**	341 (46.3)	396 (53.7)	**1.27 (1.10-1.46)**
≤ 8 years of study	296 (89.2)	36 (10.8)	1	89 (26.8)	243 (73.2)	**1**	191 (57.5)	141 (42.5)	**1**

Univariate Poisson regression; results in bold type significant at 5% level
PR: Prevalence Ratio; CI: Confidence Interval

CONSIDERAÇÕES FINAIS

A maloclusão é uma condição dentária com alta prevalência relatada em várias pesquisas [Zhang *et al*., 2006, Marques *et al*., 2005]. Contudo, essa prevalência varia dependendo de grupos populacionais, etnias e metodologias empregadas nas pesquisas [Trottman e Elsbach, 1996, Peres *et al*., 2007] . No Brasil a prevalência de maloclusão em pré-escolares varia de 49 a 87% [Frazão *et al*., 2002; Katz *et al*., 2004, Martins *et al*., 1998].

A maioria das pesquisas científicas desenvolvidas com crianças e adolescentes envolvendo maloclusões limita-se a abordar apenas aspectos de diagnóstico e de biomecânica [Peres *et al*., 2007, Silva-Filho *et al*., 2003]. Aspectos psicossociais dos indivíduos acometidos por tais problemas são praticamente inexplorados. A importância de estudos com uma abordagem preventiva das maloclusões e visão integral da criança deve ser considerada, baseada no crescimento e desenvolvimento físico, psíquico, emocional e social, visando à intervenção precoce dos problemas que as afligem.

O conhecimento da consequência da maloclusão nas atividades diárias é fundamental para o planejamento de estratégias de promoção de saúde visando melhorias na qualidade de vida das crianças e de suas famílias.

A realização do estudo caso controle em uma amostra de pré-escolares de 5 anos de idade de Belo Horizonte revelou que a presença de maloclusão não afetou negativamente a qualidade de vida de crianças. Pesquisas mostrando esta associação em crianças com esta faixa etária são escassas. O conhecimento do impacto das alterações bucais e do tratamento sobre as atividades diárias é essencial no cuidado aos indivíduos.

Populações vulneráveis são definidas como grupos que apresentam maior susceptibilidade à efeitos adversos a saúde [Flaskerud e Winslow, 1998]. Crianças são consideradas vulneráveis uma vez que geralmente apresentam limitações de poder, dinheiro, inteligência, educação, recursos e habilidade de cuidar de si próprio, o que aumenta as chances de apresentarem saúde ruim [Mattheus, 2010]. A literatura atual ainda não tem um conceito conciso de vulnerabilidade relacionada a saúde bucal e a infância [Mattheus, 2010].

A renda mensal familiar é um importante fator que afeta a vulnerabilidade social infantil, sendo que a baixa renda está associada com uma saúde geral e bucal ruim [Locker, 2000]. Famílias com recursos financeiros e sociais limitados tendem a escolher comportamentos menos saudáveis para si e seus filhos [Mattheus 2010]. Estudos demonstram que crianças podem apresentar alterações bucais como resultado de exposição a escolhas nutricionais inapropriadas bem como hábitos de sucção [Habibian *et al*., 2001, Declerck *et al*., 2008]. As conseqüências do aumento da vulnerabilidade e o desenvolvimento de doenças bucais contribuem negativamente para o bem estar das crianças.

O presente estudo, contudo, concluiu que crianças que apresentaram sobressaliência acentuada e que usaram mamadeira e chupeta, pertenciam a grupos menos vulneráveis, ou seja, com melhores condições de vida. Desigualdades econômicas em saúde têm recebido considerável atenção nas pesquisas sobre saúde [Jankovic *et al*., 2012]. Estudos que avaliam a influencia dos determinantes socioeconômicos na saúde bucal bem como a prevalência de hábitos bucais deletérios são escassos e contraditórios, o que mostra que o real papel da classe social nos hábitos bucais ainda permanece incerto [Hebling et al., 2008].

Diante disso, conclui-se que há a necessidade de um maior esclarecimento acerca das desigualdades econômicas em saúde. Considerando as condições crônicas de saúde, as desigualdades sociais, as privações material e cultural contribuem para a acumulação de riscos e influência na extensão do impacto da doença [Wong *et al*., 2006]. O desenvolvimento de estudos que avaliam o impacto das condições bucais de crianças na qualidade de vida das mesmas e de suas famílias é de extrema importância no desenvolvimento de estratégias para a promoção de saúde. Minimizando as diferenças sociais e ampliando o acesso à saúde, educação e moradia, melhora-se a qualidade de vida das pessoas, reorientando os serviços de saúde no país. As desigualdades em saúde têm vários fatores, sendo que para que as medidas de intervenção possam ser mais eficazes, é necessário um conhecimento mais específico destas desigualdades.

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APÊNDICES

APÊNDICE A: CARTA DE APRESENTAÇÃO ÀS ESCOLAS

Prezado (a) Coordenador (a) da Educação Infantil

Viemos, por meio desta, solicitar autorização para desenvolver um estudo em sua escola. Esse será realizado por Cirurgiãs-Dentistas inscritas no CRO-MG e vinculadas ao Colegiado de Pós-Graduação da Faculdade de Odontologia da Universidade Federal de Minas Gerais.

A pesquisa, intitulada **"Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte"**, tem como objetivo avaliar a repercussão da cárie dentária, dos defeitos de desenvolvimento de esmalte e do traumatismo dentário na qualidade de vida das crianças e das suas famílias, assim como avaliar a associação entre saúde materna na gestação e estes agravos. Para tanto, será necessário o preenchimento de um questionário e de um formulário pelos responsáveis, além do exame clínico de crianças na faixa etária de 5 anos. Esta escola está sendo convidada a participar por possuir crianças dentro desta faixa etária.

O exame clínico das crianças será realizado na própria escola, em um espaço que esteja disponível, sendo chamado um aluno de cada vez, com duração de 3 a 5 minutos, não atrapalhando o andamento escolar. Este exame não oferece risco de nenhuma natureza para as crianças, é rápido e indolor, e verificará quantos dentes estão cariados, foram perdidos, restaurados ou sofreram traumatismo. Serão utilizados apenas espelho clínico, gaze e algodão, todos esterilizados. A dentista que realizará o exame estará usando avental, óculos, gorro, máscara e luvas descartáveis. Durante o exame não será realizado o tratamento, mas as crianças que necessitarem de atendimento odontológico receberão um encaminhamento para que a mesma seja atendida no posto de saúde mais próximo ou na Faculdade de Odontologia da UFMG, lembrando que o atendimento acontecerá segundo a disponibilidade de vaga.

A participação das crianças é voluntária e só ocorrerá após assinatura do Termo de Consentimento Livre e Esclarecido pelos responsáveis. Não haverá ônus algum para a instituição ou para os responsáveis pelas crianças.

Os resultados serão trabalhados apenas pela equipe de pesquisa e a identidade dos participantes não será, em nenhuma hipótese, revelada.

Esta pesquisa ajudará na melhoria do atendimento às crianças e suas famílias e propiciará novo subsídio para o modelo de Promoção de Saúde do município de Belo Horizonte. Além disso, será obtido novo levantamento sobre a prevalência de cárie dentária, de defeitos de desenvolvimento de esmalte e de traumatismo dentário em pré-escolares na cidade, dados estes que servirão para trabalhos futuros.

Atenciosamente,

Ana Carolina Scarpelli (Doutoranda em Odontologia), Anita Cruz Carvalho Duarte (Mestranda em Odontologia), Cláudia Marina Viegas (Mestranda em Odontologia), Fernanda de Morais Ferreira (Pós-Doutoranda em Odontologia), Prof. Dr. Saul Martins Paiva (Coordenador da pesquisa) e Profa. Dra. Isabela Almeida Pordeus (Coordenadora da pesquisa).

Eu, _____, na condição de _____ autorizo a realização da pesquisa, intitulada **"Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte"** nesta instituição.

_____

ASSINATURA DE AUTORIZAÇÃO

APÊNDICE B: CARTA DE APRESENTAÇÃO SECRETARIA MUNICIPAL DE EDUCAÇÃO DE BELO HORIZONTE

À Exma. Senhora _____
Secretária Municipal de Educação

Somos cirurgiões-dentistas inscritos no CRO-MG e vinculados ao Colegiado de Pós Graduação da Faculdade de Odontologia da Universidade Federal de Minas Gerais. Dentro das atividades do curso estamos desenvolvendo uma pesquisa intitulada provisoriamente **"Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte"**, cujo objetivo é avaliar a repercussão da cárie dentária, dos defeitos de desenvolvimento do esmalte e do traumatismo dentário na qualidade de vida das crianças e das suas famílias, bem como a associação entre saúde materna na gestação e estes agravos. Para tanto será necessário o preenchimento de um questionário e de um formulário pelos responsáveis, além do exame clínico das crianças na faixa etária de 60 a 71 meses. O estudo terá desenho transversal e será representativo da cidade de Belo Horizonte.

Esta pesquisa ajudará na melhoria do atendimento às crianças e suas famílias e propiciará novo subsídio para o modelo de Promoção de Saúde. Além disso, será obtido novo levantamento sobre a prevalência de cárie dentária em pré-escolares na cidade, dado este que servirá para trabalhos futuros.

Gostaríamos de sua autorização para realizar a pesquisa em creches e pré-escolas de Belo Horizonte, com crianças na faixa etária de 60 a 71 meses. Ressaltamos que o estudo não acarretará ônus algum para as instituições.

Atenciosamente,

Ana Carolina Scarpelli	Doutoranda em Odontologia
Anita Cruz Carvalho	Mestranda em Odontologia
Cláudia Marina Viegas	Mestranda em Odontologia
Fernanda de Morais Ferreira	Pós-Doutoranda em Odontologia
Prof. Dr. Saul Martins Paiva	Coordenador da pesquisa
Profa. Dra. Isabela Almeida Pordeus	Coordenadora da pesquisa

APÊNDICE C: CARTA DE APRESENTAÇÃO SECRETARIA DE ESTADO DE EDUCAÇÃO DE MINAS GERAIS

À Exma. Senhora _____
Secretária Estadual de Educação

Somos cirurgiões-dentistas inscritos no CRO-MG e vinculados ao Colegiado de Pós Graduação da Faculdade de Odontologia da Universidade Federal de Minas Gerais. Dentro das atividades do curso estamos desenvolvendo uma pesquisa intitulada provisoriamente **"Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte"**, cujo objetivo é avaliar a repercussão da cárie dentária, dos defeitos de desenvolvimento do esmalte e do traumatismo dentário na qualidade de vida das crianças e das suas famílias, bem como a associação entre saúde materna na gestação e estes agravos. Para tanto será necessário o preenchimento de um questionário e de um formulário pelos responsáveis, além do exame clínico das crianças na faixa etária de 60 a 71 meses. O estudo terá desenho transversal e será representativo da cidade de Belo Horizonte.

Esta pesquisa ajudará na melhoria do atendimento às crianças e suas famílias e propiciará novo subsídio para o modelo de Promoção de Saúde. Além disso, será obtido novo levantamento sobre a prevalência de cárie dentária em pré-escolares na cidade, dado este que servirá para trabalhos futuros.

Gostaríamos de sua autorização para realizar a pesquisa em creches e pré-escolas de Belo Horizonte, com crianças na faixa etária de 60 a 71 meses. Ressaltamos que o estudo não acarretará ônus algum para as instituições.

Atenciosamente,

Ana Carolina Scarpelli	Doutoranda em Odontologia
Anita Cruz Carvalho	Mestranda em Odontologia
Cláudia Marina Viegas	Mestranda em Odontologia
Fernanda de Morais Ferreira	Pós-Doutoranda em Odontologia
Prof. Dr. Saul Martins Paiva	Coordenador da pesquisa
Profa. Dra. Isabela Almeida Pordeus	Coordenadora da pesquisa

APÊNDICE D: CARTA DE APRESENTAÇÃO AOS PAIS/RESPONSÁVEIS

Prezados Senhores Pais e Responsáveis,

Somos cirurgiões-dentistas vinculados ao Colegiado de Pós Graduação da Faculdade de Odontologia da Universiadade Federal de Minas Gerais. Dentro das atividades do curso estamos desenvolvendo uma pesquisa e precisamos de sua colaboração. O estudo deseja avaliar o impacto das alterações bucais na qualidade de vida das crianças e das suas famílias.

Estamos visitando algumas escolas na cidade de Belo Horizonte e realizando a pesquisa com os senhores e suas crianças. Para participar vocês deverão responder a um questionário e a um formulário. Após a autorização, faremos um exame dos dentes das crianças, utilizando-se espelhos clínicos, gaze e algodão. Estaremos usando avental, óculos, gorro e máscara descartável, além das luvas descartáveis. Este é um simples exame que será realizado na própria escola e que não oferece riscos para as crianças. As crianças que necessitarem de atendimento serão encaminhadas a um centro de tratamento, através de impresso próprio.

A direção desta escola autorizou a realização do estudo e por isso pedimos a sua autorização para a participação de seu filho. Gostaríamos de esclarecer que os senhores têm o direito de participar ou não da pesquisa podendo desistir a qualquer momento. Os resultados serão trabalhados apenas pela equipe de pesquisa e a identidade dos participantes não será revelada.

A realização deste estudo foi autorizada pelo Comitê de Ética da Universidade Federal de Minas Gerais, pela Secretaria de Estado de Educação de Minas Gerais e pela Secretaria Municipal de Educação de Belo Horizonte.

Colocamo-nos à disposição.

Atenciosamente,

Ana Carolina Scarpelli	Doutoranda em Odontologia
Anita Cruz Carvalho	Mestranda em Odontologia
Cláudia Marina Viegas	Mestranda em Odontologia
Fernanda de Morais Ferreira	Pós-Doutoranda em Odontologia
Prof. Dr. Saul Martins Paiva	Coordenador da pesquisa
Profa. Dra. Isabela Almeida Pordeus	Coordenadora da pesquisa

APÊNDICE E: FORMULÁRIO

UFMG
Faculdade de Odontologia

Bom dia! Precisamos da sua ajuda para o preenchimento deste formulário. As informações são muito importantes para o nosso trabalho. Após preencher pedimos que entregue este formulário para o (a) professor (a) de seu filho. Muito obrigada pela sua participação.

PARTE I – Identificação: No. de identificação (NÃO PREENCHER ESTE CAMPO):_____

DADOS DA CRIANÇA:

1- Nome da criança:_____
2- Endereço: Rua / Avenida:_____
Apto/Bloco:_____Bairro:_____CEP:_____
3- Telefones: _____ 4- Sexo: ( ) menino ( ) menina
5- Dia, mês e ano em que a criança nasceu: ____/____/_____
6- A criança é: (MARQUE COM UM X)
( ) filho(a) único(a) ( ) filho(a) mais novo(a) ( ) filho(a) mais velho(a) ( ) filho (a) do meio

DADOS DO RESPONSÁVEL:

7- Idade do responsável: _____ 8- Número de filhos: _____
9- O que você é da criança: (MARQUE COM UM X)
( )Mãe ( )Pai ( )Irmão ( )Avós ( )Outros. Qual? _____
10- Quantas pessoas moram na sua casa? _____
11- Você estudou até quando? (MARQUE COM UM X)
( ) não estudou
( ) 1ª. a 4ª. série incompleta ( ) 1ª. a 4ª. série completa
( ) 5ª. a 8ª. série incompleta ( ) 5ª. a 8ª. série completa
( ) 1º. ao 3º. ano científico incompleto ( ) 1º. ao 3º. ano científico completo
( ) ensino superior incompleto ( ) ensino superior completo
12- Somando a sua renda com a renda das pessoas que moram com você, quanto é APROXIMADAMENTE, a renda da sua família? Valor R$_____ ( )Não tem renda

PARTE II – Informações clínicas:

13- A criança nasceu pré-matura (nasceu antes de 9 meses)? ( ) Sim ( ) Não

14- Com quantos quilos a criança nasceu? _____

15- A **MÃE** da criança teve algum problema durante a gravidez? ( ) Sim ( ) Não

Se SIM, responda: Qual? _____

16- A criança tem alguma alteração de saúde? ( ) Sim ( )Não
Qual? ( ) doença do coração ( ) doença nos rins ( ) asma ( ) bronquite ( ) alergia ( ) sinusite ( ) diabetes ( ) outra. Qual? _____

17- O que você acha da saúde geral de sua criança? (MARQUE COM UM X)
( ) muito boa ( ) boa ( ) regular ( ) ruim ( ) muito ruim
18- A criança mamou no seio? ( )Sim ( )Não. **Se SIM, responda até que idade**? _____meses
19- A criança usou mamadeira? ( ) Sim ( ) Não. **Se SIM, responda até que idade?** _____anos
20- A criança chupa ou chupou chupeta? ( )Sim ( )Não. **Se SIM, responda até que idade?**_____anos
21- A criança chupa ou chupou dedo? ( )Sim ( )Não. **Se SIM, responda até que idade?** _____anos
22- A criança roe unha? ( )Sim ( )Não. **Se SIM, responda até que idade?** ____anos
23- A criança já operou a garganta? ( )Sim ( ) Não

24- A criança já operou o nariz? ( )Sim ( ) Não
25- A criança fica **SEMPRE** com o nariz entupido? ( )Sim ( )Não
26- A criança fica **SEMPRE** de boca aberta? ( )Sim ( ) Não
27- No último ano: A criança ficou com a garganta inflamada por mais de 5 vezes? ( ) Sim ( ) Não
28- No último ano: A criança teve sinusite? ( )Sim ( ) Não
29- O que você acha da saúde da boca de sua criança? (MARQUE COM UM X)
( ) muito boa ( ) boa ( ) regular ( ) ruim ( ) muito ruim

30- A criança já foi ao dentista? ( )Sim ( ) Não
31- Quando a sua criança foi ao dentista ela:
( ) Realizou **SOMENTE** exame ( ) Realizou **exame + algum tipo de tratamento** ( ) A criança nunca foi ao dentista

32- A criança já sentiu dor de dente? ( )Sim ( ) Não

33- A criança escova os dentes? ( )Sim ( ) Não

34- Quem realiza a escovação da criança?
( )Mãe ( )Pai ( )Irmãos ( )A própria criança ( )Outros. Qual? _____

35- Sua criança bateu com o dente de leite em algum lugar e machucou esse dente?
( ) Sim ( ) Não

Se SIM, responda as perguntas abaixo: (MARQUE COM UM X)

36- Quantos anos sua criança tinha quando machucou o dente de leite?
( ) Antes de completar 1 ano ( ) 1 ano ( ) 2 anos ( ) 3 anos ( ) 4 anos ( ) 5 anos ( ) 6 anos ( ) Não lembro

37- Onde ela machucou o dente de leite?
( ) Em casa ( ) Na escola ( ) Outro lugar. Qual? _____ ( ) Não lembro

38- Como ela machucou o dente de leite?
( ) Queda ( ) Agressão física (briga) ( ) Esbarrão ( ) Esporte
( ) Tombo de bicicleta, patins, patinete ( ) Acidente de carro
( ) Outra forma. Qual?_____ ( ) Não lembro

39- A criança foi atendida pelo dentista por causa do dente machucado?

( ) Sim ( ) Não ( ) Não lembro

APÊNDICE F: FICHA CLÍNICA

FICHA DE IDENTIFICAÇÃO

Examinador: _____ Data:____/____ /_____

Nome da criança: _____

Endereço: _____ IVS: _____

Nome do responsável: _____

Gênero: _____ Escola: _____ IVS: _____

Idade: _____ anos e_____meses. Data de nascimento:____/____ /_____

CÁRIE DENTÁRIA

55	54	53	52	51	61	62	63	64	65
85	84	83	82	81	71	72	73	74	75

CEO

(1,2,3,4,5,6,7,10,12,13,14,15,16): _____

Número de dentes cariados (1,2,3,4,13,14,16): _____

Acesso ao tratamento (4,5,6,7,9,10,15,16): _____

TRAUMATISMO DENTÁRIO

55	54	53	52	51	61	62	63	64	65
85	84	83	82	81	71	72	73	74	75

ORTODONTIA

1. Simetria facial
[ ] 0 - Presente
[ ] 1 - Ausente

2. Tipo Facial
[ ] 0 - Mesocefálico
[ ] 1 - Braquicefálico
[ ] 2 - Dolicocefálico

3. Selamento Labial
[ ] 0 - Presente
[ ] 1 - Ausente

4. Respiração
[ ] 0 - Nasal
[ ] 1 - Bucal

5. Fonação
[ ] 0 - Normal
[ ] 1 - Atípica

6. Deglutição
[ ] 0 - Normal
[ ] 1 - Atípica

7. Palato
[ ] 0 - Normal
[ ] 1 - Profundo

8. Desvio de linha média
[ ] 0 - Ausente
[ ] 1 - Presente

9.1. Apinhamento do segmento incisal superior
[ ] 0 - Ausente
[ ] 1 - Presente

9.2. Apinhamento do segmento incisal inferior
[ ] 0 - Ausente
[ ] 1 - Presente

10.1. Espaçamento no segmento incisal superior
[ ] 0 - Presente
[ ] 1 - Ausente

10.2. Espaçamento no segmento incisal inferior
[ ] 0 - Presente
[ ] 1 - Ausente

11.1. Espaço primata superior
[ ] 0 - Presente
[ ] 1 – Ausente

11.2. Espaço primata inferior
[ ] 0 - Presente
[ ] 1 – Ausente

12.1. Relação canino decíduo direito
[ ] 0 - Classe I (normal)
[ ] 1 - Classe III (mesioclusão)
[ ] 2 - Classe II (distoclusão)

12.2. Relação canino decíduo esquerdo
[ ] 0 - Classe I (normal)
[ ] 1 - Classe III (mesioclusão)
[ ] 2 - Classe II (distoclusão)

13.1. Relação molar decíduo direito
[ ] 0 - Plano terminal reto
[ ] 1 - Degrau mesial (Classe III)
[ ] 2 - Degrau distal (Classe II)

13.2. Relação molar decíduo esquerdo
[ ] 0 - Plano terminal reto
[ ] 1 - Degrau mesial (Classe III)
[ ] 2 - Degrau distal (Classe II)

14. Mordida cruzada posterior
[ ] 0 – Ausente
[ ] 1 - Mordida cruzada unilateral
[ ] 2 - Mordida cruzada bilateral
[ ] 3 - Mordida cruzada total

15. Sobressaliência (overjet)
[ ] 0 - Sobressaliência positiva ≤ 2mm
[ ] 1 - Sobressaliência positiva > 2mm
[ ] 2 - Mordida topo a topo
[ ] 3 - Mordida cruzada anterior

16. Sobremordida (overbite)
[ ] 0 – Normal

[ ] 1 - Mordida profunda
[ ] 2 - Mordida aberta

Encaminhamento: (0) Não (1) Cárie (2) Traumatismo (3) Ortodontia (4) Cárie + Traumatismo (5) Cárie + Ortodontia (6) Traumatismo + Ortodontia (7) Cárie + Traumatismo + Ortodontia

APÊNDICE G: TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Prezados Pais/Responsáveis,

Somos dentistas e estamos realizando, em conjunto com a Faculdade de Odontologia da Universidade Federal de Minas Gerais, um estudo chamado **"Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte"** para avaliar as conseqüências dos problemas bucais na qualidade de vida das crianças e das suas famílias. Por isto precisamos de sua colaboração.

Estamos visitando algumas escolas na cidade de Belo Horizonte e realizando o trabalho com vocês e as suas crianças. Gostaríamos de convidá-los a participar e, para isso, é preciso que vocês assinem este termo indicando a sua autorização. Então será preciso que vocês respondam algumas perguntas através de um questionário. Após devolverem este termo de autorização assinado e o questionário preenchido, será realizado um exame simples para olhar os dentes da sua criança. Neste exame usaremos espelho clínico, gaze e algodão, todos esterilizados. Nós dentistas, estaremos usando avental, óculos, gorro, máscara e luvas descartáveis. Este exame é rápido, pois iremos apenas olhar os dentes das crianças, e não oferece riscos para as crianças e será realizado na própria escola. Quando a criança precisar de tratamento odontológico, vocês serão informados pela nossa equipe. Caso seja de interesse, vocês receberão um encaminhamento para que a criança seja atendida no posto de saúde mais próximo ou na Faculdade de Odontologia da UFMG, lembrando que o atendimento acontecerá segundo a disponibilidade de vaga.

A direção desta escola permitiu a realização do estudo e, sendo assim, pedimos a sua autorização para a participação de sua criança. Gostaríamos de esclarecer que vocês têm o direito de participar ou não do estudo e podem desistir em qualquer momento. Os seus nomes, os nomes das crianças e todas as informações serão mantidos em segredo, não sendo possível saber a identidade da pessoa.

A realização deste estudo foi autorizada pelo Comitê de Ética em Pesquisa da Universidade Federal de Minas Gerais (Av. Presidente Antônio Carlos, 6627 – Unidade Administrativa II – 2ºandar – Sala 2005 – Cep 31270-901 – Belo Horizonte – MG - telefone 31 3409-4592 – e-mail: coep@prpq.ufmg.br), pela Secretaria de Estado de Educação de Minas Gerais e pela Secretaria Municipal de Educação de Belo Horizonte.

A nossa equipe está à disposição para esclarecer qualquer dúvida que vocês apresentarem.

Atenciosamente,

Ana Carolina Scarpelli (Doutoranda), Anita Cruz Carvalho (Mestranda), Cláudia Marina Viegas (Mestranda), Fernanda de Morais Ferreira (Pós Doutoranda), Prof. Dr. Saul Martins de Paiva (Coordenador), Profa. Dra. Isabela Almeida Pordeus (Coordenadora).

SUA ASSINATURA INDICA QUE VOCÊ LEU E ENTENDEU TODAS AS INFOMAÇÕES EXPLICADAS ANTERIORMENTE E DECIDIU PERMITIR A PARTICIPAÇÃO DO SEU FILHO NO ESTUDO.

Nome do responsável:_____

Documento (CI):_____

Nome da Criança:_____

Belo Horizonte,_____ de _____ de _____.

_____

Assinatura do Responsável

ANEXOS

ANEXO A: AUTORIZAÇÃO DO COMITÊ DE ÉTICA EM PESQUISA - UFMG

UNIVERSIDADE FEDERAL DE MINAS GERAIS
COMITÊ DE ÉTICA EM PESQUISA - COEP

Parecer nº. ETIC 159/08

Interessado(a): Profa. Isabela Almeida Pordeus
Departamento de Odontopediatria e Ortodontia
Faculdade de Odontologia - UFMG

DECISÃO

O Comitê de Ética em Pesquisa da UFMG – COEP aprovou, no dia 16 de maio de 2008, após atendidas as solicitações de diligência, o projeto de pesquisa intitulado **"Impacto das alterações bucais na qualidade de vida pré-escolares de Belo Horizonte"** bem como o Termo de Consentimento Livre e Esclarecido.

O relatório final ou parcial deverá ser encaminhado ao COEP um ano após o início do projeto.

Profa. Maria Teresa Marques Amaral
Coordenadora do COEP-UFMG

Av. Pres. Antonio Carlos, 6627 – Unidade Administrativa II - 2º andar – Sala 2005 – Cep:31270-901 – BH-MG
Telefax: (031) 3409-4592 - e-mail: coep@prpq.ufmg.br

ANEXO B: AUTORIZAÇÃO DA SECRETARIA MUNICIPAL DE EDUCAÇÃO

Secretaria Municipal de Educação

TERMO DE AUTORIZAÇÃO

Na condição de Secretária Adjunta de Educação, autorizo a realização do estudo **"Impacto das alterções bucais na qualidade de vida de pré-escolares de Belo Horizonte"** nas instituições públicas e particulares da rede de ensino do município de Belo Horizonte. Participarão da pesquisa, após devido consentimento dos responsáveis, crianças na faixa etária de 36 a 68 meses, de ambos os sexos. Para tanto será necessário o preenchimento de um questionário e de um formulário pelos responsáveis, além do exame clínico das crianças. Em casos de necessidade de tratamento odontológico esses indivíduos serão encaminhados para o atendimento clínico no Curso de Aperfeiçoamento em Odontopediatria da Faculdade de Odontologia da UFMG. A participação na pesquisa será voluntária e a identidade dos indivíduos será mantida em sigilo. A instituição e os participantes não terão ônus com a pesquisa.

Belo Horizonte, 20 de fevereiro de 2008

____

Secretária Adjunta de Educação

Macaé Maria Evaristo - BM [illegible]

Secretaria Municipal Adjunta de Educação

ANEXO C: AUTORIZAÇÃO DA SECRETARIA ESTADUAL DE EDUCAÇÃO

ESTADO DE MINAS GERAIS
GABINETE DO SECRETARIO DE ESTADO DE EDUCAÇÃO

TERMO DE AUTORIZAÇÃO

Eu, Vanessa Guimarães Pinto, Secretária de Estado de Educação de Minas Gerais, autorizo a realização do estudo "Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte" nas instituições públicas e particulares da rede de ensino do Município de Belo Horizonte.

Participarão da pesquisa, após devido consentimento dos responsáveis, crianças na faixa etária de 36 a 68 meses, de ambos os sexos. Para tanto, será necessário o preenchimento de um questionário e de um formulário pelos responsáveis, além do exame clínico das crianças. Em casos de necessidade de tratamento odontológico, esses indivíduos serão encaminhados para o atendimento clínico no Curso de Aperfeiçoamento em Odontopediatria da Faculdade de Odontologia da UFMG. A participação na pesquisa será voluntária e a identidade dos indivíduos será mantida em sigilo. A instituição e os participantes não terão ônus com a pesquisa.

Belo Horizonte, 28 de fevereiro de 2008.

VANESSA GUIMARÃES PINTO

Vanessa Guimarães Pinto
Secretaria de Estado da Educação
Masp 566563-3

Avenida Amazonas, 5855 - Gameleira - Fax (031) 379 8290 - Tel. (031) 379 8300 CEP 30 510-000 - Belo Horizonte - MG

ANEXO D: QUESTIONÁRIO QUALIDADE DE VIDA: ECOHIS

Questionário sobre a Qualidade de Vida Relacionada à Saúde Bucal de Crianças na Idade Pré-escolar	
Problemas com dentes, boca, ou maxilares (ossos da boca) e seus tratamentos, podem afetar o bem-estar e a vida diária das crianças e suas famílias. Para cada uma das seguintes questões perguntadas pelo entrevistador, por favor, indique no quadro de opções de respostas a que melhor descreve as experiências da sua criança ou a sua própria. Considere toda a vida da sua criança, desde o nascimento até agora, quando responder cada pergunta.	
1	Sua criança já sentiu dores nos dentes, na boca ou nos maxilares (ossos da boca)?
2	Sua criança já teve dificuldade em beber bebidas quentes ou frias devido a problemas com os dentes ou tratamentos dentários?
3	Sua criança já teve dificuldade para comer certos alimentos devido a problemas com os dentes ou tratamentos dentários?
4	Sua criança já teve dificuldade de pronunciar qualquer palavra devido a problemas com os dentes ou tratamentos dentários?
5	Sua criança já faltou à creche, jardim de infância ou escola devido a problemas com os dentes ou tratamentos dentários?
6	Sua criança já teve dificuldade em dormir devido a problemas com os dentes ou tratamentos dentários?
7	Sua criança já ficou irritada devido a problemas com os dentes ou tratamentos dentários?
8	Sua criança já evitou sorrir ou rir devido a problemas com os dentes ou tratamentos dentários?
9	Sua criança já evitou falar devido a problemas com os dentes ou tratamentos dentários?
10	Você ou outra pessoa da família já ficou aborrecido devido a problemas com os dentes ou tratamentos dentários de sua criança?
11	Você ou outra pessoa da família já se sentiu culpado devido a problemas com os dentes ou tratamentos dentários de sua criança?
12	Você ou outra pessoa da família já faltou ao trabalho devido a problemas com os dentes ou tratamentos dentários de sua criança?
13	Sua criança já teve problemas com os dentes ou fez tratamentos dentários que causaram impacto financeiro na sua família?
Opções de resposta	0 Nunca 1 Quase nunca 2 Às vezes 3 Com freqüência 4 Com muita freqüência 5 Não sei

Anexo E: Índice de Vulnerabilidade Social (IVS)

O IVS foi um índice construído a partir de uma junção entre a Secretaria de Planejamento da Prefeitura municipal de Belo Horizonte e uma equipe multidisciplinar de pesquisadores da Pontifícia Universidade Católica de Minas Gerais (Nahas *et al*., 2000).

Seu primeiro cálculo foi executado em 1999, sendo utilizado em 2001 como critérios para definição das áreas prioritárias para programas de inclusão social da Prefeitura de Belo Horizonte.

O IVS avalia a população local das 81 Unidades de Planejamento (UP) de Belo Horizonte em cinco “Dimensões de cidadania”: Ambiental (Acesso à habitação e infra-estrutura básica), Cultural (acesso à escolaridade), Econômica (acesso à renda e trabalho), Jurídica (acesso à assistência jurídica) e Segurança de sobrevivência (acesso à saúde, segurança alimentar e previdência social). Veja no QUADRO 3 as composições do IVS e ponderações (Nahas *et al*., 2000).

O IVS estabelece os níveis de vulnerabilidade da população à exclusão social. Seu valor varia de 0 a 1, sendo que quanto maior o valor pior a situação da população da Unidade de Planejamento, ou seja, mais vulnerável à exclusão social é a população (Nahas *et al*., 2000).

DIMENSÕES DE CADADANIA	VARIÁVEIS	INDICADORES
Ambiental – 0,23	Acesso a moradia-0,6	Densidade domiciliar – 0,57 (Hab/domicílio)
		Qualidade domicílio – 0,43 (Taxa de domicílio por padrão de acabamento)
	Acesso aos serviços de infra-estrutura urbana-0,4	Acesso à infra-estrutura básica (taxa de domicílios com rede de esgoto e pavimentação)
Cultural – 0,18	Acesso à educação	Índice de escolaridade relativa (txa. Popul. por faixa etária, da 6ª série ao curso superior)
Econômica – 0,27	Acesso ao trabalho – 0,7	Acesso à ocupação – 0,44 (taxa de população ocupada, entre 25 e 50 anos)
		Ocupação formal/informal – 0,56 (relação entre a taxa de população em ocupação formal/informal)
	Acesso à renda – 0,3	Renda média nominal familiar “per capita”
Jurídica – 0,08	Acesso à assistência jurídica	Acesso à assistência jurídica (txa. de processos assistidos por assistência privada)
Segurança de sobrevivência – 0,24	Acesso aos serviços de saúde – 0,44	Mortalidade neo e pós-neonatal (mortalidade infantil entre 0 e 27 dias de idade e até 1 ano)
	Garantia de segurança alimentar – 0,36	Segurança alimentar (taxa de crianças abaixo de 5 anos, atendidas com desnutrição em centros de saúde)
	Acesso à previdência social – 0,2	Acesso à previdência (total de recursos da previdência pública oriundos de aposentadoria e pensão, auferidos pela população de terceira idade e idosa)

QUADRO 1 Composição do IVS e ponderações para cálculo

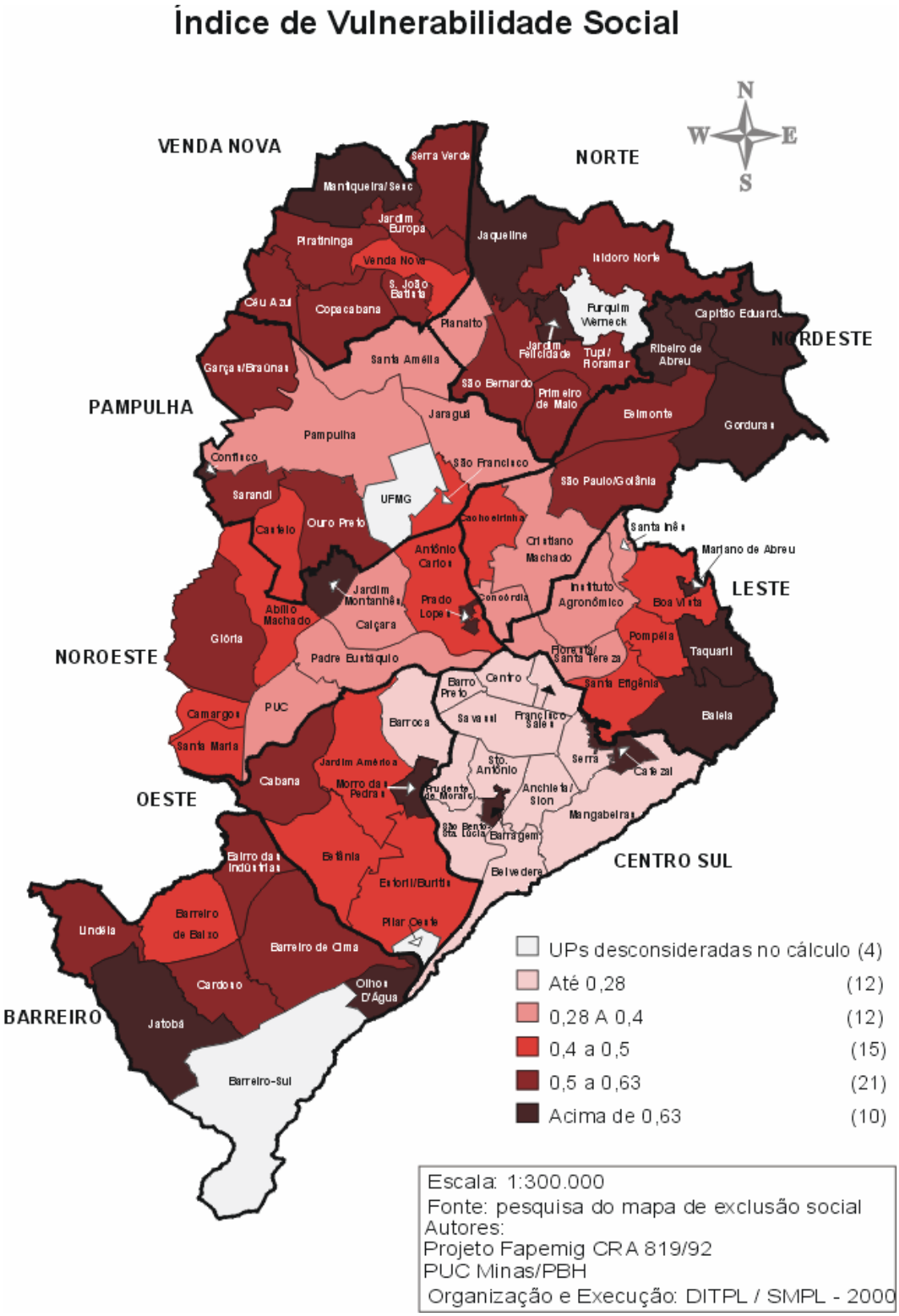

FIGURA 1 – Unidades de Planejamento de Belo Horizonte

ANEXO F: Normas para publicação no periódico: Community Dentistry and Oral Epidemiology

1. GENERAL

The aim of Community Dentistry and Oral Epidemiology is to serve as a forum for scientifically based information in community dentistry, with the intention of continually expanding the knowledge base in the field. The scope is therefore broad, ranging from original studies in epidemiology, behavioral sciences related to dentistry, and health services research through to methodological reports in program planning, implementation and evaluation. Reports dealing with people of all age groups are welcome.

The journal encourages manuscripts which present methodologically detailed scientific research findings from original data collection or analysis of existing databases. Preference is given to new findings. Confirmation of previous findings can be of value, but the journal seeks to avoid needless repetition. It also encourages thoughtful, provocative commentaries on subjects ranging from research methods to public policies. Purely descriptive reports are not encouraged, nor are behavioral science reports with only marginal application to dentistry.

Knowledge in any field only advances when research results and policies are held up to critical scrutiny. To be consistent with that view, the journal encourages scientific debate on a wide range of subjects. Responses to research results and views expressed in the journal are always welcome, whether in the form of a manuscript or a commentary. Prompt publication will be sought for these submissions. Book reviews and short reports from international conferences are also welcome, and publication of conference proceedings can be arranged with the publisher. Please read the instructions below carefully for details on the submission of manuscripts, the journal's requirements and standards as well as information concerning the procedure after acceptance of a manuscript for publication in Community Dentistry and Oral Epidemiology. Authors are encouraged to visit Wiley-Blackwell Author Services for further information on the preparation and submission of articles and figures.

2. ETHICAL GUIDELINES

Community Dentistry and Oral Epidemiology adheres to the below ethical guidelines for publication and research.

2.1. Authorship and Acknowledgements

Authorship: Authors submitting a manuscript do so on the understanding that the manuscript have been read and approved by all authors and that all authors agree to the submission of the manuscript to the Journal.

Community Dentistry and Oral Epidemiology adheres to the definition of authorship set up by The International Committee of Medical Journal Editors (ICMJE). According to the ICMJE criteria, authorship should be based on 1) substantial contributions to conception and design of, or acquisition of data or analysis and interpretation of data, 2) drafting the article or revising it critically for important intellectual content and 3) final approval of the version to be published. Authors should meet conditions 1, 2 and 3.

It is a requirement that all authors have been accredited as appropriate upon submission of the manuscript. Contributors who do not qualify as authors should be mentioned under Acknowledgements.

Acknowledgements: Under acknowledgements please specify contributors to the article other than the authors accredited and all sources of financial support for the research.

2.2. Ethical Approvals

In all reports of original studies with humans, authors should specifically state the nature of the ethical review and clearance of the study protocol. Informed consent must be obtained from human subjects participating in research studies. Some reports, such as those dealing with institutionalized children or mentally retarded persons, may need additional details of ethical clearance.

Experimental Subjects: experimentation involving human subjects will only be published if such research has been conducted in full accordance with ethical principles, including the

World Medical Association Declaration of Helsinki (version 2008) and the additional requirements, if any, of the country where the research has been carried out.
Manuscripts must be accompanied by a statement that the experiments were undertaken with the understanding and written consent of each subject and according to the above mentioned principles.
All studies should include an explicit statement in the Material and Methods section identifying the review and ethics committee approval for each study, if applicable. Editors reserve the right to reject papers if there is doubt as to whether appropriate procedures have been used.
Ethics of investigation: Manuscripts not in agreement with the guidelines of the Helsinki Declaration as revised in 1975 will not be accepted for publication.

2.3 Clinical Trials

Clinical trials should be reported using the CONSORT guidelines available at http://www.consort-statement.org. A CONSORT checklist should also be included in the submission material.
Community Dentistry and Oral Epidemiology encourages authors submitting manuscripts reporting from a clinical trial to register the trials in any of the following free, public clinical trials registries: www.clinicaltrials.gov, http://clinicaltrials.ifpma.org/clinicaltrials, http://isrctn.org/. The clinical trial registration number and name of the trial register will then be published with the manuscript.

2.4 Observational and Other Studies

Observational studies such as cohort, case-control and cross-sectional studies should be reported consistent with guidelines like STROBE.Meta analysis for systematic reviews should be reported consistent with guidelines like QUOROM and MOOSE. These guidelines can be accessed at www.equator-network.org

2.5 Appeal of Decision

The decision on a manuscript is final and cannot be appealed.

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• Review your submission (in HTML and PDF format) before sending to the Journal. Click the 'Submit' button when you are finished reviewing.

3.3. Manuscript Files Accepted

Manuscripts should be uploaded as Word (.doc) or Rich Text Format (.rft) files (not write-protected) plus separate figure files. GIF, JPEG, PICT or Bitmap files are acceptable for submission, but only high-resolution TIF or EPS files are suitable for printing. The files will be automatically converted to HTML and a PDF document on upload and will be used for the review process. The text file must contain the entire manuscript including title page, abstract, text, references, tables, and figure legends, but no embedded figures. Figure tags should be included in the file. Manuscripts should be formatted as described in the Author Guidelines below. Please note that any manuscripts uploaded as Word 2007 (.docx) will be automatically rejected. Please save any .docx file as .doc before uploading.

3.4. Suggest Two Reviewers

Community Dentistry and Oral Epidemiology attempts to keep the review process as short as possible to enable rapid publication of new scientific data. In order to facilitate this process, please suggest the names and current email addresses of two potential international reviewers whom you consider capable of reviewing your manuscript.

3.5. Suspension of Submission Mid-way in the Submission Process

You may suspend a submission at any phase before clicking the 'Submit' button and save it to submit later. The manuscript can then be located under 'Unsubmitted Manuscripts' and you can click on 'Continue Submission' to continue your submission when you choose to.

3.6. E-mail Confirmation of Submission

After submission you will receive an email to confirm receipt of your manuscript. If you do not receive the confirmation email within 10 days, please check your email address carefully in the system. If the email address is correct please contact your IT department. The error may be caused by some sort of spam filtering on your email server. Also, the emails should be received if the IT department adds our email server (uranus.scholarone.com) to their whitelist.

3.7. Review Procedures

All manuscripts (except invited reviews and some commentaries and conference proceedings) are submitted to an initial review by the Editor or Associate Editors. Manuscripts which are not considered relevant to the practice of community dentistry or of interest to the readership of Community Dentistry and Oral Epidemiology will be rejected without review. Manuscripts presenting innovative hypothesis-driven research with methodologically detailed scientific findings are favoured to move forward to peer review. All manuscripts accepted for peer review will be submitted to at least 2 reviewers for peer review, and comments from the reviewers and the editor are returned to the lead author.

3.8. Manuscript Status

You can access ScholarOne Manuscripts (formerly known as Manuscript Central) any time to check your 'Author Centre' for the status of your manuscript. The Journal will inform you by e-mail once a decision has been made.

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4. MANUSCRIPT FORMAT AND STRUCTURE

4.1. Page Charge

Articles exceeding 7 published pages are subject to a charge of USD 300 per additional page. One published page amounts approximately to 5,500 characters (excluding figures and tables).

4.2. Format

Language: All submissions must be in English; both British and American spelling conventions are acceptable. Authors for whom English is a second language must have their manuscript professionally edited by an English speaking person before submission to make sure the English is of high quality. It is preferred that manuscript is professionally edited. A list of independent suppliers of editing services can be found at http://authorservices.wiley.com/bauthor/english_language.asp. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

Font: All submissions must be double spaced using standard 12 point font size.

Abbreviations, Symbols and Nomenclature: Authors can consult the following source: CBE Style Manual Committee. Scientific style and format: the CBE manual for authors, editors, and publishers. 6th ed. Cambridge: Cambridge University Press, 1994

4.3. Structure

All manuscripts submitted to Community Dentistry and Oral Epidemiology should follow the guidelines regarding structure as below.

Title Page: should include a title of no more than 50 words, a running head of no more than 50 characters and the names and institutional affiliations of all authors of the manuscript should be included.

Abstract: All manuscripts submitted to Community Dentistry and Oral Epidemiology should use a structured abstract under the headings: Objectives - Methods - Results - Conclusions.

Main Text of Original Articles should include Introduction, Materials and Methods and Discussion.

Introduction: should be focused, outlining the historical or logical origins of the study and not summarize the results; exhaustive literature reviews are not appropriate. It should close with the explicit statement of the specific aims of the investigation.

Materials and Methods must contain sufficient detail such that, in combination with the references cited, all studies reported can be fully reproduced. As a condition of publication, authors are required to make materials and methods used freely available to academic researchers for their own use.

Discussion: may usually start with a brief summary of the major findings, but repetition of parts of the abstract or of the results sections should be avoided. The section should end with a brief conclusion and a comment on the potential clinical program or policy relevance of the findings. Statements and interpretation of the data should be appropriately supported by original references.

4.4. References

The list of references begins on a fresh page in the manuscript, using the Vancouver format. References should be numbered consecutively in the order in which they are first mentioned in the text. Identified references in the text should be sequentially numbered by Arabic numerals in parentheses, e.g., (1,3,9). Superscript in-text references are not acceptable in CDOE. For correct style, authors are referred to: International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals: writing and editing for biomedical publication. http://www.icmje.org October 2004. For abbreviations of journal names, consult http://www.lib.umich.edu/dentlib/resources/serialsabbr.html

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Examples of the Vancouver reference style are given below:
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Widström E, Linna M, Niskanen T. Productive efficiency and its determinants in the Finnish Public Dental Service. Community Dent Oral Epidemiol 2004;32:31-40.
Corporate author
WHO Collaborating Centre for Oral Precancerous Lesions. Definition of leukoplakia and related lesions: an aid to studies on oral precancer. Oral Surg Oral Med Oral Pathol 1978;46:518-39.
Books and other monographs
Personal author(s)
Fejerskov O, Baelum V, Manji F, Møller IJ. Dental fluorosis; a handbook for health workers. Copenhagen: Munksgaard, 1988:41-3.
Chapter in a book
Fomon SJ, Ekstrand J. Fluoride intake. In: Fejerskov O, Ekstrand J, Burt BA, editors: Fluoride in dentistry, 2nd edition. Copenhagen: Munksgaard, 1996; 40-52.

4.5. Tables, Figures and Figure Legends

Tables are part of the text and should be included, one per page, after the References. All graphs, drawings, and photographs are considered figures and should be sequentially numbered with Arabic numerals. Each figure must be on a separate page and each must have a caption. All captions, with necessary references, should be typed together on a separate page and numbered clearly (Fig.1, Fig. 2, etc.).
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ANEXO G – Normas para publicação do periódico: International Journal of Environmental Research and Public Health

Submission of Manuscripts

- **Submission:** Manuscripts should be submitted online at www.mdpi.com by registering and logging in to this website.
- **File Format:** Microsoft Word files (all versions, *.doc), OpenOffice, StarOffice or Latex files will be accepted. If a manuscript is prepared in Latex, the source code and a pdf version must be submitted.
- **Coverletter:** Check in your cover letter whether you supplied at least 5 referees. Check if the English corrections are done before submission.

Manuscript Preparation

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- **Electronic Supplementary Information (ESI):**Conference slides, video sequences, software, etc., can be included with the submission and published as supplementary material. Please read the information about Supplementary Material Deposit beneath.

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- Spectral data (NMR, IR, Raman, ESR, etc) can be submitted in JCAMP (.jdx) format. 3D coordinate structures (in pdb, mol, xyz or other common formats), if available, should also be submitted.

PRODUÇÃO CIENTÍFICA – PERÍODO 2008 - 2014

Artigos científicos completos publicados

- Carvalho AC, Paiva SM, Viegas CM, Scarpelli AC, Ferreira FM, Pordeus IA. Impacto f malocclusion on oral health related quality of life among Brazilian preschool children: a population-based study. Braz Dent J 2013;24:655-661.
- Carvalho AC, Paiva SM, Scarpelli AC, Viegas CM, Ferreira FM, Pordeus IA. Prevalence of malocclusion in primary dentition in a population-based sample of Brazilian preschool children. Eur J Paediatr Dent 2011;12:107-111.
- Viegas CM, Paiva SM, Carvalho AC, Scarpelli AC, Ferreira FM, Pordeus IA. Influence of traumatic dental injury on quality of life of Brazilian preschool children and their families. *Dental Traumatology* 2014; doi: 10.1111/edt.12091.
- Viegas CM, Scarpelli AC, Carvalho AC, Ferreira FM, Pordeus IA, Paiva SM. Impact of traumatic dental injury on quality of life among Brazilian preschool children and their families. Pediatr Dent, 2012;34:300-306.
- Viegas CM, Scarpelli AC, Carvalho AC, Ferreira FM, Pordeus IA, Paiva SM. Predisposing factors for traumatic dental injuries in Brazilian preschool children. Eur J Paediatr Dent 2010;11:59-65.
- Scarpelli AC, Paiva SM, Viegas CM, Carvalho AC, Ferreira FM, Pordeus IA. Oral health-related quality of life among Brazilian preschool children. Community Dent Oral Epidemiol 2013;41:336-344.

Apresentação de trabalhos em eventos científicos

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