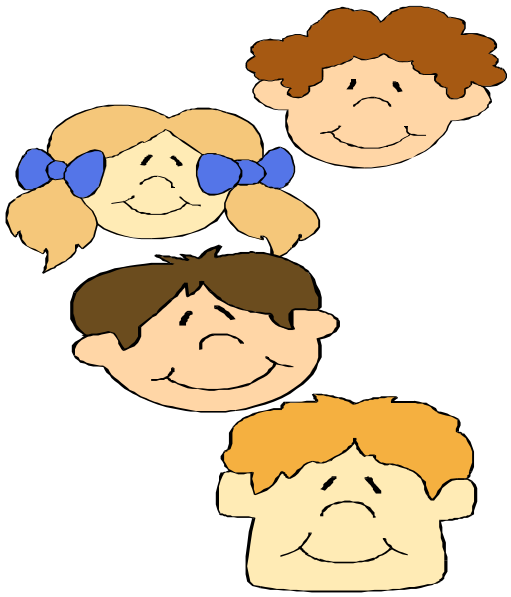
ANA CAROLINA SCARPELLI RODRIGUES BOTELHO

IMPACTO DAS ALTERAÇÕES BUCAIS NA QUALIDADE DE VIDA DE PRÉ-ESCOLARES DE BELO HORIZONTE, BRASIL



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Ana Carolina Scarpelli Rodrigues Botelho

Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte, Brasil

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 em Odontopediatria.

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

Faculdade de Odontologia
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Tese intitulada "*Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte, Brasil*", área de concentração em **Odontopediatria**, apresentada por **Ana Carolina Scarpelli Rodrigues Botelho**, para obtenção do grau de **Doutor em Odontologia**, **APROVADA** pela Comissão Examinadora constituída pelos seguintes professores:

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Belo Horizonte, 13 de julho de 2011.

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Ata da Comissão Examinadora para julgamento da Tese de Doutorado em Odontologia, área de concentração em **Odontopediatria**, da candidata **Ana Carolina Scarpelli Rodrigues Botelho**.

Aos 13 de julho de 2011, às 14:00 h, na sala de Pós-Graduação (3403) da Faculdade de Odontologia, reuniu-se a Comissão Examinadora, composta pelos professores Dra. Isabela Almeida Pordeus, Dr. Saul Martins de Paiva, Dr. Mauro Henrique Nogueira Guimarães de Abreu, Dra. Sheyla Márcia Auad, Dr. Paulo Floriani Kramer e Dra. Daniela Prócida Raggio. A Professora Dra. Isabela Almeida Pordeus, Orientadora da Tese, na qualidade de Presidente da sessão, apresentou a Comissão Examinadora e declarou abertos os trabalhos. À candidata foi dado o tempo de até 50 (cinquenta) minutos para fazer a exposição oral sobre o seu trabalho **"Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte, Brasil"**. Encerrada a exposição, foi iniciada a argüição, dentro do limite de tempo de 30 (trinta) minutos, pelos Professores Dr. Mauro Henrique Nogueira Guimarães de Abreu, Dra. Sheyla Márcia Auad, Dr. Paulo Floriani Kramer e Dra. Daniela Prócida Raggio, com limite de 30 (trinta) minutos para a resposta. Terminadas as argüições, a Presidente suspendeu os trabalhos por 10 minutos para que os examinadores pudessem decidir pelo resultado a ser dado à candidata. A Comissão Examinadora opta pela aprovação da candidata. Para constar, lavrou-se a presente ata, que vai assinada por mim Dra. Isabela Almeida Pordeus, Presidente e pelos demais membros desta comissão examinadora. Belo Horizonte, 13 de julho de 2011.

Dra. Isabela Almeida Pordeus
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Dra. Daniela Prócida Raggio
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Dedico este trabalho a todas as crianças
que com pequenos gestos, palavras, sorrisos ou lágrimas
ensinaram-me a perceber que
a alegria está no cotidiano de nossas vidas.
A meus queridos pais, Osvaldo e Myris,
às minhas irmãs, Andréa e Marina,
ao meu companheiro e amigo incondicional, Marcelo
e ao tesouro da minha vida: Maria Clara.

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"Todo jardim começa com uma história de amor,
antes que qualquer árvore seja plantada ou um lago construído
é preciso que eles tenham nascido dentro da alma.
Quem não planta jardim por dentro,
não planta jardins por fora e
nem passeia por eles"

Rubem Alves

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LISTA DE ABREVIATURAS

ABEP – Associação Brasileira de Empresas de Pesquisa

B-ECOHIS – *Brazilian version of Early Childhood Oral Health Impact Scale*

CIS – *Child Impact Section*

DDE – *Developmental Defects of Enamel*

DMFT – *Decayed, missing and/or filled teeth*

DVD – *Digital video disc*

ECC – *Early Childhood Caries*

ECOHIS – *Early Childhood Oral Health Impact Scale*

ESS/MG – *Education State Superintendence of Minas Gerais*

F – *Field study*

FIS – *Family Impact Scale*

HRQoL – *Health Related Quality of Life*

IC – *Interval Confidence*

ICC – *Intraclass Correlation Coefficient*

ICDAS – *International Caries Detection and Assessment System*

IL – *Illinois*

MG – Minas Gerais

OHIP – *Oral Health Impacts Profile*

OHRQoL – *Oral Health-Related Quality of Life*

OIDP – *Oral Impacts on Daily Performance*

OMS – Organização Mundial de Saúde

P – *Preliminary study*

PR – *Prevalence Ratio*

RJ – Rio de Janeiro

QoL – *Quality of Life*

SP – São Paulo

SPSS – *Statistical Package for the Social Sciences*

SVI – *Social Vulnerability Index*

TDI – *Traumatic Dental Injuries*

TN – *Tennessee*

TV – *Television*

TX – *Texas*

USA – *United State of America*

WHO – *World Health Organization*

RESUMO

Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte, Brasil

RESUMO

Este estudo teve como objetivos avaliar o impacto das alterações bucais na qualidade de vida de pré-escolares Brasileiros e de suas famílias e conhecer a atuação de fatores socioeconômicos e da percepção em saúde dos pais/responsáveis como possíveis determinantes do impacto na qualidade de vida. Para tanto, foram realizados um estudo transversal (n=1632) e um estudo caso-controle (n=31 casos; n=124 controles), ambos de base populacional, com crianças de 5 anos de idade matriculadas em creches e pré-escolas de Belo Horizonte, Minas Gerais e seus responsáveis. No estudo caso-controle adotou-se o pareamento por "gênero", "tipo de escola", "idade" e "escolaridade dos responsáveis" e "renda mensal da família". As variáveis de desfecho e de exposição foram o "impacto na qualidade de vida da criança" e a "presença de lesão de cárie dentária não tratada", respectivamente. O exame clínico das crianças foi realizado por um único examinador, previamente calibrado. Avaliou-se cárie dentária, maloclusão, traumatismo dentário e defeito de desenvolvimento de esmalte. Os responsáveis foram convidados a preencher um formulário contendo dados sócio-demográficos e um questionário sobre a Qualidade de Vida Relacionada à Saúde Bucal (Oral Health-Related Quality of Life – OHRQoL) de crianças na idade pré-escolar (Brazilian version of the Early Childhood Oral Health Impact Scale - B-ECOHIS). As análises univariada e multivariada dos dados foram realizadas através do programa *Statistical Package for the Social Sciences* (SPSS - versão 15.0). Os resultados do estudo transversal demonstraram que para a subescala "impacto na qualidade de vida da criança" as variáveis que repercutiram negativamente na qualidade de vida foram: experiência de cárie dentária (RP=2,18; IC95%: 1,88-2,52), posição da criança na escala de filhos (RP=1,20; IC95%: 1,04-1,39), tipo de escola da criança (RP=1,36; IC95%: 1,10-1,69), idade dos responsáveis (RP= 1,18; 95%IC: 1,04-1,34), renda mensal da família (RP= 1,48; 95%IC: 1,18-1,85) e percepção da saúde geral da criança (RP= 1,26; 95%IC: 1,06-1,51). Na subescala "impacto na qualidade de vida da família", verificou-se que o impacto negativo na qualidade de vida esteve associado à experiência de cárie dentária (RP= 3,40; 95%IC: 2,83-4,08), idade dos responsáveis (RP= 1,16; 95%IC: 1,01-1,33) e renda mensal da família (RP= 1,41; 95%IC: 1,16-1,72).

O estudo caso controle mostrou que a prevalência de um ou mais dentes cariados não tratados foi maior no grupo caso (71,0%) em relação ao grupo controle (18,5%) (p<0,001). Crianças com pelo menos um dente cariado apresentaram maior chance de impacto negativo na qualidade de vida quando comparadas àquelas livres de cárie dentária (OR=10,73; 95%IC: 2,37-26,35). A cárie dentária foi o único critério normativo que repercutiu negativamente na qualidade de vida das crianças e famílias. Crianças com pelo menos um dente cariado demonstraram maior chance de apresentar impacto negativo na qualidade de vida quando comparadas àquelas livres de cárie dentária. Famílias menos favorecidas economicamente e cujos responsáveis eram mais jovens apresentaram maior impacto na qualidade de vida. Quando os responsáveis percebiam a saúde geral da criança como "ruim" a qualidade de vida da criança apresentava escores mais baixos.

Descritores: saúde bucal, qualidade de vida, pré-escolares, criança, cárie dentária.

Impact of oral conditions on quality of life of preschoolers in Belo Horizonte, Brazil

ABSTRACT

The aim of the present study was to assess the impact of oral conditions on the quality of life of Brazilian preschoolers and their families and determine the effect of socioeconomic factors and the perceptions of parents/caregivers regarding health as possible determinants of this impact. For such, a population-based cross-sectional study (n=1632) and population-based case-control study (31 cases and 124 controls) were carried out with five-year-old children enrolled in day care centres and preschools in the city of Belo Horizonte, Minas Gerais and their parents/caregivers. The case and control groups were matched for gender, type of school, parents/caregivers' age and schooling and monthly household income. The outcome and exposure variables were "impact on the quality of life of the child" and "presence of untreated dental caries", respectively. The clinical examination was performed by a single, previously calibrated examiner, with the determination of dental caries, malocclusion, traumatic dental injury and developmental defects of enamel. The caregivers were asked to fill out a form containing socio-demographic data as well as an oral health-related quality of life (OHRQoL) questionnaire designed for preschoolers (Brazilian version of the Early Childhood Oral Health Impact Scale – B-ECOHIS). Univariate and multivariate analyses of the data were performed using the Statistical Package for the Social Sciences (SPSS, version 15.0). The results of the cross-sectional study demonstrated that the following variables had negative repercussions on OHRQoL, as determined by responses on the Child Impact Section of the B-ECOHIS: experience with dental caries (PR=2.18; 95%CI: 1.88-2.52), position of the child among other siblings in the family (PR=1.20; 95%CI: 1.04-1.39), type of preschool/day care centre (PR=1.36; 95%CI: 1.10-1.69), age of parent/caregiver (PR=1.18; 95%CI: 1.04-1.34), monthly household income (PR=1.48; 95%CI: 1.18-1.85) and perception of the child's overall health status (PR=1.26; 95%CI: 1.06-1.51). On the Family Impact Section, a negative impact on quality of life was associated to experience with dental caries (PR=3.40; 95%CI: 2.83-4.08), age of parents/caregivers (PR=1.16; 95%CI: 1.01-1.33) and monthly household income (PR=1.41; 95%CI: 1.16-1.72). The case-control study demonstrated that the prevalence of one or more teeth with untreated dental caries was greater in the case group (71.0%) than the control group (18.5%) ($p<0.001$). Children with at least one untreated carious lesion had a greater chance of experiencing a negative impact on OHRQoL than those that were free of untreated dental caries (OR=10.73; 95%CI=4.37-26.35). Dental caries constituted the only

normative criterion with a negative repercussion on the quality of life of children and their families. Children with at least one carious lesion had a greater chance of experiencing a negative impact on quality of life than those free of caries. Less economically privileged families and those in which the parents/caregivers were younger experienced a greater impact on quality of life. Parents/caregivers' perception of their child's overall health status as "poor" was associated to diminished quality of life among the children.

Key words: oral health, quality of life, preschool, child, dental caries.

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CONSIDERAÇÕES INICIAIS

CONSIDERAÇÕES INICIAIS

A expressão “qualidade de vida” foi empregada pela primeira vez por Lyndon Johnson, em 1964, nos Estados Unidos. O interesse em conceitos como “padrão de vida” e “qualidade de vida” foi inicialmente partilhado por cientistas sociais, filósofos e políticos. O crescente desenvolvimento tecnológico da medicina e ciências afins trouxe como conseqüência negativa a progressiva desumanização. Assim, a preocupação com o conceito de qualidade de vida refere-se a um movimento dentro das ciências humanas e biológicas no sentido de valorizar parâmetros mais amplos do que apenas o controle de sintomas, a diminuição da mortalidade ou o aumento da expectativa de vida (Franzi, Silva, 2003).

Entretanto, não existe uma concepção universal sobre qualidade de vida. A Organização Mundial de Saúde (OMS), em 1995, definiu “qualidade de vida” como “a percepção do indivíduo em relação a sua posição na vida, dentro do contexto de cultura e valores no qual está inserido e em relação a seus objetivos, expectativas, valores e preocupações”. Segundo Minayo, Hartz (2000), qualidade de vida é uma noção eminentemente humana, que tem sido aproximada ao grau de satisfação encontrado na vida familiar, amorosa, social e ambiental. Valores não materiais como amor, liberdade, inserção social, solidariedade, realização pessoal e felicidade também compõem sua concepção. Nesse sentido, a concepção de qualidade de vida é multidimensional e abrange a saúde física, o estado psicológico, as funções sociais e cognitivas, assim como a percepção subjetiva de bem estar e as questões existenciais (Fayers, Machin, 2000; Oliveira, Sheiham, 2003).

As intervenções em saúde devem visar à melhoria da qualidade de vida do indivíduo uma vez que as doenças interferem no funcionamento do corpo humano acarretando alterações físicas e emocionais (Guyatt et al., 1986).

Apesar da tendência em tratar a cavidade bucal como um ponto de referência anatomicamente autônoma do resto do corpo do indivíduo, a saúde bucal é uma parte integrante da saúde geral (Cunningham, Hunt, 2001). A inter-relação dos conceitos torna-se então complexa reconhecendo-se a saúde geral e a saúde bucal como um conceito multidimensional e essencial na qualidade de vida (Kieffer, Hoogstraten, 2008). Nesse sentido, tendo como referência a promoção da qualidade de vida, a visão do paciente é considerada imperativa e o uso de medidas subjetivas torna-se cada vez mais importante quando se refere à avaliação da saúde geral e da saúde bucal (Kieffer, Hoogstraten, 2008).

As alterações bucais são as doenças crônicas mais comuns na população. Representam importante interesse para a saúde pública em virtude de sua prevalência, do seu impacto na

qualidade de vida dos indivíduos e na sociedade e dos custos de seu tratamento (Sheiham, 2005).

Apesar da melhoria significativa da saúde bucal nas últimas décadas, verifica-se que as doenças ainda persistem (Bianco et al., 2009). Crianças estão sujeitas a alterações bucais e orofaciais incluindo a cárie dentária, a maloclusão, a fenda labial ou do palato e as anomalias craniofaciais (Locker et al., 2002). Recentes estudos comprovam que essas condições implicam impacto negativo significativo no bem estar físico, social e psicológico (Locker et al., 2002; McGrath et al., 2004; Bianco et al., 2009).

Portanto, o impacto na qualidade de vida constitui-se em um importante indicador de saúde e a utilização de instrumentos capazes de mensurá-lo adquire fundamental importância. Determinar qualidade de vida implica uma tentativa de quantificar as conseqüências de uma doença e de seu tratamento sob a percepção do paciente em relação à sua capacidade de viver uma vida útil (Duarte et al., 2003; Tamanini et al., 2004).

Instrumentos que mensuram o impacto na qualidade de vida têm sido desenvolvidos e avaliados. É importante que sejam sensíveis às alterações na qualidade de vida e ao entendimento do indivíduo em relação à doença, às suas causas e às finalidades do tratamento (Eiser, 1997). Ademais, resultados advindos de sua utilização podem fornecer subsídios para o delineamento de programas de intervenção possibilitando modificar variáveis que possam interferir de forma negativa no acompanhamento multidisciplinar do indivíduo (Franzi, Silva, 2003).

O presente estudo tem como objetivo avaliar o impacto das alterações bucais na qualidade de vida de indivíduos na faixa etária de 5 anos bem como na qualidade de vida das famílias. Ademais, deseja-se avaliar a associação entre qualidade de vida e a lesão de cárie dentária não tratada em pré-escolares através de um estudo do tipo caso-controle.

As crianças, bem como suas famílias apresentam a qualidade de vida comprometida em função das alterações bucais. O conhecimento das necessidades sociais através dos estudos de qualidade de vida é fundamental na estruturação de diretrizes, bem como na capacitação de recursos humanos e distribuição de recursos financeiros almejando efetividade e qualidade no sistema de saúde. Acredita-se que a implementação de políticas públicas visando minimizar a desigualdade social através da expansão do acesso à saúde, educação, moradia, trabalho, faz-se essencial quando se objetiva a obtenção de uma boa qualidade de vida. Neste sentido, a realização deste estudo poderá sugerir subsídios para o delineamento de programas de intervenção e acompanhamento multidisciplinar das crianças e suas famílias, propiciando aprimorar a atenção à saúde.

Este trabalho foi desenvolvido junto ao Programa de Pós-Graduação em Odontologia da Faculdade de Odontologia da Universidade Federal de Minas Gerais (UFMG). Optou-se pela apresentação da tese em forma de artigos científicos posto que artigos publicados constituem uma forma clara e objetiva de divulgação de pesquisas junto à comunidade científica. Portanto, essa tese inclui dois artigos sendo o primeiro relacionado à avaliação o impacto das alterações bucais na qualidade de vida de crianças e suas famílias e o segundo direcionado a avaliar o impacto da lesão de cárie dentária não tratada na qualidade de vida das mesmas.

ARTIGO 1

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Oral health-related quality of life among Brazilian preschool children

Oral-health related quality of life among preschoolers

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Abstract

Objectives: The purpose of the present study was to evaluate the impact of oral health conditions on oral health-related quality of life (OHRQoL) in a randomised population-based sample of Brazilian preschool children. A further aim was to identify the impact of determinants such as children's socio-demographic profile and perceptions of overall and oral health status on OHRQoL.

Methods: An epidemiological survey was carried out at public and private preschools in the city of Belo Horizonte, Brazil. The sample consisted of 1632 five-year-old male and female preschoolers randomly selected using a multi-stage sampling technique and their parents/caregivers. Child oral examinations were performed by a single, previously calibrated examiner for the assessment of the following conditions: dental caries, malocclusion, dental trauma and developmental defects of enamel. Caregivers were asked to complete the Brazilian Early Childhood Oral Health Impact Scale (B-ECOHIS) and a form regarding socio-demographic data. Descriptive, bivariate and adjusted Poisson regression model analyses were carried out.

Results: In the child section of the B-ECOHIS, OHRQoL was negatively impacted by decayed, missing and filled teeth (PR=2.18; 95%CI: 1.88-2.52), position of the child among other siblings in the family (PR=1.20; 95%CI: 1.04-1.39), type of preschool (PR=1.36; 95%CI: 1.10-1.69), age of parents/caregivers (PR= 1.18; 95%CI: 1.04-1.34), monthly household income (PR= 1.48; 95%CI: 1.18-1.85) and perception of the child's overall health status (PR= 1.26; 95%CI: 1.06-1.51). In the family section, the adjusted results demonstrated a negative impact on quality of life associated to experience with dental caries (PR= 3.40; 95%CI: 2.83-4.08), age of parents/caregivers (PR= 1.16; 95%CI: 1.01-1.33) and monthly household income (PR= 1.41; 95%CI: 1.16-1.72).

Conclusions: Dental caries was the only normative criteria that had a negative impact on OHRQoL. Families from low-income households and younger parents reported a greater impact on quality of life. According to parents' perceptions, a poor overall health status rating was related to a poorer quality of life among the children.

Introduction

Oral disorders can have a negative impact on the functional, social and psychological wellbeing of young children and their families (1). Oral health and dental treatment may imply an impact on speaking, eating and appearance, thereby affecting quality of life as a multidimensional concept (2). This issue has resulted in a greater clinical focus on the measurement of quality of life (QoL) as a complement to the assessment of oral health needs, the prioritisation of care and evaluating the outcomes of treatment strategies (3).

In recent decades, oral health-related quality of life (OHRQoL) assessment tools have been designed and tested on various populations, especially adults and the elderly. In the last years, however, there has been a considerable focus on children and adolescents (4). This is a major improvement, as children under six years of age are affected by early childhood caries (ECC), traumatic dental injury (TDI) and malocclusion. Furthermore, epidemiological studies have demonstrated an increase in developmental defects of enamel (DDE) (5). Knowledge on the impact of these conditions on OHRQoL contributes toward the implementation of public policies aimed at minimising social inequalities and expanding access to health, education, housing and work in order to provide individuals with a satisfactory quality of life.

The purpose of the present study was to evaluate the impact of oral health conditions on OHRQoL and identify the impact of determinants such as children's socio-demographic profile and perceptions of overall and oral health status on OHRQoL.

Materials and Methods

This study received approval from the Human Research Ethics Committee of the *Universidade Federal de Minas Gerais* (Brazil). The participants' rights were protected and the children's caregivers read and signed an informed consent form prior their participation.

The present study was carried out in the city of Belo Horizonte (southeast Brazil), the capital of the state of Minas Gerais. Belo Horizonte is an industrialised city that is geographically divided into nine administrative districts, with the entire population (2,375,444 inhabitants) residing in urban areas (6).

A pilot study was first performed from April through July 2008 using a convenience sample of 87 preschool children at a day care centre. The main population-based study was carried out from August 2008 through July 2009 on a sample of five-year-old preschool children.

The sample size was calculated to give a standard error of 2.9% (10% of the prevalence rate). A 95.0% confidence interval and the prevalence of impact on children and families' OHRQoL determined in the pilot study (29.0%) were used to calculate the sample size, which was estimated at 941 children. A correction factor of 1.5 was applied to increase the precision, as a

multi-stage sampling method was adopted (7). The minimal sample size needed to satisfy the requirements was estimated as 1412 individuals. However, the sample was increased by 20% in order to compensate for possible losses, totalling 1695 children. A total of 1632 children participated in this survey (8.8% of all 5-year-old preschool children in Belo Horizonte).

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

To be included in the study, the children had to be five years of age, regularly enrolled in preschool, with no systemic disease according caregivers information and accompanied by a Brazilian Portuguese-language speaking caregiver. Furthermore, the children had to have one or more deciduous maxillary incisors. This criterion was chosen based on the fact that the maxillary incisors are the most frequently affected by traumatic dental injuries (8). None of the children showed the presence of permanent teeth.

Data collection

The caregivers were asked to self-administer the Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS) and a fill out a form containing socio-demographic information: caregiver's age and years of schooling, relationship to the child and family income (categorised based on the minimum salary in Brazil – one minimum salary = US$258.33). To characterise the families with regard to socioeconomic status, the Social Vulnerability Index (SVI) was used. This index was drafted for the city of Belo Horizonte to measure the

vulnerability of the population through the determination of neighbourhood infrastructure – access to work, income, sanitation services, healthcare services, education, legal assistance and public transportation (9) (nao10). Each region of the city has a social exclusion value, which is divided into five classes. For the statistical tests, this variable was dichotomised as more vulnerable and less vulnerable. Residential addresses were used to classify the social vulnerability of the families.

The caregivers were also asked to answer questions regarding the child's overall health status rating ("In general, how would you rate the overall health of your child?") and child's oral health status rating ("In general, how would you rate the dental health of your child?"). The response options for the two questions were 1= Very Good, 2= Good, 3= Fair, 4= Poor, and 5= Very Poor. For the statistical tests, this variable was dichotomised as "very good/good" and "fair/poor/very poor".

The Early Childhood Oral Health Impact Scale (ECOHIS) is an OHRQoL measure developed in the United States of America to assess the negative impact of oral health conditions on quality of life among preschool children (0 to 5 years of age) (4). It is structurally composed of 13 items distributed between two sections: Child Impact Section (CIS) and Family Impact Section (FIS). The CIS has four subscales: symptoms, function, psychological and self-image/social interaction. The FIS has two subscales: parental distress and family function. The scale has five response options to record how often an event has occurred in the child's life. ECOHIS scores were calculated as a simple sum of the response codes for the CIS and FIS after recoding Don't Know responses as "missing". The CIS and FIS ECOHIS scores range from 0 to 36 and from 0 to 16, respectively, for which higher scores indicate more oral health problems and poorer OHRQoL.

The B-ECOHIS has been cross-culturally adapted and validated (10, 11). In validation process, test-retest reliability correlation values were 0.99 for both the child and family impact sections. Internal consistency was $\alpha = 0.80$ and 0.76 for the child and family impact sections, respectively. The correlation between scores obtained on the child and family impact sections was statistically significant ($P \leq 0.001$). B-ECOHIS scores were significantly correlated with the decayed, missing and filled teeth index, decayed teeth and discoloured upper anterior teeth ($p < 0.05$) (11).

Training and calibration exercise

The calibration exercise consisted of two steps. The theoretical step involved a discussion of the criteria established for the diagnosis of each oral health condition through an analysis of 55 photographs and 16 dental cast models. Photographs for dental caries, TDI and dental cast models for malocclusion included all possible classification and criteria used in this study. A specialist in paediatric dentistry (gold standard in this theoretical framework) coordinated this step, instructing a general dentist on how to perform the examination. The clinical step was performed in a public preschool. It consisted of the exam of 28 five-year-old children previously selected by the gold standard. The children were evaluated twice within an interval of seven days. Intra-examiner and inter-examiner agreement were tested. Cohen's Kappa coefficient was employed in the analysis of agreement on a tooth-by-tooth basis.

Pilot study

A pilot study was performed in order to test the methodology and the comprehension of the instruments. The children in the pilot study (n=87) were not included in the main sample. There were no misunderstandings regarding the questionnaire or the form. Based on the report of the

individuals tested, additional items (place of residence and family income) were added to the form.

Clinical assessment

Oral examinations were performed by a single dentist who had been previously calibrated at a public preschool. Cohen's kappa values regarding dental caries, developmental defects of enamel, traumatic dental injury and malocclusion were 0.96, 0.96, 0.91 and 0.97 for intra-examiner agreement and 0.96, 0.83, 0.92 and 0.87 for inter-examiner agreement, respectively.

Visual inspection of the participants' teeth was carried out with the aid of a flashlight in the knee-to-knee position. The flashlight was for the evaluation of developmental defects of enamel. The World Health Organisation (WHO) criteria for the diagnosis of decayed, missing and filled teeth (dmft) were applied (12). The criterion for the clinical diagnosis of TDI was the classification proposed by Andreasen et al. (13). A visual assessment of tooth discolouration was also performed. DDE were evaluated based on the criteria established by the Commission on Oral Health, Research & Epidemiology (Report of an FDI Working Group) (14). The following parameters were evaluated with regard to malocclusion: overbite (normal, deep overbite and anterior open bite) (15), overjet (normal, increased and anterior crossbite) (15,16) and posterior crossbite (17). Anterior crossbite, deep overbite, anterior open bite, positive overjet and posterior crossbite were considered malocclusion. Children with at least one of these conditions were classified with malocclusion (16).

Individual cross-infection protection equipment was used. Packaged and sterilised mouth mirrors (PRISMA®, São Paulo, SP, Brazil), WHO probes (Golgran Ind. e Com. Ltda., São Paulo, SP,

Brazil) and dental gauze were used for the examination. Children with specific needs were sent for dental treatment.

Data analysis

Data analysis included descriptive statistics (frequency distribution) and analytical statistics. Associations were tested using bivariate analysis (chi-square test) between the outcome and independent variables. The outcome variable was the presence or absence of a negative impact on OHRQoL. The explanatory variables were related to socio-demographic and clinical characteristics. We hypothesised that children with "better" oral health status would have a "better" OHRQoL than those with oral health problems. Multivariate analysis was used to determine interactions between the main variables. The Poisson regression model with robust variance was used. Explanatory variables were introduced into the model based on their statistical significance ($p < 0.20$). The data were processed and statistical analysis was performed using the Statistical Package for Social Science (SPSS for Windows, version 15.0, SPSS Inc, Chicago, IL, USA). Statistical significance was set at $p < 0.05$.

Results

Negative impacts on OHRQoL were more prevalent on the child section of the B-ECOHIS (36.8%) than the family section (31.4%). Due to the good response rate (96.3%), the sample size was larger than the estimated minimal size to satisfy the requirements (n=1412). The main reasons for losses (n=63) were child refused to be examined (n=29) and child left school or moved to other school (n=34).

No missing responses were found on the B-ECOHIS. Items related to “pain” (21.3%), “difficulty eating” (16.0%), “difficulty drinking” (14.1%) and “irritation” (12.9%) were the most frequently reported by the parents/caregivers on child impact section. Considering the family impact section, items related to “felt guilty” (21.5%) and “been upset” (19.3%) were reported frequently (Table 1). Approximately 3.2% of participants responded “Don’t Know” to two or more questions on the CIS. Considering the FIS, approximately 1.9% of caregivers answered “Don’t Know” to one or more questions. Caregivers answered “Don’t Know” more often for items related to “pain” and “difficulty drinking, eating and pronouncing words” on the CIS.

A total of 51.3% boys and 48.7% girls participated in the survey. Most children were regularly enrolled in public preschool (68.1%). The children’s mothers were most often the proxy respondents (86.0%) and 65.0% of the parents/caregivers had more than eight years of schooling. Most families (71.1%) belonged to the less privileged economic levels (monthly family income ≤1292 US dollars), although the proportions of less and more socially vulnerable families were equally represented in the sample (according IVS index). Caregivers rated their child’s overall health status more as “very good/good” than their oral health (93.4% vs. 70.3%). Considering the clinical status, 46.2% of the children had dmft ≥1, 46.7% presented malocclusion, 49.4% had traumatic dental injury and 42.5% of the preschoolers had developmental defects of enamel.

Table 2 displays the results of the bivariate analysis. Considering the CIS and FIS, practically the same explanatory variables exhibited statistically significant associations with impact on OHRQoL ($p < 0.05$). The child’s clinical disease status demonstrated that only dental caries were significantly associated with impact on OHRQoL ($p < 0.05$).

The results of the Poisson regression analysis are displayed in Table 3 and 4. Variables with a p-value < 0.20 were initially included in the model. Considering the CIS, the final model confirmed that the impact on OHRQoL was significantly associated with the child's position in the family (PR=1.20; 95%CI: 1.04-1.36), type of preschool (PR=1.36; 95%CI: 1.10-1.69), caregiver's age (PR= 1.18; 95%CI: 1.04-1.34), family income (PR= 1.48; 95%CI: 1.18-1.85), overall health status rating (PR= 1.26; 95%CI: 1.06-1.51) and decayed, missing and filled teeth (PR=2.18; IC95%: 1.88-2.52) (Table 3).

The results of the Poisson regression analysis for the FIS section demonstrated that the impact on OHRQoL was significantly associated with caregiver's age (PR= 1.16; 95%CI: 1.01-1.33), family income (PR= 1.41; 95%CI: 1.16-1.72) and decayed, missing and filled teeth (PR= 3.40; 95%CI: 2.83-4.08) (Table 4).

Discussion

Oral health-related quality of life measures have been the target of research investigations in the oral healthcare field and allow quantifying the extent to which dental and oral disorders interfere with daily life and wellbeing (18). Using the B-ECOHIS measure, the prevalence of negative impact on the OHRQoL of children and families was 36.8% and 31.4%, respectively. As in the original English-language instrument, parents reported more child impacts (58.0%) than family impacts (45.6%), which differs from the findings described by Wandera et al. (19). Using a modified version of the ECOHIS and Family Impact Scale, the authors found that 37.7% of caregivers scored ≥ 1 on the child impact scale and 47.1% scored ≥ 1 on the family impact scale (19). Analysing the distribution of the more frequently reported items on the two sections of the

scale, the results of the present study are similar as those reported in the ECOHIS validity studies performed in Quebec, Canada (20) and Hong Kong, China (21). On the child impact section, the most prevalent items were related to “pain”, “eating”, “drinking” and “frustration”, whereas the most prevalent items on the family impact section were “been upset” and “felt guilty”.

Impaired oral health can cause insufficient development in children and poor oral health is related to children’s overall health status (22). The present study evaluated the repercussions of oral health conditions on OHRQoL.

There has been an increase in studies assessing the relationship between oral health conditions and quality of life. In present study, the univariate and multiple regression analyses revealed that the presence of dental caries had a negative influence over the OHRQoL of children and families. In contrast, malocclusion, traumatic dental injury and developmental defects of enamel did not affect the OHRQoL of children and their families.

Studies report worse OHRQoL among children with dental disease/treatment experience in comparison to those free of dental caries (4,21). A survey performed in Sao Paulo (Brazil) found that the severity of early childhood caries had a negative impact on OHRQoL, as determined by the overall ECOHIS score and each subscale score (22). Dental caries is the most common chronic disease in childhood (23). Studies suggest that children with dental caries experience oral pain, have difficulty chewing, are emotionally upset due to their oral health status and avoid certain types of food; moreover, both play activities and sleep are affected (24, 25). Children also miss school due to their disease, resulting in lost workdays for caregivers who have to stay at home with the child or spend time and money on dental treatment (19).

Considering malocclusion, most studies are carried out with adolescents and offer conflicting evidence. The relationship between malocclusion and QoL is not well understood (26). A study performed in Brazil found that the aesthetic impact of malocclusion significantly affects the quality of life of schoolchildren (27). In contrast, recent observational studies report that malocclusion and orthodontic treatment do not appear to affect OHRQoL (22, 26).

The OHRQoL of the children and their families in the present study was not influenced by traumatic dental injury (TDI). A cross-sectional study carried out in Brazil with preschool children between two and five years of age also found no association between TDI and a negative impact on OHRQoL (22). A case-control study carried out in Canada with children from 12 to 14 years of age found no statistically significant difference regarding impact on quality of life between a group of children who had suffered TDI and another group without TDI (28). In contrast, another case-control study carried out in Brazil reports that children between 12 and 14 years of age with untreated dentine fractures in the anterior teeth, as determined during a clinical examination, expressed a greater impact on quality of life and feelings of dissatisfaction with the appearance of their teeth than children without TDI in the anterior teeth (29). Thus, no consensus is found among studies, which may be related to the type of the tooth fracture considered. It should be stressed that most TDIs are uncomplicated fractures that parents/caregivers do not consider serious enough to warrant treatment (28). In the present study, the prevalence of TDI in the primary anterior maxillary teeth was 96.1% and the most common sign of TDI was enamel fracture (50.6%).

Few studies have assessed the impact of DDE on OHRQoL. An Australian study evaluating OHRQoL among children aged eight to 13 years based on dental caries and fluorosis status found that mild fluorosis had a positive impact on child and parental quality of life (1). Marshman et al. (30) found that DDE had a negative impact on subjects whose sense of self was defined by appearance and who depended on perceived approval from counterparts. In contrast, a cross-sectional study carried out with Brazilian schoolchildren aged six to 15 years found that mild levels of fluorosis had no influence over the quality of life of the subjects (31). Therefore, there is no consensus on this issue in the literature. The results of the present study revealed that the most common enamel defects were diffuse opacities and demarcated opacities. The teeth most affected by defects were second molars, followed by first molars. These findings may explain the fact that the defects seemed not to have been perceived by most caregivers. Variations in the impact of DDE seem to be related to defining aspects of a sense of self perception (30).

Indicators of lower socioeconomic status tend to be associated with a greater risk of poor oral health. The relationship between clinical variables and OHRQoL outcomes is mediated by variety of personal, social and environmental factors (18). Furthermore, cultural and material deprivation can influence the extent of the impact of disease (32). A recent study demonstrated socioeconomic disparities in OHRQoL in a group of Canadian children; children from low-income households reported greater impacts on QoL than those children from high-income households (33). A similar result was found in the present study. The multivariate analysis confirmed that lower family income was associated to a greater impact on the quality of life of the children and their families. This acquires a greater importance in the case of Brazil, which is a country characterised by intense social and economic inequality throughout its geographic territory.

The present study has particular characteristics that should be recognised. First of all, the investigation is a population-based study in which the subjects were randomly selected using a two-stage sampling method, whereas the majority of previous studies involved convenience samples. It is recognised that a large sample size leads to more accurate parameter estimates, which leads to a greater ability to meet the aims of the study (7). Thus, the decision was made in the present investigation to employ a population-based study with a large sample size in order to produce more accurate results. Furthermore, 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, as is done in some studies (2, 19, 22, 26). Secondly, the B-ECOHIS was filled out by proxy rather than the person concerned. According the authors who developed the original instrument, there is little evidence to indicate that preschool aged children can provide valid and reliable assessments of their own OHRQoL (4). Considering 'self' and 'proxy' reports, one study shows that the level of agreement depends on the health domain being examined (34). The reports of children/adolescents and their caregivers tend to be similar when referring to externally perceptible physical symptoms. However, opinions are quite distinct with regard to subjective issues as social and emotional wellbeing. Proxy reports may reflect the distress of the caregiver more than that of the child. Therefore, parent proxy and child reports should be seen as complementary (34).

The present study has the limitations of a cross-sectional study, especially the lack of temporality, which limits reliability in establishing the direction of associations. Moreover, the way people perceive their QoL develops according to expectations resulting from the social environment in which such expectations are constructed. Therefore, longitudinal studies need to be performed in order to assess the evaluative properties of OHRQoL measures over time.

It should be stressed that, despite of growing body of work in the literature on OHRQoL measures, these indices are most commonly used on adults and adolescents. There is almost no information on representative clinical or community populations for evaluating the impact of oral conditions on children (35). This lack of studies hinders comparisons with the results obtained herein.

Regarding oral health conditions, dental caries can have a negative influence on the OHRQoL of young children and their families. Furthermore, determinants such as family income, caregivers' age and general health rating can also be considered predictors of negative oral impacts. The assessment of these influences can help clinicians and researchers in decisions regarding the implementation of strategies in oral healthcare services in order to improve oral health outcomes among young children.

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Table 1: B-ECOHIS responses in survey of parents/caregivers of 5-year-olds (n=1632).

	Never		Hardly ever		Occasionally		Often		Very often		Don't Know	
Impacts	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Child impacts												
How often has your child had pain in the teeth, mouth or jaws	1053	64.5	175	10.7	293	18.0	37	2.3	16	1.0	58	3.6
How often has your child ....because of dental problems or dental treatments?												
had difficulty drinking hot or cold beverages	1272	77.9	87	5.3	198	12.1	21	1.3	10	0.7	44	2.7
had difficulty eating some foods	1249	76.5	85	5.2	200	12.3	38	2.3	23	1.4	37	2.3
had difficulty pronouncing any words	1396	85.5	41	2.5	88	5.4	25	1.5	17	1.0	65	4.0
missed preschool, daycare or school	1437	88.1	56	3.4	116	7.1	9	0.6	9	0.6	5	0.3
had trouble sleeping	1430	87.6	40	2.5	123	7.5	19	1.2	13	0.8	7	0.4
been irritable or frustrated	1331	81.6	74	4.5	170	10.4	29	1.8	11	0.7	17	1.0
avoided smiling or laughing	1508	92.4	25	1.5	58	3.6	14	0.9	11	0.7	16	1.0
avoided talking	1528	93.6	28	1.7	46	2.8	9	0.6	4	0.2	17	1.0
Family impacts												
How often have you or another family member.....because of your child's dental problems or treatment?												
been upset	1265	77.5	47	2.9	207	12.7	58	3.6	49	3.0	6	0.4
felt guilty	1233	75.6	37	2.3	234	14.3	61	3.7	57	3.5	10	0.6
taken time off from work	1425	87.3	37	2.3	142	8.7	18	1.1	6	0.4	4	0.2
How often has your child had dental problems or dental treatments that had a financial impact on your family?	1431	87.7	56	3.4	90	5.5	29	1.8	13	0.8	13	0.8

Table 2: Bivariate analysis – association between independent variables and impact on oral health-related quality of life, Belo Horizonte, Brazil (n=1632).

	Impact on oral health-related quality of life – CIS			Impact on oral health-related quality of life – FIS		
Variables	**No impact n (%)**	**Impact n (%)**	***P-value****	**No impact n (%)**	**Impact n (%)**	***P-value****
Child characteristics						
Gender						
Boys	539 (64.4)	298 (35.6)	0.294	578 (69.1)	259 (30.9)	0.662
Girls	492 (61.9)	303 (38.1)		541 (68.1)	254 (31.9)	
Child's position						
Single child	331 (68.7)	151 (31.3)	**0.003**	344 (71.4)	138 (28.6)	0.114
Others	700 (60.9)	450 (39.1)		775 (67.4)	375 (32.6)	
Type of preschool						
Private	420 (80.8)	100 (19.2)	**<0.001**	422 (81.2)	98 (18.8)	**<0.001**
Public	611 (54.9)	501 (45.1)		697 (62.7)	415 (37.3)	
Parents'/Caregivers' characteristics						
Age (years)						
18 - 33	494 (57.8)	361 (42.2)	**<0.001**	546 (63.9)	309 (36.1)	**<0.001**
34 - 71	537 (69.1)	240 (30.9)		573 (73.7)	204 (26.3)	
Relationship to the child						
Mother	874 (62.3)	530 (37.7)	0.055	956 (68.1)	448 (31.9)	0.305
Others	157 (68.9)	71 (31.1)		163 (71.5)	65 (28.5)	
Years of schooling						
> 8 years	730 (68.9)	330 (31.1)	**<0.001**	777 (73.3)	283 (26.7)	**<0.001**
≤ 8 years	301 (52.6)	271 (47.4)		342 (59.8)	230 (40.2)	
Social Vulnerability Index (SVI) (residence)						
Less vulnerable	592 (66.3)	301 (33.7)	**0.004**	634 (71.0)	259 (29.0)	**0.020**
More vulnerable	439 (59.4)	300 (40.6)		485 (65.6)	254 (34.4)	
Family income level						
> 5 times the minimum salary	383 (81.1)	89 (18.9)	**<0.001**	385 (81.6)	87 (18.4)	**<0.001**
≤ 5 times the minimum salary	648 (55.9)	512 (44.1)		734 (63.3)	426 (36.7)	
Child's clinical disease status						
Overall health status rating						
Very good or good	983 (64.5)	541 (35.5)	**<0.001**	1055 (69.2)	469 (30.8)	**0.031**
Fair, poor or very poor	48 (44.4)	60 (55.6)		64 (59.3)	44 (40.7)	
Oral health status rating						
Very good or good	869 (75.8)	278 (24.2)	**<0.001**	941 (82.0)	206 (18.0)	**<0.001**
Fair, poor or very poor	162 (33.4)	323 (66.6)		178 (36.7)	307 (63.3)	
Decayed, missing and filled teeth						
None	691 (78.7)	187 (21.3)	**<0.001**	755 (86.0)	123 (14.0)	**<0.001**
One or more	340 (45.1)	414 (54.9)		364 (48.3)	390 (51.7)	
Developmental defects of enamel						
Absent	585 (62.3)	354 (37.7)	0.396	645 (68.7)	294 (31.3)	0.900
Present	446 (64.4)	247 (35.6)		474 (68.4)	219 (31.6)	
Traumatic dental injury						
Absent	526 (63.7)	300 (36.3)	0.668	562 (68.0)	264 (32.0)	0.642
Present	505 (62.7)	301 (37.3)		557 (69.1)	249 (30.9)	
Malocclusion						
Absent	555 (63.8)	315 (36.2)	0.580	607 (69.8)	263 (30.2)	0.263
Present	476 (62.5)	286 (37.5)		512 (67.2)	250 (32.8)	

*Chi-Square test. Statistical significance at 5.0%

Table 3: Poisson regression model explaining independent variables with impact on oral health-related quality of life – Child Impact Section (n=1632); Belo Horizonte, Brazil.

	Impact on oral health-related quality of life – Child impact section						
Variables	***Unadjusted PR***	**[95% CI]**		***P-value***	***Adjusted PR***	**[95% CI]**	
		lower	**upper**			**lower**	**upper**
Child characteristics							
Child's position							
Single child	1	1.07	1.45	0.011	1	1.04	1.39
Others	1.25				1.20		
Type of preschool							
Private	1	1.94	2.83	0.004	1	1.10	1.69
Public	2.34				1.36		
Parents'/Caregivers' characteristics							
Age (years)							
18 - 33	1.37	1.20	1.56	0.009	1.18	1.04	1.34
34 - 71	1				1		
Family income level							
> 5 times the minimum salary	1	1.92	2.86	0.001	1	1.18	1.85
≤ 5 times the minimum salary	2.12				1.48		
Child's clinical disease status							
Overall health status rating							
Very good or good	1	1.31	1.88	0.010	1	1.06	1.51
Fair, poor or very poor	1.57				1.26		
Decayed, missing and filled teeth							
None	1	2.24	2.98	<0.001	1	1.88	2.52
One or more	2.58				2.18		

PR = prevalence ratio; CI = confidence interval; statistical significance at 5.0%

Table 4: Poisson regression model explaining independent variables with impact on oral health-related quality of life – Family Impact Section (n=1632); Belo Horizonte, Brazil.

	Impact on oral health-related quality of life – Family impact section						
Variables	***Unadjusted PR***	**[95% CI]**		***P-value***	***Adjusted PR***	**[95% CI]**	
		lower	**upper**			**lower**	**upper**
Parents'/Caregivers' characteristics							
Age (years)							
18 – 33	1.38	1.19	1.60	0.031	1.16	1.01	1.33
34 – 71	1				1		
Family income level							
> 5 times the minimum salary	1	1.62	1.45	0.001	1	1.16	1.72
≤ 5 times the minimum salary	1.99				1.41		
Child's clinical disease status							
Decayed, missing and filled teeth							
None	1	3.09	4.41	<0.001	1	2.83	4.08
One or more	3.69				3.40		

PR = prevalence ratio; CI = confidence interval; statistical significance at 5.0%

ARTIGO 2

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

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Impact of untreated dental caries on quality of life

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Declaration of Interests

We are submitting the manuscript entitled **"Impact of untreated dental caries on oral health-related quality of life among Brazilian preschool children: a case-control study"** for your appreciation regarding its possible publication in Caries Research. The manuscript has been reviewed and approved by all authors. The authors warrant that there are no any personal, financial, economic, commercial and/or professional interests that may influence the positions presented in the article. All authors have made a significant contribution to the study and manuscript.

Abstract

Objective: The aim of the present study was to assess the association between the oral health-related quality of life (OHRQoL) and the impact of untreated dental caries among Brazilian preschool children. **Methods:** A population-based case-control study was carried out at preschools in the city of Belo Horizonte, Brazil (4:1 control-to-case ratio). The case group consisted of 31 five-year-old preschoolers with impact on OHRQoL and their parents/caregivers. The control group was made up of 124 children without impact on OHRQoL matched for gender, type of preschool, parents/caregivers' age and schooling and monthly household income. OHRQoL was the outcome variable and was determined using the Brazilian Early Childhood Oral Health Impact Scale – Child Impact Section. Independent variables were analysed for being of interest to the study (untreated dental caries) or acting as potential confounding variables (traumatic dental injury and malocclusion). Children oral examinations were performed by a single, previously calibrated examiner. Descriptive, bivariate and conditional logistic regression analyses were carried out. **Results:** The prevalence of children with one or more teeth with untreated dental caries was greater in the case group (71.0%) than the control group (18.5%) ($p < 0.001$). Children with at least one untreated carious lesion had a greater chance of experiencing a negative impact on OHRQoL than those that were free of untreated dental caries (OR=10.73; 95%CI=4.37-26.35). **Conclusion:** Children with untreated dental caries were at greater risk of experiencing diminished OHRQoL than those without untreated dental caries.

Introduction

Oral disorders can have a negative impact on the functional, social and psychological wellbeing of young children and their families [Do and Spencer, 2007]. Oral health and dental treatment may have an impact on speaking, eating and appearance, thereby affecting quality of life [Luoto et al., 2009]. The multidimensional concept of quality of life helps researchers gain an understanding of the direct and indirect repercussions of oral conditions and treatment interventions on wellbeing [Goettems et al., 2010; Locker and Quiñonez, 2011]. This issue has resulted in a greater clinical focus on the measurement of quality of life as a complement to the assessment of oral health needs, the prioritisation of care and the evaluation of the outcomes of treatment strategies [Sheiham et al., 1982].

For a number of decades, oral health-related quality of life (OHRQoL) assessment tools have been designed and tested on various populations, especially adults and the elderly [Pahel et al., 2007]. In recent years, however, there has been considerable focus on children and adolescents [Pahel et al., 2007; Goettems et al., 2010]. This is a major improvement, as children under six years of age are affected by early childhood caries, traumatic dental injury (TDI) and malocclusion [McGrath et al., 2004].

Dental caries remain the most prevalent chronic childhood disease and constitute a public health problem as well as a major concern for families who have a child affected by caries [Arora et al., 2011]. According to one Brazilian survey, nearly 27% of children aged 18 to 36 months have at least one primary tooth with dental caries experience and this proportion rises to nearly 60% among five-year-old children [Ministério da Saúde, 2004]. Knowledge regarding the impact of this condition on OHRQoL can contribute toward the implementation of public policies aimed at minimising social inequality by expanding access to health, education, housing and work and offering individuals an adequate quality of life.

The purpose of the present study was to assess the association between the oral health-related quality of life (OHRQoL) and the impact of untreated dental caries among Brazilian preschool children, through a case-control study.

Materials and Methods

Study design and area

A population-based case-control study (n=155) was carried out to compare OHRQoL among Brazilian preschool children with and without untreated dental caries.

This study received approval from the Human Research Ethics Committee of the *Universidade Federal de Minas Gerais* (Brazil). All participants' rights were protected. Caregivers read and signed an informed consent form prior to the children's participation. The study was conducted in the city of Belo Horizonte, capital of the state of Minas Gerais (southeast Brazil). Belo Horizonte is an industrialised city, geographically divided into nine administrative districts, the entire population of which (2,375,444 inhabitants) resides in urban areas [IBGE, 2011].

The present study was carried out on a sample of 155 five-year-old preschool children, randomly selected from private and public institutions (n=39). Sample distribution was proportional to the total population enrolled in private and public preschools in each of the nine administrative districts of the city. At least one case was selected from each type of school (public and private) in each administrative district in order to ensure the representativeness of the sample. The subjects were randomly selected using a two-stage sampling method: randomisation of preschools and day care centres, followed by randomisation of preschool classes.

Selection of subjects – definition of case and control groups

The inclusion criteria were aged five years, regular enrolment in a preschool/day care centre, absence of systemic disease based on caregiver's information and accompaniment by a Brazilian Portuguese-speaking caregiver. None of the children had permanent teeth.

Preschool children with an impact on OHRQoL were defined as the cases. The outcome variable "impact on child's OHRQoL" was determined using the Brazilian Early Childhood Oral Health Impact Scale – Child Impact Section (B-ECOHIS - CIS). Children with no impact on OHRQoL were identified as the controls.

Each child identified as a case was pitted against four controls matched for gender, type of preschool, parents/caregivers' age and schooling and monthly household income. The choice of latter two variables was based on previous studies [Locker et al., 2007; Goettems et al., 2010], as these aspects appear to influence healthy choices, behaviour and, consequently, children's quality of life. The controls were selected from five-year-olds enrolled in the same class and/or at the same school. When more than four controls matched one case, simple random selection was performed.

Data collection – assessment of impact on child's OHRQoL

Caregivers were asked to self-administer the Child Impact Section of the B-ECOHIS and a fill out a form addressing socio-demographic information: caregiver's age, relationship to child, caregiver's schooling (number of years of study) and monthly household income (categorised based on the minimum salary in Brazil – one minimum salary = US$258.33).

The B-ECOHIS was used to assess the negative impact of oral health conditions on the quality of life of the preschoolers. This scale was developed in the United States of America and cross-culturally adapted and validated for use in Brazil [Pahel et al., 2007; Tesch et al., 2008; Scarpelli et al., 2011]. It is structurally composed of 13 items distributed in two sections: Child Impact Section (CIS) and Family Impact Section (FIS). The CIS has four domains: symptoms, function, psychology and self-image/social interaction. The FIS has two domains: parental distress and family function. The scale has five rated response options for recording how often an event has occurred during the child's life. ECOHIS scores were calculated as a simple sum of the response codes for the CIS and FIS after recoding "Don't Know" responses as "missing". The CIS and FIS score ranges from 0 to 36 and 0 to 16 respectively, with higher scores denoting greater oral health impact (more oral health problems) and poorer OHRQoL.

Clinical assessment - exposure assessment

Oral examinations were performed by a single dentist previously calibrated at a public preschool. Cohen's kappa values were 0.98, 0.91 and 0.97 with regard to intra-examiner agreement and 0.97, 0.92 and 0.87 with regard to inter-examiner agreement for untreated dental caries, TDI and malocclusion, respectively.

Visual inspection of the participants' teeth was carried out with the aid of a portable lantern on the examiner's head (Tikka XP, Peltz, Crolles, France) in the knee-to-knee position. Untreated dental caries (decayed teeth = 0 or decayed teeth ≥ 1) was defined as the exposure variable. The diagnosis of untreated dental caries was established for the following lesions: visible cavitated lesion in enamel without dentine involvement; cavitated lesion with eroded enamel, visible softening of the floor and/or walls and dentine affected; lesion with communication with pulp chamber; root remnants with exposed pulp; root remnants without exposed pulp and without restorative material. Moreover, a restored surface with a re-incidence of caries was diagnosed as a carious lesion involving the dentine. Temporary restorations were also considered carious lesions involving the dentine [WHO, 1997].

Evaluations for the diagnosis of TDI and malocclusion were performed. The criterion for the clinical diagnosis of TDI was the classification proposed by Andreasen et al. [2007]. A visual assessment of tooth discolouration was also carried out. Regarding malocclusion, the following parameters were assessed: overbite (normal, deep overbite and anterior open bite) [Grabowski et al., 2007], overjet (normal, increased and anterior crossbite) [Grabowski et al., 2007; Oliveira et al., 2008] and posterior crossbite [Foster and Hamilton, 1969]. Anterior crossbite, deep overbite, anterior open bite, positive overjet and posterior crossbite were considered malocclusions. Children with at least one of these conditions were classified as having malocclusion [Oliveira et al., 2008].

Individual cross-infection protection equipment was used. Packaged and sterilised mouth mirrors (PRISMA®, São Paulo, SP, Brazil), WHO probes (Golgran Ind. e Com. Ltda., São Paulo, SP, Brazil) and dental gauze were used for the examination. Children with specific needs were sent for dental treatment.

Training and calibration exercise

The calibration exercise consisted of two steps. The theoretical step involved a discussion of the criteria established for the diagnosis of each oral health condition through an analysis of 55 photographs and 16 dental cast models. Photographs for dental caries, TDI and dental cast models for malocclusion included all possible classifications and criteria used in this study. A specialist in paediatric dentistry (gold standard in this theoretical framework) coordinated this step, instructing a general dentist on how to perform the examination. The clinical step consisted of the exam of 28 five-year-old children previously selected by the gold standard.

The children were evaluated twice within an interval of seven days. Intra-examiner and inter-examiner agreement were tested. Cohen's Kappa coefficient was employed in the analysis of agreement on a tooth-by-tooth basis.

Pilot study

A case-control pilot study was conducted on a convenience sample of 32 five-year-old preschoolers in order to test the study methodology and the comprehension of the instruments. This pilot test was also used to assess parameters for the calculation of sample size (probability of exposure in controls, odds ratio of exposure in cases relative to controls and correlation coefficient for exposure between matched cases and controls), as no previous population data were available. The pilot sample was composed of 16 cases and 16 controls that were not included in the main sample. The inclusion criteria, definition of cases and controls and variables used for matching the groups were the same as those established for the main study. The study methodology was established (figure 1) and no misunderstandings were found with regard to the questionnaire or form. The parameters needed to perform the sample size calculation were defined.

Sample size calculation

The sample size was calculated to detect an odds ratio of 4.084 between cases and controls in order to have a 90% power of demonstrating a significant difference between groups at a 5% significance level. Prior data indicate that the probability of exposure among controls is 0.375 and the correlation coefficient for exposure between matched cases and controls is 0.298. The sample totalled 31 cases and 124 controls. The decision was made to evaluate four controls for each case in order to improve the statistical power of the study. The Power and Sample Size Calculation software (version 3.0, Dupont WD, Plummer WD, Nashville, TN, USA) was used for the calculation of sample size.

Statistical analysis

Data analysis involved descriptive statistics (frequency distribution) and analytic statistics. The results were submitted to conditional logistic regression [Hosmer and Lemeshow, 1989]. Independent variables were introduced into the model based on statistical significance ($p < 0.20$). The variables TDI and malocclusion were selected as potential confounding factors. The hypothesis was that children with untreated dental caries would be at greater risk of having diminished OHRQoL than those without untreated dental caries. The data were

processed and statistical analysis was performed using the Statistical Package for Social Science (SPSS for Windows, version 15.0, SPSS Inc, Chicago, IL, USA), with the level of significance set at $p < 0.05$.

Results

Boys accounted for 48.4% of the sample and girls accounted for 51.6% (n=155). Most of children were regularly enrolled in public preschool (67.7%) and most of the families (79.3%) belonged to the less privileged economic levels (monthly household income ≤ 1292 US dollars). Table 1 displays the distribution of children according to the variables used for matching the groups. There were no statistically significant differences between the case and control groups regarding gender, type of school, parents/caregivers' age, parents/caregivers' schooling or monthly household income.

The prevalence of one or more untreated dental caries was greater in the case group (71.0%) than the control group (18.5%) ($p < 0.001$). The conditional logistic regression analysis revealed that children with at least one untreated dental carious lesion had a greater chance of experiencing a negative impact on OHRQoL than those who were free of untreated dental carious lesions (OR = 10.73; 95%CI = 4.37 to 26.35) (Table 2). As possible confounding variables, two clinical conditions (TDI and malocclusion) were also identified and analysed. There were no statistically significant differences between the case and control groups regarding these variables ($p > 0.05$) (Table 2).

In the case group, negative impact on child's OHRQoL was most prevalent in the B-ECOHIS functional domain (80.6%). The items addressing "difficulty eating" (64.5%) and "difficulty drinking" (41.9%) were the most frequently reported by the parents/caregivers (Table 3).

Table 4 displays the frequency distribution and odds ratio of each B-ECOHIS CIS domain for the preschool children with and without untreated dental caries. The results reveal that the majority of subjects in the case group (> 70%) had at least one tooth with untreated dental caries.

Discussion

The concept of OHRQoL has been the target of important investigations in the oral health field [Barbosa and Gavião, 2008]. The assessment of the effect of adverse functional and psychosocial impacts on the OHRQoL is meant to quantify the extent to which dental and oral disorders interfere with daily life and wellbeing [Barbosa and Gavião, 2008; Locker and Quiñonez, 2011].

A major strength of the present study was its population-based case-control design. During the selection of the sample, the aim was to establish a representative group of cases and carefully match the controls. The groups were to have maximal similarity, except in relation to the presence of impact on OHRQoL. Furthermore, the data were standardised to annul the effects of confounding variables. The case and control groups were randomly selected using a two-stage sampling method and matched for gender and school.

School in Brazil is a proxy for socioeconomic status and is used as such in epidemiological studies [Da Rosa et al., 2011; Piovesan et al., 2011]. This facilitates epidemiological oral health surveys by simplifying the data collection process, thereby decreasing the duration and cost of the study [Piovesan et al., 2011]. Studies have shown that children enrolled in public school have a greater chance of exhibiting dental caries than those attending private school [Hoffmann et al., 2004; Piovesan et al., 2011]. A greater degree of dental decay is found in areas of social deprivation among socioeconomically disadvantaged groups, such as children enrolled in public schools [Piovesan et al., 2011]. To control the possible socioeconomic variability existing internally at the schools, caregiver's schooling was used in conjunction with monthly family income to match the case and control groups [Locker at al., 2007; Goettems et al., 2010]. A low educational level on the part of parents/caregivers may lead to a lower income, poor occupational status or unemployment. An adverse socioeconomic environment at birth and throughout the upbringing of a child reduces the chances of adopting healthy choices and behaviours [Nicolau et al., 2003; Sanders and Spencer, 2005].

The present study assessed the impact of untreated dental caries on OHRQoL among preschool children. The outcome variable was measured using the B-ECOHIS – Child Impact Section. The diagnosis of the exposure variable was established based on different degrees of tooth decay using standard World Health Organisation criteria [WHO, 2007].

The ECOHIS is a condition-specific OHRQoL measure designed for use in epidemiological surveys to assess the burden of dental disease among young children on the population level [Pahel et al., 2007]. The measure considers the child's entire lifetime and uses response options to determine the frequency at which oral disease affects a child's quality of life [Pahel et al., 2007]. The ECOHIS has a small number of items, which minimises the cost of data collection [Goettems et al., 2010]. The Brazilian version of the measure exhibits adequate properties regarding test-retest reliability and internal consistency. Its construct validity provides evidence of the ability of this measure to distinguish children with different oral health conditions [Scarpelli et al., 2011].

The B-ECOHIS was filled out by proxy rather than the person concerned. According to the authors of the original measure, there is little evidence to indicate that preschool children can provide valid and reliable assessments of their own OHRQoL [Pahel et al., 2007]. A Canadian study with 6- to 14 year-old children and their parents found that the level of agreement between a self-report and proxy report depends on the health domain being examined [Jokovic et al., 2004]. The reports of children/adolescents and their caregivers tend to be similar when referring to externally perceptible physical symptoms. However, parents seem have a limited knowledge regarding their children's activities and feelings, as their opinions are quite different on subjective issues such as social and emotional wellbeing [Jokovic et al., 2004]. In the present study, this aspect may have been reflected in the low prevalence of impact on child's quality of life in the self-image/social interaction domain. Furthermore, proxy reports often reflect the caregiver's distress rather than that of the child. As parents are responsible for child care, knowledge of the parents' perception is of utmost importance, as it influences oral health decisions and healthcare use patterns [Jokovic et al., 2004].

The decayed, missed and filled teeth (dmft) index proposed by the World Health Organisation [WHO, 1997] is as an important predictor of the risk of dental caries. This index has been widely used for caries detection involving cavitation [Disney et al., 1992]. With the decrease in the prevalence of caries, a novel visual caries diagnosis system – the International Caries Detection and Assessment System (ICDAS) – has been proposed as an alternative to the dmft index. The ICDAS involves the assessment of both cavitated and non-cavitated dental caries [Mendes et al., 2010] and has demonstrated good discriminant validity [Ismail et al., 2007; Ismail et al., 2008]. However, the advantage of this system over the standard WHO criteria has not been studied yet [Mendes et al., 2010]. The inclusion of non-cavitated carious lesions

in dental health surveys has not been appraised as to its validity and, furthermore, may require longer training sessions, thereby increasing the cost of the study. On the other hand, the inclusion of initial carious lesions could make the association with risk factors more sensitive [Mendes et al., 2010]. Nonetheless, the dmft index remains recommended by the World Health Organisation for measuring dental caries experience [Petersen, 2003].

In the present study, the children with untreated dental caries had a greater risk of experiencing diminished OHRQoL than those without untreated dental caries. The results of a previous study also revealed worse OHRQoL among children with dental disease/treatment experience compared to those free of dental caries [Abanto et al., 2010]. A cross-sectional study carried out with 608 mother-child pairs during the Children's National Immunisation Campaign in the city of Pelotas (Brazil) found greater impacts on OHRQoL among children with untreated dental caries (RR = 2.26; 95%CI = 1.75 to 2.93) [Goettems et al., 2010]. A survey conducted in São Paulo (Brazil) reports that the severity of early childhood caries has a negative impact on OHRQoL, as demonstrated by the scores of the overall ECOHIS and each of its domains [Abanto et al., 2010].

Dental caries is the most common chronic childhood disease [Patel et al., 2007]. Studies report that children affected by dental caries frequently experience oral pain [Patel et al., 2007; Moura-Leite et al., 2008; Jürgensen and Petersen, 2009]. Pain may also have a negative impact on the ability to engage in social activities and get the full benefit of a formal education [Jürgensen and Petersen, 2009]. Moreover, children often miss school due to dental pain, resulting in lost workdays for caregivers who have to stay at home with the child or spend time and money on dental treatment [Wandera et al., 2009].

Difficulty chewing may lead to the avoidance of certain types of food [Foster Page et al., 2005]. Decreased food intake due to oral pain or poor dental status can affect growth and worsen nutritional status in children [Sheiham, 2006; Jürgensen and Petersen, 2009]. Poor dental status also has a negative effect on speech development [Jürgensen and Petersen, 2009] and may have a socially stigmatising effect on children stemming from dissatisfaction with their mouths [Foster Page et al., 2005; Jürgensen and Petersen, 2009].

Dental caries in children are related to oral health attitudes and behaviours [Matilla et al., 2000]. A study carried out in New Zealand found maternal factors to be significantly

associated with children's oral health practices and experiences. Mothers who brushed their teeth once or less than once a day were significantly more likely to report fillings or extractions in their six-year-old children (OR = 1.35; 95%CI = 1.02 to 1.79). These findings indicate the importance of parents' education and their position as role models for their children regarding the establishment of good oral health behaviours as an effective strategy for the reduction of childhood dental disease [Paterson et al., 2011].

In the oral health field, it is common for lay people to consider diseases of the oral cavity as unlinked to the rest of the body. However, oral health means more than good teeth; it is integral to general health and wellbeing [Petersen, 2003]. The oral cavity has a multitude of functions in relation to daily living, such as food intake, speech, social contact and appearance. Poor oral health therefore has the potential to diminish quality of life. Health authorities should focus on the planning and implementation of population-directed oral health promotion programmes and initiatives aimed at improving oral health outcomes.

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Legends

Tables

Table 1: Conditional logistic regression analysis of variables used for matching groups; Belo Horizonte, Brazil

Table 2: Conditional logistic regression analysis of untreated dental caries and other clinical variables by study group; Belo Horizonte, Brazil

Table 3: Prevalence of impact on child's oral health-related quality of life according to each domain/item on B-ECOHIS in case group; Belo Horizonte, Brazil (n=31)

Table 4: Frequency distribution and odds ratio of each B-ECOHIS domain for preschool children with and without untreated dental caries; Belo Horizonte, Brazil (base: case group=31)

Figure

Figure 1: Flowchart of methodology employed

Tables

Table 1

Variable	Study group: Case (n=31) n	(%)	Control (n=124) n	(%)	p-value*	Unadjusted OR	[95% CI] lower	upper
Children's characteristics								
Gender								
Male	15	(48.4)	60	(48.4)	1.000	1	0.45	2.20
Female	16	(51.6)	64	(51.6)		1.00		
Type of preschool								
Private	10	(32.3)	40	(32.3)	1.000	1	0.43	2.32
Public	21	(67.7)	84	(67.7)		1.00		
Parents/Caregivers' characteristics								
Ages (years)								
23 – 32	17	(54.8)	63	(50.8)	0.688	1	0.39	1.87
33 – 42	14	(45.2)	61	(49.2)		0.85		
Years of schooling								
> 8 years	24	(77.4)	96	(77.4)	1.000	1	0.39	2.56
≤ 8 years	7	(22.6)	28	(22.6)		1.00		
Monthly household income								
> 5 times the minimum salary	5	(16.1)	27	(21.8)	0.489	1	0.51	4.13
≤ 5 times the minimum salary	26	(83.9)	97	(78.2)		1.45		

*Conditional logistic regression

Table 2

Variable	Study group: Case (n=31) n	(%)	Control (n=124) n	(%)	p-value*	Unadjusted OR	[95% CI] lower	upper
Untreated dental caries								
Decayed teeth=0	9	(29.0)	101	(81.5)	**<0.001**	1	4.37	26.35
Decayed teeth≥1	22	(71.0)	23	(18.5)		**10.73**		
Traumatic dental injury								
Absent	14	(45.2)	57	(46.0)	0.936	1	0.47	2.28
Present	17	(54.8)	67	(54.0)		1.03		
Malocclusion								
Absent	15	(48.4)	70	(56.5)	0.421	1	0.63	3.04
Present	16	(51.6)	54	(43.5)		1.38		

*Conditional logistic regression

Table 3

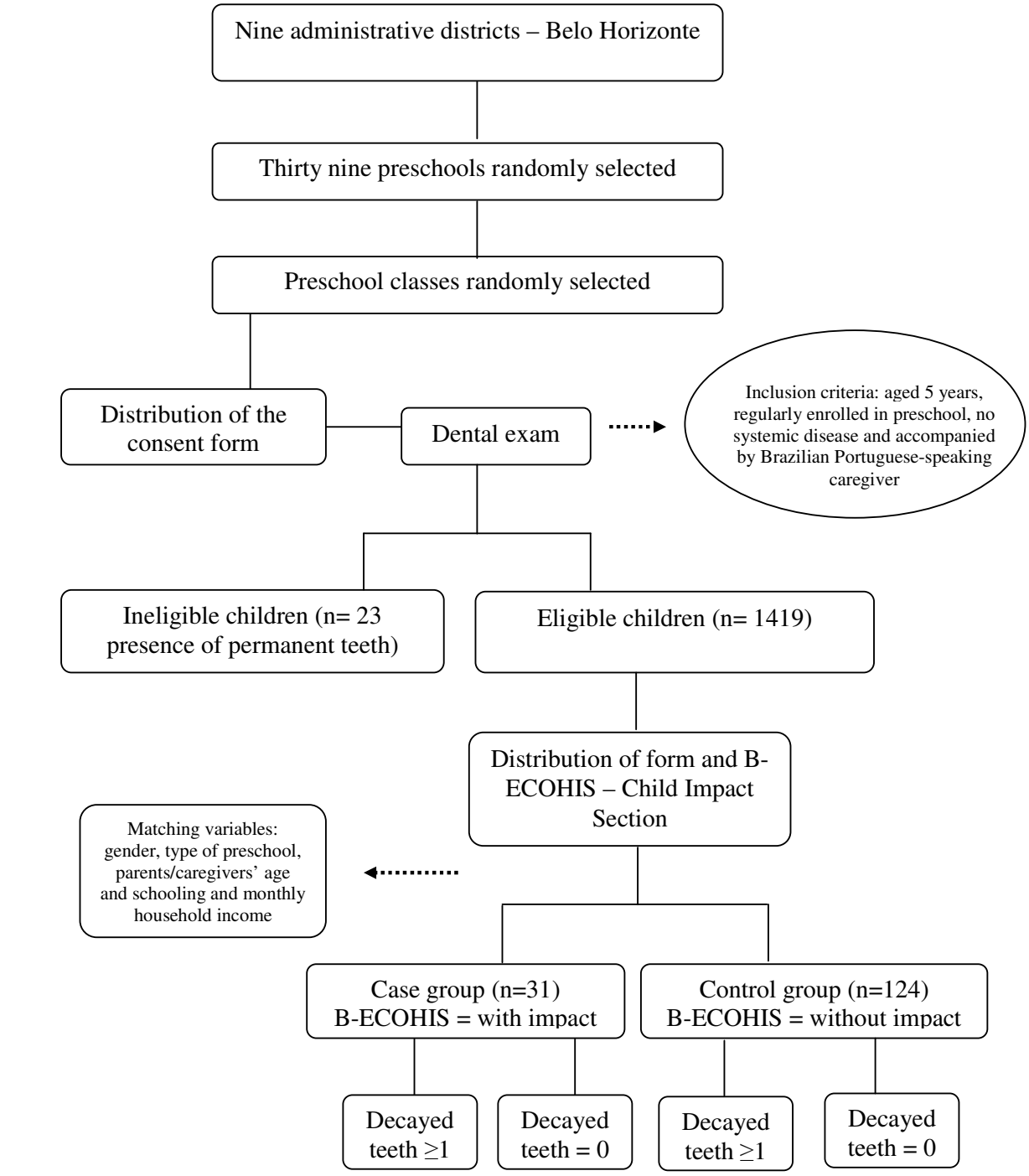
ECOHIS domain/item	Prevalence of impact on OHRQoL (%)
Child symptoms domain	25.8
How often has your child had pain in the teeth, mouth or jaws	67.7
Child function domain	80.6
How often has your child ....because of dental problems or dental treatment?	
had difficulty drinking hot or cold beverages	41.9
had difficulty eating some foods	64.5
had difficulty pronouncing any words	19.3
missed preschool, day care or school	29.0
Child psychological domain	48.4
How often has your child ....because of dental problems or dental treatment?	
had trouble sleeping	35.5
been irritable or frustrated	41.9
Child self-image/social interaction domain	19.3
How often has your child ....because of dental problems or dental treatment?	
avoided smiling or laughing	16.1
avoided talking	6.4

Table 4

Variable	Child symptoms domain Impact N	Impact (%)	No impact N	No impact (%)	p-value	Unadjusted OR*	[95% CI] lower	[95% CI] upper
Untreated dental caries								
c=0	2	(25.0)	7	(30.4)	0.771	1	0.21	8.18
c≥1	6	(75.0)	16	(69.6)		1.31		
	Child function domain							
	Impact		**No impact**					
	N	**(%)**	**N**	**(%)**				
Untreated dental caries								
c=0	7	(28.0)	2	(33.3)	0.796	1	0.19	8.67
c≥1	18	(72.0)	4	(66.7)		1.29		
	Child psychological domain							
	Impact		**No impact**					
	N	**(%)**	**N**	**(%)**				
Untreated dental caries								
c=0	2	(13.3)	7	(43.8)	0.075	1	0.85	30.18
c≥1	13	(86.7)	9	(56.3)		5.06		
	Child self-image/social interaction domain							
	Impact		**No impact**					
	N	**(%)**	**N**	**(%)**				
Untreated dental caries								
c=0	1	(16.7)	8	(32.0)	0.467	1	0.23	23.60
c≥1	5	(83.3)	17	(68.0)		2.35		

*Binary logistic regression

Figure 1


Nine administrative districts – Belo Horizonte
Thirty nine preschools randomly selected
Preschool classes randomly selected
Distribution of the consent form
Dental exam
Inclusion criteria: aged 5 years, regularly enrolled in preschool, no systemic disease and accompanied by Brazilian Portuguese-speaking caregiver
Ineligible children (n= 23 presence of permanent teeth)
Eligible children (n= 1419)
Distribution of form and B-ECOHIS – Child Impact Section
Matching variables: gender, type of preschool, parents/caregivers' age and schooling and monthly household income
Case group (n=31) B-ECOHIS = with impact
Control group (n=124) B-ECOHIS = without impact
Decayed teeth ≥1
Decayed teeth = 0
Decayed teeth ≥1
Decayed teeth = 0

CONSIDERAÇÕES FINAIS

CONSIDERAÇÕES FINAIS

A saúde bucal é tradicionalmente mensurada pelos profissionais durante exames bucais através de indicadores clínicos objetivando determinar a presença ou a ausência de doença (Gherunpong et al., 2004). Entretanto, sabe-se que a avaliação da saúde não pode se restringir à presença da doença. A percepção da saúde/doença bucal bem como sua implicação positiva ou negativa na qualidade de vida do indivíduo deve ser também avaliada (Castro et al., 2007; Do, Spencer, 2007).

Alterações bucais podem produzir impacto negativo significativo sobre o bem-estar funcional, social e psicológico das crianças e suas famílias (Do, Spencer, 2007). Neste contexto, tem se dado enfoque clínico para a qualidade de vida, medida como uma forma de assistência na avaliação das necessidades, priorização de atendimento e avaliação de resultados das estratégias de tratamento (Sheiham et al., 1982).

Nas últimas décadas instrumentos relacionados à avaliação da qualidade de vida foram desenvolvidos e testados em diferentes populações, especialmente em adultos e idosos (Barbosa, Gavião, 2008). Nos últimos anos, o interesse centrado nas crianças e adolescentes representa um grande avanço, considerando o fato de que crianças menores de 6 anos de idade são afetados pela cárie dentária, lesões traumáticas dentárias, maloclusão e patologias dos tecidos moles (Tesch et al., 2008).

Crianças com a saúde bucal precária podem apresentar limitações no desenvolvimento e crescimento. As doenças bucais podem interferir na alimentação, no sono, na fala, na comunicação e interação social e na auto-estima acarretando dificuldades nas atividades diárias e trazendo prejuízos à qualidade de vida dos indivíduos (Grath, Bedi, 2001; Patel et al., 2007).

Neste sentido, o conhecimento do impacto das alterações bucais e do tratamento sobre as atividades diárias emerge como informação essencial no cuidado aos indivíduos. Ademais, os indicadores de qualidade de vida são importantes em decisões tais como alocação de recursos e planejamento de estratégias de atenção à saúde.

A realização do estudo transversal em uma amostra de pré-escolares de 5 anos de idade de Belo Horizonte revelou que dentre as alterações bucais, a cárie dentária implicou repercussão negativa na qualidade de vida das mesmas e suas famílias. Além disso, o estudo caso controle mostrou que crianças que apresentaram um ou mais dentes cariados possuem maior chance de apresentar impacto na qualidade de vida quando comparados às crianças livres da cárie dentária.

A cárie dentária permanece como a doença crônica mais prevalente na infância (Patel et al., 2007; Arora et al., 2011). Além de constituir um problema de saúde pública, implica limitações para as famílias que têm de lidar com a criança que experimenta esta realidade (Arora et al. 2011). Estudos sugerem que crianças com experiência de cárie podem sentir dor, apresentarem dificuldades na mastigação, distúrbios durante o sono, além de limitações na interação social (Foster Page et al. 2005; Kiwanuka, Åstrømn, 2005). A ocorrência de tal alteração pode implicar ausência nas atividades escolares, resultando em dias de trabalho perdidos pelos cuidadores. Isto, pois, têm que ficar em casa com a criança ou despender tempo e dinheiro para ter acesso ao tratamento dentário (Wandera et al., 2009).

Segundo estudo realizado pelo Ministério da Saúde em 2003, aproximadamente 27% das crianças de 18 a 36 meses apresentam pelo menos um dente decíduo acometido pela lesão de cárie sendo que esta proporção sobe para 60% para crianças aos 5 anos de idade (Ministério da Saúde, 2004). Dados do IBGE demonstraram que em 2007, Minas Gerais possuía 197.064 crianças aos 5 anos de idade. Portanto estima-se que aproximadamente 118.240 crianças podem ter convivido com todas as dificuldades e limitações decorrentes da experiência da lesão de cárie dentária (IBGE, 2007).

Considerando as demais alterações bucais avaliadas (traumatismo dentário, maloclusão e defeitos de desenvolvimento de esmalte), observa-se que as mesmas não implicaram repercussão negativa na qualidade de vida. Interessante ressaltar que são condições que não estiveram relacionadas à dor. Além disso, a gravidade da maioria das lesões dentárias traumáticas, das maloclusões e dos defeitos de desenvolvimento do esmalte observados no estudo foram leves e, os pais/responsáveis não perceberam ou consideram suficientemente importantes para justificar a procura ao tratamento. Isso pode estar relacionado ao entendimento sobre a importância da dentição decídua. Estudo recente demonstrou que o fato de os responsáveis acreditarem que “os dentes vão cair de qualquer jeito” contribui para que os cuidados preventivos não sejam uma prioridade para a dentição decídua (Hilton et al., 2007). Além disso, variações no impacto das alterações na qualidade de vida estão relacionadas à capacidade de percepção (Marshman et al., 2009). Neste contexto sugere-se que estas alterações bucais sejam avaliadas por meio de outros instrumentos específicos capazes de detectar as particularidades de cada uma e suas possíveis repercussões na qualidade de vida dos indivíduos.

O indicador econômico “renda mensal familiar” esteve associado ao impacto na qualidade de vida. Detectou-se que crianças de famílias de renda mais baixa apresentaram maior impacto sobre a qualidade de vida do que aquelas oriundas de famílias de renda mais

alta. 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). A análise do quadro social brasileiro evidencia significativa persistência da pobreza no país que decorre, em grande parte, de um quadro de extrema desigualdade, marcado por profunda concentração de renda. O Brasil apresenta-se entre os países de maior concentração de renda no mundo (Silva e Silva, 2010).

O desenvolvimento de estudos que visam conhecer os fatores envolvidos na etiologia, bem como o impacto das condições bucais da infância na qualidade de vida das crianças e das famílias adquire grande importância na elaboração de estratégias visando promover a saúde. Ademais, fornece subsídios para a elaboração e implementação de políticas públicas no sentido de minimizar as diferenças sociais ampliando acesso à saúde, educação, moradia, trabalho possibilitando qualidade de vida ao indivíduo.

Enfim, citando Buss (2000):

> "Proporcionar SAÚDE significa, além de evitar doenças e prolongar a vida, assegurar meios e situações que ampliem a QUALIDADE DE VIDA "vivida", ou seja, ampliem a capacidade de autonomia e o padrão de bem-estar que, por sua vez, são valores socialmente definidos, importando em valores e escolhas"

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Considerações iniciais e finais

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APÊNDICES

APÊNDICE A

CARTA DE APRESENTAÇÃO PARA AS INSTITUIÇÕES

Belo Horizonte, __ de _____ de 200_.

À coordenação da instituição_____

Viemos, por meio desta, solicitar autorização para desenvolver um estudo em sua escola. Esse será realizado por 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, dos defeitos de desenvolvimento do esmalte e do traumatismo dentário na qualidade de vida das crianças e das suas famílias. Para tanto, será necessário o exame clínico das crianças na faixa etária de 60 a 71 meses e o preenchimento de um questionário e de um formulário pelos responsáveis. Esta escola está sendo convidada a participar por trabalhar com crianças nesta faixa etária.

O exame clínico das crianças será realizado na própria escola, sendo chamado um aluno de cada vez, com duração de 10 a 15 minutos, não atrapalhando o andamento escolar. Este exame não oferece risco para as crianças, é rápido e indolor. As crianças que necessitarem de atendimento odontológico serão encaminhadas a um centro de tratamento (Posto de Saúde ou à Faculdade de Odontologia da Universidade Federal de Minas Gerais). Os pais responderão em casa, a um questionário e a um formulário. Não haverá ônus algum para a instituição ou para os responsáveis pelas crianças.

A realização deste estudo foi autorizada pelo Comitê de Ética em Pesquisa da Universidade Federal de Minas Gerais (31 3409-4592), pela Secretaria de Estado de Educação de Minas Gerais e pela Secretaria Municipal de Educação de Belo Horizonte.

Atenciosamente,

Ana Carolina Scarpelli (Doutoranda em Odontologia)

Cláudia Marina Viegas (Mestranda em Odontologia)

Anita Cruz Carvalho (Mestranda em Odontologia)

Fernanda de Morais Ferreira (Pós-Doutoranda em Odontologia)

Prof. Dr. Saul Martins de Paiva (Coordenador da pesquisa)

Profa. Dra. Isabela Almeida Pordeus (Coordenadora da pesquisa)

1ª. Via Pesquisadores

TERMO DE AUTORIZAÇÃO

Eu, _____, na condição de _____ da instituição _____ autorizo a realização do estudo **"Impacto das alterações bucais na qualidade de vida de pré-escolares de Belo Horizonte"** nas dependências desta instituição. Participarão da pesquisa, depois de devido consentimento dos responsáveis, crianças na faixa etária de 60 a 71 meses. Será necessário o exame clínico das crianças além do preenchimento de um questionário e de um formulário pelos responsáveis. Em casos de necessidade de tratamento odontológico esses indivíduos serão encaminhados para o atendimento clínico no posto de saúde próximo à sua residência ou na Faculdade de Odontologia da Universidade Federal de Minas Gerais. 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. A realização deste estudo foi autorizada pelo Comitê de Ética em Pesquisa da Universidade Federal de Minas Gerais (31 3409-4592), pela Secretaria de Estado de Educação de Minas Gerais e pela Secretaria Municipal de Educação de Belo Horizonte.

Belo Horizonte, _____ de _____ de _____.

_____

Assinatura

1ª. Via Pesquisadores

APÊNDICE B

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

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

Assim, estamos visitando algumas escolas na cidade de Belo Horizonte e realizando o trabalho com os senhores e as suas crianças. Para participar vocês deverão autorizar assinando a este termo. Será realizado um exame simples dos dentes da sua criança. Neste exame usaremos espelho clínico, gaze e algodão, todos esterilizados. A dentista que realizará o exame estará usando avental, óculos, gorro, máscara e luvas descartáveis. Este exame é rápido, não oferece riscos para as crianças e será realizado na própria escola. Vocês deverão ainda responder a um questionário e a um formulário.

Os senhores receberão um bilhete contendo informações sobre a condição bucal de sua criança. Quando a criança precisar de tratamento odontológico, os senhores serão informados. 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 os senhores têm o direito de participar ou não do estudo e podem desistir em qualquer momento. A identidade dos senhores e das crianças não será revelada.

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.

Estamos à disposição para maiores esclarecimentos.

Atenciosamente,

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

SUA ASSINATURA INDICA QUE VOCÊ LEU E ENTENDEU TODAS AS INFORMAÇÕES 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

1ª. Via Pesquisadores

UFMG
Faculdade de Odontologia

APÊNDICE C

FORMULÁRIO PARA OS RESPONSÁVEIS

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 até ____/_____/_____. Muito obrigada pela sua participação.

PARTE I – Identificação:

DADOS DA CRIANÇA:

1- No. de identificação da criança: ***(NÃO PREENCHER ESTE CAMPO):*** _____

2- Endereço: Rua / Avenida:_____

Apto/Bloco:_____Bairro:_____CEP:_____

3- Sexo: ( ) menino ( ) menina

4- Dia, mês e ano em que a criança nasceu: ____/____/_____

5- 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:

6- Idade do responsável: _____ 7- Número de filhos: _____

8- O que você é da criança: (MARQUE COM UM X)

( )Mãe ( )Pai ( )Irmão ( )Avós ( )Outros. Qual? _____

9- Quantas pessoas moram na sua casa? _____

10- 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

11- Somando a sua renda com a renda das pessoas que moram com você, quanto é aproximadamente, a RENDA MENSAL DA SUA FAMÍLIA? Valor R$_____ ( ) Não tem renda

PARTE II – Informações clínicas:

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

13- Com quantos quilos a criança nasceu? _____

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

Se SIM, responda: Qual? _____

15- A criança tem alguma alteração de saúde? ( ) Sim ( )Não

Qual? ( ) doença do coração ( ) doença nos rins ( ) asma ( ) bronquite ( ) alergia ( ) sinusite ( ) diabetes ( ) outra. Qual? _____

16- O que você acha da saúde geral de sua criança? (MARQUE COM UM X)

( ) muito boa ( ) boa ( ) regular ( ) ruim ( ) muito ruim

17- A criança mamou no seio? ( )Sim ( )Não. **Se SIM, responda até que idade**? _____meses

18- A criança usou mamadeira? ( ) Sim ( ) Não. **Se SIM, responda até que idade?** _____anos

19- A criança chupa ou chupou chupeta? ( )Sim ( )Não. **Se SIM, responda até que idade?** _____anos

20- A criança chupa ou chupou dedo? ( )Sim ( )Não. **Se SIM, responda até que idade?** _____anos

21- A criança roe unha? ( )Sim ( )Não. **Se SIM, responda até que idade?** _____anos

22- A criança já operou a garganta? ( )Sim ( ) Não

23- A criança já operou o nariz? ( )Sim ( ) Não

24- A criança fica **SEMPRE** com o nariz entupido? ( )Sim ( )Não

25- A criança fica **SEMPRE** de boca aberta? ( )Sim ( ) Não

26- No último ano: A criança ficou com a garganta inflamada por mais de 5 vezes? ( ) Sim ( ) Não

27- No último ano: A criança teve sinusite? ( )Sim ( ) Não

28- O que você acha da saúde da boca de sua criança? (MARQUE COM UM X)

( ) muito boa ( ) boa ( ) regular ( ) ruim ( ) muito ruim

29- A criança já foi ao dentista? ( )Sim ( ) Não

30- Quando a sua criança foi ao dentista ela:

( ) Realizou **SOMENTE** exame ( ) Realizou **exame + algum tipo de tratamento** ( ) A criança nunca foi ao dentista

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

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

33- Quem realiza a escovação da criança?

( )Mãe ( )Pai ( )Irmãos ( )A própria criança ( )Outros. Qual? _____

34- 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)

35- 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

36- Onde ela machucou o dente de leite?

( ) Em casa ( ) Na escola ( ) Outro lugar. Qual? _____ ( ) Não lembro

37- 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

38- A criança foi atendida pelo dentista por causa do dente machucado? ( ) Sim ( ) Não ( ) Não lembro

OBRIGADA POR SUA COLABORAÇÃO. ELA FOI MUITO IMPORTANTE PARA O NOSSO TRABALHO!

APÊNDICE D

FICHA - EXAME CLÍNICO

Examinador: _____ Data:____/____/_____

Nome da criança: _____ No. de identificação: _____

Endereço: _____ IVS: _____

Nome do responsável: _____-___

Gênero: _____ Escola: _____ IVS: _____

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

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

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): _____

DEFEITO NO DESENVOLVIMENTO DO ESMALTE (DDE)

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

TRAUMATISMO DENTÁRIO

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

Encaminhamento: (0) não (1) cárie (2) trauma (3) orto (4) cárie + trauma (5) cárie + orto (6) trauma + orto (7) cárie + trauma + orto

ANEXOS

ANEXO A

APROVAÇÃO - SECRETARIA DE ESTADO DE EDUCAÇÃO – MINAS GERAIS

ESTADO DE MINAS GERAIS
GABINETE DO SECRETÁRIO 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
Secretária de Estado de Educação
Masp 556983-6

ANEXO B

APROVAÇÃO - SECRETARIA MUNICIPAL DE EDUCAÇÃO – BELO HORIZONTE

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 27.[illegible]
Secretaria Municipal Adjunta de Educação

ANEXO C

APROVAÇÃO - COMITÊ DE ÉTICA EM PESQUISA DA UNIVERSIDADE FEDERAL DE MINAS GERAIS

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 - 2° andar – Sala 2005 – Cep:31270-901 – BH-MG
Telefax: (031) 3409-4592 - e-mail: coep@prpq.ufmg.br

ANEXO D

INSTRUMENTO B-ECOHIS

EARLY CHILDHOOD ORAL HEALTH IMPACT SCALE – BRAZILIAN VERSION

Quadro 1: Instrumento: "Questionário sobre a Qualidade de Vida Relacionada à Saúde Bucal de Crianças na Idade Pré-escolar" (B-ECOHIS – Early Childhood Oral Health Impact Scale – versão Brasileira)

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, 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 aborrecida devido a problemas com os dentes ou tratamentos dentários de sua criança?
11	Você ou outra pessoa da família já se sentiu culpada 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

A condição social das famílias foi classificada de acordo com o Índice de Vulnerabilidade de Social (IVS), descrito por Nahas et aI. (2000).

O índice foi desenvolvido pela Secretaria Municipal de Planejamento, pela Secretaria Municipal de Desenvolvimento Social e por uma equipe da Pontifícia Universidade Católica de Minas Gerais no intuito de determinar o acesso da população de Belo Horizonte a determinadas dimensões de cidadania (Ambiental, Cultural, Econômica, Jurídica e Segurança de Sobrevivência). O objetivo deste trabalho foi orientar as políticas públicas visando à melhoria da qualidade de vida nas cidades. O IVS é o elemento central do "Mapa da Exclusão Social de Belo Horizonte", também formulado como instrumento de gestão urbana. A estrutura do "Mapa de Exclusão Social" encontra-se abaixo.

Estrutura do Mapa de Vulnerabilidade Social de Belo Horizonte

Elementos	Temas
Índice de vulnerabilidade social	Acesso à moradia Acesso à infra-estrutura Acesso à escolaridade Acesso ao trabalho Acesso à renda Acesso à assistência jurídica Acesso aos serviços de saúde Garantia de segurança alimentar Acesso à previdência social
Representações especiais	População de rua População em domicílios improvisados População analfabeta População com pós-graduação Trabalho infantil
Características populacionais	Taxa de população por faixa etária Taxa de população por cor da pele Taxa de população por sexo
Índice de assistência social	Composto por 8 indicadores de atendimento por serviços de destinados aos vários segmentos da população mais vulnerável

Para a construção do IVS, sujeitos oriundos da população da cidade participaram de grupos de discussão nos quais formularam os temas a serem abordados, definindo ainda os pesos das dimensões

e os indicadores. Os indicadores foram calculados a partir de dados georreferenciais de toda a cidade de Belo Horizonte

Composição do IVS e ponderações

Dimensões de cidadania	Variáveis	Indicadores
AMBIENTAL - 0,23	Acesso à moradia – 0,60	> Densidade domiciliar - 0,57 (habitantes por dormitório) > Qualidade do domicílio - 0,43 (taxa de domicílios por padrão de acabamento)
	Acesso aos serviços de infra-estrutura urbana - 0,40	> Acesso à infra-estrutura básica (taxa de domicílios com rede de esgoto e pavimentação)
CULTURAL - 0,18	Acesso à educação	> Índice de escolaridade relativa (população por faixa etária, da 6a. série ao curso superior)
ECONÔMICA - 0,27	Acesso ao trabalho - 0,70	> 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 - 0,30	> Renda média nominal familiar "per capita"
JURÍDICA - 0,08	Acesso à assistência jurídica	> Acesso à assistência jurídica (taxa 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 - 0,20	> Acesso à previdência (total de recursos da previdência pública oriundos de aposentadoria e pensão, aferidos pela população de 3a. idade e idosa)

Fonte: PBH/PUC-MG, 2000

De acordo com os autores do índice:

"Na realidade, o conceito de exclusão social - que se caracteriza hoje pelo acúmulo de deficiências de várias ordens e pela falta de proteção social - vem sendo progressivamente utilizado nas políticas públicas, e pode ser visto como sendo um processo que leva à negação (ou desrespeito) dos direitos que garantem ao cidadão um padrão mínimo de vida, envolvendo tanto direitos sociais quanto questões materiais. Tal processo mostra-se dinâmico em termos temporais e contém um aspecto territorial, uma vez que não se apresenta de forma homogênea nos diversos espaços da cidade, podendo ser compreendido como um processo sócio-espacial. Desta forma, retratá-lo de forma precisa e ao mesmo

> tempo útil à gestão da cidade, significa tratá-lo no território, dimensionando intra-urbanamente suas manifestações na população num dado momento, e captando diferenças / disparidades dentro da cidade, que possam orientar a tomada de decisões".

Portanto, o Índice de Vulnerabilidade Social avalia o impacto das carências de serviços e da infra-estrutura do município na população local, estabelecendo-se como um indicador social. Considerando-se sua interpretação, os escores variam de 0 a 1, sendo os valores mais altos correspondentes à piores condições estudadas, ou seja, áreas de maior vulnerabilidade à exclusão social.

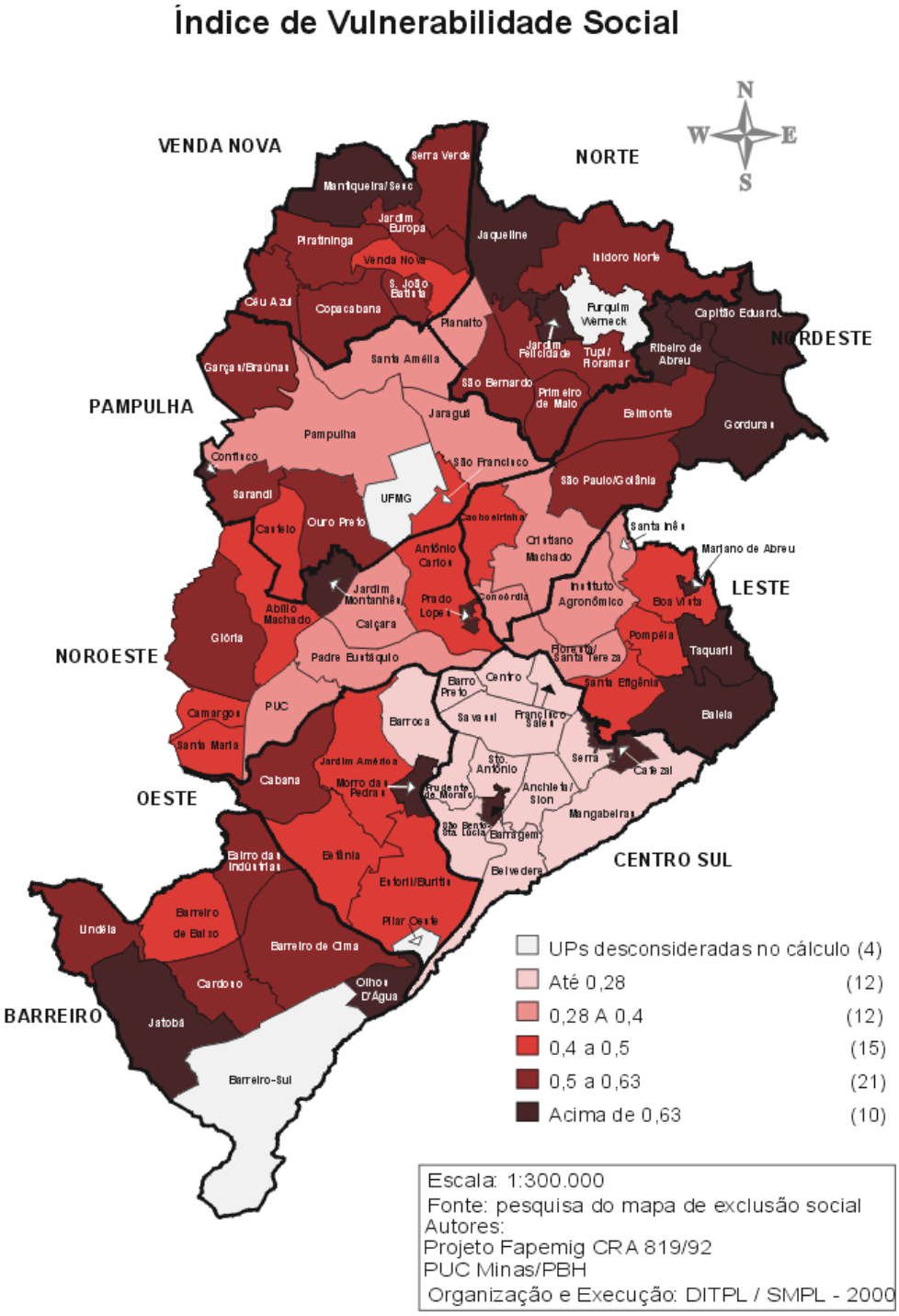

Figura 1: Mapa de Vulnerabilidade Social

ANEXO F

CRITÉRIOS PARA DIAGNÓSTICO DAS CONDIÇÕES BUCAIS

CÁRIE - CRITÉRIOS DE DIAGNÓSTICO SEGUNDO A ORGANIZAÇÃO MUNDIAL DE SAÚDE (OMS)

Os critérios propostos pela Organização Mundial de Saúde (OMS, 1999) para o diagnóstico da superfície dental em dentes decíduos são:

- Superfície hígida: superfície que não apresenta nenhum ataque pela cárie ou não se mostra restaurada. Manchas amareladas ou marrons em cicatrículas e fissuras de superfícies oclusais serão consideradas como lesões de caries incipientes inativas.
- Superfície restaurada: superfície que apresenta restauração permanente, não associada à existência de outras lesões de cárie. Quando mais de uma superfície estiver restaurada, e alguma se apresentar com reincidência de cárie, aquela superfície acometida pela recidiva será considerada como cárie envolvendo dentina. Nos casos em que houver pequenas descontinuidades restritas a esmalte sem reincidência de cárie, considerar-se-á como superfície restaurada.
- Lesão de mancha branca ativa: mancha branca, porosa, opaca, localizada em regiões de conhecida prevalência, a qual não deixou dúvida para o seu diagnóstico.
- Lesão de cárie envolvendo esmalte: lesão cavitada visível sem acometimento de dentina.
- Lesão de cárie envolvendo dentina: lesão cavitada com esmalte socavado, com amolecimento visível do assoalho e/ou paredes. Restaurações provisórias serão consideradas como lesões de cárie envolvendo dentina.
- Lesão de cárie envolvendo polpa: lesão que apresenta comunicação com a câmara pulpar. A presença de restos radiculares será considerada como lesão de cárie envolvendo polpa em todas as superfícies.
- Superfície perdida: uma superfície será considerada perdida quando nenhuma porção da mesma estiver visível no elemento dentário e/ou quando o dente não se encontrar na cavidade bucal sendo que a esfoliação fisiológica não é tida como uma explanação suficiente para a sua ausência.
- Superfície ausente: uma superfície será considerada ausente quando o dente não se encontrar na cavidade bucal por evidente esfoliação fisiológica ou por traumatismo.

Quadro 2: Critérios utilizados para o diagnóstico e classificação da cárie dentária

CÓDIGO	CONDIÇÃO DO DENTE	Equivalente ceo-d
A (0)	Manchas brancas ou porosas Manchas com alteração de coloração ou rugosidade que não sejam amolecidas ao toque Fóssulas ou fissuras pigmentadas no esmalte Áreas escuras, brilhantes, duras, pontilhadas de esmalte apresentando sinais de fluorose moderada à severa Lesões que parecem ser devido à abrasão	-
B1(1) B2 (2) B3 (3)	Lesão envolvendo esmalte com cavidade Lesão envolvendo dentina Lesão envolvendo polpa dental	c
C (4)	Coroa restaurada, com cárie (material restaurador permanente ou provisório)	c
D1 (5) D2 (6)	Coroa restaurada, sem cárie (material permanente) Coroa restaurada, sem cárie (material provisório)	o c
E (7) E1(8)	Dente ausente como resultado de cárie (dente perdido) Dente ausente, por qualquer outra razão (dente ausente)	e -
F (9)	Selante de fissura	-
G (10)	Dente suporte de prótese, coroa protética ou faceta	o
T (11)	Traumatismo (fratura)	-
RR (12) RR1(13) RR2 (14) RR3 (15) RR4 (16)	Resto radicular com extração indicada (alveólise, fratura radicular, etc) Resto radicular com polpa exposta Resto radicular sem polpa exposta e sem material restaurador Resto radicular com material restaurador permanente Resto radicular com material restaurador provisório	e c c o c

MALOCLUSÃO - CRITÉRIOS DE DIAGNÓSTICO SEGUNDO Foster, Hamilton, 1969, Grabowski et al., 2007; Oliveira et al., 2008)

Quadro 3: Critérios utilizados para o diagnóstico e classificação da maloclusão

Overbite	
Normal	When upper incisors overlapped the lower incisors by 2mm.
Deep Overbite	Maxillay teeth cover more than 2mm of the vestibular surface of the mandibular teeth (excessive overbite).
Edge-to-edge bite	Incisal surfaces of maxillary teeth touch the incisal surfaces of mandibular teeth (no overbite).
Anterior open bite	Absence of a vertical overlap of the lower incisors.
Overjet	
Ideal	A positive incisor overjet not exceeding 2mm, measured on the primary upper central incisors.
Increased	Incisal edge of maxillary incisor more prominent toward the vestibular face of the corresponding mandibula incisor, over 2mm.
Anterior crossbite	The lower primary central incisors in anterior relationship to the upper primary central incisors (negative overjet, absent overbite).
Posterior crossbite	The upper primary molars occluding in lingual relationship to the lower primary molars in centric oclusion.

"Anterior crossbite, deep overbite, anterior open bite, positive overjet and posterior crossbite were considered malocclusion. The preschool children, who had at least on of these conditions, were classified with malocclusion".

TRAUMATISMO - CRITÉRIOS DE DIAGNÓSTICO SEGUNDO Andreasen et al., 2007

Quadro 4: Critérios utilizados para o diagnóstico e classificação do traumatismo dentário

CÓDIGO	CONDIÇÃO DENTAL
0	Sem trauma
1	Fratura de esmalte
2	Fratura de esmalte-dentina
3	Fratura coronária complicada
4	Luxação extrusiva
5	Luxação lateral
6	Luxação intrusiva
7	Avulsão
8	Alteração de cor

DEFEITOS DE DESENVOLVIMENTO DE ESMALTE – CRITÉRIOS DE DIAGNÓSTICO SEGUNDO "COMMISSION ON ORAL HEALTH, RESEARCH & EPIDEMIOLOGY REPORT OF A FDI WORKING GROUP, 1992"

Quadro 5: Critérios utilizados para o diagnóstico e classificação dos defeitos de desenvolvimento do esmalte

CÓDIGO	CONDIÇÃO DA SUPERFÍCIE DENTAL
0	Normal
1	Opacidade demarcada
2	Opacidade difusa
3	Hipoplasia
4	Outros Defeitos
5	Opacidade demarcada e difusa
6	Opacidade demarcada e hipoplasia
7	Opacidade difusa e hipoplasia
8	Todas as três alterações

ANEXO G

NORMAS PARA PUBLICAÇÃO
COMMUNITY DENTISTRY AND ORAL EPIDEMIOLOGY

Community Dentistry and Oral Epidemiology

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Content of Author Guidelines: 1. General, 2. Ethical Guidelines, 3. Submission of Manuscripts, 4. Manuscript Format and Structure, 5. After Acceptance

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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.

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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 Blackwell Publishing Author Services for further information on the preparation and submission of articles and figures.

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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, 2002 http://www.wma.net/e/policy/b3.htm) 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.

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Clinical trials should be reported using the CONSORT guidelines available at http://www.consort-statement.org/newene.htm. A CONSORT checklist should also be included in the submission material (http://www.consort-statement.org/newene.htm#checklist).

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-dev.ifpma.org/, http://isrctn.org/. The clinical trial registration number and name of the trial register will then be published with the manuscript.

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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

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• If you are creating a new account.

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

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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.

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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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Standard journal article

(List all authors when six or fewer. When seven or more, list first six and add et al.)

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

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