UNIVERSIDADE ESTADUAL DA PARAÍBA
PRÓ-REITORIA DE PÓS-GRADUAÇÃO E PESQUISA
CENTRO DE CIÊNCIAS BIOLÓGICAS E DA SAÚDE
PROGRAMA DE PÓS-GRADUAÇÃO EM ODONTOLOGIA

IMPACTO DAS ALTERAÇÕES BUCAIS DE PRÉ-ESCOLARES NO FUNCIONAMENTO FAMILIAR

Gustavo Leite Ribeiro

CAMPINA GRANDE/ PB
2015

GUSTAVO LEITE RIBEIRO

IMPACTO DAS ALTERAÇÕES BUCAIS DE PRÉ-ESCOLARES NO FUNCIONAMENTO FAMILIAR

Dissertação apresentada ao Programa de Pós-Graduação em Odontologia da Universidade Estadual da Paraíba como parte dos requisitos para obtenção do título de Mestre em Odontologia.

Orientadora: Profª. Dra. Ana Flávia Granville-Garcia

CAMPINA GRANDE/ PB

2015

R484i Ribeiro, Gustavo Leite.
Impacto das alterações bucais de pré-escolares no funcionamento familiar [manuscrito] / Gustavo Leite Ribeiro. - 2015.
118 p. : il. color.

Digitado.
Dissertação (Mestrado em Odontologia) - Universidade Estadual da Paraíba, Centro de Ciências Biológicas e da Saúde, 2015.
"Orientação: Profa. Dra. Ana Flávia Granville-Garcia, Departamento de Odontologia".

1. Pré-escolar. 2. Traumatismos dentários. 3. Cárie Dentária. I. Título.

21. ed. CDD 617.67

GUSTAVO LEITE RIBEIRO

IMPACTO DAS ALTERAÇÕES BUCAIS DE PRÉ-ESCOLARES NO FUNCIONAMENTO FAMILIAR

DATA DA DEFESA: 24/03/2015

BANCA EXAMINADORA

Martins

Profª. Dra. Carolina de Castro Martins
Membro titular (1º Examinador)

Prof. Dr. Sérgio d'Ávila Lins Bezerra Cavalcanti / UEPB
Membro titular (2ª Examinador)

Profª. Dra. Ana Flávia Granville-Garcia / UEPB
Membro titular (Orientadora)

Dedico esse trabalho a pessoa que o idealizou e foi a principal articuladora para o seu desenvolvimento; montando e coordenando uma equipe que não mediu esforços para o alcance de seus objetivos desde a coleta de dados até a sua escritura final, atuando como uma verdadeira líder: Prof. Drª Ana Flávia Granville-Garcia. E a minha mãe, Eunice de Aguiar Leite, por me apoiar nessa nova conquista e ser também a minha maior professora, não pelo método científico, mas pela educação de uma forma mais abrangente.

AGRADECIMENTOS ESPECIAIS

A Deus, por ser minha força, energia e guia para todas as questões de minha vida, sempre me protegendo e orientando meus passos onde eu estiver e me ajudando a enfrentar a adversidades que surgirem.

À minha mentora e orientadora: Prof. Drª Ana Flávia Granville-Garcia, por me "adotar" mesmo com um perfil um pouco divergente dos seus demais orientandos, entendendo as minhas limitações, mas ao mesmo tempo explorando minhas potencialidades e também me fazendo descobri-las. Sou grato por ter me acolhido e ter tido a paciência de me guiar durante toda essa trajetória, ensinando, cobrando e me fazendo crescer profissionalmente.

À minha mãe, Eunice de Aguiar Leite, por ser minha "professora da vida". Principal responsável por ter feito de mim quem sou hoje. Obrigado por me ensinar através de exemplos, e não só de palavras, a importância da "empatia" para o desenvolvimento pessoal, moral e também espiritual. Essa reflexão tem me ajudado nos mais diversos aspectos de minha vida.

Ao Prof. Dr. Sérgio D'Ávila Lins Bezerra Cavalcanti, que me acompanhou durante toda a minha graduação, pós-graduação *lato sensu* e agora também na *strictu sensu*. Reconheço humildemente a importância de sua contribuição para a minha formação profissional, pela qual sou extremamente grato. Agradeço também por me permitir descobrir o campo da Saúde do Trabalhador, área que me identifiquei fortemente.

À Prof. Drª. Carolina de Castro Martins, pelo conhecimento compartilhado durante este curso de pós-graduação, contribuindo para a minha formação, e também futuras contribuições para esta dissertação, que certamente serão de extremo valor.

AGRADECIMENTOS

A todo o corpo docente do mestrado em Clínicas Odontológicas da UEPB, por contribuírem para a minha formação enriquecendo meus conhecimentos e me preparando para enfrentar novos desafios.

A toda a turma de mestrandos da qual tive o imenso orgulho de fazer parte: Arlley, Érika, Fernando, Júlio, Lorenna, Martina, Onilson, Pedro, Ramon e Rayanne por amenizar com alegria e união os instantes de preocupação e ansiedade naturais a esse processo de formação. Fico extremamente feliz não só pela quantidade de amigos que fiz como também pela qualidade dos mesmos.

A Emylia Rachel de Figueiredo Brito, cuja ajuda e companheirismo foram fundamentais para que eu pudesse cursar o mestrado em Clínicas Odontológicas da UEPB.

Aos “irmãos GG’s”: Ramon Targino Firmino; Maraysa Alves Clementino e Monalisa da Nóbrega Cesarino Gomes, por me ajudarem de diversas formas, unindo forças em prol do objetivo comum a todos que é o de fornecer informação científica de qualidade, possibilitando a melhoria contínua da promoção de saúde e qualidade de vida para a população.

Aos professores Saul Martins de Paiva (UFMG), Carolina de Castro Martins (UFMG) e Kenio Costa de Lima (UFRN) pela doutrina que me foi repassada e pelas contribuições fundamentais para este trabalho.

"Foi o tempo que dedicastes à tua rosa
que fez tua rosa tão importante"
(Antoine de Saint-Exupéry)

Impacto das alterações bucais de pré-escolares no funcionamento familiar

RESUMO

OBJETIVO: Determinar o impacto da cárie dentária e do traumatismo dentário de pré-escolares de três a cinco anos sobre as finanças e trabalho dos seus pais/responsáveis. **MÉTODO:** Um estudo transversal foi realizado com 837 pré-escolares matriculados em instituições públicas e particulares de Campina Grande-PB, Brasil. Um estudo piloto foi conduzido previamente com 40 pré-escolares, para averiguar a metodologia utilizada. A versão brasileira do *Early Childhood Oral Health Impact Scale* (B-ECOHIS) foi aplicada para determinar o impacto das alterações bucais na qualidade de vida relacionada à saúde bucal (QVRSB) dos pré-escolares e de seus pais/responsáveis. Os itens "impacto financeiro" e "tempo de trabalho perdido" (absenteísmo) foram as variáveis dependentes utilizadas nesta pesquisa. Os pais/responsáveis também responderam a um questionário sobre informações sóciodemográficas (sexo da criança, idade da criança, idade do pai/responsável, escolaridade materna e renda familiar), histórico de dor de dente, percepção de saúde geral e saúde bucal de seus filhos. Os exames clínicos nas crianças foram realizados por três cirurgiões-dentistas previamente calibrados (K:0,85-0,90). Foram utilizados como critérios de diagnóstico, o *International Dental Caries Detection and Assessment System* (ICDAS-II) e o critério de diagnóstico de traumatismo dentário proposto por Andreasen *et al*. (2007). Foi realizada estatística descritiva e analítica, seguida de regressão logística para amostras complexas (α= 5%). **RESULTADOS:** A frequência de absenteísmo no trabalho pelos pais/responsáveis devido a problemas de saúde bucal de suas crianças foi de 9.2%. Os fatores associados com o absenteísmo foram: baixa escolaridade materna (OR=2.306; 95% IC: 1.307-4.068), histórico de dor de dente (OR= 6.329; 95% IC: 3.178-12.607) e trauma dentário dos tipos avulsão/luxação (OR= 7.927; 95% IC: 1.489-42.205). Já a frequência de impacto financeiro devido a problemas de saúde bucal de pré-escolares foi de 7.7%. As seguintes variáveis foram associadas ao impacto financeiro: percepção parental sobre a saúde bucal como sendo ruim (OR=2.025; 95% IC: 1.016-4.034) e interação entre histórico de dor de dente e cáries dentárias (OR= 22.587; 95% IC:

4.838-105.448). **CONCLUSÃO:** O absenteísmo no trabalho pelos pais/responsáveis foi influenciado pela escolaridade materna, histórico de dor de dente e traumatismo dentário do tipo avulsão/luxação nos pré-escolares. A ocorrência de impacto financeiro para a família foi afetada pela percepção ruim dos pais sobre a saúde bucal dos filhos e interação entre histórico de dor de dente e cáries dentárias.

Palavras-chave: Pré-escolar; Traumatismos Dentários; Absenteísmo; Pais; Cárie Dentária

Impact of oral health problems of preschool children on family function

ABSTRACT

OBJECTIVE: To determine the impact of tooth decay and traumatic dental injury (TDI) in preschool children aged three to five years old on the finances and work of their parents/guardians. **METHODS:** A cross-sectional study was carried out with 837 preschool children enrolled in public and private institutions of Campina Grande-PB, Brazil. A pilot study was previously conducted with 40 preschoolers, to ascertain the methodology used. The Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS) was applied to determine the impact of dental caries and oral disorders on quality of life related to oral health (OHRQoL) of preschool children and their parents/guardians. The items "financial impact" and "taken time off work" (absenteeism) were the dependent variables. Parents/caregivers also completed a questionnaire on sociodemographic information (child's sex, child's age, parent's/caregiver's age, maternal education and family income), toothache history, perception of children's general health and oral health. Clinical examinations were performed in children for three calibrated dentists (K: 0,85 to 0,90). As diagnostic criteria, it was used the International Dental Caries Detection and Assessment System (ICDAS-II) and the criteria for diagnosis proposed by Andreasen *et al*. (2007). Descriptive and analytical statistics were performed, followed by logistic regression for complex samples (α = 5%). **RESULTS:** The frequency of absenteeism at work by parents/guardians due to oral health problems of their children was 9.2%. The factors associated with absenteeism were: low maternal education (OR = 2.306; 95% CI: 1.307-4.068), toothache history (OR = 6.329; 95% CI: 3.178-12.607), and TDI types of avulsion/dislocation (OR = 7.927; 95% CI: 1.489-42.205). The frequency of financial impact due to oral health problems of preschool children was 7.7%. The following variables were associated with the financial impact: parental perception of oral health as bad (OR = 2.025; 95% CI: 1.016-4.034) and interaction between dental pain history and tooth decay (OR = 22.587; 95% CI: 4.838-105.448). **CONCLUSION:** Absenteeism at work by parents/guardians was influenced by maternal education, toothache history and dental trauma type avulsion/dislocation in preschoolers. The occurrence of financial

impact on the family has been affected by the bad perception of parents about the oral health of children and interaction between dental pain history and tooth decay.

Keywords: Child, Preschool; Tooth Injuries; Absenteeism; Cost of Illness; Parents; Dental Caries

LISTA DE ILUSTRAÇÕES

LISTA DE QUADROS

LISTA DE TABELAS

LISTA DE ABREVIATURAS E SIGLAS

B-ECOHIS – Brazilian Early Childhood Oral Health Impact Scale
CAPES – Coordenação de aperfeiçoamento de pessoal de nível superior
CD – Cárie Dentária
CI – Confidence interval
CNPQ – Conselho nacional de desenvolvimento científico e tecnológico
CNS – Conselho Nacional de Saúde
COHQOLI – Child Oral Health Quality of of Life Instrument
ECOHIS – Early Childhood Oral Health Impact Scale
FAPEMIG – Fundação de amparo à pesquisa do Estado de Minas Gerais
IBGE – Instituto Brasileiro de Geografia e Estatística
ICDAS – International Caries Detection and Assessment System
IDH – Índice de desenvolvimento humano
IL - Illinois
INEP - Instituto Nacional de Estudos e Pesquisas Educacionais
ISSN – International Standard Serial Number
MG – Minas Gerais
OHRQoL – Oral Health-Related Quality of Life
OMS – Organização Mundial de Saúde
OR – Odds Ratio
PA - Pará
PB – Paraíba
QVRSB – Qualidade de vida relacionada à saúde bucal
PR – Poisson Regression
SP – São Paulo
SPSS – Statistical Package for the Social Sciences
TCLE – Termo de consentimento livre e esclarecido
TD – Traumatismo Dentário
TDI – Traumatic Dental Injuries
UEPB – Universidade Estadual da Paraíba
UFMG – Universidade Federal de Minas Gerais
UFRN – Universidade Federal do Rio Grande do Norte

US$ - Dólares Americanos

USA – United States of America

UT - Utah

WHO – World health organization

SUMÁRIO

1. CONSIDERAÇÕES INICIAIS

As desordens bucais presentes na primeira infância podem trazer prejuízos à qualidade de vida não apenas para a criança como também para seus familiares próximos de uma forma indireta. Os prejuízos familiares em decorrência das condições bucais da criança podem variar desde faltas dos pais/responsáveis ao trabalho até dificuldades financeiras, causando conflito e prejudicando o funcionamento familiar (ABANTO *et al*., 2011; ABANTO *et al*., 2012; SCARPELLI *et al*., 2011; LOCKER *et al*., 2002; TESCH *et al*., 2007).

Dentre as desordens bucais de pré-escolares, merecem destaque a cárie dentária (CD) e o traumatismo dentário (TD). A cárie dentária ainda é a desordem bucal mais prevalente, e também a principal causa de dor e perda dentária (PETERSEN, 2008; SHEIHAM *et al*., 2005; TRENTESAUX *et al*., 2014). O TD ocorre de forma inesperada e requer um cuidado imediato (BERGER *et al*., 2009).

Crianças em idade pré-escolar dependem do pai, mãe ou responsável para acompanha-las ao tratamento odontológico. Dependendo da severidade do quadro clínico, serão necessárias várias consultas, podendo acarretar em dias de trabalho perdidos (absenteísmo) para os pais/responsáveis que por sua vez pode implicar em perda de renda (ANDERSON *et al*., 2004; GIFT *et al*., 1992; GLENDOR *et al*., 2001). Como geralmente não é dada a devida importância à dentição decídua, muitos pais/responsáveis só procuram o tratamento para suas crianças quando os problemas bucais já se encontram em um estágio de maior gravidade (CAMARGO *et al*., 2012).

Embora haja na literatura uma variedade de estudos que discorrem sobre o impacto financeiro sofrido pela família em decorrência de problemas de saúde sistêmica dos filhos (BREHAUT *et al*., 2004; PAGANO *et al*., 2014; WARNER *et al*., 2014), tem-se percebido uma escassez desse tipo de estudo referente a saúde bucal (GIFT *et al*., 1992; AHMAD *et al*., 2013; SAVAGE *et al*., 2004). Da mesma forma, verifica-se um grande número de estudos que tratam de índices de absenteísmo por causas odontológicas (LACERDA *et al*., 2011; LOPEZ *et al*., 2014; MACEDO & QUELUZ, 2010; MIOTTO *et al*., 2012; MIOTTO *et al*., 2013; MIOTTO *et al*., 2014; NARDI *et*

al., 2009). Esses estudos, entretanto, destacam as condições de saúde bucal do próprio trabalhador.

Em relação ao absenteísmo causado por problemas de saúde dos filhos, até o momento os estudos discorrem apenas sobre causas médicas (LAFOREST *et al*., 2004; SCHMIER *et al*., 2007). Além disso, até o momento, nenhum estudo ressaltou os fatores associados com o absenteísmo ou impacto financeiro causados à família por problemas de saúde bucal dos filhos.

Não obstante estudos indiquem que as condições de saúde bucal em pré-escolares possam resultar em impacto no trabalho e finanças dos pais/responsáveis (ABANTO *et al*., 2011; SCARPELLI *et al*., 2013; VIEGAS *et al*., 2014), nota-se a necessidade de um estudo que analise os fatores associados a estes tipos de impacto utilizando amostra representativa. Sob essa perspectiva, os governantes e profissionais de saúde poderiam ter um novo olhar sobre a real dimensão da carga da doença sobre a população, levando em conta não só os aspectos clínicos, mas também os sociais. Dessa forma, a saúde bucal recebe um maior destaque nas discussões sobre políticas de saúde pública, passando-se a considerar também o impacto sócio-econômico para toda a população (HAYES *et al*., 2013; REISINE *et al*., 1988).

Este trabalho foi desenvolvido junto ao Programa de Pós-graduação da Universidade Estadual da Paraíba. Optou-se pela apresentação da dissertação em forma de artigos. O primeiro avalia o absenteísmo laboral de pais/responsáveis por problemas de saúde bucal de suas crianças. O segundo verifica o potencial impacto financeiro que os problemas de saúde bucal podem gerar sobre as famílias.

2. OBJETIVOS

2.1 GERAL

Avaliar o impacto das alterações bucais de pré-escolares de 3 a 5 anos matriculados na rede pública e particular de Campina Grande no funcionamento familiar.

2.2 ESPECÍFICOS

Plano de análise I (Artigo 1)

- Avaliar o impacto da cárie dentária e traumatismo dentário de pré-escolares no trabalho de seus pais/responsáveis.

- Identificar se fatores sociodemográficos, histórico de dor de dente, percepção de saúde geral e bucal das crianças estão associados ao absenteísmo laboral dos pais/responsáveis.

Plano de análise II (Artigo 2)

- Avaliar o impacto financeiro da cárie dentária e traumatismo dentário de pré-escolares para a família.

- Identificar se fatores sociodemográficos, histórico de dor de dente, percepção de saúde geral e bucal das crianças estão associados a um impacto financeiro para a família.

3. METODOLOGIA

3.1 CARACTERIZAÇÃO DA ÁREA DE ESTUDO

O estudo foi realizado no município de Campina Grande, localizado no interior do estado da Paraíba, mais precisamente no agreste paraibano a 133 km da capital do estado, João Pessoa. A cidade possui uma área total de 594,182 Km² e uma população de 385.213 habitantes. O município de Campina Grande abrange os distritos de Catolé de Zé Ferreira, Santa Terezinha, São José da Mata e Galante (IBGE 2012; IBGE 2014).

A cidade é considerada um dos principais polos industriais da Região Nordeste, bem como um dos maiores polos tecnológicos da América Latina. Campina Grande é um importante centro universitário, contando com 15 universidades particulares e 2 públicas (IBGE, 2012).

Além disso, Campina Grande também tem graves problemas sociais e elevados índices de pobreza, possuindo um Índice de Desenvolvimento Humano (IDH) de 0,720 além de um grande número de desempregados e de trabalhadores do setor informal (IBGE, 2012).

Figura 1: Localização geográfica do município de Campina Grande-PB, Brasil.
Fonte: http://pt.wikipedia.org/wiki/Campina_Grande

3.2 DESENHO DO ESTUDO:

Trata-se de um estudo do tipo transversal, analítico, com amostra aleatória e representativa. Os estudos de corte transversal permitem avaliar como se dá a distribuição de um agravo em uma determinada população. São importantes, pois servem de base para o planejamento de políticas públicas. Além de apresentarem vantagens como o baixo custo e objetividade dos dados (PINTO, 2000).

3.3 POPULAÇÃO DO ESTUDO:

Pares de pais responsáveis/crianças de 3 a 5 anos assistidas em creches/pré-escolas públicas e privadas da cidade de Campina Grande-PB. O município apresenta 127 creches/pré-escolas privadas e 122 públicas (estaduais, municipal e federal), perfazendo um total de 12.705 crianças de acordo com o censo escolar 2011, (Dados obtidos da Secretaria de Educação da Paraíba, 2011).

3.4 GRUPO DE ESTUDO E PROCESSO DE SELEÇÃO

3.4.1 Cálculo Amostral

Esta pesquisa foi realizada por meio de procedimento amostral estratificado por Distritos Sanitários e por conglomerados (creches). Em cada estrato foi selecionado um número determinado de estabelecimentos e em cada escola foi selecionada uma amostra aleatória proporcional ao número de alunos por escola. A amostra foi obtida através do cálculo de estimativa de proporção, de acordo com Kirkwood (1996), como mostra a fórmula abaixo:

$$n = (Z_{1-\alpha})^2 \frac{p\,(1-p)}{d^2}$$

Na qual, **α** corresponde ao nível de significância, **p** à prevalência do agravo analisado, e **d** ao erro admissível. Neste estudo adotou-se um nível de significância de 95%, impacto da qualidade de vida de 50%, e erro admissível de 4%. Deste modo, segundo o cálculo de estimativa de proporções, o tamanho amostral foi de 600 crianças. Porém, adicionou-se 20% para compensar as possíveis perdas, totalizando uma amostra de 720 pré-escolares de três a cinco anos.

Por se tratar de uma amostra por conglomerados (*cluster*), foi feito também um sorteio aleatório dos alunos das escolas sorteadas para participação na pesquisa. O processo de amostragem por conglomerados altera a precisão das estimativas, já que essas dependem do grau de homogeneidade interna dos conglomerados. Ao se proceder a essa técnica de amostragem, perde-se a homogeneidade, e, portanto, um número mais elevado foi requerido para compensar esse aspecto. Essa correção pode ser efetuada de forma simplificada e conservadora: multiplicou-se o tamanho da amostra por 1,2. Esse procedimento é denominado efeito de delineamento ou efeito do desenho (PERES *et al.*, 2009). Desta forma, a amostra final foi constituída de 864 pré-escolares de três a cinco anos de idade.

3.4.2 Critérios de Inclusão

- Pares de pais/responsáveis e crianças de três a cinco anos matriculadas em creches/escolas da rede pública e privada de Campina Grande – PB;
- Ausência de doenças sistêmicas e/ou deficiências físicas e de aprendizagem relatada pelas professores.

3.4.3 Critérios de Exclusão

- Presença de um ou mais dentes permanentes em erupção;
- Crianças submetidas a tratamento ortodôntico;

3.4.4 Calibração

A calibração seguiu a metodologia proposta por Peres, Traebert e Marcenes (2001), sendo dividida em quatro etapas:

Primeira Etapa: consistiu em um momento teórico no qual foram apresentados os critérios e índices. Posteriormente imagens das condições a serem observadas no exame foram projetadas por um minuto, sendo solicitado aos examinadores que diagnosticassem as alterações. Foi, então, realizado o estudo da ficha clínica e da rotina a ser seguida no exame clínico.

Segunda Etapa: foram realizados exames clínicos, pelos examinadores e pelo padrão ouro, em 50 crianças entre três a cinco anos pertencentes a uma escola pública selecionada por sorteio. Em caso de discordância no diagnóstico um novo exame era realizado. Os exames foram repetidos até que o padrão-ouro julgasse que os critérios haviam sido atendidos. Posteriormente, o padrão ouro fez a seleção de crianças de acordo com a variação dos índices para que os examinadores realizassem o exame clínico. Com os resultados das fichas clínicas foram montadas matrizes para comparação dos diagnósticos e o coeficiente *Cohen's Kappa.*

Terceira Etapa: Após um intervalo de sete dias foram realizados novos exames nas mesmas crianças selecionadas anteriormente. Os examinadores não podiam se comunicar e as crianças foram examinadas duas vezes por cada examinador. Os resultados foram utilizados para medir a calibração intra e interexaminadores. Novamente foram montadas as matrizes e o teste *Cohen's Kappa* foi realizado.

Quarta etapa: discussão final dos resultados.

A consistência dos diagnósticos foi medida através do coeficiente *Cohens´s kappa* para a obtenção dos valores de concordância, a partir da seguinte fórmula:

$$K = \frac{Po - Pe}{100 - Pe}$$

Onde:

Po - porcentagem de casos com concordância diagnóstica.

Pe - porcentagem de concordância esperada.

Os resultados numericamente obtidos representam (Bulman e Osborn, 1989):

- k igual a zero: baixíssima confiabilidade;
- k maior que zero e menor que 0,40: baixa confiabilidade;
- k entre 0,41 e 0,60: moderada confiabilidade;
- k entre 0,61 e 0,80: substancial confiabilidade;
- k acima de 0,81: boa confiabilidade.

Assim, diante da metodologia exposta, os dados obtidos pelo teste de Kappa na calibração realizada variaram de 0,85-0,90, representando boa confiabilidade e, desse modo, os três examinadores foram considerados aptos para a realização dos exames clínicos.

3.4.5 Estudo-piloto

Foi realizado um estudo-piloto com a finalidade de avaliar os instrumentos de pesquisa e a dinâmica da coleta dos dados.

Para a realização desse tipo de estudo foram sorteadas duas creches (uma pública e uma privada), das quais foram sorteadas 40 crianças, sendo 20 da escola publica e 20 da privada. As crianças inseridas no estudo-piloto não foram incluídas no estudo principal.

A fim de se avaliar a confiabilidade das respostas do questionário foi realizado o teste e re-teste no intervalo de sete dias para medir a confiabilidade do questionário.

3.5 CONTATOS COM AS PRÉ-ESCOLAS

Inicialmente foi realizada uma listagem das creches e pré-escolas existentes no município a partir de uma relação disponibilizada pelo INEP (Instituto Nacional de Pesquisas Educacionais Anísio Teixeira). Posteriormente, as instituições foram divididas de acordo com o respectivo distrito sanitário ao qual faziam parte, para então ser realizado o sorteio de quais creches/pré-escolas que fariam parte do estudo.

Após esta etapa, as instituições sorteadas foram contatadas pelo pesquisador, onde eram explicados ao responsável pelo estabelecimento os objetivos da pesquisa, bem como a forma como seriam desenvolvidas todas as atividades naquele local. Ao contato inicial eram apresentados os documentos de aprovação pelo Comitê de Ética em

Pesquisa (ANEXO C) bem como a autorização dos secretários de educação municipal (APÊNDICE C) ou estadual (APÊNDICE D), dependendo da esfera a qual a instituição pertencia. Em caso de recusa em participação, outra instituição do mesmo distrito sanitário era sorteada e consequentemente solicitada a participar do estudo.

3.6 CRITÉRIOS DE DIAGNÓSTICO

3.6.1 Cárie Dentária

Utilizou-se como critério de diagnóstico para a cárie dentária o índice ICDAS-II (*International Caries Detection and Assessment System*) (ISMAIL *et al*., 2007):

0 = Sadio, imediatamente após secagem com ar (5 segundos); sem cárie, manchamento, hipoplasia, desgaste, erosão e outros fenômenos não cariosos.
1 = Imediatamente após secagem com ar, primeira alteração visível no esmalte ou alterações na coloração limitada às áreas de fóssulas e fissuras.
2 = Observação sem secagem, alteração visual distinguível, branca ou colorida, numa extensão que vai além as fóssulas e fissuras.
3 = Ruptura localizada do esmalte, sem dentina visível, descontinuidade na superfície do esmalte. Confirmada com sonda OMS.
4 = Sombra escura subjacente desde a dentina, com ou sem ruptura localizada do esmalte.
5 = Cavidade com dentina exposta na base da cavidade.
6 = Cavidade extensa, visível, em dentina, na base e nas paredes (mais de metade da superfície).

Em função da natureza epidemiológica desse estudo os códigos um e dois foram unidos em uma mesma classificação diagnóstica. Para este estudo, o código dois foi utilizado para indicar manchas brancas e códigos iguais ou maiores que três corresponderam a diferentes graus de cavitação. Os códigos três e quatro indicaram baixa severidade de cárie, enquanto que os códigos cinco e seis indicaram a sua alta severidade.

Justifica-se a utilização deste critério diagnóstico em virtude de sua praticidade, validade, correlação positiva com exames histológicos além de ser apropriado para uso na dentição decídua e ter comprovada viabilidade em estudos epidemiológicos em pré-escolares, população alvo da presente pesquisa (ISMAIL, 2007; BRAGA *et al*, 2009).

3.6.2 Traumatismo Dentário

Para o diagnóstico de traumatismo dentário nos incisivos e caninos foi utilizada a classificação de Andreasen *et al*. (2007) que é destinada a estudos epidemiológicos uma vez que os diagnósticos são realizados sem o auxílio do exame radiográfico:

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

3.7 COLETA DE DADOS

A coleta de dados foi realizada nas instituições de ensino previamente selecionadas para a pesquisa, por três pesquisadores devidamente calibrados e auxiliados por anotadores corretamente treinados.

Em um primeiro momento um dos pais ou responsável pela criança era solicitado a responder a um questionário (APÊNDICE A) bem como a assinar o Termo de Consentimento Livre e Esclarecido (TCLE) (APÊNDICE F) autorizando a participação da criança na pesquisa. Em um segundo momento, foram realizados os exames clínicos nas crianças cujos pais/responsáveis autorizaram a participação no estudo e que tivessem respondido devidamente ao questionário proposto.

3.7.1 Instrumentos para coleta dos dados

Para a coleta dos dados foram utilizados dois instrumentos de pesquisa:

- Questionário dirigido aos pais contendo questões relacionadas às condições sociodemográficas e à condição de saúde da criança (APÊNDICE A);
- Questionário ECOHIS, também dirigido aos pais/responsáveis (ANEXO A);
- Ficha clínica para anotação dos dados clínicos (APÊNDICE B) contendo a ficha do ICDAS-II (ANEXO B).

O instrumento *Early Childhood Oral Health Impact Scale* (ECOHIS) foi criado por pesquisadores da Universidade da Carolina do Norte (PAHEL *et al*., 2007) para avaliar a qualidade de vida relacionada à saúde bucal de crianças na idade pré-escolar. Ele foi desenvolvido a partir de uma seleção de 13 itens, oriundos dos 36 que compõem o questionário *Child Oral Health Quality of Life Instrument* (COHQOLI). Esses itens foram considerados os mais relevantes para mensurar o impacto dos problemas bucais sobre a qualidade de vida dos pré-escolares e consideram as experiências de doenças bucais e tratamentos dentários da vida inteira da criança (TESCH *et al*., 2008; SCARPELLI *et al*., 2011).

A versão brasileira é composta por treze itens que avaliam o impacto dos problemas bucais sobre as crianças (subescala da criança), sendo uma questão relativa a sintomas, quatro questões sobre domínio das limitações, duas relacionadas a fatores psicológicos e duas referentes à autoimagem/interação social da criança. As outras quatro questões avaliam o impacto dos problemas bucais da criança sobre a sua família (subescala da família), sendo, duas questões de angústia dos pais e duas questões de função familiar (TESH *et al*., 2008).

Os itens 12: "Você ou outra pessoa da família já faltou ao trabalho devido a problemas com os dentes ou tratamentos dentários de sua criança?" e 13: "Sua criança já teve problemas com os dentes ou fez tratamentos dentários que causaram impacto financeiro na sua família?" do instrumento B-ECOHIS foram as variáveis dependentes do presente estudo e demonstraram consistência interna e confiança satisfatórias.

As opções de respostas estão elencadas em códigos que variam de 0 a 5, onde, código 0 = nunca, 1 = quase nunca, 2 = às vezes, 3 = com frequência, 4 = com muita frequência, 5= não sei.

Para fins estatísticos, as respostas dos itens foram dicotomizadas como "ausente" (quando a opção de resposta "nunca" foi marcada) e "presente" (para as demais opções de resposta: "quase nunca", "às vezes", "com frequência" e "com muita frequência"). As respostas do tipo "não sei" não foram contadas e as do tipo "quase nunca" foram consideradas o ponto de corte para as variáveis dependentes analisadas (TESCH *et al*.,2008; SCARPELLI *et al*., 2011).

O questionário dirigido aos pais avaliou os seguintes aspectos:

- Sexo
- Idade
- Condição socioeconômica da família: avaliada através do questionamento do nível de escolaridade do responsável e da renda familiar;
- Percepção da saúde geral e bucal da criança.
- Dor de dente
- Presença de absenteísmo laboral e impacto financeiro

3.7.2 Exame Clínico

As crianças ficaram sentadas em cadeiras escolares para a execução dos exames, que foram realizados em uma sala da própria creche/escola, após escovação dentária supervisionada. Imediatamente antes do início do exame, os examinadores realizavam secagem das superfícies dentárias com o auxílio de gazes estéreis, com o intuito de remover quaisquer resquícios de biofilme, bem como facilitar a visualização das superfícies dentárias, melhorando a qualidade do exame.

Os examinadores atenderam aos princípios da biossegurança, uma vez que utilizaram todos os equipamentos de proteção individual necessários, sendo as luvas trocadas a cada exame e o gorro e a máscara a cada turno de exame. Também foi utilizada a lanterna de cabeça (Petzl Zoom head lamp, Petzl America, Clearfield, UT, USA). Nos exames foram utilizados espelho bucal (PRISMA®, São Paulo, SP, Brasil) e sonda periodontal WHO (GOLGRAN®, São Paulo, SP, Brasil).

A cárie dentária foi diagnosticada de acordo com o índice ICDAS-II (ISMAIL *et al*.,2007) e os traumatismos dentários segundo a classificação de Andreasen *et al*. (2007) conforme descrito anteriormente nos critérios de diagnóstico.

3.8 ELENCO DE VARIÁVEIS

O presente estudo apresenta dois planos de análise. Sendo assim, as variáveis foram classificadas em duas etapas distintas, conforme descritas a seguir.

3.8.1 Plano de Análise I (Artigo 1)

- **Variável Dependente**

A variável dependente eleita foi a questão relativa ao impacto das alterações bucais de pré-escolares nas atividades laborais dos pais/responsáveis. A variável dependente correspondeu a um item da subescala de função familiar da versão brasileira do *Early Childhood Oral Health Impact Scale* (B-ECOHIS).

Quadro 1: Categorização da variável dependente do plano de análise I.

VARIÁVEL DEPENDENTE	CATEGORIZAÇÃO
Impacto nas atividades laborais dos pais/responsáveis ECOHIS (TESCH; OLIVEIRA; LEÃO, 2008)	1. Sem impacto laboral; 2. Com impacto laboral.

- **Variáveis Independentes**

As variáveis independentes serão apresentadas conforme a categorização em: variáveis de interesse (cárie dentária e traumatismos dentários), que serão apresentadas no quadro 2; e as variáveis de caráter exploratório, apresentadas no quadro 3.

Quadro 2: Definição e categorização das variáveis de interesse do plano de análise I.

NOME DA VARIÁVEL	DEFINIÇÃO DA VARIÁVEL	CATEGORIZAÇÃO
Cárie dentária / ICDAS-II (ISMAIL *et al*., 2007)	Presença de cárie dentária no exame clínico	1. Presente 2. Ausente
Severidade da cárie dentária (ISMAIL *et al*., 2007)	Gravidade da cárie dentária de acordo com a classificação do ICDAS-II (caráter qualitativo)	1. Ausente (código zero) 2. Mancha branca (código 1 e/ou 2) 3. Baixa gravidade (códigos 3 e/ou 4) 4. Alta gravidade (códigos 5 e/ou 6)
Traumatismo dentário (ANDREASEN *et al*., 2007)	Presença de traumatismo dentário no exame clínico	1. Presente 2. Ausente
Tipo de traumatismo dentário	Categorização dos traumatismos dentários de acordo com a classificação inglesa (ANDREASEN *et al*., 2007)	0. Sem trauma 1. Fratura de esmalte 2. Fratura de esmalte e dentina 3. Fratura coronária complicada 4. Luxação extrusiva 5. Luxação lateral 6. Luxação intrusiva 7. Avulsão 8. Alteração de cor

Quadro 3: Definição e categorização das variáveis de caráter exploratório do plano de análise I.

NOME DA VARIÁVEL	DEFINIÇÃO DA VARIÁVEL	CATEGORIZAÇÃO
Sexo	Sexo da criança	1. Feminino 2. Masculino
Idade	Idade da criança em anos	1. 3 anos 2. 4 anos 3. 5 anos
Renda mensal familiar	Relato do responsável sobre a renda mensal da família	1. ≤ 1 salário mínimo mensal (≤ US$ 312,50) 2. > 1 salário mínimo mensal
Nível de Escolaridade Materna	Relato do responsável sobre a escolaridade da mãe da criança	1. ≤ 8 anos de estudo 2. > 8 anos de estudo
Idade do responsável	Idade do responsável em anos	1. ≤ 30 anos 2. > 30 anos
Percepção de saúde geral da criança	Avaliação da percepção de saúde geral da criança segundo o responsável	1. Boa 2. Ruim
Percepção de saúde bucal da criança	Avaliação da percepção de saúde bucal da criança segundo o responsável	1. Boa 2. Ruim
Histórico de dor de dente	Relato do responsável sobre algum episódio de dor de dente por parte da criança	1. Sim 2. Não

3.8.2 Plano de Análise II (Artigo 2)

- **Variável Dependente**

A variável dependente eleita foi a questão relativa ao impacto financeiro das alterações bucais de pré-escolares para a família. A variável dependente correspondeu a um item da subescala de função familiar da versão brasileira do *Early Childhood Oral Health Impact Scale* (B-ECOHIS).

Quadro 4: Categorização da variável dependente do plano de análise II.

VARIÁVEL DEPENDENTE	CATEGORIZAÇÃO
Impacto financeiro para a família ECOHIS (TESCH; OLIVEIRA; LEÃO, 2008)	1. Sem impacto financeiro 2. Com impacto financeiro

- **Variáveis Independentes**

As variáveis independentes serão apresentadas conforme a categorização em: variáveis de interesse (cárie dentária e traumatismos dentários), que serão apresentadas no quadro 5; e as variáveis de caráter exploratório, apresentadas no quadro 6.

Quadro 5: Definição e categorização das variáveis de interesse do plano de análise II.

NOME DA VARIÁVEL	DEFINIÇÃO DA VARIÁVEL	CATEGORIZAÇÃO
Cárie dentária / ICDAS-II (ISMAIL *et al*., 2007)	Presença de cárie dentária no exame clínico	1. Presente 2. Ausente
Severidade da cárie dentária (ISMAIL *et al*., 2007)	Gravidade da cárie dentária de acordo com a classificação do ICDAS-II (caráter qualitativo)	1. Ausente 2. Mancha Branca 3. Baixa gravidade (códigos 3 e/ou 4) 4. Alta gravidade (códigos 5 e/ou 6)
Traumatismo dentário (ANDREASEN *et al*., 2007)	Presença de traumatismo dentário no exame clínico	1. Presente 2. Ausente
Tipo de traumatismo dentário	Categorização dos traumatismos dentários de acordo com a classificação inglesa (ANDREASEN *et al*., 2007)	1. Fratura de esmalte 2. Fratura de esmalte e dentina 3. Fratura coronária complicada 4. Luxação extrusiva 5. Luxação lateral 6. Luxação intrusiva 7. Avulsão 8. Alteração de cor

Quadro 6: Definição e categorização das variáveis de caráter exploratório do plano de análise II.

NOME DA VARIÁVEL	DEFINIÇÃO DA VARIÁVEL	CATEGORIZAÇÃO
Sexo	Sexo da criança	1. Feminino 2. Masculino
Idade	Idade da criança em anos	1. 3 anos 2. 4 anos 3. 5 anos
Renda mensal familiar	Relato do responsável sobre a renda mensal da família	1. ≤ 1 salário mínimo mensal (≤ US$ 312,50) 2. > 1 salário mínimo mensal
Nível de Escolaridade Materna	Relato do responsável sobre a escolaridade da mãe da criança	1. ≤ 8 anos de estudo 2. > 8 anos de estudo
Idade do responsável	Idade do responsável em anos	1. ≤ 30 anos 2. > 30 anos
Percepção de saúde geral da criança	Avaliação da percepção de saúde geral da criança segundo o responsável	1. Boa 2. Ruim
Percepção de saúde bucal da criança	Avaliação da percepção de saúde bucal da criança segundo o responsável	1. Boa 2. Ruim
Histórico de dor de dente	Relato do responsável sobre algum episódio de dor de dente por parte da criança	1. Sim 2. Não

3.9 PRINCÍPIOS ÉTICOS

3.9.1 Consentimento das Secretarias Municipal e Estadual de Educação e das Escolas Particulares

Após a elaboração do projeto, este foi encaminhado às secretarias Municipal e Estadual de Educação e para análise e obtenção do consentimento por parte dos respectivos Secretários de Educação, com o intuito de possibilitar a realização da pesquisa nas creches e pré-escolas de Campina Grande-PB.

Depois das assinaturas por parte dos Secretários das cartas de anuência (APÊNDICE C e APÊNDICE D), o projeto foi encaminhado ao Comitê de Ética em Pesquisa da Universidade Estadual da Paraíba (UEPB).

Para obtenção da autorização nas escolas particulares, foi solicitada ao responsável técnico de cada instituição a assinatura de uma carta de anuência (APÊNDICE E), na qual foram explicados os objetivos do estudo e os procedimentos a serem realizados nas escolas.

3.9.2 Termo de Consentimento Livre e Esclarecido

No que concerne ao estabelecido pela resolução 196/96 do Conselho Nacional de Saúde (CNS), foi enviado um Termo de Consentimento Livre e Esclarecido (APÊNDICE F) a todos os pais/responsáveis pelas crianças participantes do estudo. Este documento teve por finalidade apresentar os objetivos do estudo, a ausência de riscos e danos aos participantes, bem como obter a autorização dos mesmos para a realização da pesquisa.

3.9.3 Parecer do Comitê de Ética em Pesquisa

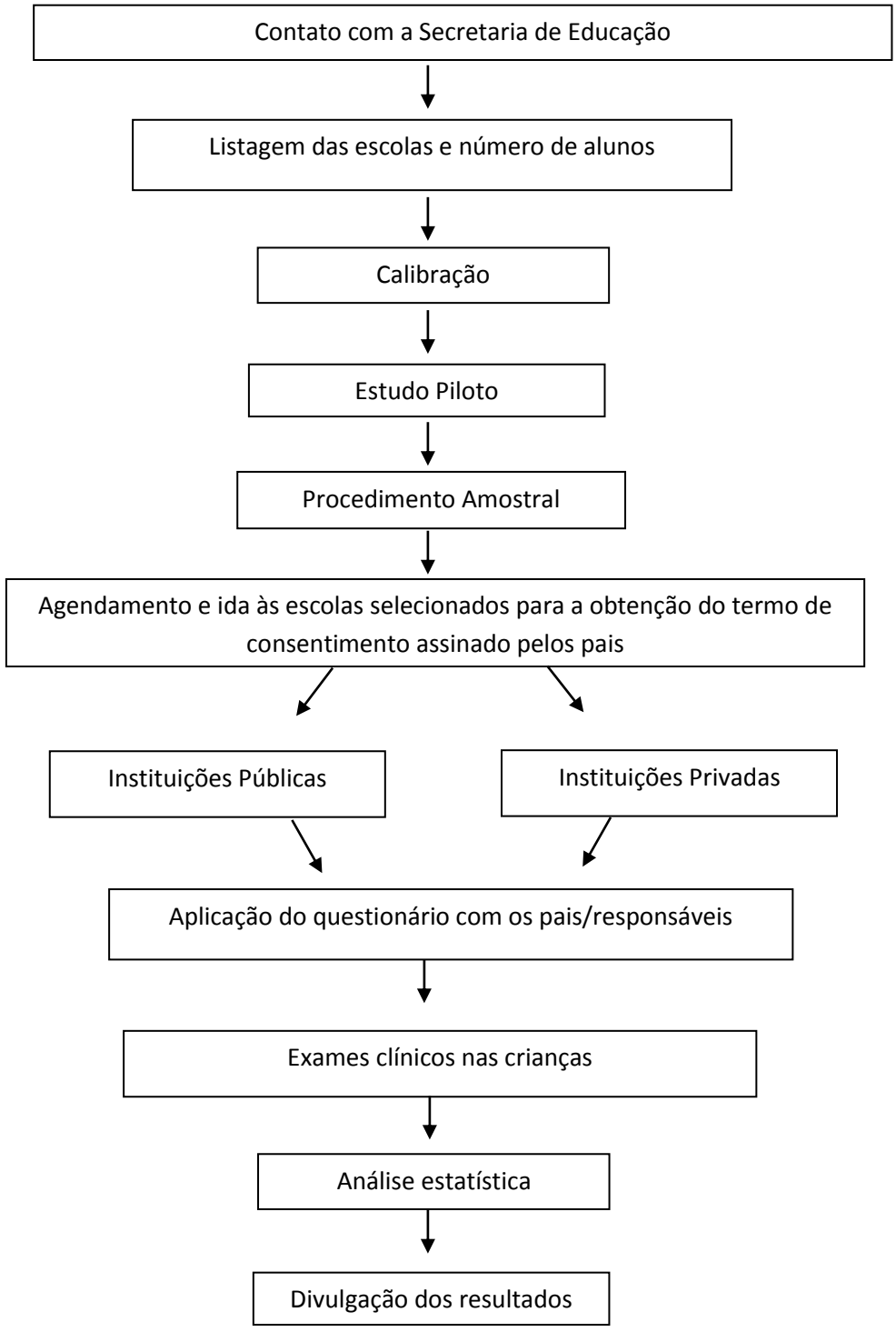
No que concerne à resolução 196/96 do Conselho Nacional de Saúde (CNS), de 10 de outubro de 1996, o projeto de pesquisa foi submetido à análise e aprovação pelo Comitê de Ética em Pesquisa da UEPB, sob o protocolo de número 0046.0.133.000-11 (ANEXO C).

3.10 PROCESSAMENTO E ANÁLISE DOS RESULTADOS

Estatística descritiva foi conduzida inicialmente para a caracterização da amostra. A distribuição da frequência dos dados foi determinada. A variável dependente foi o impacto no funcionamento familiar, de acordo com o plano de análise (dicotomizadas em sim/não). Para o plano de análise I, a variável dependente foi o impacto nas atividades laborais dos pais/responsáveis, enquanto que no plano de análise II a variável dependente consistiu no impacto financeiro para a família. Regressão logística considerando o efeito do desenho para amostras complexas foi conduzida para cada variável dependente ($p<0.05$). As variáveis independentes com $p<0.20$ foram

incorporadas ao modelo de regressão logística múltipla a partir de um procedimento *backward*. Em seguida foi realizada a análise múltipla, permanecendo no modelo final aquelas variáveis com valor de p <0,05. Para a obtenção dos cálculos estatísticos foi utilizado o software *Statistical Package for Social Sciences* (SPSS for Windows, version 18.0, SPSS Inc, Chicago, IL, USA).

3.11 FLUXOGRAMA



4. RESULTADOS

Como se optou pela apresentação da dissertação em forma de artigo, os resultados serão descritos conforme a apresentação de cada artigo.

ARTIGO 1

Periódico: ***International Dental Journal***

ISSN: 1875-595X / Qualis Odontologia B1 / Fator de impacto: 1,195 (2014)

Artigo formatado segundo as normas de publicação do periódico (ANEXO D)

Work absenteeism by parents due to oral health problems in preschool children

Gustavo Leite Ribeiro[1], Monalisa Cesarino Gomes[1], Kenio Costa de Lima[2], Carolina Castro Martins[3], Saul Martins Paiva[3], Ana Flávia Granville-Garcia[1]

[1]Postgraduate Program in Dentistry, State University of Paraiba (UEPB), Campina Grande, PB, Brazil.
[2]Department of Dentistry, Federal University of Rio Grande do Norte (UFRN), Natal, RN, Brazil.
[3]Department of Paediatric Dentistry and Orthodontic, Federal University of Minas Gerais (UFMG), Belo Horizonte, MG, Brazil.

Running title: Work absenteeism and oral health

Key words: Absenteeism; Work; Parents; Child Preschool; Dental Caries; Tooth Injuries

Address for correspondence
Ana Flávia Granville-Garcia
1325/410 Capitão João Alves de Lira, 58428-800, Campina Grande, PB, Brazil
Phone number: +55 83 33153326
e-mail: anaflaviagg@hotmail.com

Work absenteeism by parents due to oral health problems in preschool children

Abstract

The aim of the present study was evaluate the influence of oral health problems in preschool children and associated factors on work absenteeism by parents/guardians. A preschool-based, cross-sectional study was conducted with 837 children aged three to five years in Campina Grande, Brazil. Parents/guardians answered the Brazilian version of the Early Childhood Oral Health Impact Scale. The item "taken time off work" was the dependent variable. Questionnaires addressing socio-demographic variables (child's sex, child's age, parent's/guardian's age, mother's schooling and household income), history of toothache and health perceptions (general and oral) were also administered. Clinical exams for dental caries and traumatic dental injury (TDI) were performed by three dentists who had undergone training and calibration exercises (Kappa: 0.83-0.88 for inter-examiner agreement and K: 0.85-0.90 for intra-examiner agreement). Descriptive, analytical statistics were conducted, followed by logistic regression for complex samples (α = 5%). The prevalence of work absenteeism by parents/guardians due to the oral health problems of their children was 9.2%. The following variables were significantly associated with work absenteeism: low mother's schooling (OR=2.306; 95% CI: 1.307-4.068), history of toothache (OR=6.329; 95% CI: 3.178-12.607) and avulsion/luxation types of TDI (OR= 8.543; 95% CI: 1.801-40.531). Other oral health problems that do not generally cause pain, such as dental caries with a low degree of severity or inactive dental caries and uncomplicated TDI were not associated with work absenteeism by parents/guardians of preschool children. The factors associated to negative impact on work absenteeism were toothache, avulsion, luxation and a lower degree of mother's schooling.

Introduction

Despite the increased access to public healthcare services in Brazil in recent years,[1] there continues to be a large number of preschool children with dental caries and traumatic dental injury (TDI).[2,3] These conditions can exert an influence on functional, emotional and social aspects, thereby impacting oral health-related quality of life (OHRQoL).[4,5]

Preschool children in need of dental treatment depend on parents/guardians to accompany them to the dentist, which affects family functioning due to missed days of work and the possible loss of income.[6] Research has tended to focus on the benefits or effectiveness of treatment[7]. One aspect of the evaluation that is less understood or studied is the ability to define and interpret social aspects linked to the search for dental treatment. Access may depend significantly on factors such as the availability of transportation, access to childcare and the opportunity to take time away from work.[8] Indeed, the social impact of adverse health conditions on daily living include time away from work, school and normal activities. A previous study found that more than 40 million hours are lost annually due to oral health problems, resulting in subsequent potential losses in productivity of more than a billion dollars.[9]

A number of studies have addressed work absenteeism rates due to oral health problems in adults,[10-13] whereas studies addressing work absenteeism of parents due to the health problems of their children have been restricted to non-dental causes.[14,15] While oral health problems in preschool children can result in work absenteeism by parents/guardians, previous studies have only reported the frequency of missed work days.[5,16-18] To best of our knowledge, the present investigation is the first study to analyze factors associated with work absenteeism due to oral health problems in preschool children and the treatment of such problems. This information is essential to understanding the impact of oral health problems on the societal level and evaluating oral health policies, especially regarding the economic aspects involved in this process.[9,19]

The aim of the present study was to evaluate the prevalence of negative impact on family functioning stemming from work absenteeism of parents/guardians due to the oral problems of their children and evaluate the influence of oral health problems in preschool children and associated factors on work absenteeism in a preschool-based sample selected using a multistage sampling process.

Methods

Ethical Considerations

The present study received approval from the Human Research Ethics Committee of the State University of Paraíba (Brazil) (process number: 00460133000-11) in compliance with

Resolution 196/96 of the Brazilian National Health Council. All participants' rights were protected. Parents/guardians read and signed a statement of informed consent prior to the children's participation.

Sample characteristics

A cross-sectional study was conducted involving a random sample of 837 male and female children aged three to five years enrolled at private and public preschools in the city of Campina Grande, Brazil. The participants were selected from a total population of 12,705 children in this age group. Campina Grande (population: 386,000) is an industrialized city in northeastern Brazil and is divided into six administrative districts. The city has a Human Development Index of 0.72[20].

The percentage distribution of three-to-five-year-old preschool children in each administrative district was calculated from information provided by the municipal Board of Education. To ensure representativeness, the sample was stratified according to administrative district and type of institution (two-phase sampling method). Preschools were randomly selected from each administrative district in the first phase and preschool children were randomly selected from each preschool in the second phase. Sample distribution was proportional to the total population enrolled in private and public preschools in each administrative district of the city.

The sample size was estimated based on the different predicted outcomes in this study, the prevalence of absenteeism among parents/guardians due to the oral health problems of their children and associated factors. Thus, the decision was made to consider the largest sample required, which was calculated based on the prevalence of absenteeism. The sample size was calculated based on a 4% margin of error, a 95% confidence level and a correction factor of 1.2 to compensate for the design effect. A 50% prevalence rate of negative impact on family functioning stemming from work absenteeism of parents/guardians due to the oral problems of their children was considered to increase the power, as this value gives the largest sample regardless of the actual prevalence.[21] Eighteen of the 127 public preschools and 15 of the 122 private preschools were randomly selected. The minimum sample size was estimated at 720 preschool children, to which an additional 20% was added to compensate for possible losses, giving a total of 864 preschool children.

Eligibility criteria

To be included in the study, the children needed to be between three and five years of age, enrolled at a preschool and free of systemic diseases. Only the reports of parents/guardians were considered with regard to the absence/presence of systemic diseases; no systemic examination was conducted. The exclusion criteria were the presence of one or more erupted

permanent teeth, a history of orthodontic treatment and parents/guardians not fluent in Brazilian Portuguese.

Training and calibration exercises

The training and calibration exercises consisted of two steps (theoretical and clinical). The theoretical step involved a discussion of the criteria for the diagnosis of dental caries and TDI. A specialist in pediatric dentistry (gold standard in this theoretical framework) coordinated this step, instructing three general dentists on how to perform the examination. The clinical step was conducted at a randomly selected preschool that was not part of the main sample. Each dentist examined 50 previously selected children between three to five years of age. Data analysis involved Cohen's Kappa (K) coefficient on a tooth-by-tooth basis. Inter-examiner agreement was tested by comparing each examiner with the gold standard (K = 0.83 to 0.88) for dental caries and TDI. A seven-day interval was respected between clinical examinations for the determination of intra-examiner agreement (K = 0.85 to 0.90) for dental caries and TDI. As the Kappa coefficients were very good[22], the examiners were considered capable of performing the epidemiological study. The preschool children examined in the calibration exercises did not participate in the main study.

Pre-testing of questionnaire

A pilot study was conducted to test the methodology and comprehension of the questionnaires. The children in the pilot study (n = 40) were not included in the main sample. As there were no misunderstandings regarding the questionnaires or the methodology, no changes to the data collection process were deemed necessary.

Non-clinical data collection

The collection of the non-clinical data involved one item on the family function subscale of the Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS) and questionnaires addressing socio-demographic data, health perceptions and history of toothache. Parents/guardians were previously contacted to attend a meeting at the preschools, at which they were informed regarding the objectives of the study. Parents/guardians who agreed to participate signed a statement of informed consent and were then instructed to answer the questionnaires. For the B-ECOHIS, the parents/guardians were instructed to consider the child's entire lifetime experience of oral health conditions and treatment. All questionnaires were filled out by the parents/guardians and returned at the end of the meeting. This study followed the same methodology used in previous studies.[4,23-25]

The B-ECOHIS addresses the perceptions of parents/guardians regarding the impact of oral health problems on the quality of life of preschool children and their families. This scale is

divided into two sections (Child Impact and Family Impact), containing six subscales and thirteen items. The impact on work absenteeism by parents/guardians was evaluated using the family function subscale.[21,22] The item "How often have you or another family member taken time off from work because of your child's dental problems or treatments?" has demonstrated satisfactory internal consistency and reliability. For statistical purposes, this item was dichotomized as absent (only the response option “never”) and present (remaining response options: “hardly ever”, “sometimes”, “often” and “very often”). “Don’t know” responses were not counted.

The following socio-demographic data were analyzed: child’s sex, child’s age, mother’s schooling, age of parent/guardian and household income (classified based on the monthly minimum wage in Brazil, which was equal to US$312.50).

Parent’s/guardian’s perceptions regarding their child’s general and oral health status were evaluated based on answers to the following question: In general, how would you describe your child’s general health/oral health? The response options were 1) very good, 2) good, 3) fair, 4) poor and 5) very poor. For statistical purposes, these answers were dichotomised as good (codes 1 and 2) and poor (codes 3, 4 and 5).[14]

Clinical data collection

After the return of the questionnaires, the clinical exams were performed by three dentists who had undergone the training and calibration exercise. Prior to the exam, the children cleaned their teeth under the supervision of the examiner. For such, each child received a kit containing a toothbrush, toothpaste and dental floss to remove bacterial plaque from the tooth surfaces and facilitate the diagnosis. The children were examined at the preschools in a sitting position in front of the examiner. Lighting was provided by a portable headlamp (Petzl Zoom head lamp, Petzl America, Clearfield, UT, USA). The dentists used individual protection equipment, a sterile mouth mirror (PRISMA ®, São Paulo, SP, Brazil), sterile Williams probe (WHO-621, Trinity ®, Campo Mourão, PA, Brazil) and dental gauze to dry the teeth.

Dental caries was diagnosed using the International Caries Detection and Assessment System (ICDAS II).[23] This index has codes ranging from 0 (absence of dental caries) to 6. Due to the epidemiological nature of the present study, code 1 was not used, as drying of the teeth was performed with gauze rather than compressed air. Code 2 is used for white spots and codes equal to or greater than 3 determine different degrees of cavitation. Codes 3 and 4 indicate low severity caries, whereas cods 5 and 6 indicate high severity caries.[23]

TDI was classified as enamel fracture, enamel + dentin fracture, complicated crown fracture, extrusive luxation, lateral luxation, intrusive luxation and avulsion.[24] A visual evaluation of tooth coloration was also performed. TDI was recorded as present when any type of injury or tooth discoloration was diagnosed. After the exam, a fluoridated varnish was applied to all teeth and children with dental caries or other dental needs were sent for treatment.

Statistical analysis

Descriptive statistics were performed for the characterization of the sample. The frequency distribution of the data was determined. The dependent variable was work absenteeism by parents/guardians due to the oral health problems of children (dichotomized as yes/no). Logistic regression considering the design effect in sampling weights for complex samples was conducted for each dependent variable ($p < 0.05$). Independent variables with a p-value < 0.20 were incorporated into the multiple logistic regression model using the backward stepwise procedure. Statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS for Windows, version 18.0, SPSS Inc, Chicago, IL, USA).

Results

A total of 837 pairs of preschool children and their parents/guardians participated in the study, which corresponds to 96.8% of the total determined during the calculation of the sample size. The loss of 27 pairs was due to a lack of cooperation on the part of the child during the clinical exam (n = 6), incomplete questionnaires (n = 11), absence from preschool on the days scheduled for the clinical exams (n = 4) and "don't know" responses on the B-ECOHIS item addressing work absenteeism (n = 6).

Table 1 displays the socio-demographic and clinical characteristics of the sample. Most children (65.9%) did not exhibit TDI. However, 66.5% were diagnosed with dental caries (white spot or cavitation). A total of 9.2% of the parents/guardians reported a negative impact on family functioning stemming from work absenteeism due to the oral problems of their children.

In the bivariate analysis, the following independent variables were associated with work absenteeism: mother's schooling ≤ 8 years, household income ≤ the Brazilian monthly minimum wage, parent's/guardian's perception of their child's oral health status as poor, a history of toothache, dental caries and high severity dental caries (Table 2). Table 3 displays the results of the multiple logistic regression. The variables that remained in the final model were low mother's schooling (OR = 2.306; 95% CI: 1.307 to 4.068), history of toothache (OR = 6.329; 95% CI: 3.178 to 12.607) and avulsion/luxation types of TDI (OR = 8.543; 95% CI: 1.801 to 40.531).

Discussion

In the present investigation, mother's schooling, toothache and tooth avulsion/luxation in preschool children exerted an impact on family functioning, causing parents/guardians to miss days of work. This study makes a contribution to the literature by demonstrating such an

association in a representative, preschool-based sample. Previous studies have addressed the frequency of work absenteeism due to dental problems in preschool children, reporting rates ranging from 3.4 to 12.5%.[5,14,15] However, none of the studies cited described determinant factors of work absenteeism.

Caring for the health of a child requires considerable resources, including time and money.[25] Quantifying lost time and potential losses in productivity due to health problems allows a broader discussion beyond mere clinical aspects of adverse health conditions.[17] Thus, the analysis of factors associated with missed days of work furnishes useful population statistics for measuring the social impact of oral health.[26]

A lower level of mother's schooling was a predictor of work absenteeism by parents/guardians due to the oral health problems of their preschool children, which may be associated with less knowledge regarding healthy choices that help maintain satisfactory oral health.[27,28] A low degree of mother's schooling leads to less interest in preventive treatment[34] and may act as an indirect factor for the absenteeism of parents due to the need to seek curative dental treatment for their children. Moreover, most preschool children in Brazil make use of public dental services,[29] which are generally offered during business hours, leading to a greater amount of work absenteeism in social classes that cannot afford private dental care.

A history of toothache was significantly associated with work absenteeism, which demonstrates that family functioning is affected by pain symptoms, regardless of the causal factor. Indeed, toothache is one of the main reasons for seeking dental treatment in this age group[30] and requires a parent/guardian to accompany the child. A study conducted in Canada involving individuals aged six to 70 years fount that toothache was associated to an average loss of four hours of time.[17] Thus, although dental caries was highly prevalent, it likely does not affect family functioning in the early stages.[31] Moreover, the severity of caries was not associated with work absenteeism, perhaps due to a possible interaction with toothache, as severe caries that do not cause pain may go unnoticed by parents/guardians.

TDI occurs unexpectedly and requires immediate treatment.[32] In the present study, tooth avulsion/luxation was associated with work absenteeism, likely due to the classification as "complicated TDI". Treating TDI is a complex issue in the management of child and adolescent health care. Besides the emotional stress, children can experience pain and discomfort and parents/guardians are forced to put off their work commitments in order to take the child for treatment.[4,5,33]

The present study has limitations that should be addressed. Information bias may have occurred in relation to household income and memory bias may have occurred regarding aspects related to the past, such as a history of toothache and the B-ECOHIS questionnaire used to analyze work absenteeism. Moreover, due to the lack of temporal relationship in this type of study, the prevalence of TDI was likely underestimated, as past occurrences of TDI may not

have been diagnosed in subsequent clinical examinations. However, measures were taken to minimize the occurrence of such sources of bias, such as the use of a validated questionnaire and the execution of a pilot study. Moreover, the present study involved a sample of adequate size and multivariate analysis was performed, thus, the results are reliable.

The reduction in social impact caused by oral health problems requires investments in programs and services that correspond to the needs of the target population. It is important for governments to consider offering care to the population with flexible hours and establish effective prevention programs in preschools. If such measures were taken, the frequency of work absenteeism among parents/guardians would tend to diminish, considering the association between work absenteeism and the need to seek curative treatment for children. Longitudinal studies are needed to evaluate the impact of oral health problems in children on the work activities of parents/guardians over time.

Acknowledgments

This study was supported by the State University of Paraíba (UEPB), the Brazilian Coordination of Higher Education, Ministry of Education (CAPES), the Research Foundation of the State of Minas Gerais (FAPEMIG) and the National Council for Scientific and Technological Development (CNPQ), Brazil.

Competing interests

The authors declare that they have no competing interests.

References

1. Paim J, Travassos C, Almeida C, et al. The Brazilian health system: history, advances, and challenges. *Lancet* 2011 **377**: 1778-1797.

2. Siqueira M B, Gomes M C, Oliveira A C, et al. Predisposing factors for traumatic dental injury in primary teeth and seeking of post-trauma care. *Braz Dent J* 2013 **24**: 647-654.

3. Ardenghi T M, Piovesan C, Antunes J L. Inequalities in untreated dental caries prevalence in preschool children in Brazil. *Rev Saude Publica* 2013 **47**: 129-137.

4. Gomes M C, Pinto-Sarmento T C, Costa E M, et al. Impact of oral health conditions on the quality of life of preschool children and their families: a cross-sectional study. *Health Qual Life Outcomes* 2014 **12**: 55.

5. Kramer P F, Feldens C A, Ferreira S H, et al. Exploring the impact of oral diseases and disorders on quality of life of preschool children. *Community Dent Oral Epidemiol* 2013 **41**: 327-335.

6. Anderson H K, Drummond B K, Thomson W M. Changes in aspects of children's oral-health-related quality of life following dental treatment under general anaesthesia. *Int J Paediatr Dent* 2004 **14**: 317-325.

7. Locker D. Measuring oral health: a conceptual framework. *Community Dent Health* 1988 **5**: 3-18.

8. Curtis B, Evans R W, Sbaraini A, et al. Geographic location and indirect costs as a barrier to dental treatment: a patient perspective. *Australian Dental Journal* 2007 **52**: 271-275.

9. Hayes A, Azarpazhooh A, Dempster L, et al. Time loss due to dental problems and treatment in the Canadian population: analysis of a nationwide cross sectional survey. *BMC Oral Health* 2013 **13**: 17.

10. Block J, Goerke L, Millán J M, et al. Family Employees and Absenteeism. *IZA Discussion* 2014 **7936**: 1-11.

11. Lacerda J T, Ribeiro J D, Ribeiro D M, et al. Prevalence of orofacial pain and its impact on the oral health-related quality of life of textile industries workers of Laguna, SC, Brazil. *Cien Saude Colet* 2011 **16**: 4275-4282.

12. Gift H C, Reisine S T, Larach D C. The social impact of dental problems and visits. *Am J Public Health* 1992 **82**: 1663-1668.

13. Miotto M H M B, Barcellos L A, Lopes Z V. Dental pain as a predictor of absenteeism among workers in a juice factory in southeastern Brazil. *Cien Saude Colet* 2013 **18**: 3183-3190.

14. Laforest L, Yin D, Kocevar V S, et al. Association between asthma control in children and loss of workdays by caregivers. *Ann Allergy Asthma Immunol* 2004 **93**: 265-271.

15. Schmier J K, Manjunath R, Halpern M T, et al. The impact of inadequately controlled asthma in urban children on quality of life and productivity. *Ann Allergy Asthma Immunol* 2007 **98**: 245-251.

16. Abanto J, Carvalho T S, Mendes F M, et al. Impact of oral diseases and disorders on oral health-related quality of life of preschool children. *Community Dent Oral Epidemiol* 2011 **39**: 105-114.

17. Scarpelli A C, Paiva S M, Viegas C M, et al. Oral health-related quality of life among Brazilian preschool children. *Community Dent Oral Epidemiol* 2013 **41**: 336-344.

18. Viegas C M, Paiva S M, Carvalho A C, et al. Influence of traumatic dental injury on quality of life of Brazilian preschool children and their families. *Dent Traumatol* 2014 **30**: 338-347.

19. Quiñonez C, Sherret L, Grootendorst P, et al. An environmental scan of publicly financed dental care in Canada. Toronto: Community Dental Health Services Research Unit, University of Toronto 2005.

20. Brazilian Institute of Geography and Statistics: First Results of the 2010 Census [http://cidades.ibge.gov.br/xtras/home.php]

21. Browner W S, Newman T B, Hulley S B. Estimating sample size and power: applications and exemples. *In*: Hulley SB, Cummings SR, Browner WS, et al. *Designing clinical research*. 3rd ed. pp 65-94. Philadelphia: Lippincott and Williams & Wilkins, 2007.

22. Altman D G. *Practical statistics for medical research*. 2nd ed. London: Chapman and Hall, 2006.

23. Gomes M C, Clementino M A, Pinto-Sarmento T C, et al. Association between parental guilt and oral health problems in preschool children: a hierarchical approach. *BMC Public Health* 2014 **14**: 854.

24. Siqueira M B, Firmino R T, Clementino M A, et al. Impact of traumatic dental injury on the quality of life of Brazilian preschool children. *Int J Environ Res Public Health* 2013 **10**: 6422-6441.

25. Sousa R V, Clementino M A, Gomes M C, et al. Malocclusion and quality of life in Brazilian preschoolers. *Eur J Oral Sci* 2014 **122**: 223-229

26. Tesch F C, Oliveira B H, Leão A. Semantic equivalence of the Brazilian version of the Early Chilhood Oral Health Impact Scale. *Cad Saude Publica* 2008 **24**: 1897-1909.

27. Scarpelli A C, Oliveira B H, Tesch F C, et al. Psychometric properties of the Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS). *BMC Oral Health* 2011 **11**: 19.

28. Ismail A I, Sohn W, Tellez M, et al. The International Caries Detection and Assessment System (ICDAS): an integrated system for measuring dental Caries. *Community Dent Oral Epidemiol* 2007 **35**: 170-178.

29. Andreasen J O, Andreasen F M, Andersson L. *Textbook and color atlas of traumatic injuries to the teeth*. 4th ed. Oxford: Blackwell, 2007.

30. Brehaut J C, Kohen D E, Raina P, et al. The health of primary caregivers of children with cerebral palsy: how does it compare with that of other Canadian caregivers? *Pediatrics* 2004 **114**: e182-191.

31. Reisine S T, Miller J. A longitudinal study ofwork loss related to dental diseases. *Soc Sci Med* 1985 **21**: 1309-1314.

32. Feldens C A, Kramer P F, Sequeira M C, et al. Maternal education is an independent determinant of cariogenic feeding practices in the first year of life. *Eur Arch Paediatr Dent* 2012 **13**: 70-75.

33. Kramer P F, Chaffe B W, Bertelli A E, et al. Gains in children's dental health differ by socioeconomic position: evidence of widening inequalities in southern Brazil. *Int J Paediatr Dent* 2014 doi: 10.1111/ipd.12140. [Epub ahead of print]

34. Ardenghi T M, Vargas-Ferreira F, Piovesan C, et al. Age of first dental visit and predictors for oral healthcare utilisation in preschool children. *Oral Health Prev Dent* 2012 **10**: 17-27.

35. Machry R V, Tuchtenhagen S, Agostini B A, et al. Socioeconomic and psychosocial predictors of dental healthcare use among Brazilian preschool children. *BMC Oral Health* 2013 **13**: 60.

36. Camargo M B J, Barros A J D, Frazão P, et al. Predictors of dental visits for routine check-ups and for the resolution of problems among preschool children. *Rev Saude Publica* 2012 **46**: 87-97.

37. Barbosa T S, Gavião M B D. Evaluation of the family impact scale for use in Brazil. *J Appl Oral Sci* 2009 **17**: 397-403

38. Berger T D, Kenny D J, Casas M J, et al. Effects of severe dentoalveolar trauma on the quality of life of children and parentes. *Dent Traumatol* 2009 **25**: 462-469.

39. Abanto J, Tello G, Bonini G C, et al. Impact of traumatic dental injuries and malocclusions on quality of life of preschool children: a population-based study. *Int J Paediatr Dent* 2014 **25**: 18-28.

Tables

Table 1. Sociodemographic and clinical characteristics of sample

Variable	Frequency	
	n	%
Sex		
Male	432	51.6
Female	405	48.4
Age		
3 years	274	32.7
4 years	332	39.7
5 years	231	27.6
Mother's schooling		
≤ 8 years of study	384	46.0
>8 years of study	450	54.0
Household income*		
≤ 1 monthly minimum wage	437	54.8
> 1 monthly minimum wage	361	45.2
Dental caries		
Absent	280	33.5
Present	557	66.5
TDI**		
Absent	549	65.9
Present	284	34.1
Work absenteeism		
Absent	760	90.8
Present	77	9.2
TOTAL	837	100.0

*39 interviewees did not provide this information

** n < 837 for TDI (n = 833) due to tooth loss and/or destruction that rendered the diagnosis impossible

Table 2. Bivariate logistic regression for complex samples regarding work absenteeism and independent variables among children aged three to five years

Variable	Work absenteeism		Bivariate		Size effect
	Yes	No		Unadjusted OR	
	n(%)	n(%)	p-value	(95% CI)	
Sex					
Male	46(10.6)	386(89.4)		1.00	
Female	31(7.7)	374(92.3)	0.249	1.356(0.808-2.275)	0.05
Age of child					
3 years	22(8.0)	252(92.0)	0.385	0.754(0.398-1.427)	
4 years	27(8.1)	305(91.9)	0.584	1.193(0.634-2.248)	0.05
5 years	28(12.1)	203(87.9)		1.00	
Mother's schooling					
≤ 8 years of study	49(12.8)	335(87.2)	<0.001	2.669(1.578-4.515)	0.11
> 8 years of study	28(6.2)	422(93.8)		1.00	
Household income					
≤ 1 monthly minimum wage	50(11.4)	387(88.6)	0.006	2.130(1.243-3.648)	0.07
> 1 monthly minimum wage	26(7.2)	335(92.8)		1.00	
Age of parent/guardian					
≤ 30 years	36(8.6)	383(91.4)	0.812	1.064(0.636-1.781)	0.02
> 30 years	39(9.8)	361(90.2)		1.00	
Perception of general health					
Good	57(8.4)	619(91.6)		1.00	
Poor	19(12.1)	138(87.9)	0.202	1.474(0.812-2.675)	0.05
Perception of oral health					
Good	34(6.1)	525(93.9)		1.00	
Poor	43(15.5)	234(84.5)	<0.001	2.738(1.639-4.573)	0.15
Toothache					
Absent	50(18.9)	215(81.1)		1.00	0.30
Present	26(4.7)	532(95.3)	<0.001	6.438(3.808-10.884)	
Dental caries					
Absent	16(5.7)	264(94.3)		1.00	
Present	61(11.0)	496(89.0)	0.039	1.906(1.032-3.522)	0.08
Severity of dental caries					
Absent	16(5.7)	264(94.3)		1.00	

White spot	7(4.4)	151(95.6)	0.600	0.771(0.292-2.040)	
Low severity cavitations	7(10.1)	62(89.9)	0.379	1.571(0.574-4.303)	0.14
High severity cavitations	47(14.2)	283(85.8)	0.003	2.614(1.383-4.944)	
TDI					
Absent	50(9.1)	499(90.9)		1.00	<0.01
Present	25(8.8)	259(91.2)	0.522	0.837(0.485-1.443)	
Type of TDI					
Enamel fracture and without trauma	58(8.5)	627(91.5)		1.00	
Enamel + dentin fracture	3(7.1)	39(92.9)	0.694	0.774(0.216-2.775)	0.05
Avulsion and/or luxation	3(27.3)	8(72.7)	0.024	5.283(1.242-22.472)	
Discoloration	11(11.6)	84(88.4)	0.540	1.262(0.599-2.656)	

Table 3. Multiple logistic regression for complex samples regarding work absenteeism and independent variables among children aged three to five years

Variable		Multiple	
	p-value	**Adjusted OR (95%CI)***	**Size effect**
Mother's schooling			
≤ 8 years of study	0.004	2.306(1.307-4.068)	0.11
> 8 years of study		1.00	
Toothache			
Yes	<0.001	6.329(3.178-12.607)	0.30
No		1.00	
Type of TDI			
Enamel fracture and without trauma		1.00	
Enamel + dentin fracture	0.989	1.010(0.274-3.721)	0.05
Avulsion and/or luxation	0.007	8.543(1.801-40.531)	
Discoloration	0.854	1.078(0.484-2.400)	

* Variables incorporated into multivariate model ($p < 0.20$): mother's schooling, monthly household income, perception of oral health, toothache, dental caries, caries severity and type of TDI

ARTIGO 2

Periódico: ***Ciência & Saúde Coletiva***ISSN: 1678-4561 (online)/ Qualis Odontologia: B1/ Fator de impacto: 0,4030 (2015)

Artigo formatado segundo as normas de publicação do periódico (ANEXO E)

The potential financial impact of oral health problems in preschool children

Gustavo Leite Ribeiro[1], Monalisa Cesarino Gomes[1], Kenio Costa de Lima[2], Carolina Castro Martins[3], Saul Martins Paiva[3], Ana Flávia Granville-Garcia[1]

[1]Postgraduate Program in Dentistry, State University of Paraiba (UEPB), Campina Grande, PB, Brazil

[3]Department of, Dentistry, Federal University of Rio Grande do Norte (UFRN), Natal, RN, Brazil

[3]Department of Pediatric Dentistry and Orthodontic, Federal University of Minas Gerais (UFMG), Belo Horizonte, MG, Brazil

Address for correspondence

Ana Flávia Granville-Garcia

1325/410 Capitão João Alves de Lira, 58428-800, Campina Grande, PB, Brazil

Phone number: +55 83 33153326

e-mail: anaflaviagg@hotmail.com

The potential financial impact of oral health problems in preschool children

Abstract

Objective: The aim of the present study was to investigate the financial impact of oral health problems on the families of preschool children. **Methods:** A preschool-based, cross-sectional study was conducted with 834 preschool children in Campina Grande, Brazil. Parents/caregivers answered the Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS). The item "financial impact" was the dependent variable. Questionnaires addressing socio-demographic variables, history of toothache and health perceptions (general and oral) were also administered. Clinical exams were performed by three dentists who had undergone a calibration exercise (Kappa: 0.85-0.90). Descriptive, analytical statistics were performed, followed by logistic regression for complex samples (α = 5%). **Results:** The frequency of financial impact due to oral health problems in preschool children was 7.7%. The following variables were significantly associated with financial impact: parental perception of child's oral health as poor (OR=2.025; 95% CI: 1.016-4.034) and the interaction between history of toothache and dental caries (OR=2.587; 95% CI: 4.838-105.448). **Conclusion:** Financial impact was influenced by parental perceptions of their child's oral health as poor and the interaction between history of toothache and dental caries.

Keywords: Cost of Illness; Parents; Child; Preschool; Dental Caries; Tooth Injuries.

INTRODUCTION

Oral health problems can affect family structure due to the impact on activities of daily living as well as both social and financial aspects.[1,2] Dental caries and tooth injuries are the main oral health problems that affect preschool children. Dental caries is the main cause of pain and tooth loss.[3-5] Traumatic dental injury (TDI) occurs unexpectedly and requires immediate care.[6] Moreover, the treatment of these oral health problems can be costly and exert a financial impact on the family.

Oral health problems can result in emergency care, hospitalization, dental appointments and the prescription of medications. Besides treatment-related expenses, there are also indirect costs in the form of transportation and absenteeism from work and school. [7] These factors contribute toward increasing the cost of oral health care.[8,9] Moreover, little importance is given to the primary dentition, which can lead to oral health problems of greater severity when treatment is eventually sought.[10]

Despite the importance of estimating the costs of oral health problems and dental treatment, there have been few recent data generated from studies employing a representative sample. Some studies have addressed the financial impact of systemic diseases on families,[7,11] but little is known regarding the financial impact on the families of preschool children with oral health problems[12-15] and, to best of our knowledge, no previous study has investigated factors associated with this financial impact.

The analysis of the financial aspects of oral health problems can help public administrators understand the overall disease burden in the population rather than merely clinical aspects. Moreover, oral health should take a larger part in discussions addressing health policies.[16,17] To gain a better understanding of this issue, the aim of

the present study was to investigate the perceptions of parents/caregiver regarding the financial impact of oral problems in a preschool-based sample.

METHODS

SAMPLE CHARACTERISTICS

A cross-sectional study was carried out involving a random sample of 834 male and female children aged three to five years enrolled at private and public preschools in the city of Campina Grande, Brazil. The participants were selected from a total population of 12,705 children in this age group. Campina Grande (population: 386,000) is an industrialized city in northeastern Brazil and is divided into six administrative districts. The city has a Human Development Index of 0.72.[18]

The percentage distribution of three-to-five-year-old preschool children in each administrative district was calculated from information provided by the municipal Board of Education. To ensure representativeness, the sample was stratified according to administrative district and type of preschool (two-phase sampling method). Preschools were randomly selected from each administrative district in the first phase and preschool children were randomly selected from each preschool in the second phase. Sample distribution was proportional to the total population enrolled in private and public preschools in each administrative district of the city. The sample size was calculated based on a 4% margin of error, a 95% confidence level and a correction factor of 1.2 to compensate for the design effect. A 50% prevalence rate of financial impact due to oral health problems was considered to increase the power and because this value gives the largest sample regardless of the actual prevalence.[19] Eighteen of the 127 public preschools and 15 of the 122 private preschools were randomly selected. The

minimum sample size was estimated at 720 preschool children, to which an additional 20% was added to compensate for possible losses, giving a total sample of 864 preschool children.

ELIGIBILITY CRITERIA

To be included in the study, the children needed to be between three and five years of age, enrolled in a preschool and free of systemic diseases (based on the reports of the parents/caregivers). Only reports of parents/caregivers were considered for systemic disease; no systemic examination was conducted. The exclusion criteria were the presence of one or more erupted permanent teeth, a history of orthodontic treatment and parents/caregivers not fluent in Brazilian Portuguese.

TRAINING AND CALIBRATION EXERCISES

The training and calibration exercises consisted of two steps (theoretical and clinical). The theoretical step involved a discussion of the criteria for the diagnosis of dental caries and TDI. A specialist in pediatric dentistry (gold standard in this theoretical framework) coordinated this step, instructing three general dentists on how to perform the examination. The clinical step was conducted at a randomly selected preschool that was not part of the main sample. Each dentist examined 50 previously selected children between three to five years of age. Data analysis involved Cohen's Kappa coefficient on a tooth-by-tooth basis. Inter-examiner agreement was tested by comparing each examiner with the gold standard (K = 0.85 to 0.90). A seven-day interval was respected between clinical examinations for the determination of intra-examiner agreement (K = 0.85 to 0.90). As Kappa coefficients were very good,[20] the examiners were considered capable of performing the epidemiological study.

PILOT STUDY

A pilot study was conducted to test the methodology and comprehension of the questionnaires. The children in the pilot study (n = 40) were not included in the main sample. As there were no misunderstandings regarding the questionnaires or the methodology, no changes to the data collection process were deemed necessary.

NON-CLINICAL DATA COLLECTION

The collection of the non-clinical data involved one item on the family function subscale of the Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS) and questionnaires addressing socio-demographic data, health perceptions and history of toothache. Parents/caregivers were previously contacted to attend a meeting at the preschools, at which they were informed regarding the objectives of the study. Parents/caregivers who agreed to participate signed a statement of informed consent and were then instructed to answer the questionnaires. For the B-ECOHIS, the parents/caregivers were instructed to consider the child's entire lifetime experience of oral health conditions and treatment. All questionnaires were filled out by the parents/caregivers and returned at the end of the meeting.

The B-ECOHIS addresses the perceptions of parents/caregivers regarding the impact of oral health problems on the quality of life of preschool children and their families. This scale is divided into two sections (Child Impact and Family Impact), containing six subscales and thirteen items. The impact on the financial due to oral health problems was evaluated using the family function subscale.[21,22] The item "How often has your child had dental problems or dental treatments that had a financial impact on your family?" has demonstrated satisfactory internal consistency and reliability. For statistical purposes, financial impact was dichotomized as absent (when the response

option “never” was marked) or present (remaining response options: “hardly ever”, “sometimes”, “often” and “very often”). “Don’t know” responses were not counted.

The following socio-demographic data were analyzed: child’s sex, child’s age, mother’s schooling, age of parent/caregiver and household income (classified based on the monthly minimum wage in Brazil, which was equal to US$312.50).

Parent’s/caregiver’ perceptions regarding their child’s general and oral health status were evaluated based on answers to the following question: In general, how would you describe your child’s general health/oral health? The response options were 1) very good, 2) good, 3) fair, 4) poor and 5) very poor. For statistical purposes, these answers were dichotomized as good (codes 1 and 2) or poor (codes 3, 4 and 5).[14]

CLINICAL DATA COLLECTION

After the return of the questionnaires, the clinical exams were performed by three dentists who had undergone the training and calibration exercise. Prior to the exam, the children cleaned their teeth under the supervision of the examiner. For such, each child received a kit containing a toothbrush, toothpaste and dental floss to remove bacterial plaque from the tooth surfaces and facilitate the diagnosis. The children were examined at the preschools in a sitting position in front of the examiner. Lighting was provided by a portable headlamp (Petzl Zoom head lamp, Petzl America, Clearfield, UT, USA). The dentists used individual protection equipment, a sterile mouth mirror (PRISMA ®, São Paulo, SP, Brazil), sterile Williams probe (WHO-621, Trinity ®, Campo Mourão, PA, Brazil) and dental gauze to dry the teeth.

Dental caries was diagnosed using the International Caries Detection and Assessment System (ICDAS II).[23] This index has codes ranging from 0 (absence of dental caries) to 6. Due to the epidemiological nature of the present study, code 1 was

not used, as drying of the teeth was performed with gauze rather than compressed air. Code 2 is used for white spots and codes equal to or greater than 3 determine different degrees of cavitation. Codes 3 and 4 denoted low severity caries, whereas codes 5 and 6 denoted high severity caries.[23]

TDI was classified as enamel fracture, enamel + dentin fracture, complicated crown fracture, extrusive luxation, lateral luxation, intrusive luxation and avulsion.[24] A visual evaluation of tooth coloration was also performed. TDI was recorded as present when any type of injury or tooth discoloration was diagnosed. After the exam, a fluoridated varnish was applied to all teeth and children with dental caries or other dental needs were sent for treatment.

STATISTICAL ANALYSIS

Descriptive statistics were performed for the characterization of the sample. The frequency distribution of the data was determined. The dependent variable was financial impact due to oral health problems of the children (dichotomized as yes/no). Logistic regression considering the design effect in sampling weights for complex samples was conducted for each dependent variable ($p < 0.05$). Independent variables with a p-value < 0.20 were incorporated into the multiple logistic regression model using the backward stepwise procedure. The interaction factor was tested for history of toothache and dental caries. Statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS for Windows, version 18.0, SPSS Inc, Chicago, IL, USA).

ETHICAL CONSIDERATIONS

The present study received approval from the Human Research Ethics Committee of the State University of Paraíba (Brazil) (process number: 00460133000-

11) in compliance with Resolution 196/96 of the Brazilian National Health Council. All participants' rights were protected. Parents/guardians read and signed a statement of informed consent prior to the children's participation.

RESULTS

A total of 837 pairs of preschool children and their parents/caregivers participated in the study, which corresponds to 96.5% of the total determined during the calculation of the sample size. The loss of 30 pairs was due to a lack of cooperation on the part of the child during the clinical exam (n = 6), incomplete questionnaires (n = 11), absence from preschool on the days scheduled for the clinical exams (n = 4) and "don't know" responses on the B-ECOHIS item addressing financial impact (n = 9).

Table 1 displays the socio-demographic and clinical characteristics of the sample. A total of 66.3% of the children were diagnosed with dental caries and 33.9% had suffered some type of TDI. A total of 7.7% of the parents/caregiver reported a financial impact on the family due to the oral problems of their children.

In the bivariate analysis, the following variables were associated with financial impact: mother's schooling ≤ 8 years, household income ≤ minimum monthly salary, parents'/caregivers' perception of their child's oral health as poor, history of toothache, dental caries and high severity dental caries (Table 2). However, only the interaction between history of toothache and dental caries (OR = 22.587; 95% CI: 4.838 to 105.448) and parents'/caregivers' perception of their child's oral health as poor (OR = 2.025; 95% CI: 1.016 to 4.034) remained in the final model (Table 3).

DISCUSSION

There has been little investigation into the financial impact of dental treatment for oral health problems. Only a few studies have analyzed the frequency of financial impact due to oral health problems in preschool children.[12-15] Nonetheless, it is necessary to investigate factors associated with this impact in order to assist in the development of new public health policies. The present findings indicate that a history of toothache and parental perceptions of their child's oral health status as poor are associated with a financial impact on the family.

For the analysis of dental caries, an interaction factor with a history of toothache was used. Dental pain independent of dental caries was significantly associated with financial impact on the family. This means that only dental caries with a pain component or pain stemming from another oral health problem exerts a financial impact. Indeed, a large portion of the Brazilian population does not seek dental care unless experiencing pain or discomfort.[25,26] Moreover, although dental caries is relatively prevalent, it does not affect a child's ability to perform activities of daily living in the early stages of decay.[27] In general, only pain and infection caused by the complications of dental caries motivates parents/caregivers to seek urgent care for their children.[25,28,29] It is possible that seeking care only in such cases is due to the low degree of resolution in public healthcare services for this age group and the need for specific knowledge of pediatric dentistry.[30,31] Moreover, a previous study demonstrated that public primary care is focused on children aged six to 12 years, giving priority to the permanent dentition,[32] which could lead parents/caregivers of preschool children to seek an expensive private practice.

The diagnosis of TDI in preschool children was not significantly associated with financial impact on the family. This may be explained by the fact the mild types of TDI are the most diagnosed in epidemiological studies and do not cause long periods of pain for the child, which translates into a low frequency of seeking treatment.[33] However, a study involving children and adolescents found that the degree of TDI severity has an impact on both direct and indirect costs for patients and caregivers.[34] On the other hand, most parents/caregivers do not consider TDI to be a disease.[2,35] Thus, there is no concern regarding this condition and many do not seek the necessary treatment.

Parents'/caregivers' perception of their child's oral health status as poor was associated with financial impact. Adequate oral health care and visits to the dentist are influenced by parents'/caregivers' perceptions.[10,36] The perception of poor oral health is generally associated with clinical conditions and dental treatment needs in preschool children.[36-38] Seeking this type of treatment requires time and money, thereby causing a financial impact.

The present study was conducted with a representative sample and it is therefore possible to extrapolate the findings. However, despite the use of validated questionnaires and the execution of a pilot study, the present investigation has the limitations inherent to the cross-sectional design and some degree of information bias may have occurred. Thus, longitudinal studies are needed to assist in the establishment of new public health programs aimed at reducing the financial impact related to oral health problems. The evaluation of financial impact stemming from oral health problems can contribute to improving public health strategies directed at preschool children.

ACKNOWLEDGMENTS

This study was supported by the State University of Paraíba (UEPB), the Brazilian Coordination of Higher Education, Ministry of Education (CAPES), the Research Foundation of the State of Minas Gerais (FAPEMIG) and the National Council for Scientific and Technological Development (CNPQ), Brazil.

REFERENCES

1. Locker D, Jokovic A, Stephens M, Kenny D, Tompson B, Guyatt G. Family impact of child oral and oro-facial conditions. ***Community Dent Oral Epidemiol***2002; 30(6):438-448.

2. Bendo CB, Paiva SM, Abreu MH, Figueiredo LD, Vale MP. Impact f traumatic dental injuries among adolescents on family's quality of life: a population-based study. ***Int J Paediatr Dent*** 2014; 24(5):387-396.

3. Amorim RG, Figueiredo MJ, Leal SC, Mulder J, Frencken JE. Caries experience in a child population in a deprived area of Brazil, using ICDAS II. ***Clin Oral Investig***2012; 16(2):513-520.

4. Leal SC, Bronkhorst EM, Fan M, Frencken JE. Untreated Cavitated Dentine Lesions: Impact on Children's Quality of Life. ***Caries Res***2012; 46(2):102-106.

5. Trentesaux T, Delfosse C, Rousset MM, Hervé C, Hamel O. Social vulnerability in paediatric dentistry: an overview of ethical considerations of therapeutic patient education. ***Cult Med Psychiatry***2014; 38(1):5-12.

6. Goursand D, Paiva SM, Zarzar PM, Pordeus IA, Allison PJ. Family Impact Scale (FIS): psychometric properties of the Brazilian Portuguese language version. ***Eur J Paediatr Dent***2009; 10(3):141-146.

7. Pagano E, Baldi I, Mosso ML, di Montezemolo LC, Fagioli F, Pastore G, Merletti F. The Economic Burden of Caregiving on Families of Children and Adolescents with Cancer: A Population-Based Assessment. ***Pediatr Blood Cancer***2014; 61(6):1088-1093.

8. Seirawan H, Faust S, Mulligan R. The Impact of Oral Health on the Academic Performance of Disadvantaged Children. ***Am J Public Health***2012; 102(9):1729-1734.

9. Harford J, Chrisopoulos S. Productivity losses from dental problems. ***Aust Dent J***2012; 57(3):393-397.

10. Camargo MBJ, Barros AJD, Frazão P, Matijasevich A, Santos IS, Peres MA, Peres KG. Predictors of dental visits for routine check-ups and for the resolution of problems among preschool children. ***Rev Saude Publica***2012; 46(1):87-97.

11. Warner EL, Kirchhoff AC, Nam GE, Fluchel M. Financial Burden of Pediatric Cancer for Patients and Their Families. ***J Oncol Pract***. In press 2014.

12. Abanto J, Carvalho TS, Mendes FM, Wanderley MT , Bonecker M , Raggio DP. Impact of oral diseases and disorders on oral health-related quality of life of preschool children. ***Community Dent Oral Epidemiol***2011; 39(2):105-114.

13. Kramer PF, Feldens CA, Ferreira SH, Bervian J, Rodrigues PH, Peres MA. Exploring the impact of oral diseases and disorders on quality of life of preschool children. ***Community Dent Oral Epidemiol***2013; 41(4):327-335.

14. Scarpelli AC, Paiva SM, Viegas CM, Carvalho AC , Ferreira FM , Pordeus IA. Oral health-related quality of life among Brazilian preschool children. ***Community Dent Oral Epidemiol***2013; 41(4):336-344.

15. Viegas CM, Paiva SM, Carvalho AC, Scarpelli AC, Ferreira FM, Pordeus IA. Influence of traumatic dental injury on quality of life of Brazilian preschool children and their families. ***Dent Traumatol***2014; 30(5):338-347.

16. Reisine S. The impact of dental conditions on social functioning and quality of life. ***Ann Rev Public Health***1988; 21(12):1-19.

17. Hayes A, Azarpazhooh A, Dempster L, Ravaghi V, Quiñonez C. Time loss due to dental problems and treatment in the Canadian population: analysis of a nationwide cross sectional survey. ***BMC Oral Health***. 2013; 13: 17.

18. Brazilian Institute of Geography and Statistics. ***First Results of the 2010 Census*** [acessado 2013 mai 10]. Disponível em: http://cidades.ibge.gov.br/xtras/home.php

19. Browner WS, Newman TB, Hulley SB. Estimating sample size and power: applications and exemples. In: Hulley SB, Cummings SR, Browner WS. ***Designing clinical research***. 3rd ed. Philadelphia: Lippincott and Williams & Wilkins; 2007. p. 65-94.

20. Altman DG. ***Practical statistics for medical research***. 2nd ed. London: Chapman and Hall; 2006.

21. Tesch FC, Oliveira BH, Leão A. Semantic equivalence of the Brazilian version of the Early Chilhood Oral Health Impact Scale. ***Cad Saude Publica***2008; 24(8):1897-1909.

22. Scarpelli AC, Oliveira BH, Tesch FC, Leão AT, Pordeus IA, Paiva SM. Psychometric properties of the Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS). ***BMC Oral Health***2011; 11:19.

23. Ismail AI, Sohn W, Tellez M, Amaya A, Sen A, Hasson H, Pitts NB. The International Caries Detection and Assessment System (ICDAS): an integrated system for measuring dental Caries. ***Community Dent Oral Epidemiol***2007; 35(3):170-178.

24. Andreasen JO, Andreasen FM, Andersson L. ***Textbook and color atlas of traumatic injuries to the teeth.*** 4th ed. Oxford: Blackwell; 2007.

25. Sakai VT, Magalhães AC, Pessan JP, Silva SMB, Machado MAAM. Urgency treatment profile of 0 to 15 year-old children assisted at urgency dental service from Bauru Dental School, University of São Paulo. ***J Appl Oral Sci***2005; 13(4):340-344.

26. Figueiredo N, Carnut L, Goes PSA. Evaluation of out-of-hours dental service, Recife, Brazil. ***Int J Dent***2010; 9(3):114-119.

27. Barbosa TS, Gavião MB. Evaluation of the family impact scale for use In Brazil. ***J Appl Oral Sci***2009; 17(5):397-403.

28. Moura-Leite FR, Ramos-Jorge ML, Bonanato K, Paiva SM, Vale MP, Pordeus IA. Prevalence, intensity and impact of dental pain in 5-years-old preschool children. ***Oral Health Prev Dent***2008; 6(4):295-301.

29. Tulip DE, Palmer NO. A retrospective investigation of the clinical management of patients attending an out of hours dental clinic in Merseyside under the new NHS dental contract. ***Brit Dent J***2008; 205(12):659-664.

30. Silva MCB, Silva RA, Ribeiro CCC, Cruz MCFN. Profile of public dental care for children and adolescents in São Luís, Maranhão State. ***Cienc Saude Colet***2007; 12(5):1237-1246.

31. Machado Dc, Daher A, Costa LR. Factors Associated with No Dental Treatment in Preschoolers with Toothache: A Cross-Sectional Study in Outpatient Public Emergency Services. ***Int J Environ Res Public Health***2014; 11(8):8058-8068.

32. Duggal M. Carious primary teeth in children: Can or should they be left unrestored? ***Faculty Dent J***2011; 2(1):8-13.

33. Siqueira MB, Gomes MC, Oliveira AC, Martins CC, Granville-Garcia AF, Paiva SM. Predisposing factors for traumatic dental injury in primary teeth and seeking of post-trauma care. ***Braz Dent J***2013; 24(6):647-654.

34. Glendor U, Jonsson D, Halling A, Lindqvist K. Direct and indirect costs of dental trauma in Sweden: a 2-year prospective study of children and adolescents. ***Community Dent Oral Epidemiol***2001; 29(2):150-160.

35. Carvalho TS, Abanto J, Mendes FM, Raggio DP, Bönecker M. Association between parental guilt and oral health problems in preschool children. ***Braz Oral Res***2012; 26(6):557-653.

36. Wandera M, Kayondo J, Engebretsen IM, Okullo I, Astrom AN. Factors associated with caregivers' perception of children's health and oral health status: a study of 6- to 36-month-olds in Uganda. ***Int J Paediatr Dent***2009; 19(4):251-262.

37. Piovesan C, Marquezan M, Kramer PF, Bönecker M, Ardenghi TM. Socioeconomic and clinical factors associated with caregivers' perceptions of children's oral health in Brazil. ***Community Dent Oral Epidemiol***2011; 39(3):260-267.

38. Talekar BS, Rozier RG, Slade GD, Ennett ST. Parental perceptions of their preschool-aged children's oral health. ***J Am Dent Assoc***2005; 136(3):364-372.

Table 1 – Socio-demographic and clinical characteristics of sample

	Frequency	
Variable	**N**	**%**
Sex		
Male	433	51.9
Female	401	48.1
Age		
3 years	273	32.7
4 years	332	39.8
5 years	229	27.5
Mother's schooling*		
≤ 8 years of study	382	46.0
>8 years of study	449	54.0
Monthly household income*		
≤ minimum salary	435	54.7
> minimum salary	360	45.3
Dental caries		
Absent	281	33.7
Present	553	66.3
TDI**		
Absent	549	66.1

Present	282	33.9
Financial impact		
Absent	770	92.3
Present	64	7.7
TOTAL	834	100.0

*3 interviewees did not provide information on mother's schooling and 39 did not provide information on monthly household income

** n < 834 for TDI (n = 831) due to tooth loss and/or destruction that rendered the diagnosis impossible

Table 2 – Bivariate logistic regression for complex samples regarding financial impact and independent variables among children aged three to five years

Variable	Financial impact		Bivariate		
	Yes	No		Unadjusted OR	Size effect
	n(%)	n(%)	p-value	(95% CI)	
Sex					
Male	37(8.5)	396(91.5)	0.359	1.301(0.741-2.286)	0.03
Female	27(6.7)	374(93.3)		1.00	
Age of child					
3 years	19(7.0)	254(93.0)		1.00	
4 years	22(6.6)	310(93.4)	0.859	1.065(0.530-2.140)	0.04
5 years	23(10.0)	206(90.0)	0.114	1.754(0.873-3.521)	
Mother's schooling					
≤ 8 years of study	40(10.5)	342(89.5)	0.010	2.105(1.192-3.717)	0.09
> 8 years of study	24(5.3)	425(94.7)		1.00	
Monthly household income					
≤ minimum salary	43(9.9)	392(90.1)	0.024	1.981(1.096-3.580)	0.08
> minimum salary	20(5.6)	340(94.4)		1.00	
Age of parent/caregiver					
≤ 30 years	30(7.2)	389(92.8)	0.937	1.023(0.585-1.789)	0.02
> 30 years	34(8.6)	363(91.4)		1.00	
Perception of general health					
Good	49(7.3)	626(92.7)		1.00	

Poor	15(9.7)	140(90.3)	0.130	1.661(0.862-3.201)	0.04
Perception of oral health					
Good	25(4.5)	532(95.5)		1.00	
Poor	39(14.1)	237(85.9)	<0.001	3.979(2.244-7.053)	0.17
Toothache					
Yes	50(19.2)	211(80.8)	<0.001	14.162(7.084-28.311)	0.30
No	12(2.2)	546(97.8)		1.00	
Dental caries					
Absent	11(3.9)	270(96.1)	0.003	3.080(1.469-6.456)	0.10
Present	53(9.6)	500(90.4)		1.00	
Caries severity					
Absent	11(3.9)	270(96.1)		1.00	
White spot	8(5.1)	150(94.9)	0.463	1.465(0.527-4.068)	
Low severity	2(2.9)	67(97.1)	0.797	1.230(0.254-5.965)	0.16
High severity	43(13.2)	283(86.8)	<0.001	4.449(2.084-9.496)	
TDI					
Absent	39(7.1)	510(92.9)		1.00	
Present	23(8.2)	259(91.8)	0.993	1.003(0.554-1.814)	0.02
Type of TDI					
Discoloration	9(9.6)	85(90.4)	0.434	1.394(0.606-3.211)	
Avulsion and/or luxation	1(9.1)	10(90.9)	0.436	2.298(0.283-18.675)	0.07
Enamel + dentin fracture	6(14.3)	36(85.7)	0.291	1.730(0.625-4.793)	
Enamel fracture and without trauma	46(6.7)	638(93.3)		1.00	

Table 3 – Multiple logistic regression for complex samples regarding financial impact and independent variables among children aged three to five years

Variable	p-value	Multiple Adjusted OR (95%CI)*
Interaction factor		
Toothache (no)*dental caries (no)		
Toothache (yes)*dental caries (no)	<0.001	22.587(4.838-105.448)
Toothache (no)*dental caries (yes)	0.400	1.922(0.419-8.821)
Toothache (yes)*dental caries (yes)	0.001	15.256(3.167-73.482)
Perception of oral health		
Good		1.00
Poor	0.045	2.025(1.016-4.034)

* Variables incorporated into multivariate model (p < 0.20): child's age, mother's schooling, monthly household income, perception of general health, perception of oral health, dental caries severity and history of toothache*dental caries interaction

5. CONSIDERAÇÕES FINAIS

O presente estudo demonstrou que a cárie dentária e os traumatismos dentários em pré-escolares podem gerar impacto negativo no funcionamento familiar no que concerne às atividades laborais/ocupacionais e finanças/orçamento da família.

Em relação ao absenteísmo dos pais/responsáveis em decorrência de problemas/tratamentos bucais de suas crianças, foi demonstrado que a menor escolaridade materna, dor de dente e traumatismo do tipo avulsão/luxação estão associados a esse tipo de fenômeno. Entretanto, outros problemas de saúde bucal menos complexos como cáries dentárias de baixa gravidade, cáries inativas e traumatismos dentários não complicados não influenciaram as faltas dos pais/responsáveis aos seus trabalhos.

No que diz respeito ao impacto financeiro para a família, apenas a percepção ruim dos pais sobre saúde bucal dos filhos e a interação entre o histórico de dor de dente e a presença de cárie dentária foram associadas a esse aspecto. Esse fato sugere que grande parte dos pais/responsáveis que sentem o impacto do custo do tratamento procuram a atenção odontológica para seus filhos em um momento tardio, motivados por dor ou infecção causados por complicações no quadro clínico. É justamente o agravamento dessa condição que eleva os custos do tratamento. Isso reforça a necessidade da prevenção de problemas de saúde bucal em pré-escolares, principalmente aqueles relacionados à alterações cuja exacerbação pode resultar em dor de dente.

Para suprir essa demanda, seria conveniente a disponibilidade de serviços de atenção odontológica cujo expediente funcionasse em horários diferenciados, e não apenas no horário comercial (período no qual geralmente os pais/responsáveis estão no

trabalho). Dessa forma, os familiares não precisariam faltar ao trabalho para acompanharem as crianças ao atendimento, reduzindo assim o número de absenteísmo. Outrossim, o impacto do tratamento odontológico das crianças para as finanças da família seria amenizado, já que consultas preventivas têm custos muito mais reduzidos em relação a consultas curativas (SHEIHAM, 1992; GIFT *et al*., 1992; HAYES *et al.* 2013).

Para o nosso conhecimento, este foi o primeiro trabalho a investigar os fatores associados ao absenteísmo e impacto financeiro causado à família por problemas de saúde bucal dos filhos utilizando amostra representativa. O presente trabalho permitiu concluir que os problemas bucais de crianças pré-escolares podem repercutir em uma série de contratempos de modo que, se não tratados precoce e adequadamente, podem gerar consequências que rompem os limites da esfera biológica passando a afetar também a esfera social.

Sob essa óptica, ao se quantificar o tempo de trabalho perdido, é possível se estimar as possíveis perdas salariais decorrentes do absenteísmo motivado por problemas de saúde de dependentes do trabalhador. Além disso, ao se dar a devida importância ao impacto social e econômico que as desordens bucais podem trazer para a população, torna-se possível uma discussão da saúde bucal de uma forma mais ampla e sobre uma nova perspectiva.

6. REFERÊNCIAS

ABANTO, J.; CARVALHO, T. S.; MENDES, F. M.; WANDERLEY, M. T.; BÖNECKER, M.; RAGGIO, D. P. Impact of oral diseases and disorders on oral health-related quality of life of preschool children. **Community Dentistry and Oral Epidemiology**, v. 39, n.2, p. 105-114, 2011.

ABANTO, J.; PAIVA, S. M.; RAGGIO, D. P.; CELIBERTI, P.; ALDRIGUI, J. M.; BÖNECKER, M. The impact of dental caries and trauma in children on family quality of life. **Community Dentistry and Oral Epidemiology**, v. 40, n. 4, p. 323-331, 2012.

AHMAD, N.; ABUBAKER, O.; LASKIN, D.M.; STEFFEN, D. The Financial Burden of Hospitalization Associated With Odontogenic Infections. **Journal of Oral and Maxillofacial Surgery**, v.71, p. 656-658, 2013

ANDERSON, H.K.; DRUMMOND B.K.; THOMSON W.M. Changes in aspects of children's oral-health-related quality of life following dental treatment under general anaesthesia. **International Journal of Paediatric Dentistry**, v.14, p. 317-325, 2004.

ANDREASEN, J.O.; ANDREASEN, F.M.; ANDERSSON, L. Textbook and Color Atlas of Traumatic Injuries to the Teeth, 4th edn. Copenhagen: Munskgaard International Publishers, p. 912, 2007.

BERGER, T.D.; KENNY, D.J.; CASAS, M.J.; BARRET, E.J.; LAWRENCE, H.P. Effects os severe dentoalveolar trauma on the quality-of-life of children and parents. **Dental Traumatology**, v.25, p. 462-469, 2009.

BRAGA, M.M.; OLIVEIRA, L.B.; BONINI, G.A.; BÖNECKER, M.; MENDES, F.M. Feasibility of the International Caries Detection and Assessment System (ICDAS-II) in epidemiological surveys and comparability with standard World Health Organization criteria. **Caries Research,** v.43, n.4, p. 245-9, 2009.

BREHAUT, J.C.; KOHEN, D.E.; RAINA, P., *et al*. The health of primary caregivers of children with cerebral palsy: how does it compare with that of other Canadian caregivers? **Pediatrics**, v. 114, p. 182-191, 2004.

BULMAN, J. S.; OSBORN, J. F. Measuring diagnostic consistency. **British Dent Journal**, v. 166, n. 10, p. 377-381, 1989.

CAMARGO, M.B.J.; BARROS, A.J.D.; FRAZÃO, P. Predictors of dental visits for routine check-ups and for the resolution of problems among preschool children. **Revista de Saúde Pública**, v.46, p. 87-97, 2012.

GIFT, H.C.; REISINE, S.T.; LARACH, D.C. The Social Impact of dental Problems and Visits. **American Journal of Public Health**, v. 82, n. 12, p. 1663-1668, 1992

GLENDOR, U.; JONSSON, D.; HALLING, A.; LINDQVIST, K. Direct and indirect costs of dental trauma in Sweden: a 2-year prospective study of children and adolescents. **Community Dentistry and Oral Epidemiology**, v.29, p. 150-160, 2001

HAYES, A.; AZARPAZHOOH, A.; DEMPSTER, L.; RAVAGHI, V., QUIÑONEZ, C. Time loss due to dental problems and treatment in the Canadian population: analysis of a nationwide cross sectional survey. **BMC Oral Health**, v. 13, 17, 2013.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). **Primeiros resultados do censo 2010.** 2012. Disponível em: <http://www.censo2010.ibge.gov.br/dadosdivulgados/index.php?uf=25>

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). **Cidades.** 2014. Disponível em: <http://cidades.ibge.gov.br/xtras/perfil.php?lang=&codmun=250400&search=||infogr%E1ficos:-informa%E7%F5es-completas>

ISMAIL, A.I.; SOHN, W.; TELLEZ, M.; AMAYA, A.; SEN, A.; HASSON, H. The International Caries Detection and Assessment System (ICDAS): an Integrated System for Measuring Dental Caries. **Community Dentistry and Oral Epidemiology,** v. 35, n. 3, p. 170-178, 2007.

LACERDA, J.T.; RIBEIRO, J.D.; RIBEIRO, D.M; TRAEBERT, J. Prevalence of orofacial pain and its impact on the oral health-related quality of life of textile industries workers of Laguna, SC, Brazil. **Ciência e Saúde Coletiva**. v.16, p. 4275-4282, 2011.

LAFOREST, L.; YIN, D.; KOCEVAR, V.S.; PACHECO, Y.; DICKSON, N.; GORMAND, F.; GANSE, E.V. Association between asthma control in children and loss of workdays by caregivers. **Annals of Allergy, Asthma & Immunology**. v. 93, p. 265-271, 2004.

LOPEZ, J.M.S.; ANNUNZIATA, K.; BAILEY, R.; RUPNOW, M.F.T.; MORISKY, D.E. Impact of hypoglycemia on patients with type 2 diabetes mellitus and their quality of life, work producity, and medication adherence. **Patient Preference and Adherence**. v. 8, p. 683-692, 2014.

LOCKER, D.; JOKOVIC, A.; STEPHENS, M.; KENNY D.; TOMPSON B.; GUYATT G. Family impact os child oral and oro-facial conditions. **Community Dentistry and Oral Epidemiology,** v. 30, p. 338-348, 2002.

MACEDO, C.G. & QUELUZ, D.P. Medical and dental absenteeism in workers from a furniture industry in Itatiba, SP, Brazil. **Brazilian Journal of Oral Sciences**. v.9, n. 4, p. 443-448, 2010.

MIOTTO, M.H.M.B.; SOLOTTI, J.C.B.; BARCELLOS, L.A. Dor dentária como motive de absenteísmo em uma população de trabalhadores. **Ciência & Saúde Coletiva**, v. 17, n.5, p. 1357-1363, 2012.

MIOTTO, M.H.M.B.; BARCELLOS, L.A.; LOPES, Z.V. Dor de dente como preditor de absenteísmo em trabalhadores de uma indústria de sucos da Região Sudeste do Brasil. **Ciência & Saúde Coletiva**, v. 18, n.11, p. 3183-3190, 2013.

MIOTTO, M.H.M.B.; LIMA, W.J.G.; BARCELLOS, L.A. Association between dental pain and absenteeism among public workers from Southeastern Brazil. **Revista Dor**, v. 15, n.3, p. 173-177, 2014.

NARDI, A.; MICHEL-CROSATO, E.; BIAZEVIC, M.G.H.; CROSATO, E.; PIZZATTO, E.; QUELUZ, D.P. Relationship between orofacial pain and absenteeism among workers in Southern Brazil. **Brazilian Journal of Oral Sciences**, v. 8, n.1, p. 50-54, 2009.

PAGANO, E.; BALDI, I.; MOSSO, M.L.; DI MONTEZEMOLO, L.C.; FAGIOLI, F.; PASTORES, G.; MERLETTI, F. The Economic Burden of Caregiving on Families of Children and Adolescents with Cancer: A Population-Based Assessment. **Pediatric Blood & Cancer**; v.61, n.6, p. 1088-1093, 2014.

PAHEL, B. T.; ROZIER, R. G.; SLADE, G. D. Parental perceptions of children's oral health: the Early Childhood Oral Health Impact Scale (ECOHIS). **Health and Quality of life Outcomes**, v. 5, n. 6, 2007.

PERES, M. A.; TRAEBERT, J.; MARCENES, W. Calibração de examinadores para estudos epidemiológicos de cárie dentária. **Cadernos de Saúde Pública**, v. 17, n. 1, p.153-159, 2001.

PETERSEN, P. E.; Oral Health. **International Encyclopedia of Public Health**, v. 4, p. 677-685, 2008.

PINTO, V.G. Identificação de problemas. In PINTO, V.G. **Saúde Bucal Coletiva**. 4 ed. Rio de Janeiro: Guanabara Koogan, 2000. p. 596.

REISINE, S. The impact of dental conditions on social functioning and quality of life. **Annual Review of Public Health** v. 21, n. 12, p.1-19, 1988.

SAVAGE, M.F.; LEE, J.Y.; KOTCH, J.B.; JUNIOR, W.F.V. Early Preventive Dental Visits: Effects on Subsequent Utilization and Costs. **Pediatrics**. v.114, p. 418-423, 2004.

SCARPELLI, A. C.; OLIVEIRA, B. H.; TESCH, F. C.; LEÃO, A. T.; PORDEUS, I. A.; PAIVA, S. M. Psychometric properties of the Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS). **BMC Oral Health**, v. 11, n. 19, 2011.

SCARPELLI, A. C.; PAIVA, S. M.; VIEGAS, C. M.; CARVALHO, A. C.; FERREIRA, F. M.; PORDEUS, I. A. Oral health-related quality of life among Brazilian preschool children. **Community Dentistry and Oral Epidemiology**, v. 41, n.4, p. 336-344, 2013.

SCHMIER J.K.; MANJUNATH, R.; HALPERN, M.T. JONES, M.L.; THOMPSON, K.; DIETTE, G.B. The impact of inadequately controlled asthma in urban children on quality of life and productivity. **Annals of Allergy, Asthma & Immunology**. v. 98, p. 245-251, 2007.

SHEIHAM, A. Oral health, general health and quality of life. **Bulletin of the World Health Organization**, v. 83, n. 9, p. 644, 2005.

SHEIHAM, A. The role of dental team in promoting dental health and general health trough oral health. **International Dental Journal**. v. 42, p. 223-228, 1992.

TESCH, F. C.; OLIVEIRA, B. H.; LEÃO, A. Mensuração do impacto dos problemas bucais sobre a qualidade de vida de crianças: aspectos conceituais e metodológicos. **Cadernos de Saúde Pública**, v. 23, n. 11. p. 2555-2564, 2007.

TESCH, F. C.; OLIVEIRA, B. H.; LEÃO, A. Semantic equivalence of the Brazilian version of teh Early Chilhood Oral Halth Impact Scale. **Cadernos de Saúde Pública**, v. 24, p. 1897-1909, 2008.

TRENTESAUX, T.; DELFOSSE C.; ROUSSET, M.; HERVÉ, C.; HAMEL, O. Social Vulnerability in Paediatric Dentistry: An Overview of Ethical Considerations of Therapeutic Patient Education. **Culture, Medicine and Psychiatry**, v. 38, p. 5-12, 2014.

VIEGAS, C.M.; PAIVA, S.M.; CARVALHO, A.C., *et al*. Influence of traumatic dental injury on quality of life of Brazilian preschool children and their families. **Dental Traumatology**. v. 30, p. 338-347, 2014.

WARNER, E.L.; KIRCHHOFF, A.C.; NAM, G.E.; FLUCHEL, M. Financial Burden of Pediatric Cancer for Patientes and Their Families. **Journal of Oncology Practice**, In press 2014.

APÊNDICES E ANEXOS

APÊNDICE A Questionário Dirigido aos Pais

Programa de Pós-Graduação em Odontologia

QUESTIONÁRIO DIRECIONADO AOS PAIS/RESPONSÁVEIS

IDENTIFICAÇÃO:

01.Nome da criança:_____

02. Sexo: ( ) menina ( ) menino 03. Dia do aniversário da criança: ____/____/____

04.Nome do responsável pela criança_____

05. Pré-escola: _____ 06. Pública ( ) Particular ( )

07.Você é que parente da criança? (MARQUE COM UM X)

() Mãe ( ) Pai ( ) Irmão (ã) ( ) Tio (a) ( ) Avô (ó) ( ) Vizinho (a)

( ) Amigo (a) ( ) Outro. Qual? _____

08. Qual a idade do responsável pela criança: _____

09. A criança é:

( ) filho(a) único(a) ( ) filho(a) mais novo(a) ( ) filho(a) mais velho(a) ( ) filho (a) do meio

DADOS SOBRE A FAMÍLIA DA CRIANÇA

10. A mãe da criança 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 as das pessoas que moram com você, quanto é aproximadamente, a RENDA MENSAL DA SUA FAMÍLIA? (incluir salários-mínimos, Bolsa família, Seguro desemprego, "bicos") Valor R$_____ ( ) Não tem renda

12. Quantas pessoas moram na casa da criança (contando com ela)? _____

DADOS SOBRE A CRIANÇA

13. O que você acha da saúde geral de sua criança?

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

14. O que você acha da saúde da boca de sua criança?

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

15. A criança bateu com o dente de leite em algum lugar e machucou esse dente? (MARQUE COM UM X)

( ) Sim ( ) Não

APÊNDICE B Ficha clínica

Universidade Estadual da Paraíba
Departamento de Odontologia
FICHA CLÍNICA

Nº _____ Examinador:_____
Pré-escola:_____ Pública ( ) Particular ( )
Responsável pela criança na pré-escola:_____
Pertencente ao distrito sanitário: _____

Dados Pessoais:
Nome da criança:_____
Sexo: ( ) menina ( ) menino
Dia, mês e ano em que a criança nasceu: _____/_____/____ Idade: ___(em meses)
Nome da mãe, pai, ou responsável:_____

Exame Clínico:

TRAUMATISMO

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

Tipo de trauma:
0. Sem trauma
1. Fratura de esmalte
2. Fratura de esmalte e dentina
3. Fratura coronária complicada
4.Luxação extrusiva
5. Luxação lateral
6. Luxação intrusiva
7. Avulsão
8. Alteração de cor

APÊNDICE C Consentimento da Secretaria Municipal de Educação

UNIVERSIDADE ESTADUAL DA PARAÍBA
CENTRO DE CIÊNCIAS BIOLÓGICAS E DA SAÚDE
Departamento de Odontologia

CARTA DE ANUÊNCIA

Exmo. Sr. Secretário Municipal de Educação.

Nós, Ana Flávia Granville-Garcia e Edja Maria de Melo Brito Costa, pesquisadoras responsáveis, objetivamos realizar uma pesquisa para dissertação de mestrado intitulada "Avaliação das repercussões das alterações bucais na qualidade de vida em pré-escolares de 36 a 60 meses de Campina Grande-PB".

Solicitamos, por gentileza, sua autorização para examinar pré-escolares de 36 a 60 meses e entrevistar suas mães/responsáveis. Informamos que a realização deste trabalho não trará custos para as instituições e, na medida do possível, não iremos interferir na operacionalização e/ou nas atividades cotidianas das mesmas. Salientamos, ainda que em retorno, forneceremos os resultados desta pesquisa para a Secretaria de Educação.

Esclarecemos que tal autorização é uma pré-condição bioética para execução de qualquer estudo envolvendo seres humanos, sob qualquer forma ou dimensão, em consonância com a resolução 196/96 do Conselho Nacional de Saúde.

Atenciosamente,

Campina Grande, 28 de fevereiro de 2011

Ana Flávia Granville-Garcia

Profª do programa de pós-graduação em odontologia da UEPB

Edja Maria de Melo Brito Costa

Profª do programa de pós-graduação em odontologia da UEPB

Autorizo

Exmo. Prof. Flávio Romero Guimarães

Secretário de Educação do Município de Campina Grande-PB

APÊNDICE D Consentimento da Secretaria Estadual de Educação

UNIVERSIDADE ESTADUAL DA PARAÍBA
Departamento de Odontologia

CARTA DE ANUÊNCIA

Ilma Sra. Claubete Ludugério,

Estamos realizando uma pesquisa que tem como título: "Alterações Bucais: Prevalência, Fatores Associados e Impacto na Qualidade de Vida de Pré-Escolares de Campina Grande-PB" com o objetivo de avaliar a condição de saúde bucal, em relação a cárie dentária, maloclusão e traumatismo, bem como suas possíveis causas e a repercussão dessas condições com a qualidade de vida de crianças de 36 a 60 meses. Esta pesquisa será realizada por professores da Universidade Estadual da Paraíba, alunos de mestrado e de graduação e tem finalidade acadêmica.

O estudo será realizado mediante exame clínico da criança, o qual apresenta baixo risco ou desconforto à criança e apenas será realizado se a mesma e seu pai/mãe/responsável permitir. Também será realizada aplicação de questionário aos pais ou responsáveis, sendo que este questionário não apresenta quaisquer tipos de risco ou desconforto, exceto o tempo gasto para responder as questões (cerca de 15 minutos).

Salienta-se que todas as informações obtidas serão guardadas e resguardadas, não sendo revelado sob qualquer pretexto a identificação das crianças e dos responsáveis. Daremos claro pesquisadores, nem para as instituições.

Solicitamos então, por gentileza, sua autorização para examinar essas crianças e entrevistar suas mães/pais/responsáveis. Informamos que, na medida do possível, não iremos interferir na operacionalização e/ou nas atividades cotidianas das escolas/creches, nem das crianças. Será feita aplicação de Flúor nas crianças , como também serão fornecidos Kits para escovação. Salientamos, ainda que em retorno, forneceremos os resultados desta pesquisa para a Secretaria de Educação.

Esclarecemos que tal autorização é uma pré-condição bioética para execução de qualquer estudo envolvendo seres humanos, sob qualquer forma ou dimensão, em consonância com a resolução 196/96 do Conselho Nacional de Saúde.

Atenciosamente,

Campina Grande, 8 de agosto de 2011

Ana Flávia Granville-Garcia
Profª do programa de pós-graduação em odontologia da UEPB

Edja Maria de Melo Brito Costa
Profª do programa de pós-graduação em odontologia da UEPB

Autorizo

Claubete L. Pereira
Chefe do NUAGE da Terceira
Gerência Regional de Educação
Coordenadora da Inspetoria 155-706-8 Ensino da 3ª Região
8841606 4.

APÊNDICE E Consentimento das Escolas Particulares

UNIVERSIDADE ESTADUAL DA PARAÍBA
CENTRO DE CIÊNCIAS BIOLÓGICAS E DA SAÚDE

CARTA DE ANUÊNCIA

Exmo(a). Sr(a). Diretor(a).

Eu, Ana Flávia Granville-Garcia, pesquisadora responsável, juntamente com minha equipe, objetivamos realizar uma pesquisa para dissertação de mestrado intitulada "Avaliação das repercussões das alterações bucais na qualidade de vida em pré-escolares de 36 a 60 meses de Campina Grande-PB".

Solicitamos, por gentileza, sua autorização para examinar pré-escolares de 36 a 60 meses e entrevistar suas mães/responsáveis. Informamos que a realização deste trabalho não trará custos para as instituições e, na medida do possível, não iremos interferir na operacionalização e/ou nas atividades cotidianas das mesmas. Salientamos, ainda que em retorno, forneceremos os resultados desta pesquisa para a sua escola posteriormente.

Esclarecemos que tal autorização é uma pré-condição bioética para execução de qualquer estudo envolvendo seres humanos, sob qualquer forma ou dimensão, em consonância com a resolução 196/96 do Conselho Nacional de Saúde.

Atenciosamente,

Campina Grande, ____ de _____ de 2011.

Ana Flávia Granville-Garcia
Profª do programa de pós-graduação em odontologia da UEPB

Autorizo

_____
Diretor (a) / Responsável pela escola

APÊNDICE F Termo de Consentimento Livre e Esclarecido

Programa de Pós-Graduação em Odontologia

Termo de Consentimento Livre e Esclarecido

Prezado (a) Senhor (a), responsável, pedimos o favor de dedicar alguns minutos do seu tempo para ler este comunicado.

Estamos realizando uma pesquisa que tem como título: "Avaliação das repercussões das alterações bucais na qualidade de vida em pré-escolares de três a cinco anos de Campina Grande-PB". Esta pesquisa tem finalidade acadêmica. Será realizada mediante aplicação de um questionário aos pais dos pré-escolares, sendo que este procedimento não apresenta quaisquer tipos de risco ou desconforto, exceto o tempo gasto para responder as questões (cerca de 15 minutos); e exame clínico da criança, o qual apresenta baixo risco ou desconforto a mesma e apenas será realizado se ela permitir. Salienta-se que todas as informações obtidas serão guardadas e resguardadas, não sendo revelada sob qualquer pretexto a identificação das crianças e dos respondentes.Deixamos claro, desde já, que não haverá nenhuma forma de benefício financeiro ou pessoal, e que esta declaração de concordância em participar do estudo poderá ser retirada a qualquer época, não acarretando em danos. A sua colaboração, autorizando no quadro abaixo a realização do exame e da entrevista, é importante para avaliar a necessidade de realização de programas de saúde bucal. Esclarecemos que sua participação é decorrente de sua livre decisão após receber todas as informações que julgarem necessárias. Você não será prejudicado de qualquer forma caso sua vontade seja de não colaborar, até mesmo onde haja submissão à autoridade. Se quiser informações sobre nosso trabalho, por favor, ligue para Ana Flávia Granville-Garcia, professora responsável pela pesquisa no telefone 33153300, ou então, fale com ela pessoalmente na Av. das Baraúnas, s/n Bodocongó, no horário comercial de 2ª a 6ª feiras. Esperamos contar com o seu apoio, desde já agradecemos.

_____

Ana Flávia Granville-Garcia (Pesquisadora Responsável)

AUTORIZAÇÃO

Após ter sido informado sobre as características da pesquisa: "Avaliação das repercussões das alterações bucais na qualidade de vida em pré-escolares de três a cinco anos de Campina Grande-PB", autorizo a realização do exame clínico na criança e entrevista em:

Campina Grande,___ de _____2012

Responsável_____RG_____

ANEXO A Instrumento B-ECOHIS

Universidade Estadual da Paraíba

Departamento de Odontologia

Instrumento ECOHIS

Questionário sobre a Qualidade de Vida Relacionada à Saúde Bucal de Crianças na Idade Pré-Escolar

"Problemas com dentes, boca, ou maxilares (ossos da boca) e seus tratamentos, podem afetar o bem-estar e a vida diária das crianças e suas famílias. Para cada uma das seguintes questões perguntadas pelo entrevistador, por favor, indique no quadro de opções de respostas a que melhor descreve as experiências da sua criança ou a sua própria. Considere toda a vida da sua criança, desde o nascimento até agora, quando responder cada pergunta".

Sua criança já sentiu dores nos dentes, na boca ou nos maxilares (ossos da boca)?

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

Sua criança já teve dificuldade de beber bebidas quentes ou frias devido a problemas com os dentes ou tratamentos dentários?

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

Sua criança já teve dificuldade para comer certos alimentos devido a problemas com os dentes ou tratamentos dentários?

6. Nunca
7. Quase nunca
8. Às vezes
9. Com frequência
10. Com muita frequência
11. Não sei

Sua criança já teve dificuldade de pronúncias qualquer palavra devido a problemas com os dentes ou tratamentos dentários?

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

Sua criança já faltou à creche, jardim de infância ou escola devido a problemas com os dentes ou tratamentos dentários.

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

Sua criança já teve dificuldades em dormir devido a problemas com os dentes ou tratamentos dentários.

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

Sua criança já ficou irritada devido a problemas com os dentes ou tratamentos dentários.

6. Nunca
7. Quase nunca
8. Às vezes
9. Com frequência
10. Com muita frequência
11. Não sei

Sua criança já evitou sorrir ou rir devido a problemas com os dentes ou tratamentos dentários.

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

Sua criança já evitou falar devido a problemas com os dentes ou tratamentos dentários.

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

Você ou outra pessoa da família já ficou aborrecida devido a problemas com os dentes ou tratamentos dentários de sua criança?

0. Nunca
1. Quase nunca

2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

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

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

Você ou outra pessoa da família já faltou trabalho devido a problemas com os dentes ou tratamentos dentários de sua criança?

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

Sua criança já teve problemas com os dentes ou fez tratamentos dentários que causaram impacto financeiro na sua família?

0. Nunca
1. Quase nunca
2. Às vezes
3. Com frequência
4. Com muita frequência
5. Não sei

ANEXO B Ficha ICDAS-II

Código Dental
S – Saudável
U - Não erupcionado
E – Exfoliado (>60 meses)
X – Perdido por cárie
Dentes anteriores – (6-59meses)
Posteriores (6-71meses)
T – Perdido por trauma
R – Resto radicular
N – Não aplicável
C – Cárie
P – Exposição pulpar
F – Fístula

I.D. Crç. _____ Escola _____ Examinador _____ Data _____

Idade _____ Gênero _____ Anotador _____ Peso _____ Taman _____

Código ICDAS -lesões

0- hígido
2- não cavitada
(seca e úmida)
3- ruptura localizada no esmalte
4- sombra cinzenta de dentina
5- cavidade com dentina visível
6- cavidade extensa

Superior Direito

código dente	55			54			53			52			51		
	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res
Mesial															
Oclusal															
Distal															
Vestib															
Lingual															

Superior Esquerdo

código dente	61			62			63			64			65			código dente
	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	
Mesial																Mesial
Oclusal																Oclusal
Distal																Distal
Vestib																Vestib
Lingual																Lingual

Código de Atividade

1- não ativa
2- ativa

Inferior Direito

código dente	85			84			83			82			81		
	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res
Mesial															
Oclusal															
Distal															
Vestib															
Lingual															

Inferior Esquerdo

código dente	71			72			73			74			75			código dente
	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	Les	Ativ	Res	
Mesial																Mesial
Oclusal																Oclusal
Distal																Distal
Vestib																Vestib
Lingual																Lingual

Código Restauração

(0 – Nada)
1 - Selante parcial
2 - Selante completo
3 - Rest. dcor do dente
4 - Amálgama
5- Corona aço /policarb.
6 – Corona ouro/ porcelana
7 - Rest. perdida
8 - Rest. temporária
9 - Outra

*Resinas, compómeros, Ionómeros, etc

OBSERVACIONES: _____

ANEXO C Parecer do Comitê de Ética em Pesquisa

ANEXO C Parecer do Comitê de Ética em Pesquisa

UNIVERSIDADE ESTADUAL DA PARAÍBA-UEPB
PRÓ-REITORIA DE PÓS-GRADUAÇÃO E PESQUISA- PRPGP
COMITÊ DE ÉTICA EM PESQUISA ENVOLVENDO SERES HUMANOS
COMPROVANTE SISNEP

Andamento do projeto - CAAE - 0046.0.133.000-11

Título do Projeto de Pesquisa
Avaliação das repercussões das alterações bucais na qualidade de vida em pré-escolares de 36 a 60 meses de Campina Grande-PB

Situação	Data Inicial no CEP	Data Final no CEP	Data Inicial na CONEP	Data Final na CONEP
Aprovado no CEP	15/03/2011 14:44:02	30/03/2011 15:00:43		

Descrição	Data	Documento	Nº do Doc	Origem
1 - Envio da Folha de Rosto pela Internet	28/02/2011 11:24:33	Folha de Rosto	FR406207	Pesquisador
3 - Protocolo Aprovado no CEP	30/03/2011 15:00:43	Folha de Rosto	0046.0.133.000-11	CEP
2 - Recebimento de Protocolo pelo CEP (Check-List)	15/03/2011 14:44:02	Folha de Rosto	0046.0.133.000-11	CEP

UNIVERSIDADE ESTADUAL DA PARAÍBA
PRÓ-REITORIA DE PÓS-GRADUAÇÃO E PESQUISA
COMITÊ DE ÉTICA EM PESQUISA

Profª Dra. Doralúcia Pedrosa de Araújo
Coordenadora do Comitê de Ética em Pesquisa

ANEXO D Normas de publicação da revista *International Dental Journal*

Author Guidelines

Content of Author Guidelines: 1. General, 2. Ethical Guidelines, 3. Submission of Manuscripts, 4. Manuscript Types Accepted, 5. Manuscript Format and Structure, 6. After Acceptance.

Useful Websites: Author Services, Wiley Blackwell's Ethical Guidelines, Guidelines for Figures

***International Dental Journal* Introduces Online Submission at**
http://mc.manuscriptcentral.com/idj

1. GENERAL

International Dental Journal publishes peer-reviewed, scientific articles relevant to international oral health issues.

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 a manuscript has been accepted for publication in *International Dental Journal*. Authors are encouraged to visit Wiley Blackwell Author Services for further information on the preparation and submission of articles and figures.

Avoiding allegations of plagiarism
The journal to which you are submitting your manuscript employs a plagiarism detection system (iThenticate). By submitting your manuscript to this journal you accept that your manuscript may be screened for plagiarism against previously-published work. Authors would be well-advised to consider whether their manuscript may raise concerns via iThenticate, which will signal whether a paper is likely in any way to be plagiarized in a formal sense. iThenticate will also, however, signal whether a paper may be plagiarized by repeating work of the submitting authors. Experience shows that, on occasion, large sections of submitted manuscripts can be close to verbatim in word choice from that seen in other papers from the authors' group. This has nothing to do with simple repetition of names/affiliations, but does involve common (not necessarily "standard") phrases that are more appropriately referenced instead of repeating. Alternatively, they can be rephrased differently. Attention to these points could avoid these difficulties.

2. ETHICAL GUIDELINES

International Dental Journal ads to the below ethical guidelines for publication and research.

2.1. Authorship and Acknowledgements
Authors submitting a paper do so on the understanding that the manuscript have been read and approved by all authors and that all authors agree to the submission of the manuscript to the Journal. ALL named authors must have made an active contribution to the conception and design and/or analysis and interpretation of the data and/or the drafting of the paper and ALL must have critically reviewed its content and have approved the final version submitted for publication. Participation solely in the acquisition of funding or the collection of data does not justify authorship.

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

Up to 6 authors are accepted without need for justification. In the case of a specific and detailed justification of the role of every author, up to 8 authors may be mentioned. It is a requirement that all authors have been accredited as appropriate upon submission of the manuscript. Contributors who do not qualify as authors should be mentioned under Acknowledgements.

Acknowledgements: Under acknowledgements please specify contributors to the article other than the authors accredited. Acknowledge only persons who have made substantive contributions to the study. Authors are responsible for obtaining written permission from everyone acknowledged by name because readers may infer their endorsement of the data and conclusions.

2.2. Ethical Approvals
Experimentation involving human subjects will only be published if such research has been conducted in full accordance with ethical principles, including the World Medical Association Declaration of Helsinki(version, 2008) and the additional requirements, if any, of the country where the research has been carried out. Manuscripts must be accompanied by a statement that the experiments were undertaken with the understanding and written consent of each subject and according to the above mentioned principles. A statement regarding the fact that the study has been independently reviewed and approved by an ethical board should also be included. Editor reserve the right to reject papers if there are doubts as to whether appropriate procedures have been used.

When experimental animals are used the methods section must clearly indicate that adequate measures were taken to minimize pain or discomfort. Experiments should be carried out in accordance with the Guidelines laid down by the National Institute of Health (NIH) in the USA regarding the care and use of animals for experimental procedures or with the European Communities Council Directive of 24 November 1986 (86/609/EEC) and in accordance with local laws and regulations.

2.3 Clinical Trials
Clinical trials should be reported using the CONSORT guidelines available at www.consort-statement.org. A CONSORT checklist should also be included in the submission material.

International Dental Journal encourages authors submitting manuscripts reporting from a clinical trial to register the trials in any of the following free, public clinical trials registries: www.clinicaltrials.gov,http://clinicaltrials.ifpma.org/clinicaltrials, http://isrctn.org/. The clinical trial registration number and name of the trial register will then be published with the paper.

2.4 Conflict of Interest and Source of Funding
International Dental Journal requires that sources of institutional, private and corporate financial support for the work within the manuscript be fully acknowledged, and any potential conflicts of interest noted. Suppliers of materials should be named and their location (town, state/county, country) included. Information concerning conflict of interest and sources of funding should be included under Acknowledgements.

2.5 Appeal of Decision
The decision on a paper is final and cannot be appealed.

2.6 Permissions
If all or parts of previously published illustrations are used, permission must be obtained from the copyright holder concerned. It is the author's responsibility to obtain these in writing and provide copies to the Publishers.

2.7 Photographs of People
The International Dental Journal follows current HIPAA guidelines for the protection of patient/subject privacy. If an individual pictured in a digital image or photograph can be identified, his or her permission is required to publish the image. The corresponding author may submit a letter signed by the patient authorizing the International Dental Journal to publish the image/photo. Or, a form provided by the International Dental Journal (available here or by clicking the “instructions and Forms” link in Manuscript Central) may be downloaded for your use. The approval must be received by the Editorial Office prior to final acceptance of the manuscript for publication. Otherwise, the image/photo must be altered such that the individual cannot be identified (black bars over eyes, tattoos, scars, etc.). The International Dental Journal will not publish patient photographs that will in any way allow the patient to be identified, unless the patient has given their express consent.

2.8 Copyright Assignment
If your paper is accepted, the author identified as the formal corresponding author for the paper will receive an email prompting them to login into Author Services; where via the Wiley Author Licensing Service (WALS) they will be able to complete the license agreement on behalf of all authors on the paper.
For authors signing the copyright transfer agreement
If the OnlineOpen option is not selected the corresponding author will be presented with the copyright transfer agreement (CTA) to sign. The terms and conditions of the CTA can be previewed in the samples associated with the Copyright FAQs below:

CTA Terms and Conditions http://exchanges.wiley.com/authors/faqs---copyright-_301.html

For authors choosing OnlineOpen

If the OnlineOpen option is selected the corresponding author will have a choice of the following Creative Commons License Open Access Agreements (OAA):
Creative Commons Attribution License OAA
Creative Commons Attribution Non-Commercial License OAA
Creative Commons Attribution Non-Commercial -NoDerivs License OAA
To preview the terms and conditions of these open access agreements please visit the Copyright FAQs hosted on Wiley Author
Services http://exchanges.wiley.com/authors/faqs---copyright-_301.html and visit http://www.wileyopenaccess.com/details/content/12f25db4c87/Copyright--License.html.
If you select the OnlineOpen option and your research is funded by certain funders [e.g. The Wellcome Trust and members of the Research Councils UK (RCUK) or the Austrian Sceince Fund (FWF)]you will be given the opportunity to publish your article under a CC-BY license supporting you in complying with your Funder requirements. For more information on this policy and the Journal's compliant self-archiving policy please visit:http://www.wiley.com/go/funderstatement.

3. MANUSCRIPT SUBMISSION PROCEDURE - launches on April 1st, 2011.

International Dental Journal only accepts online submission of manuscripts. Manuscripts should be submitted at the online submission site: http://mc.manuscriptcentral.com/idj. Complete instructions for submitting a manuscript are available at the site upon creating an account.
Upon successful submission, the journal administrator will check that all parts of the submission have been completed correctly. If any necessary part is missing or if the manuscript does not fulfil the requirements as specified in these guidelines, the corresponding author will be asked either to adjust the submission according to specified instructions or to submit their paper to another journal.

3.1. Getting Started

Launch your web browser (supported browsers include Internet Explorer 5.5 or higher, Safari 1. , or Firefox 1.0.4 and higher) and go to the journal's online Submission Site:
• Log-in or, if you are a new user, click on 'register here'.
• If you are registering as a new user.
- After clicking on 'register here', enter your name and e-mail information and click 'Next'. Your e-mail information is very important.
- Enter your institution and address information as appropriate, and then click 'Next.'
- Enter a user ID and password of your choice (we recommend using your e-mail address as your user ID), and then select your areas of expertise. Click 'Finish'.
• If you are registered as a user, but have forgotten your log in details, enter your e-mail address under 'Password Help'. The system will send you an automatic user ID and a new temporary password.
• Log-in and select 'Author Center'

3.2. Submitting Your Manuscript

• After you have logged into your 'Author Center', submit your manuscript by clicking the submission link under 'Author Resources'.

• Enter data and answer questions as appropriate. You may copy and paste directly from your manuscript and you may upload your pre-prepared covering letter.
• Click the 'Next' button on each screen to save your work and advance to the next screen.
• You are required to upload your files.
- Click on the 'Browse' button and locate the file on your computer.
- Select the designation of each file in the drop down next to the Browse button.
- When you have selected all files you wish to upload, click the 'Upload Files' button.
• Review your submission (in HTML and PDF format) before completing your submission by sending it to the Journal. Click the 'Submit' button when you are finished reviewing.

3.3. Manuscript Files Accepted
Manuscripts should be uploaded as Word (.doc) or Rich Text Format (.rft) files (not write-protected) plus separate figure files. GIF, JPEG, PICT or Bitmap files are acceptable for submission, but only high-resolution TIF or EPS files are suitable for printing. The files will be automatically converted to HTML and PDF on upload and will be used for the review process. The text file must contain the entire manuscript including title page, summary, text, references, tables, and figure legends, but no embedded figures. In the text file, please reference figures as for instance 'Figure 1', 'Figure 2' etc to match the tag name you choose for the individual figure files uploaded. Manuscripts should be formatted as described in the Author Guidelines below. Please note that any manuscripts uploaded as Word 2007 (.docx) will be unassigned. Please save any .docx file as .doc before uploading.

3.4. Blinded Review
All manuscripts submitted to *International Dental Journal* will be reviewed by at least two experts in the field. The names of the reviewers will not be disclosed to the author submitting a paper.

3.5. Suggest a Reviewer
International Dental Journal attempts to keep the review process as short as possible to enable rapid publication. In order to facilitate this process, please suggest the names and current e-mail addresses of three potential international reviewer whom you consider capable of reviewing your manuscript. In addition please suggest one of the Associate Editors to review your manuscript.

3.6. Suspension of Submission Mid-way in the Submission Process
You may suspend a submission at any phase stage clicking the 'Submit' button and save it to submit later. The manuscript can then be located under 'Unsubmitted Manuscripts' and you can click on 'Continue Submission' to continue your submission when you choose to.

3.7. E-mail Confirmation of Submission
After submission you will receive an e-mail to confirm receipt of your manuscript. If you do not receive the confirmation e-mail after 24 hours, please check your e-mail address carefully in the system. If the e-mail address is correct please contact your IT department. The error may be caused by spam filtering on your e-mail server. Also, the e-mails should be received if the IT department adds our e-mail server (uranus.scholarone.com) to their whitelist.

3.8. Manuscript Status
You can access ScholarOne Manuscripts (formerly known as Manuscript Central) any time to check your 'Author Centre' for the status of your manuscript. The Journal will inform you by e-mail once a decision has been made.
3.9. Submission of Revised Manuscripts
To submit a revised Manuscript, locate your manuscript under 'Manuscripts with Decisions' and click on 'Submit a Revision'. Please remember to delete any old files uploaded when you upload your revised manuscript. Please also upload graphics. Please do not upload PDF files.

4. MANUSCRIPT TYPES ACCEPTED

The International Dental Journal publishes peer-reviewed, scientific articles relevant to international oral health issues. The Journal will publish three types of articles: scientific research reports, concise reviews and editorials as described in greater detail below. In addition, policy statements from the Scientific Committee of the FDI will continue to be published in the Journal. The Journal does not publish case reports or case series, or short communications. Authors of case reports may consider submitting them to Clincal Case Reports (www.clinicalcasesjournal.com/info), a Wiley Open Access online journal.

Original articles are in three categories.

4.1 Scientific Research reports

• **Practice-related research:** including applied research related to the oral cavity, contiguous structures and the influence of diseases and disorders of these structures on other aspects of human health and disease.
• **International public health:** including public health issues of concern to the dental profession, the epidemiology of oral diseases, and programs that address the oral health care needs of individuals within different countries.
• **Interprofessional education and practice:** including studies of how oral health care providers and other health care providers function to improve health and oral health. Studies reporting on dental education should focus on issues related to the future of dental practice.

4.2 Concise reviews are invited or can be suggested to the editorial board. These are written by authors who are recognized experts in their field. These reviews synthesize the state of the science for a particular topic of importance to oral health care providers. The topics are of practical use to the readership. Selected authors are invited to submit these manuscripts, which are a maximum of 3,000 words.

4.3 Editorials are written by members of the editorial board or by invited authors, and provide commentary on an article in that issue of the International Dental Journal, or other topic of importance to the dental profession.

5. MANUSCRIPT FORMAT AND STRUCTURE

5.1. Format

Language: The language of publication is English. It is preferred that the manuscript is professionally edited. A list of independent suppliers of editing services can be found atwww.blackwellpublishing.com/bauthor/english_language.asp. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

Abbreviations, Symbols and Nomenclature: This journal follows the recommendations of:
1) Council of Biology Editors Style Manual, 5th ed., Council of Biology Inc., Bethesda, MD, 1983: and
2) Instructions to Authors (January issue of each year)
3) Generally accepted abbreviations and symbols may be used provided that the terms appear in full together with the abbreviation when first used in the text e.g. fluoride (F), decayed, missing and filled surfaces (DMFS), and thereafter F, DMFS. The two digit tooth notation system of the FDI must be used (see Int Dent J 1971 21: 104)

Scientific Names: Scientific names of bacteria should be binomials, only the generic name with an initial capital, and should be italicized (or underlined) in the typescript. A name should be given in full upon first mention in a paper; the generic name may be abbreviated thereafter, but the abbreviation must be unambiguous. With regard to drugs, generic names should be used instead of proprietary names. If proprietary names are used, they should be attached when the term is first used, and should be followed by a superscript ®. Units used must conform to the Système International d'Unités (SI).

5.2. Structure

All manuscripts submitted to *International Dental Journal/span> should include Title Page, abstract, Main Text, Acknowledgements, References, Tables, Figure Legends and Figures as appropriate. You are encouraged to view a recent paper published to resolve any formatting issues or use the Submission Template*
Title Page: should contain the following information in the order given: 1) the article title; 2) authors' full names (without degrees or titles); 3) authors' institutional affiliations including city and country; 4) a running title, not exceeding 40 letters and spaces; 5) 4-6 keywords; 6) name, address, telephone, fax and e-mail address of the author responsible for correspondence.
Summary: A separate abstract should not exceed 250 words.
The Main Text of Original Research Article should include
Introduction, Methods, Results, Discussion and References.
Introduction: Clearly state the purpose of the article. Summarize the rationale for the study or observation. Give only strictly pertinent references, and do not review the subject extensively.
Methods: The objective of writing the Methods is that there is sufficient information presented for a reader to be able to repeat the work. As the author, you will be very familiar with what has been done, but the challenge is to present information clearly for others.
Results: Present your results in logical sequence in the text, tables, and illustrations. Do not repeat in the text all the data in the tables, illustrations, or both: emphasize or summarize only important observations.

***Discussion**:* Emphasize the new and important aspects of the study and conclusions that follow from them. Do not repeat in detail data given in the Results section. Include in the Discussion the implications of the findings and their limitations and relate the observations to other relevant studies.

Acknowledgements: Under Acknowledgements please specify contributors to the article other than the authors accredited. Acknowledge only persons who have made substantive contributions to the study. Please also include specifications of the source of funding for the study and any potential conflict of interests if appropriate. Suppliers of materials should be named and their location (town, state/county, country) included.

5.3. References

The Vancouver style should be used. References should be numbered in the order in which they appear in the text, and these numbers should be inserted as superscript each time the author is cited (e.g. Williams24 reported similar findings...). At the end of the manuscript the full list of references should give the names and initials of all authors unless there are more than three, when only the first three should be given followed by et al. The authors' names are followed by the title of the article: the title of the journal abbreviated according to the style of the *Index Medicus* and *Index to Dental Literature*(see 'List of Journals Indexed' published annually in the January issue): the year of publication: the volume number: and the first and last page numbers in full. Titles of books should be followed by the place of publication, the publisher, and the year.

Reference to an article: 1. Lange D E. The practical approach to improved oral hygiene. *Int Dent J* 1988**38**: 154–162.

References to a book: 5. Mason R A. *A Guide to Dental Radiography*. 3rd ed, pp 34–37. London: John Wright, 1988.

Reference to a book chapter: 8. Avery B. Diseases of the maxillary antrum. *In* Scully C (ed) *The Mouth and Perioral Tissues*. 1st ed. pp 108–125. Oxford: Heinemann, 1989.

Reference to a report: 5. Guidelines for self care in oral health. Copenhagen: World Health Organisation 1988, publication no. ICP/ORH 113.

We recommend the use of a tool such as EndNote or Reference Manager for reference management and formatting. EndNote reference styles can be searched for here: www.endnote.com/support/enstyles.asp. Reference Manager reference styles can be searched for here: www.refman.com/support/rmstyles.asp

5.4. Tables, Figures and Figure Legends

Tables: Tables should be numbered consecutively with Arabic numerals.

Figures: All figures (abbreviated to Fig(s).) should clarify the text and their number be kept to a minimum. Details must be large enough to retain their clarity after reduction in size. Illustrations should preferably fill single column width (54 mm) after reduction, although in some cases 113 mm (double column) and 171 mm (full page) widths will be

accepted. Micrographs should be designed to be reproduced without reduction, and a linear size scale incorporated. Line drawings should be professionally drawn; half-tones should exhibit high contrast.

Figure Legends: should be numbered and listed after the Tables.
Preparation of Electronic Figures for Publication: Although low quality images are adequate for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit EPS (lineart) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented programmes. Scans (TIFF only) should have a resolution of 300 dpi (halftone) or 600 to 1200 dpi (line drawings) in relation to the reproduction size (see below). EPS files should be saved with fonts embedded (and with a TIFF preview if possible). For scanned images, the scanning resolution (at final image size) should be as follows to ensure good reproduction: lineart: >600 dpi; half-tones (including gel photographs): >300 dpi; figures containing both halftone and line images: >600 dpi.

Further information can be obtained at Wiley Blackwell's guidelines for figures:http://authorservices.wiley.com/bauthor/illustration.asp.

Check your electronic artwork before submitting it:http://authorservices.wiley.com/bauthor/eachecklist.asp

Permissions: If all or parts of previously published illustrations are used, permission must be obtained from the copyright holder concerned. It is the author's responsibility to obtain these in writing and provide copies to the Publishers.

5.5. Supporting Material

Publication in electronic formats has created opportunities for adding details or whole sections in the electronic version only. Supporting Material, such as data sets or additional figures or tables, that will not be published in the print edition of the journal, but which will be viewable via the online edition, can be submitted.

It should be clearly stated at the time of submission that the Supporting Material is intended to be made available through the online edition. If the size or format of the Supporting Material is such that it cannot be accommodated on the journal's Web site, the author agrees to make the Supporting Material available free of charge on a permanent Web site, to which links will be set up from the journal's website. The author must advise Wiley Blackwell if the URL of the website where the Supporting Material is located changes. The content of the Supporting Material must not be altered after the paper has been accepted for publication.

The availability of Supporting Material should be indicated in the main manuscript by a paragraph, to appear after the References, headed 'Supporting Material' and providing titles of figures, tables, etc. In order to protect reviewer anonymity, material posted on the authors Web site cannot be reviewed. The Supporting Material is an integral part of the article and will be reviewed accordingly.

5.6. Early View

International Dental Journal is covered by Wiley Blackwell Publishing's Early View

service. Early View Articles are complete full-text articles published online in advance of their publication in a printed issue. Articles are therefore available as soon as they are ready, rather than having to wait for the next scheduled print issue. Early View articles are complete and final. They have been fully reviewed, revised and edited for publication, and the author's final corrections have been incorporated. Because they are in final form, no changes can be made after online publication. The nature of Early View articles means that they do not yet have volume, issue or page numbers, so Early View articles cannot be cited in the traditional way. They are therefore given a Digital Object Identifier (DOI), which allows the article to be cited and tracked before it is allocated to an issue. After print publication, the DOI remains valid and can continue to be used to cite and access the article.

6. AFTER ACCEPTANCE

Upon acceptance of a paper for publication, the manuscript will be forwarded to the Production Editor who is responsible for the production of the journal.

It is a condition of acceptance of a manuscript for publication that the Editor shall have the right to edit the text to improve its clarity and style and to bring its length within the available space.

6.1 Proof Corrections

The corresponding author will receive an email alert containing a link to a web site. A working email address must therefore be provided for the corresponding author. The proof can be downloaded as a PDF (portable document format) file from this site. Acrobat Reader will be required in order to read this file. This software can be downloaded (free of charge) from the following Web site: www.adobe.com/products/acrobat/readstep2.html . This will enable the file to be opened, read on screen, and for corrections to be electronically annotated. Further instructions will be sent with the proof. Hard copy proofs will be posted if no e-mail address is available; in your absence, please arrange for a colleague to access your e-mail to retrieve the proofs. Proofs must be returned to the Production Editor within three days of receipt.

As changes to proofs are costly, we ask that you only correct typesetting errors. Excessive changes made by the author in the proofs, excluding typesetting errors, will be charged separately. Other than in exceptional circumstances, all illustrations are retained by the publisher. Please note that the author is responsible for all statements made in his work, including changes made by the copy editor.

6.2 Online Production Tracking

Online production tracking is available for your article through Blackwell's Author Services. Author Services enables authors to track their article - once it has been accepted - through the production process to publication online and in print. Authors can check the status of their articles online and choose to receive automated e-mails at key stages of production. The author will receive an e-mail with a unique link that enables them to register and have their article automatically added to the system. Please ensure that a complete e-mail address is provided when submitting the manuscript. Visithttp://authorservices.wiley.com/bauthor/ for more details on online production tracking and for a wealth of resources including FAQs and tips on article preparation, submission and more.

6.3 Author Material Archive Policy
Please note that unless specifically requested, Wiley Blackwell will dispose of all hardcopy or electronic material submitted two months after publication. If you require the return of any material submitted, please inform the editorial office or production editor as soon as possible.

6.4 Offprints and Extra Copies
Free access to the final PDF offprint of your article will be available via Author Services only. Please therefore sign up for Author Services if you would like to access your article PDF offprint and enjoy the many other benefits the service offers. Additional paper offprints may be ordered online. Please click on the following link, fill in the necessary details and ensure that you type information in all of the required fields: Offprint.Cosprinters . If you have queries about offprints please email offprint@cosprinters.com

6.5 Author Services
For more substantial information on the services provided for authors, please see Wiley Blackwell Author Services

ANEXO E Normas de publicação da revista *Ciência & Saúde Coletiva*

Instructions for contributors

Ciência & Saúde Coletiva publishes debates, analyses and research findings on specific themes considered to be of relevance to public health, as well as articles for discussion and analysis of the state of the art topics in the area and subareas, even if they are not directly related to the core theme under scrutiny. The journal is published monthly and sets out to tackle the challenges while seeking to consolidate and promote an ongoing update of trends of thought and practices in public health in a dialogue with the contemporary agenda of Science & Technology.

Guidelines for the organization of thematic issues

Within the diversity of magazines in the area, the hallmark of *Ciência & Saúde Coletiva* Journal is its thematic focus in line with ABRASCO's vocation to conduct in-depth study, as well as promote and disseminate academic debate and peer discussions on issues considered important and relevant and highlight the historical development of public health in Brazil.

The thematic editions are scheduled around four modes of submission:

- By Term of Reference sent by teachers/researchers in the area of public health (spontaneously or suggested by the Editors-in-Chief) when they consider it relevant to examine a given subject in greater depth.
- By Term of Reference sent by coordinators of unpublished and comprehensive research relevant to the area, on results presented in the form of articles within the guidelines described above. In these first two approaches, the Terms of Reference are evaluated on their scientific merit and relevance by the Associate Editors of the Journal.
- By Public Call for papers announced in a page in the journal, and coordinated by Guest Editors. In this case, the Guest Editors accumulate the task of selecting the articles according to their scope to be judged on their merit by referees.
- By Internal Organization of in-house Editors-in-chief, bringing together unsolicited articles under a relevant title within the criteria already described.

The Term of Reference shall contain: (1) title (even provisional) of the proposed thematic edition; (2) the name (or names) of the Guest Editor(s); (3) justification summarized in one or two paragraphs on the proposal from the point of view of the objectives, context, meaning and relevance for Public Health; (4) a list of the ten proposed articles already with the names of the invited authors; (5) the proposal with the text consisting of an opinion or interview with someone who has authority in the discussion of the subject; and (6) proposal of one or two synopses of books that address the theme.

By editorial decision, the maximum number of articles written by the same author in a thematic edition shall not exceed three, either as first author or co-author.

It is emphatically suggested to the organizers that they submit contributions by authors from various national institutions and from foreign contributors. As for any other form of presentation, these editions accept texts in Spanish, English and French.

Recommendations for the submission of articles

It is recommended that articles submitted shall not only address issues of local interest, or be restricted to the descriptive plane. The discussions shall submit a broadened analysis that situates the specificity of the research or review findings in the scenario of the national and international literature on the subject, making clear the original nature of the contribution that the article affords.

C&SC journal adopts the "Rules for submission of proposed articles for publication in medical journals," of the International Committee of Editors of Medical Journals, the Portuguese version of which is published in *Rev Port Clin Geral* 1997; 14:159-174. The document is available on various sites on the World Wide Web, such as by way of
example, www.icmje.org orwww.apmcg.pt/document/71479/450062.pdf. Careful scrutiny of the text by the authors is recommended.

Sections of the publication

Editorial: this is the responsibility of the editors-in-chief or guest editors and it shall contain no more than 4,000 characters with spaces.

Thematic Articles: these shall contain empirical, experimental and conceptual results of research and reviews on the topic in question. The research texts shall not exceed 40,000 characters with spaces.

Free Themed Articles: these shall be of interest to public health by free submission of authors through the journal page. They shall have the same characteristics as the thematic articles, namely up to 40,000 characters with spaces, with the results of research and present analyses and assessments of theoretical, methodological and conceptual trends of the area.

Review Articles: these shall consist of texts exclusively based on secondary sources, subjected to methods of theoretically time-honored thematic or unsolicited analysis, being no longer than 45,000 characters with spaces.

Opinion: texts that express a qualified position of one or several authors or interviews conducted with specialists on the subject under discussion in the journal; they shall not exceed 20,000 characters with spaces.

Synopses: critical analysis of books related to the thematic field of public health, published in the previous two years, the text of which shall not exceed 10,000 characters including spaces. The authors of the synopsis shall include the full reference details of the book at the beginning of the text. References cited throughout the text shall abide by the same rules as the articles. At the time of

submission of the synopsis the authors shall insert a high resolution reproduction of the book cover in jpeg format as an attachment in the system.

Letters: with testimonials and suggestions about what is published in previous issues of the journal (no more than 4,000 characters with spaces).

Note: The maximum limit of characters shall take into account the spaces and include text and bibliography. The abstract and illustrations (figures and tables) are considered separately.

Presentation of manuscripts

1. The originals may be written in Portuguese, Spanish, French and English. Texts in Portuguese and Spanish shall feature the title, abstract and key words in the original language and in English. Texts in French and English shall have the title, abstract and key words in the original language and in Portuguese. Footnotes or notes at the end of the article shall not be accepted.

2. The texts shall be double-spaced, in Times New Roman with a font size of 12, with 2.5 cm margins, in MS Word format and sent by electronic mail only (http://mc04.manuscriptcentral.com/csc-scielo) in accordance with the guidelines of the site.

3. Published articles shall be the property of *C&SC* journal, the full or partial reproduction thereof being prohibited in any medium, whether printed or electronic, without the prior permission of the editors-in-chief of the Journal. The secondary publication shall indicate the source of the original publication.

4. The articles submitted to *C&SC* shall not be offered simultaneously to other magazines.

5. Ethical issues relating to research publications involving human beings are the sole responsibility of the authors and shall be in accordance with the principles contained in the Declaration of Helsinki of the World Medical Association (1964, as revised in 1975, 1983, 1989, 1989, 1996 and 2000).

6. The articles shall be submitted with authorization to reproduce previously published material, use illustrations that may identify people and to transfer copyright and other documents.

7. The concepts and opinions expressed in the articles, as well as the accuracy and validity of the quotations shall be the exclusive responsibility of the authors.

8. The texts are generally (but not necessarily) divided into sections with the title headings Introduction, Methods, Results and Discussion, with the inclusion of subheadings within some sections sometimes being required. The titles and subtitles of the sections shall not be organized with progressive numbering, but with graphical features (upper case, decrease in margin, etc.).

9. The title shall have no more than 120 characters with spaces and an abstract with a maximum of 1400 characters including spaces (including key words), which shall specify the scope, objectives, methodology, theoretical approach and the results of the research or investigation. Immediately below the abstract the authors

shall indicate no more than five (5) key words. We draw attention to the importance of clarity and objectivity in writing the abstract, which shall certainly elicit the reader's interest in the article, and the key words that will assist in the multiple indexing of the article. The key words in the original language and in English shall be included in DeCS/MeSH (http://www.ncbi.nlm.nih.gov/mesh/ and http://decs.bvs.br/).

Authorship

1. The people designated as authors shall have participated in the drafting of the articles such that they can publicly assume responsibility for their content. Qualification as an author shall assume: a) the conception and design or analysis and interpretation of data; b) drafting the article or revising it critically; and c) approval of the version to be published.

2. At the end of the text the individual contributions of each author in the preparation of the article shall be specified (e.g. LM Fernandes worked on the design and final text and CM Guimarães worked on the research and methodology).

Nomenclature

1. The rules for public health/community health nomenclature, as well as abbreviations and conventions adopted in the specialized disciplines, shall be rigidly adhered to. Abbreviations shall be avoided in the title and abstract.

2. The full designation to which an abbreviation refers shall precede its first appearance in the text unless it is a standard unit of measurement.

Illustrations

1. The illustrative material of *C&SC* journal includes tables (demonstrative elements such as numbers, measures, percentages, etc.), charts (demonstrative elements with textual information), graphs (schematic demonstration of a fact and its variations), figures (schematic demonstration of information by means of maps, diagrams, flowcharts, as well as by means of drawings or photographs). It shall be borne in mind that the magazine is printed in one color only, namely black, and if the illustrative material is colored, it will be converted to grayscale.

2. The number of illustrative materials shall not exceed five per article, with exceptions relating to articles of systematization of specific areas of a thematic field. In this case the authors shall negotiate with the editors-in-chief.

3. All illustrative material shall be numbered consecutively in Arabic numerals, with their respective captions and sources, and each one shall be attributed a brief title. All illustrations shall be cited in the text.

4. The tables and charts shall be drafted in the same program used in preparing the article (MS Word).

5. Graphs shall be in the MS Excel program, and the numerical data shall be submitted in a separate MS Word program or in another worksheet as text, to facilitate the use of the copy and paste feature. The graphs generated in an image program (Photoshop or Corel Draw) shall be sent in an open file with a copy in pdf.

6. The figure files (e.g. maps) shall be saved in (or exported to) the Illustrator or Corel Draw format with a copy in pdf. These formats retain the vector information, i.e. maintain the drawn lines of the maps. If it is impossible to save in these formats, files can be sent in TIFF or BMP formats, namely image formats that do not retain the vector information, which affects the quality of the result. If the TIFF or BMP format is used, it shall be saved in the highest resolution (300 DPI or more) and larger size (longest side = 18cm). The same applies to the material that is in photograph form. If the graphs cannot be sent in a digital medium, the original material shall be sent in good condition for reproduction.

Messages of Thanks

1. When these are included, they shall be placed before the bibliographical references.

2. The authors shall be responsible for obtaining written permission of the persons named in the messages of thanks, since readers may infer that such persons agree with the data and conclusions reached.

3. The messages of thanks for technical support shall be in a separate paragraph from other types of contribution.

References

1. References shall be numbered consecutively in accordance with the order in which they appear in the text. In the event that the references are from more than two authors, only the first author's name shall be cited in the text followed by *et al*.

2. References shall be identified by superscript Arabic numerals, as per the examples below:

Example 1: "Another indicator analyzed was the maturity of the PSF"11 ...

Example 2: "As Maria Adelia de Souza4 warns, the city..."

References only cited in tables and figures shall be numbered from the last reference number cited in the text.

3. References shall be listed at the end of the article in numerical order following the general norms of the *Uniform requirements for manuscripts submitted to biomedical journals* (http://www.nlm.nih.gov/bsd/uniform_requirements.html).

4. The names of journals shall be abbreviated according to the style used in the Index Medicus (http://www.nlm.nih.gov/).

5. The names of individuals, cities and countries shall be cited in the original language of publication.

Examples of how to cite references

Articles in journals

1. Standard article (include all authors)
Pelegrini MLM, Castro JD, Drachler ML. Equity in the allocation of resources for health: the experience in Rio Grande do Sul, Brazil. *Cien Saude Colet* 2005; 10(2):275-286. Maximiano AA, Fernandes RO, Nunes FP, Assis MP, Matos RV, Barbosa CGS, Oliveira-Filho EC. Use of veterinary drugs, pesticides and related chemicals in water environments: demands, regulatory considerations and risks to human and environmental health. *Cien Saude Colet* 2005; 10(2):483-491.

2. Institution as author
The Cardiac Society of Australia and New Zealand. Clinical exercise stress testing. Safety and performance guidelines. *Med J Aust* 1996; 164(5):282-284

3. Without indication of authorship
Cancer in South Africa [editorial]. *S Afr Med J* 1994; 84:15.

4. Issue with supplement
Duarte MFS. Physical maturation: a literature review with special attention to Brazilian children. *Cad Saude Publica* 1993; 9 (Suppl. 1):71-84.

5. Indication of the type of text, if necessary
Enzensberger W, Fischer PA. Metronome in Parkinson's disease [letter]. *Lancet* 1996; 347:1337.

Books and other monographs

6. Individual as author
Cecchetto FR. *Violence, culture and power*. Rio de Janeiro: FGV; 2004.

Minayo MCS. *The challenge of knowledge:* qualitative health research. 8th Edition. Sao Paulo, Rio de Janeiro: Hucitec, Abrasco; 2004.

7. Organizer or compiler as author
Bosi MLM, Mercado FJ, compilers. *Qualitative research in health services*. Petropolis: Vozes; 2004.

8. Institution as author
Brazilian Institute of Environment and Renewable Natural Resources (IBAMA). *Control of aquatic plants by means of pesticides and related chemicals.* Brasilia: DILIQ/IBAMA; 2001.

9. Book chapter
Sarcinelli PN. The exposure of children and adolescents to pesticides. In: Peres F, Moreira JC, organizers. *It is either medicine or poison*. Pesticides, health and environment. Rio de Janeiro: Fiocruz; 2003. p. 43-58.

10. Abstract in Annals of Congresses
Kimura J, Shibasaki H, organizers. Recent advances in clinical neurophysiology. *Proceedings of the 10th International Congress of EMG and Clinical Neurophysiology,* 1995 Oct 15-19, Kyoto, Japan. Amsterdam: Elsevier; 1996.

11. Complete works published in scientific events
Coates V, Correa MM. Characteristics of 462 pregnant adolescents in São Paulo. In: *Annals of the V Brazilian Congress of adolescence*, 1993; Belo Horizonte. p. 581-582.

12. Dissertation and thesis
Carvalho GCM. *The federal public funding of the Unified Health System 1988-2001* [thesis]. London: School of Public Health; 2002.

Gomes WA. *Adolescence, pubertal development and sexuality*: information level of adolescents and teachers of municipal schools in Feira de Santana - BA [dissertation]. Feira de Santana (BA): State University of Feira de Santana; 2001.

Other published works

13. Newspaper article
New assisted reproductive techniques enable motherhood after 40 years of age. *Jornal do Brasil*, 2004 Jan 31; p. 12
Lee G. Hospitalizations tied to ozone pollution: study estimates 50,000 admissions annually. *The Washington Post* 1996 Jun 21; Sect. A: 3 (col. 5).

14. Audiovisual material
HIV +/AIDS: the facts and the future [videocassette]. St. Louis (MO): Mosby-Year Book, 1995.

15. Legal documents
Brazil. Law No. 8.080 of September 19, 1990. Deals with the conditions for promotion, protection and recovery of health, the organization and functioning of relevant services and other matters. *Diário Oficial da União* 1990; 19 Sept.

Forthcoming or unpublished material

Leshner AI. Molecular mechanisms of cocaine addiction. *N Engl J Med* Forthcoming 1996.

Cronemberg S, Santos DVV, Ramos LFF, Oliveira ACM, Maestrini HA, Calixto N. Trabeculectomy with mitomycin C in patients with refractory congenital glaucoma. *Arq Bras Oftalmol.* Forthcoming 2004.

Electronic material

16. Article in electronic format
Morse SS. Factors in the emergence of infectious diseases. *Emerg Infect Dis* [journal on the Internet] 1995 Jan-Mar [cited 1996 Jun 5];1(1):[about 24 p.]. Available from: http://www.cdc.gov/ncidod/EID/eid.htm

Lucena AR, Velasco e Cruz AA, Cavalcante R. Epidemiological study of trachoma in the community of Chapada do Araripe – PE – Brazil.*Arq Bras Oftalmol* [serial on the Internet]. 2004 Mar-Apr [accessed 2004 Jul 12];67(2): [about 4 p.]. Available at:http://www.abonet.com.br/abo/672/197-200.pdf

17. Monograph in electronic format
CDI, clinical dermatology illustrated [CD-ROM]. Reeves JRT, Maibach H. CMEA Multimedia Group, producers. 2nd ed. Version 2.0. San Diego: CMEA; 1995.

18. Computer program

Hemodynamics III: the ups and downs of hemodynamics [computer program]. Version 2.2. Orlando (FL): Computerized Educational Systems; 1993.