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ASSOCIAÇÃO ENTRE DETERMINANTES INDIVIDUAIS E DO CONTEXTO ESCOLAR NA CÁRIE DENTÁRIA, DOR DE DENTE E QUALIDADE DE VIDA RELACIONADA À SAÚDE BUCAL EM CRIANÇAS DE 5 ANOS DE IDADE

MONALISA DA NÓBREGA CESARINO GOMES

CAMPINA GRANDE/PB
2017

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

Orientadora: Profª. Dra. Ana Flávia Granville-Garcia

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BANCA EXAMINADORA

Profa. Dra. Fernanda de Morais Ferreira/ UFMG
Membro titular (1º Examinador)

Profa. Dra. Ana Maria Gondim Valença / UFPB
Membro titular (2º Examinador)

Profa. Dra. Edja Maria Melo de Brito Costa / UEPB
Membro titular (3ª Examinador)

Profa. Dra. Tarciana Nobre de Menezes / UEPB
Membro titular (4ª Examinador)

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

Aos meus queridos pais, que sempre estão ao meu lado, em todos os momentos.

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Aos diretores das pré-escolas, às crianças e seus responsáveis os quais permitiram e contribuíram para a execução deste projeto.

“Que tamanho tem o universo?

O universo tem o tamanho do seu mundo.

Que tamanho tem o meu mundo?

Tem o tamanho dos seus sonhos”

Augusto Cury

Associação entre determinantes individuais e do contexto escolar na cárie dentária, dor de dente e qualidade de vida relacionada à saúde bucal em crianças de 5 anos de idade

RESUMO

Os problemas de saúde bucal, em especial à cárie dentária, apresentam uma alta prevalência e resultam muitas vezes em dor de dente e impacto na qualidade de vida relacionada à saúde bucal (QVRSB). A compreensão dos fatores contextuais envolvidos com o processo de saúde-doença permite a identificação de áreas de risco e o planejamento apropriado de estratégias de promoção de saúde em nível comunitário. O contexto escolar é considerado um local importante para o desenvolvimento intelectual das crianças, bem como ao desenvolvimento de programas de saúde. OBJETIVO: O objetivo desse estudo foi avaliar a influência de determinantes individuais e do contexto escolar na cárie dentária, no histórico de dor de dente e no impacto na QVRSB de crianças com cinco anos de idade. MÉTODOS: Um estudo transversal com amostra representativa (n= 769) crianças de cinco anos de idade foi realizado em pré-escolas públicas e privadas na cidade de Campina Grande-PB, Brasil. Os pais/responsáveis responderam questionários sobre dados sociodemográficos, relacionados à saúde bucal da criança, senso de coerência e lócus de controle. As crianças responderam a *Scale of Oral Health Outcomes for five-year-old children* (SOHO-5). Após a aplicação dos questionários, as crianças foram examinadas para cárie dentária, traumatismo dentário, má oclusão e desgaste dentário por critérios estabelecidos pela literatura. A cárie dentária foi diagnosticada através do *International Caries Detection and Assessment System* (ICDAS-II) e índice pufa. Os examinadores foram previamente calibradas e obtiveram bons resultados inter-examinador e intra-examinador. Variáveis relacionadas ao contexto foram obtidas nas pré-escolas e em publicações oficiais do município. Modelos de regressão de Poisson multinível foram realizados para avaliar a associação de variáveis individuais e contextuais com a variável desfecho de cada plano de análise. RESULTADOS: A prevalência de lesões cavitadas de cárie dentária foi de 58,8% e o histórico de dor de dente foi relatado em 23,8% das crianças. A média do somatório do SOHO-5 foi de 2,37 (± 3,35). Após ajuste por variáveis individuais e contextuais, a presença lesão cavitada de cárie dentária foi associada com o uso de serviço de saúde bucal (RP= 0,73; IC95%: 0,58-0,93), menor frequência de escovação (RP= 2,05; IC95%: 1,18-3,60), pré-escola pública (RP= 1,66; IC95%: 1,16-2,36) e menor tamanho da pré-escola (RP= 1,01; IC95%: 1,01-1,02). Em relação ao histórico de dor de dente, as variáveis associadas no modelo final foram sexo feminino da criança (RP= 1,37; IC95%: 1,02-1,85), ser o filho do meio (RP= 1,73; IC95%: 1,08-2,77), menor escolaridade dos pais/responsáveis (RP= 1,65; IC95%: 1,14-2,39) e pré-escola privada (fator de proteção) (RP= 0,58; IC95%: 0,40-0,84). Quanto à QVRSB, na análise multinível observou-se associação com a maior renda familiar mensal (fator de proteção) (RR= 0,99; IC95%: 0,99-0,99), menor idade do pai/responsável (RR= 1,01; IC95%: 1,01-1,02), histórico de dor de dente (RR= 1,52; IC95%: 1,35-

1,72), presença de lesão de mancha branca (RR= 1,43; IC95%: 1,11-1,85), presença de lesão cavitada (RP= 1,42; IC95%: 1,11-1,82), presença da consequência da carie não tratada (RR= 1,20; IC95%: 1,04-1,38), presença do traumatismo dentário (RR= 1,20; IC95%: 1,09-1,33) e pré-escola pública (RR= 1,51; IC95%: 1,17-1,93). CONCLUSÃO: O contexto escolar teve influência na presença de cárie, no histórico de dor de dente e na QVRSB. Crianças de pré-escolas públicas apresentaram os piores desfechos relacionados as condições de saúde bucal. Além disso, o tamanho da pré-escola foi também um importante fator para as lesões cavitadas de cárie dentária. Em relação aos determinantes individuais, após ajuste com o contexto, variáveis socioeconômicas e relacionadas à saúde também foram associadas para os desfechos analisados.

Palavras-chave: cárie dentária; dor de dente; pré-escolar; qualidade de vida; saúde bucal.

Association between individual determinants and school context on dental caries, dental pain and oral health-related quality of life in 5-year-old children

ABSTRACT

Oral health problems, especially dental caries, present a high prevalence which frequently often result in dental pain and impact on oral health-related quality of life (OHRQoL). The understanding of contextual factors involved with the health-disease process allows the identification of risk areas and appropriate planning of health promotion strategies at the community level. School context is considered an important place for the intellectual development of children, as well as the development of health programs. OBJECTIVE: The purpose of this study was to evaluate the influence of individual and school context determinants on dental caries, history of dental pain and impact on the OHRQoL in five-year-old children. METHODS: A cross-sectional study based on a representative sample of 769 five-year-old children was conducted in public and private preschools in the city of Campina Grande, Brazil. Parents/caregivers answered questionnaires concerning socio-demographic data, child's oral health, sense of coherence and locus of control. Children answered the Scale of Oral Health Outcomes for five-year-old children (SOHO-5). After the application of the questionnaires, children were examined for dental caries, traumatic dental injuries, malocclusion and dental wear according to criteria established in the literature. Dental caries was diagnosed through the International Caries Detection and Assessment System (ICDAS-II) and pufa index. The examiners were previously calibrated and obtained good inter-examiner and intra-examiner results. Variables related to social context were collected at the preschools and official municipal publications. Unadjusted and adjusted multilevel Poisson regression models were employed to investigate associations between individual and contextual characteristics with the outcome variable of each analysis plan. RESULTS: The prevalence of cavitated lesions was 58.8% and history of dental pain was reported in 23.8% of all children. The mean SOHO-5 scores were 2.37 (± 3.35). After adjusting for individual and contextual variables, the presence cavitated lesion was associated with visit to the dentist (PR = 0.73, 95% CI: 0.58-0.93), less tooth brushing frequency (<2x/day) (PR = 2.05, 95% CI: 1.18- 3.60), public preschool (PR = 1.66, 95% CI: 1.16-2.36) and smaller size of the preschool (PR = 1.01, 95% CI: 1.01-1.02). In relation to the history of dental pain, the variables associated with the final model were female children (PR = 1.37, 95% CI: 1.02-1.85), being a middle child (PR = 1.73, 95% CI: 1.08-2.77), lower parent's/caregiver's schooling (PR = 1.65, 95% CI: 1.14-2.39) and private preschool (protection factor) (PR = 0.58, 95% CI: 0.40-0.84). Regarding OHRQoL, in the multilevel analysis, there was an association with higher monthly family income (protection factor) (RR = 0.99, 95% CI: 0.99-0.99), younger parent's/caregiver's (RR = 1.01, 95% CI: 1.01-1.02), history of dental pain (RR = 1.52, 95% CI: 1.35-1.72), presence white spot lesion (RR = 1.43, 95% CI: 1.11-1.85), presence cavitated lesion (PR = 1.42, 95% CI: 1.11-1.82), presence consequence of untreated caries (RR = 1.20, 95% CI: 1.04-1.38), presence traumatic dental injuries (RR = 1.20, 95% CI: 1.09-1.33) and private preschool (RR = 1.51, 95% CI: 1.17-1.93).

CONCLUSION: The preschool context had an influence on the presence for dental caries, history of dental pain and OHRQoL. Children of public preschools had the worst outcomes related to oral health conditions. In addition, the size of the preschool was also an important factor for cavitated lesion. Regarding individual determinants, after adjusting for the context, the socioeconomic and health-related variables were also associated with the outcomes analyzed.

Keywords: dental caries; oral health; preschool children; quality of life; toothache.

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LISTAS DE ABREVIATURAS, SIGLAS E SÍMBOLOS (PORTUGUES/INGLÊS)

CNS – Conselho Nacional de Saúde

CI – *Confidence interval*

ECOHIS – *Early Childhood Oral Health Impact Scale*

HDI – *Human Development Index*

IBGE – Instituto Brasileiro de Geografia e Estatística

IC – Intervalo de confiança

ICDAS – *International Caries Detection and Assessment System*

INEP - Instituto Nacional de Estudos e Pesquisas Educacionais

MG – Minas Gerais

MHLC – *Multidimensional Health Locus of Control Scale*

OHRQoL – *Oral Health-Related Quality of Life*

OMS – Organização Mundial de Saúde

PA – Pará

PB – Paraíba

PR – *Prevalence Ratio*

QVRSB – Qualidade de vida relacionada à saúde bucal

RE – Razão de escores

RP – Razão de prevalência

RR – *Rate Ratio*

SD – *Standard deviation*

SOC – Senso de coerência/ *Sense of coherence*

SOHO-5 – *Scale of Oral Health Outcomes*

SP – São Paulo

STROBE – *Strengthening the Reporting of Observational Studies in Epidemiology*

TDI – *Traumatic Dental Injuries*

TX – Texas

UEPB – Universidade Estadual da Paraíba

USA – *United States of America*

UT – Utah

WHO – *World Health Organization*

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Considerações iniciais

1. CONSIDERAÇÕES INICIAIS

A cárie dentária é considerada uma doença multifatorial de alta prevalência em idade pré-escolar (FRANÇA-PINTO et al., 2012; RAMOS-JORGE et al., 2014; PINTO-SARMENTO et al., 2016), sendo as lesões cavitadas as que provocam um maior prejuízo funcional, estético e social nas crianças e suas famílias (DO; HA; SPENCER, 2015). Além disso, a presença de cárie dentária na infância é um preditor para este problema na vida adulta (MEHTA; BHALLA, 2014; NEVES et al., 2016). Entre as principais consequências da cárie dentária, encontra-se a dor de dente. Estudos anteriores demonstram um histórico de dor de dente em crianças pré-escolares entre 9,4% a 25,0% (MOURA-LEITE et al., 2011; ORTIZ et al., 2014; CLEMENTINO et al., 2015; FERREIRA-JÚNIOR et al., 2015). A presença da cárie dentária pode representar uma falha das estratégias de saúde bucal, uma vez que se trata de uma doença passível de prevenção (PITTS, 2004). Dessa forma, a cárie dentária e a dor de dente precisam ser melhor compreendidas quanto aos seus fatores associados na tentativa de aprimoramento das políticas de saúde bucal.

A maioria dos estudos avaliam a cárie dentária e a dor de dente em pré-escolares através de determinantes individuais (MOURA-LEITE et al., 2011; BOEIRA et al., 2012; TANAKA et al., 2013; ORTIZ et al., 2014; PIOVESAN et al., 2014; LEMES et al., 2015; PINTO-SAREMENTO et al., 2016). No entanto, há a necessidade de avaliar a condição contextual em que essas crianças estão inseridas, pois explicações apenas de aspecto individual da doença são insuficientes e não conseguem capturar determinantes importantes das condições de saúde (ANTUNES et al., 2006; DIEZ-ROUX; MAIR, 2010). Assim, compreender essas disparidades contextuais pode ser a base de intervenções direcionadas e políticas de saúde. De fato, estudos envolvendo adolescentes e adultos já demonstram influência de determinantes contextuais para a presença dessas condições de saúde bucal (PERES et al., 2010; SANTIAGO et al., 2013; LAMARCA et al., 2013; MARTINS et al., 2014; GABARDO et al., 2015; ARDILA et al., 2016; ENGELMANN et al., 2016). Em pré-escolares,

alguns estudos também já foram realizados para verificar a associação entre fatores individuais e contextuais com a cárie dentária (MELLO et al., 2008; PIOVENSAN et al., 2011; ARDENGHI et al., 2013; CARVALHO et al., 2014; DO; HA; SPENCER, 2015; PRIESNITZ et al., 2016) e histórico de dor de dente (FERREIRA-JÚNIOR et al., 2015). No entanto apresentaram algumas limitações, como realizados com faixas etárias diferentes de crianças com cinco anos de idade (MELLO et al., 2008; PIOVENSAN et al., 2011; CARVALHO et al., 2014; DO; HA; SPENCER, 2015; PRIESNITZ et al., 2016), apenas em pré-escolas públicas (CARVALHO et al., 2014; PRIESNITZ et al., 2016) ou então a partir de dados do levantamento nacional de saúde bucal realizado em 2010 no Brasil (ARDENGHI et al., 2013; FERREIRA-JÚNIOR et al., 2015). Dessa forma, estudos adicionais que superem essas limitações são necessários.

Dentre os problemas de saúde bucal, a cárie dentária representa a condição de maior influência na qualidade de vida relacionada à saúde bucal (QVRSB) em pré-escolares (SCARPELLI et al., 2013; KRAMER et al., 2013; GOMES et al., 2014; ABANTO et al., 2014; GUEDES et al., 2014; CLEMENTINO et al., 2015; PERAZZO et al., 2017; ABANTO et al., 2017). Além disso, a dor de dente é considerada a principal limitação relatada (SCARPELLI et al., 2013; CLEMENTINO et al., 2015; GOMES et al., 2014). O termo QVRSB pode ser definido como o impacto dos sintomas e aspectos funcionais, além de questões psicológicos e sociais no bem-estar dos indivíduos, advindos dos problemas de saúde bucal (LIU; MCGRATH; HÄGG, 2009; ALDRIGUI et al., 2011; MARTINS-JÚNIOR et al., 2013).

Atualmente, no Brasil, existem apenas dois instrumentos validados para mensurar a QVRSB de pré-escolar, o "*Scale of Oral Health Outcomes*" (SOHO-5) (TSAKOS et al., 2012; ABANTO et al., 2013), e o "*Early Chilhood Oral Health Impact Scale*" (ECOHIS) (TESCH; OLIVEIRA; LEÃO, 2008; SCARPELLI et al., 2011), este último usa as respostas dos pais para avaliar o impacto das alterações bucais na QVRSB (TESCH; OLIVEIRA; LEÃO, 2008; SCARPELLI et al., 2011). O SOHO-5 foi desenvolvido para mensurar a QVRSB de pré-escolares por meio de autorrelatos e relatos secundários dos pais (TSAKOS et al., 2012; ABANTO et al., 2013).

Percepções das crianças sobre o impacto das condições bucais na vida são baseadas em sua experiência de doenças bucais e influenciadas por sua família, ambientes e contexto social mais amplo, incluindo amigos, escolas e bairros. Além disso, a compreensão da doença e da saúde é dependente da idade devido o desenvolvimento social, de linguagem, emocional e cognitivo da criança (PAHEL et al., 2007). Esse desafio resultou no uso de relatos parentais secundários para a percepção de QVRSB de pré-escolares. No entanto, os pais nem sempre percebem com precisão a qualidade de vida de seus filhos, assim medidas proxy trazem uma percepção diferente, mas não substituem os autorrelatos das crianças (VETTER et al., 2012; TSAKOS et al., 2012). Dessa forma a avaliação do relato das crianças nessa faixa etária deve ser usada como um complemento aos relatórios dos pais, auxiliando no planejamento de políticas de saúde bucal (TSAKOS et al., 2012).

Estudos anteriores realizados com esses dois instrumentos já validados, identificaram que a presença dos problemas de saúde bucal, em especial em suas formas mais graves, está relacionada com um maior impacto na QVRSB em pré-escolares (SCARPELLI et al., 2013; GOMES et al., 2014; ABANTO et al., 2014; GUEDES et al., 2014; PERAZZO et al., 2017; VIEGAS et al., 2012; KRAMER et al., 2013; RAMOS-JORGE et al., 2014; ABANTO et al., 2017). No entanto, a maioria dos estudos nessa faixa etária utilizaram como medidas avaliativas da QVRSB apenas os determinantes individuais da criança e sua família (SCARPELLI et al., 2013; GOMES et al., 2014; ABANTO et al., 2014; PERAZZO et al., 2017; VIEGAS et al., 2012; KRAMER et al., 2013; RAMOS-JORGE et al., 2014; ABANTO et al., 2017). Além de características individuais, o contexto em que a criança está inserida pode influenciar a presença de problemas de saúde bucal bem como seu impacto na QVRSB. Dessa forma, realizar estudos com abordagem contextual poderá auxiliar no entendimento dessa relação.

Apenas um estudo avaliou o impacto de fatores individuais e contextuais na QVRSB de crianças pré-escolares (GUEDES et al., 2014), e o fez apenas através da percepção dos pais. Como resultado, esse estudo encontrou que condições contextuais desfavoráveis, como menor apoio comunitário cultural, resultou em um maior impacto negativo na QVRSB das crianças (GUEDES et

al., 2014). De fato, indivíduos que tem maior apoio social podem ter melhores informações e, portanto, fazer escolhas mais saudáveis. No entanto, há a necessidade de avaliar também a influência de fatores contextuais a partir do autorrelato da criança sobre a QVRSB, uma vez que pode complementar a visão dos pais.

Quanto aos aspectos psicológicos, estudos tem avaliado a influência psicológica dos pais/responsáveis, como senso de coerência (SOC) e lócus de controle, os quais também podem apresentar relação com a condição de saúde bucal das crianças (BONANATO et al., 2009b; KHATRI et al., 2014; NUNES et al., 2017). No entanto, em pré-escolares essa questão foi pouco explorada. Esses aspectos psicológicos e relacionados a qualidade de vida são importantes para o processo de tomada de decisão em saúde pública, na alocação de recursos e delineamento de programas adequados de intervenção, possibilitando modificar variáveis que possam interferir de forma negativa no indivíduo (LEE et al., 2009; MARTINS-JÚNIOR et al., 2013).

Além disso, devido ao Brasil ser um país com consideráveis disparidades sociais, os estudos devem buscar determinar os fatores que possam explicar diferenças no estado de saúde bucal da população (MARTINS et al., 2014). Os determinantes individuais de saúde sozinhos não explicam desigualdades em níveis de saúde entre diferentes grupos de uma sociedade. Tais divergências podem estar relacionadas a fatores decorrentes do contexto em que os indivíduos estão inseridos (BUSS; PELLEGRINI FILHO, 2007). Independentemente do nível socioeconômico, sociedades com apoio social mais elevado apresentam melhores condições de saúde (PATTUSSI; HARDY; SHEIHAM, 2006). Por isso, as análises para avaliar fatores associados às condições de saúde devem dar a devida atenção à complexa interação entre determinantes individuais e contextuais.

A compreensão de quais fatores contextuais estão envolvidos no processo saúde-doença pode permitir a identificação de áreas de risco e o planejamento apropriado de estratégias preventivas e de cuidados de saúde em nível comunitário (ROCHA et al., 2014). Entre os aspectos sociais a serem reconhecidos no processo de contextualização da saúde, destaca-se a escola, considerada um local importante para o desenvolvimento intelectual das

crianças, bem como ao desenvolvimento de programas de saúde (SÁ; VASCONCELOS, 2009). Além disso, há relação entre condições econômicas e tipos de escolas em que as crianças em idade pré-escolar estão inseridas (PIOVESAN et al., 2011). Portanto, as escolas podem ser consideradas configurações apropriadas para a promoção da saúde em crianças, uma vez que podem fornecer um ambiente para melhorar a saúde, autoestima, comportamentos e habilidades para a vida (PIOVESAN et al., 2011). Além disso, variáveis como o número de unidades de saúde e a renda mensal da vizinhança da escola podem representar o contexto em que a criança está inserida. No entanto, a influência do aspecto contextual foi pouco explorada em análises com abordagem multinível em crianças com idade pré-escolar.

Diante do exposto, pode-se dizer que há uma lacuna de estudos com análise contextual sobre a saúde bucal de crianças com idade pré-escolar. Dessa forma, o objetivo desse estudo foi avaliar a influência dos determinantes individuais e contextuais na cárie dentária e dor de dente, bem como na QVRSB segundo o relato das crianças, baseando-se na pré-escola como unidade de contexto para as crianças de 5 anos. Optou-se pela apresentação da tese em forma de artigos científicos, uma vez que constituem uma forma clara e objetiva de divulgação dos resultados das pesquisas junto à comunidade científica.

Objetivos

2. OBJETIVOS

2.1 OBJETIVO GERAL

Avaliar a influência de determinantes individuais e do contexto escolar na cárie dentária, no histórico de dor de dente e no impacto na QVRSB de crianças com cinco anos de idade da cidade de Campina Grande, Paraíba.

2.2 OBJETIVOS ESPECÍFICOS

Plano de análise I (Artigo 1)

- Determinar a prevalência de lesões cavitadas de cárie dentária em crianças com cinco anos de idade.
- Avaliar a associação entre determinantes individuais (condição socioeconômica, questão relativas à saúde bucal e aspectos psicológicos dos pais/responsáveis) e lesões cavitadas de cárie dentária.
- Identificar a associação de variáveis contextuais nas lesões cavitadas de cárie dentária.

Plano de análise II (Artigo 2)

- Determinar a prevalência de histórico de dor de dente alguma vez na vida de crianças com cinco anos de idade.
- Avaliar a associação entre determinantes individuais (condição socioeconômica e aspectos psicológicos dos pais/responsáveis) e histórico de dor de dente.
- Identificar a associação de variáveis contextuais no histórico de dor de dente.

Plano de análise III (Artigo 3)

- Avaliar o impacto na QVRSB segundo o relato de crianças com cinco anos de idade.
- Avaliar a associação entre determinantes individuais (condição socioeconômica, questões relacionadas à saúde bucal e aspectos psicológicos dos pais/responsáveis) e a QVRSB.
- Identificar a associação de variáveis contextuais na QVRSB.

Metodologia

3. METODOLOGIA

3.1 Área do estudo

O município de Campina Grande está localizado no interior do estado da Paraíba, no agreste paraibano, na parte oriental do Planalto da Borborema (Figura 1). Com uma população estimada de 400.002 habitantes, o município de Campina Grande, apresenta uma área total de 2.124,80 km^2 e é um dos principais polos de desenvolvimento econômico do interior do Nordeste. A vigilância sanitária subdivide o município em seis distritos sanitários, visando facilitar a programação local dos serviços de saúde (IBGE, 2015).

O município sedia a Federação das Indústrias do Estado, possui 16 instituições de ensino superior, sendo duas da rede pública. Com isso, a cidade de Campina Grande é reconhecida como uma cidade universitária. Além disso, Campina Grande também tem graves problemas sociais e elevados índices de pobreza, além de um grande número de desempregados e de trabalhadores do setor informal. O censo demográfico de 2010 considerou que aproximadamente 64.476 pessoas na cidade viviam abaixo da linha de pobreza. (IBGE, 2015)

Figura 1- Localização geográfica do Estado de Paraíba e da Cidade de Campina Grande.

3.2 DESENHO DO ESTUDO

Este estudo foi do tipo transversal, analítico, que determinou a influência de determinantes individuais e contextuais na cárie dentária, na dor de dente e na QVRSB em crianças com cinco anos de idade, na cidade de Campina Grande-PB.

Os estudos de corte transversal são importantes, pois permitem analisar a distribuição de um agravo em determinada população, além de serem úteis como base para o planejamento e determinação de necessidades coletivas de tratamento. Apresentam, entre outras vantagens, baixo custo e objetividade dos dados (PEREIRA, 1995; PINTO, 2000; FRAZÃO, 2003).

3.3 POPULAÇÃO DO ESTUDO

Crianças de cinco anos, matriculadas em pré-escolas públicas e privadas da cidade de Campina Grande-PB. O município apresenta 134 pré-escolas privadas e 129 públicas, perfazendo um total de 14.474 crianças matriculadas, sendo dessas 4.665 com 5 anos, de acordo com o censo escolar de 2014.

3.4 CÁLCULO AMOSTRAL

Nesta pesquisa o cálculo amostral foi realizado por meio de uma amostragem probabilística por conglomerados para amostras complexas, estratificado em dois estágios (pré-escolas e crianças) e proporcional ao número de estabelecimentos por Distritos Sanitários. Em cada distrito, foi selecionado um número determinado de pré-escolas, 48 pré-escolas, 20 das 129 públicas e 28 das 134 privadas. No segundo estágio as crianças foram selecionadas a partir de uma amostra aleatória simples de cada escola selecionada.

A amostra foi obtida através do cálculo de estimativa de proporção, de acordo com Kirkwood e Sterne (2003) e foi considerado um nível de significância de 95%, prevalência de agravo de 50% (para maximizar a

amostra, uma vez que o estudo utilizou mais de um desfecho de interesse) e erro admissível de 5%:

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

Onde:

α: nível de significância (95%)

p: prevalência do agravo analisado (50%)

d: erro admissível (5%)

Deste modo, segundo o cálculo de estimativa de proporções, o tamanho amostral seria de 384 crianças. O processo de amostragem por conglomerados altera a precisão das estimativas, uma vez 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 é requerido para compensar esse aspecto. Essa correção pode ser efetuada de forma simplificada e conservadora: multiplica-se o tamanho da amostra por 1,2 a 2,0. Esse procedimento é denominado efeito de delineamento ou efeito do desenho. Neste estudo utilizou-se fator 1,6, sendo a amostra estimada em 615 crianças. Porém, este tamanho foi aumentado para compensar possíveis perdas estimadas em 20%. Assim, a amostra final foi constituída de 769 pré-escolares de cinco anos.

3.5 CALIBRAÇÃO

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

Primeira Etapa: consistiu em um momento teórico no qual foram apresentados os índices a serem utilizados e os critérios de diagnóstico. Imagens das condições que poderiam ser observadas no exame foram projetadas por um minuto, sendo solicitado aos dois examinadores que diagnosticassem as alterações bucais. Foi, então, realizado o estudo da ficha clínica e da rotina a ser seguida durante o exame clínico. Esta etapa foi

coordenada por um especialista em odontopediatria, considerado padrão-ouro no treinamento de dois cirurgiões-dentistas selecionados para a coleta de dados.

Segunda Etapa: etapa na qual foram conduzidos os exames clínicos, pelos examinadores e pelo padrão ouro, realizados em 40 pré-escolares de cinco anos pertencentes a uma pré-escola pública selecionada por sorteio. Estes pré-escolares examinados no exercício de calibração não foram incluídos no estudo principal. O grau de concordância inter-examinador foi testado comparando-se os diagnósticos de cada examinador com o padrão-ouro. Dessas 40 crianças, 20 foram reexaminadas após um intervalo de sete dias para determinação do grau de concordância intra-examinador.

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

$$K = \frac{P_o - P_e}{100 - P_e}$$

Onde:

Po - porcentagem de dentes nos quais obteve-se concordância diagnóstica.

Pe - porcentagem de concordância esperada.

Condição clínica	Inter-examinador	Intra-examinador
Cárie dentária	0,89-0,90	0,87-1,00
Atividade de cárie dentária	0,80-0,89	0,88-1,00
Índice pufa	0,90-1,00	1,00
Traumatismo dentário	0,88-0,90	0,82-0,87
Má oclusão	0,86-0,91	0,94-1,00
Desgaste dentário	0,68-0,73	0,81-1,00

Quadro 1 - Coeficientes *Cohens´s kappa* inter e intra-examinador.

Os resultados numericamente obtidos representam (ALTMAN, 2006):

k < 0.20: confiabilidade pobre.

k entre 0,21-0,40: confiabilidade justa.

k entre 0,41-0,60: confiabilidade moderada.

k entre 0,61 e 0,80: confiabilidade boa.

k entre 0,81-1,00: confiabilidade muito boa.

A confiabilidade inter-examinador e intra-examinador foi considerada boa para este estudo, portanto os dois cirurgiões-dentistas treinados foram considerados aptos para execução da metodologia proposta.

3.6 CRITÉRIOS DE INCLUSÃO

- Crianças de cinco anos matriculadas em pré-escolas públicas e privadas de Campina Grande-PB.
- Ausência de doenças sistêmicas e/ou deficiências físicas e de aprendizagem (relatado pelos pais/responsáveis).

3.7 CRITÉRIOS DE EXCLUSÃO

- Presença de um ou mais dentes permanentes.
- Crianças previamente submetidas a tratamento ortodôntico.
- Pais/responsáveis que não apresentavam pelo menos 12 horas por dia/noite de convivência com a criança.

3.8 ESTUDO PILOTO

Previamente ao estudo principal foi realizado um estudo piloto para testar e avaliar a metodologia proposta para o estudo (exames clínicos e aplicabilidade dos questionários). Esta etapa foi realizada em duas pré-escolas (uma pública e uma privada) selecionadas por conveniência. As crianças da pré-escola inserida no estudo piloto não foram incluídas no estudo principal.

3.9 CONTATO COM AS PRÉ-ESCOLAS

As pré-escolas foram localizadas de acordo com os dados fornecidos pelo INEP (Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira), e visitadas inicialmente pelo pesquisador. Neste momento, foram esclarecidos à pessoa responsável pelo estabelecimento, os objetivos da pesquisa, as atividades a serem realizadas na pré-escola e a metodologia do trabalho proposto. Em cada pré-escola foram apresentadas a aprovação do trabalho pelo Comitê de Ética em Pesquisa e a Autorização da Secretaria de Educação.

3.10 COLETA DE DADOS

A coleta dos dados foi realizada nas instituições públicas e privadas selecionadas para o estudo, sendo executada por 2 examinadores calibrados e os dados anotados por assistentes devidamente treinados, no período de agosto a dezembro de 2015.

Após o contato com os responsáveis por cada pré-escola para explicar o estudo e a dinâmica do processo de coleta de dados, os pais/responsáveis foram então convidados a participar de uma reunião na pré-escola de seus filhos para obter esclarecimentos sobre os objetivos do estudo e obter o consentimento por escrito para o exame das crianças. Na mesma reunião, os pais/responsáveis foram convidados a preencher os questionários abordando dados sociodemográficos, características relacionadas à saúde bucal das crianças e aspectos psicológicos. As crianças receberam um kit de higiene bucal (escova, dentifrício e fio dental) e realizaram uma escovação supervisionada. Após essa etapa, as crianças foram examinadas para avaliação das condições bucais (cárie dentária, traumatismo dentário, má oclusão e desgaste dentário).

3.10.1 Instrumentos para coleta de dados

Para coleta dos dados foram necessários os seguintes instrumentos de pesquisa:

- Questionário dirigido aos pais contendo questões relacionadas às condições sociodemográficas e características relacionadas à saúde bucal das crianças (APÊNDICE A).
- Questionário SOHO-5, dirigido aos pré-escolares (ANEXO A).
- Questionário SOC-13, adaptado para pais/responsáveis de pré-escolares (ANEXO B).
- Questionário Lócus de controle, dirigido aos pais/responsáveis (ANEXO C).
- Ficha clínica para anotação dos dados clínicos (APÊNDICE B) e ficha do ICDAS-II (ANEXO D)

Questionário de condições sociodemográficas e características relacionadas à saúde bucal das crianças

Os dados sociodemográficos foram coletados para obter um perfil individual da criança e sua inserção familiar. Os dados coletados foram relativos ao sexo da criança, escolaridade dos pais/responsáveis, idade dos pais/responsáveis, renda familiar mensal, número de filhos e ordem de nascimento.

Questões relacionadas à hábitos de higiene, visita ao dentista e histórico de dor de dente também foram coletadas com os pais/responsáveis. O histórico de dor de dente foi considerado se alguma vez na vida foi relatado/observado esse sintoma na criança. Em relação à visita ao dentista considerou se a criança foi alguma vez na vida ao dentista, independentemente do motivo. Além disso, foi pesquisada a frequência de escovação da criança.

SOHO-5

O SOHO-5 consiste em uma versão de autorrelato da criança e outra versão de relatos secundários dos pais em relação à QVRSB da criança. O instrumento é estruturalmente composto por 14 itens contidos nas duas versões, 7 itens para cada versão, sendo que 6 destes comuns nas duas

versões em termos de conteúdo (TSAKOS et al., 2012; ABANTO et al., 2013). Na presente pesquisa foi analisada a versão da criança sobre a sua QVRSB.

Na versão da criança os 7 itens são: dificuldade para comer, dificuldade para beber, dificuldade para falar, dificuldade para brincar, dificuldade para dormir, evitar sorrir devido a dor e evitar sorrir devido à aparência. As respostas de cada item são dadas em uma escala de 3 pontos: não=0; um pouco=1; muito=2. A explicação das respostas foi facilitada pelo uso de um cartão com o desenho de 3 faces.

Figura 2. Faces para facilitar a obtenção de respostas na versão da criança.

O escore total para cada versão do SOHO-5 é calculado a partir do somatório dos pontos das opções de respostas. Desse modo, o escore total da versão da criança pode variar de 0 a 14. Quanto à interpretação da escala, escores mais altos indicam uma pior qualidade de vida da criança.

Sense of Coherence Scale (SOC -13)

O senso de coerência dos pais/responsáveis foi medido usando a versão curta do *Sense of Coherence Scale* (SOC -13), que consiste em 13 itens e opções de resposta em uma escala de Likert. A fim de exemplificar o instrumento, existem 3 itens que poderiam ser considerados representativos da SOC -13: (1) "Você tem interesse pelo que se passa ao seu redor?", (2) "Já lhe aconteceu ter ficado desapontada com pessoas em quem você confiava?", e (3) " Você tem ideias e sentimentos confusos?" (ANTNOWSY, 1987).

O SOC-13 foi validado para uso em mães de adolescentes (FREIRE et al., 2001) e foi submetido à adaptação transcultural e de propriedades psicométricas para uso em mães de pré-escolares (BONANATO et al., 2009a). As modificações consistiram de uma simplificação no texto e uma mudança de escala de classificação a partir de uma escala de Likert de 7 pontos com extremos descritivos em uma escala de Likert de 5 pontos com todas as

respostas descritas. Assim, a soma do escore final é de 13 a 65, com os valores mais elevados correspondentes a uma maior capacidade de adaptação ao estresse. O somatório foi dicotomizado a partir da mediana para sua utilização na análise estatística, como realizado em estudo anterior (BONANATO et al., 2009b). Resultados abaixo da mediana foram considerados SOC fraco e acima da mediana SOC forte.

Questionário Lócus de controle

O lócus de controle dos pais/responsáveis foi avaliado pelo *Multidimensional Health Locus of Control Scale* (MHLC) (NUNES et al., 2017). Esse questionário apresenta 18 questões, apresentando 3 subdivisões (interno/externo/acaso) e tem como finalidade avaliar quem determina os eventos de saúde/doença do indivíduo, os quais podem apresentar internalidade para a saúde (interno) e externalidade para saúde (externo/acaso). Cada questão apresenta cinco opções de resposta (1= concordo totalmente; 2= concordo em parte; 3= estou indeciso(a); 4= discordo em parte; 5= discordo totalmente). Para avaliar os resultados, somam-se as respostas dos itens correspondentes a cada subescala, que pode variar de 6 a 30 pontos. Quanto maior o valor da subescala, menor o valor de cada fator (interno e externo/acaso). O lócus de controle dos pais/responsáveis pode ser dividido em lócus interno quando o menor somatório for na subescala de fatores internos; e lócus externo quando o menor somatório for na subescala de fatores externos e ao acaso. Os questionários com ausência de respostas em mais de três questões ou com somatórios empate das três subescalas foram descartados.

3.10.2 Exame clínico

Antes do exame clínico, as crianças realizaram uma escovação supervisionada pelo examinador. Para tal, cada criança recebeu um kit contendo escova de dente, dentifrício e fio dental para remover o biofilme dental das superfícies dentárias e facilitar o diagnóstico.

As crianças foram examinadas nas pré-escolas, permanecendo na posição sentada em frente ao examinador, com o auxílio de uma lâmpada portátil posicionada na cabeça do examinador (Petzl Zoom head lamp, Petzl America, Clearfield, UT, USA). Para o exame clínico, os examinadores estavam utilizando equipamentos de proteção individual, sendo as luvas trocadas a cada exame e o gorro e a máscara a cada turno de exame. Nos exames clínicos foram utilizados espelhos bucais estéreis (PRISMA ®, São Paulo, SP, Brasil), sondas de Williams estéreis (OMS-621, Trinity ®, Campo Mourão, PA, Brasil) e gazes dentárias para secar os dentes. Após a realização dos exames clínicos foi aplicado um verniz fluoretado (Duraphat® - 5% NaF) nas crianças. Além disso, os pesquisadores enviaram para os pais uma carta explicando a condição de saúde bucal da criança e a importância da visita ao dentista. Os critérios de diagnósticos utilizados para o exame clínico são descritos a seguir:

Cárie dentária

A cárie dentária foi avaliada a partir do *International Caries Detection and Assessment System* (ICDAS-II) (ISMAIL et al., 2007). Esse índice avalia a cárie a partir de escores que variam de 0 a 6, descritos a seguir:

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.

Em função da natureza epidemiológica desse estudo os códigos “1” e “2” foram unidos em uma mesma classificação diagnóstica (mancha branca), em

virtude da secagem ser feita com gaze e não com jato de ar no escore “1”. Neste estudo foram considerados os dentes com lesões cavitadas aqueles que apresentarem escores iguais ou superiores a “3”, uma vez que é a partir deste ponto que se observa danos estruturais à superfície do esmalte.

Atividade de cárie dentária também foi detectada e seguiu os seguintes critérios:

Lesão no esmalte: a lesão é branca/amarelada; opaca (falta de brilho); pode ser cavitada ou não; áspera na sondagem; podendo encontrar cavitação ou não com a sondagem.

Lesão na dentina: a lesão pode manifestar-se como uma sombra abaixo do esmalte intacto, mas desmineralizado; se a cavidade se estende para a dentina, esta aparece amarelada/acastanhada; dentina amolecida para sondagem (PITTS et al., 2009).

Além do ICDAS-II, foi utilizado um outro índice para avaliar a presença de condições específicas decorrentes da cárie dentária não tratada, o pufa (MONSE et al., 2010). O índice foi desenvolvido para avaliar a presença de envolvimento pulpar, ulceração, fístula e abscesso na mucosa bucal devido à presença de fragmentos de raízes. A avaliação é feita visualmente sem o uso de instrumentos. Os códigos e critérios para o índice pufa são os seguintes:

p: Envolvimento pulpar é registrado quando há abertura da câmara pulpar ou quando as estruturas dentárias coronais foram destruídas pelo processo de cárie dentária e apenas raízes ou fragmentos de raízes estão presentes. Nenhuma sondagem é realizada para diagnosticar envolvimento pulpar.

u: Ulceração é registrado como presente quando há bordas afiadas de um com envolvimento pulpar ou fragmentos radiculares e que causaram ulceração traumática nos tecidos moles adjacentes, por exemplo, na língua ou mucosa bucal.

f: Fístula é marcado na presença de pus sendo drenado e relacionado a um dente com envolvimento pulpar.

a: Abscesso é marcado na presença de um edema contendo pus e estando relacionado com um dente com envolvimento pulpar.

Para esse estudo essa variável foi dicotomizada em ausente (nenhuma consequência da cárie não tratada) e presente (um ou mais dentes diagnosticados com alguma consequência da cárie dentária não tratada).

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. Foram diagnosticados os seguintes tipos de traumatismo dentário: fratura de esmalte, fratura de esmalte e dentina, fratura coronária complicada, luxação extrusiva, luxação lateral, luxação intrusiva e avulsão. Além disso, foi avaliada a alteração de cor decorrente do traumatismo dentário.

Má oclusão

Os critérios utilizados para avaliação da oclusão foram baseados no índice de Foster e Hamilton (1969) e Grabowski et al. (2007) descrito abaixo:

Overbite: trespasse vertical dos incisivos

- Normal: quando o trespasse vertical dos incisivos não ultrapassar 2mm;
- Overbite aumentado: quando o trespasse vertical ultrapassar 2mm;
- Mordida aberta anterior: ausência de contato dos incisivos anteriores estando os posteriores em oclusão.

Overjet: trespasse horizontal dos incisivos

- Normal: distância entre os incisivos superiores e os inferiores no sentido horizontal não ultrapassar 2 mm;
- Overjet aumentado: quando o trespasse horizontal ultrapassar os 2 mm;
- Mordida cruzada anterior: trespasse horizontal negativo.

Mordida Cruzada Posterior

- Os molares superiores ocluem numa relação lingual em relação aos inferiores em oclusão cêntrica.

O pré-escolar que apresentou pelo menos uma das condições de anormalidade indicadas pelo índice, tais como: sobremordida profunda,

mordida aberta anterior, sobressaliência aumentada, mordida cruzada anterior e mordida cruzada posterior, foi diagnosticado com presença de má oclusão. Para o diagnóstico de má oclusão a criança permaneceu em oclusão cêntrica.

Desgaste dentário

Exame clínico de desgastes dentários do tipo atrição também foi realizado. Esse tipo de desgaste dentário está associado à alguns hábitos funcionais e parafuncionais, incluindo a mastigação, o bruxismo e apertamento dentário. Ocorre geralmente nas superfícies oclusais, incisais ou palatinas dos dentes superiores, ou na vestibular dos dentes inferiores, apresentando uma pequena área polida na ponta da cúspide, na região ao redor dela ou nos ângulos incisais. Esta condição bucal foi diagnosticada na presença de desgaste nas superfícies incisais dos dentes anteriores e/ou superfícies oclusais dos dentes posteriores.

3.10.3 Variáveis de contexto

Para avaliar as influências do nível contextual, cinco variáveis foram avaliadas: tipo de pré-escola (pública ou privada) que a criança está matriculada, número de crianças na pré-escola, renda mensal do bairro da pré-escola que a criança frequenta e a quantidade de equipes de saúde geral e bucal no distrito administrativo que a pré-escola está localizada. As informações relativas à renda do bairro foram obtidas a partir de dados coletados do Instituto Brasileiro de Geografia e Estatística (IBGE) sobre a cidade. A quantidade de equipes de saúde geral e bucal nos distritos foi coletada com informações do Ministério da Saúde do município. E os dados relativos às pré-escolas (tipo e número de crianças) foram coletados nas mesmas no momento da primeira visita ao local.

3.11 ELENCO DE VARIÁVEIS

O estudo apresenta três planos de análise. Foi avaliada inicialmente a influência de determinantes individuais e de contexto na presença de lesões

cavitadas. Num segundo plano de análise, foi determinada a influência dos determinantes individuais e de contexto no histórico de dor de dente. Por fim, o terceiro plano de análise avaliou a associação desses fatores com o relato da criança sobre a QVRSB. Neste sentido, as variáveis foram classificadas em três etapas distintas, de acordo com os planos de análise descritos a seguir:

3.11.1 Plano de análise I

Variável dependente

A variável dependente eleita nesta etapa da pesquisa foi a presença de lesões cavitadas de cárie dentária nas crianças. O diagnóstico dessas lesões foi realizado pelo ICDAS-II (ISMAIL et al., 2007).

Variável dependente	Categorização
Lesão cavitada de cárie dentária (ISMAIL et al., 2007)	Ausente (códigos 0, 1 e 2) Presente (códigos 3, 4, 5 e 6)

Quadro 2. Categorização da variável dependente do plano de análise I.

Variáveis independentes

As variáveis independentes desse plano de análise foram relativas às questões socioeconômicas individuais, questões relacionadas à saúde bucal da criança, aspectos psicológicos dos pais/responsáveis e variáveis de contexto. A categorização dessas variáveis segue no quadro 3.

Variável	Categorização
Variáveis individuais	
Sexo da criança	Masculino Feminino
Escolaridade dos pais/responsáveis	≤ 8 anos de estudo > 8 anos de estudo
Renda familiar mensal	< R$ 1.000,00 (U$ 280) ≥ R$ 1.000,00 (U$ 280)

Idade do pai/responsável	≤ 30 anos > 30 anos
Número de filhos	Variável contínua
Uso de serviço de saúde bucal	Sim Não
Frequência de escovação dentária	< 2 vezes ao dia ≥ 2 vezes ao dia
Senso de coerência	Fraco Forte
Lócus de controle	Interno Externo
Variáveis contextuais	
Tipo de pré-escola	Pública Privada
Número de crianças na pré-escola	Variável contínua
Número de equipes de saúde geral na vizinhança da escola	Variável contínua
Número de equipes de saúde bucal na vizinhança da escola	Variável contínua

Quadro 3. Categorização das variáveis independentes do plano de análise I.

3.11.2 Plano de análise II

Variável dependente

A variável dependente analisada nesta parte da pesquisa foi o histórico de dor de dente na criança alguma vez na vida, segundo o relato dos pais/responsáveis.

Variável dependente	Categorização
Histórico de dor de dente na criança	Não Sim

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

Variáveis independentes

As variáveis independentes desse plano de análise foram relativas às questões socioeconômicas individuais, aspectos psicológicos dos pais/responsáveis e variáveis de contexto. A categorização dessas variáveis segue no quadro 5.

Variável	Categorização
Variáveis individuais	
Sexo da criança	Masculino Feminino
Escolaridade dos pais/responsáveis	≤ 8 anos de estudo > 8 anos de estudo
Renda familiar mensal	< R$ 1.000,00 (U$ 280) ≥ R$ 1.000,00 (U$ 280)
Filho único	Sim Não
Ordem de nascimento	Filho único Filho mais novo Filho mais velho Filho do meio
Número de filhos	Variável contínua
Senso de coerência	Fraco Forte
Lócus de controle	Interno Externo
Variáveis contextuais	
Tipo de pré-escola	Pública Privada
Número de crianças na pré-escola	Variável contínua

Renda mensal do bairro da pré-escola	Variável contínua
Número de equipes de saúde geral na vizinhança da escola	Variável contínua
Número de equipes de saúde bucal na vizinhança da escola	Variável contínua

Quadro 5. Categorização das variáveis independentes do plano de análise II.

3.11.3 Plano de análise III

Variável dependente

A variável dependente desse último plano de análise da pesquisa foi relativa à QVRSB. Essa variável refere-se à versão das crianças do questionário SOHO-5 adaptado para o idioma português (ABANTO et al., 2013).

Variável dependente	Categorização
Impacto na QVRSB através do SOHO-5 (versão da criança)	Variável contínua discreta

Quadro 6. Categorização da variável dependente do plano de análise III.

Variáveis independentes

As variáveis independentes desse plano de análise foram relativas às questões socioeconômicas individuais, questões relacionadas à saúde bucal da criança, aspectos psicológicos dos pais/responsáveis e variáveis de contexto. A categorização dessas variáveis segue no quadro 7.

Variável	Categorização
Variáveis individuais	
Sexo da criança	Masculino Feminino

Escolaridade dos pais/responsáveis	≤ 8 anos de estudo > 8 anos de estudo
Renda familiar mensal	Variável contínua
Idade do pai/responsável	Variável contínua
Filho único	Sim Não
Uso de serviço de saúde bucal	Sim Não
Frequência de escovação dentária	< 2 vezes ao dia ≥ 2 vezes ao dia
Histórico de dor de dente	Sim Não
Cárie dentária	Ausente Mancha Branca Lesão cavitada
Atividade de cárie dentária	Ativa Inativa
Consequência da cárie não tratada (índice pufa)	Ausente Presente
Traumatismo dentário	Ausente Presente
Má oclusão	Ausente Presente
Desgaste dentário	Ausente Presente
Senso de coerência	Fraco Forte
Lócus de controle	Interno Externo
Variáveis contextuais	
Tipo de pré-escola	Pública

	Privada
Número de crianças na pré-escola	Variável contínua
Renda mensal do bairro da pré-escola	Variável contínua
Número de equipes de saúde bucal na vizinhança da escola	Variável contínua

Quadro 7. Categorização das variáveis independentes do plano de análise III.

3.12 PROCESSAMENTO E ANÁLISE DOS DADOS

O software STATA 12.0 (Stata Corporation, College Station, TX, EUA) foi utilizado para análise de dados. Estatísticas descritivas foram utilizadas para caracterização da amostra. Os modelos multinível de regressão de Poisson não ajustados e ajustados foram utilizados para descrever a associação entre variáveis de desfecho e preditoras. O estudo considerou como varáveis respostas a presença de lesões cavitadas de cárie dentária, histórico de dor de dente e QVRSB, de acordo com cada plano de análise explicado. A análise multinível de regressão de Poisson utilizou um modelo de efeito fixo com interceptação randômica para avaliar as associações entre variáveis dependentes e variáveis independentes (individuais e de contexto). Essa estratégia permitiu a estimativa de razão de prevalência/razão de escores (RP/RE) entre os grupos de comparação e seus respectivos intervalos de confiança de 95% (IC).

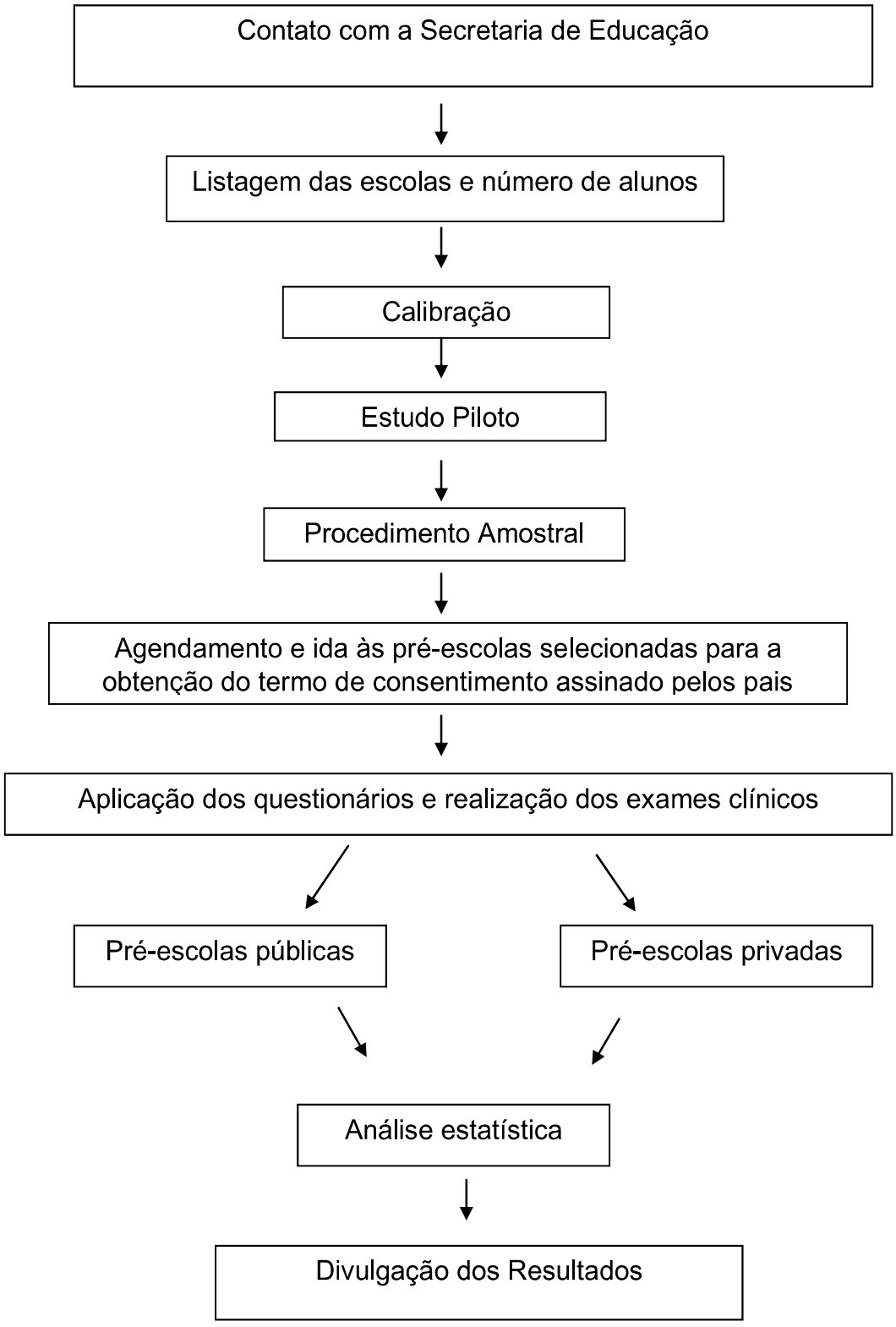
Na primeira etapa, um modelo vazio (modelo "nulo") verificou a variabilidade dos dados antes que as características individuais e comunitárias fossem levadas em consideração (DIEZ-ROUX, 2000). O segundo modelo (Modelo 2) adicionou covariáveis do nível individual. O modelo final (Modelo 3) incluiu os fatores individuais e covariáveis contextuais. Para a seleção de variáveis inicialmente foram incluídas as variáveis individuais que na regressão de Poisson multinível univariada apresentaram valor de $p< 0,20$ e mantidas no Modelo 2 aquelas que apresentaram $p<0,05$. Em seguida foram incluídas as variáveis de contexto que na regressão de Poisson multinível univariada

apresentaram valor de p< 0,20 e mantidas no Modelo 3 aquelas que apresentaram p<0,05 (Modelo final). A qualidade do ajuste dos modelos foi calculada através de valores “deviance” (–2 log likelihood) e sua significância foi avaliada pelo teste de razão de verossimilhança.

3.13 PRINCÍPIOS ÉTICOS

Este projeto foi submetido ao Comitê de Ética da Universidade Estadual da Paraíba e recebeu aprovação (38937714.0.00005187), de acordo com a resolução CNS Nº 466/2012 (ANEXO E). Um documento explicando a pesquisa foi aprovado pela Secretaria de Educação estadual (APÊNDICE C), municipal (APÊNDICE D) e, posteriormente, pela direção das escolas. Uma vez obtida as aprovações, foram destinados termos de consentimentos livres e esclarecidos aos pais e/ou responsáveis (APÊNDICE E) para a participação das crianças na pesquisa. Os pesquisadores envolvidos foram cientes das obrigações cabidas (APÊNDICES F e G). As alterações bucais diagnosticadas foram divulgadas aos pais por escrito.

3.14 FLUXOGRAMA



Resultados

4. RESULTADOS

Como descrito anteriormente, o presente trabalho foi dividido em três artigos. Desse modo, os resultados serão apresentados conforme a apresentação de cada artigo.

Artigo 1

Importance of contextual variables related to cavitated lesions in five-year-old children

Periódico: Plos one

Fator de impacto: 2,806– Qualis A1

Formato segundo as normas de publicação do periódico (ANEXO F)

Artigo 2

Relationship between a history of toothache and individual and contextual factors in five-year-old children: a multilevel analysis cross-sectional study

Periódico: Community Dentistry and Oral Epidemiology

Fator de impacto: 2,302 – Qualis A1

Formato segundo as normas de publicação do periódico (ANEXO G)

Artigo 3

Contextual and individual determinants of oral health-related quality of life among five-year-old children: a multilevel analysis

Periódico: International Journal of Paediatric Dentistry

Fator de impacto: 1,532 – Qualis A1

Formato segundo as normas de publicação do periódico (ANEXO H)

Artigo 1

Importance of contextual variables related to cavitated lesions in five-year-old children

Monalisa Cesarino Gomes[1¶], Érick Tássio Neves[1¶], Matheus França Perazzo[2¶], Saul Martins Paiva[2&], Fernanda Morais Ferreira[2&], Ana Flávia Granville-Garcia[1*&]

[1] Department of Dentistry, State University of Paraíba, Campina Grande, Paraíba, Brazil.
[2] Department of Paediatric Dentistry and Orthodontics, Federal University of Minas Gerais, Belo Horizonte, Brazil.

* Corresponding author
E-mail: anaflaviagg@hotmail.com (AFGG)

[¶] Conception and design of the study, data acquisition or analysis and interpretation, final approval of the version to be published
[&] Drafting of the article or revising it critically for important intellectual content.

Abstract

Objective: The aim of the present study was to evaluate the importance of individual and contextual determinants on the occurrence of cavitated lesions in five-year-old children. Methods: A cross-sectional study was conducted with 769 children in public and private preschools in a medium-sized city in northeastern Brazil. Parents/caregivers answered questionnaires addressing psychological aspects, socio-demographic characteristics and the child's oral health. The children were examined by two examiners who had undergone training and calibration exercises for the administration of the International Caries Detection and Assessment System. Variables related to the social context were collected at the preschools and official municipal publications. Unadjusted and adjusted multilevel Poisson regression models were used to investigate associations between caviated lesions and both individual and contextual characteristics. Results: The prevalence of cavitated lesions was

58.8%. In the analysis adjusted by individual determinants, low household income (PR= 1.59; 95%CI: 1.23-2.07), lower parent's/caregiver's schooling (PR = 1.54; 95% CI: 1.12-2.12), not visited to the dentist (PR= 0.76; 95%CI: 0.60-0.97) and brushing frequency (< 2x/day) (PR= 2.17; 95%CI: 1.24-3.81) were associated with cavitated lesions in the children. However, after the incorporation of the contextual determinants, parent's/caregiver's schooling and household income lost their associations. Considering contextual factors, children attending public preschools (PR= 1.66; 95%CI: 1.16-2.36) and/or smaller preschools (PR= 1.01; 95%CI: 1.01-1.02) had a greater probability of exhibiting cavitated lesions. Conclusion: Contextual variables were more important to the occurrence cavitated lesions than individual socioeconomic variables. The type and size of the preschool were the main contextual determinants associated with dental caries, whereas no use of oral health services and lower brushing frequency were the individual factors associated with the greater prevalence of dental caries.
Keywords: Oral health; Dental caries; Children.

Introduction

Dental caries is a multifactor condition, the prevention of which requires an understanding of both contextual and compositional determinants as well as the impact of such determinants on the population [1]. This condition is highly prevalent among preschool children. In Brazil, more than half of all five-year-old children have caries experience [2]. Cavitated lesions are the type of dental caries that cause greater functional, esthetic and social impact on children and their families [3] and are a determinant factor in the progression of dental caries [4].

Considering the fact that this condition is preventable, the occurrence of cavitated lesions may represent a failure in oral health policies. Current trends for the treatment of dental caries emphasize preventive care to control the causal factors rather than merely treat the consequences [5]. Thus, the emergence of cavitated lesions needs to be explored better with regard to associated factors in an attempt improve oral health policies.

Studies have evaluated the association between dental caries and psychological aspects, such as a sense of coherence (SOC) and the locus of control. SOC reflects the views an individual has on life and his/her capacity to adapt in stressful situations, whereas locus of control is a indicator of the personal perception of who or what controls events in life [6,7]. Studies conducted with preschool children have demonstrated that a weak SOC and external locus of control on the part of parents/caregivers are considered risk factors for dental caries [7,8]. This relationship needs to be explored further within the social context of children.

Socioeconomic issues are associated with the occurrence and severity of dental caries [9-11]. However, the studies cited evaluated this relationship based only on individual determinants. A child's surrounding environment can exert an influence on oral health, since individuals who live in the same context tend to exhibit similar behaviors [12]. Due to social inequalities and their effects on health, it is necessary to go beyond clinical indicators and include aspects of the social context [12,13]. The school at which a child studies can be used as an indicator of socioeconomic status and is considered a viable predictor of caries experience in epidemiological studies conducted in Brazil [14]. Studies have been conducted to analyze the influence of individual and contextual determinants on oral health [1,14-25]. However, studies involving multilevel analyses on dental caries among five-year-old children have limitations related to the sample. These some studies target on with different age groups [1,14,15,19,24], or have been conducted only with children attending public schools [19,24] or were based on data from a national oral health survey in Brazil [16]. Moreover, the studies cited focused on different contextual variables from those analyzed in the present investigation. The understanding of contextual factors involving in the occurrence of dental caries can enable the identification of areas of risk as well as the planning of appropriate preventive and health care strategies [26] on the community level. Thus, this issue still needs to be further explored in different populations.

The aim of the present study was to evaluate the influence of individual and contextual determinants on the occurrence of cavitated lesions in five-year-old children.

Materials and Methods

Sample and study design

A cross-sectional study was conducted to evaluate the oral health status of five-year-old children in Campina Grande, which is a medium-sized city in northeastern Brazil that has approximately 400,000 inhabitants and a human development index of 0.72 [27]. The study was conducted at public and private preschools between August and December 2015 and conforms to the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement [28].

The sample was selected using a two-stage (preschools and children) probabilistic method for complex sampling. The city is divided into six administration districts, which contain a total of 263 preschools (129 public and 134 private). Preschools (28 public and 20 private) were randomly selected proportionally to the total number in each district. In the second stage, five-year-old children enrolled in the selected preschools were selected using simple lottery randomization.

The sample size was calculated considering a 5% margin of error, 95% confidence interval and design effect of 1.6 due to the change in the precision of the estimates caused by the two-stage sampling. To maximize the sample size, a 50% prevalence rate of dental caries was considered in the calculation, leading to a minimum sample of 615 children. This value was increased to compensate for possible dropouts estimated at 20% resulting in a sample of 769 five-year-old children.

Eligibility criteria

Children aged five years in the primary dentition phase, attending a public or private preschool, with no systemic problems (based on the reports of parents/caregivers) and no history of orthodontic treatment were included in the study. Moreover, the parents/caregivers needed to spend at least 12 hours a day with the child.

Training and calibration exercise

The training and calibration process included theoretical explanations and clinical examinations. An experienced specialist in pediatric dentistry supervised two examiners. In the theoretical step, photographs of dental caries were analyzed and discussed. In the clinical step, 40 children randomly selected from a preschool that did not participate in the main study were examined on two occasions. During the first examination, inter-examiner agreement (Kappa statistic) was determined between the examiners and the experienced specialist (K = 0.89 to 0.90). After a seven-day interval, the same children were examined a second time for the determination of intra-examiner agreement (K = 0.87 to 1.00). The results demonstrated good reliability for the clinical examinations [29].

Pilot study

A pilot study was performed prior to the data collection of the main study to determine the applicability of the assessment tools and the dynamics of the clinical examinations. For this step, the entire proposed methodology was administered to 45 children from two preschools (one public and one private) not selected for participation in the main study. The results of the pilot study revealed no need to alter the proposed methods.

Data collection

Data collection was performed at the previously selected preschools. Contact was initially made with the principals of each preschool to explain the study and dynamics of the data collection. Parents/caregivers were then asked to participate in meetings at the preschools to explain the objectives of the study and sign a statement of informed consent authorizing their child's participation. The parents/caregivers were also asked to fill out questionnaires addressing their psychological aspects, socio-demographic characteristics and the oral health of the children. After the questionnaires had been collected, the children were examined by the researchers for the evaluation of dental caries.

Sense of coherence. SOC of the parents/caregivers was determined using the Brazilian Sense of Coherence Scale (SOC-13). The version validated for use on mothers of preschool children was employed [6]. This questionnaire has 13 items, each with five response options to evaluate the components of SOC: comprehensibility, manageability and meaningfulness. The total sum of the responses ranges from 13 to 69, with higher scores denoting a stronger SOC and greater capacity to cope with stress. For the purposes of statistical analysis, the score was dichotomized by the median, as performed in a previous study [8]. Thus, a score below the median was considered indicative of a weak SOC and a score above the median was considered indicative of a high SOC.

Locus of control. The parent/caregiver's locus of control was determined using the Multidimensional Health Locus of Control Scale [7], which has 18 items with three subdivisions (internal, external and chance). The aim is to evaluate the respondent's perception of who determines his/her health/illness events. Individuals who believe they control their health events demonstrate internal control, whereas those who believe that events are determined by external forces or chance demonstrate external control. Each item has five response options: 1 = completely agree; 2 = partially agree; 3 = neither agree nor disagree; 4 = partially disagree; 5 = completely disagree. The total sum of each subscale ranges from 6 to 30 points, with higher scores denoting a lower degree of the locus tested. Thus, parents/caregivers with a lower score on the subscale of internal factors are considered to have an internal locus of control and those with a lower score on the subscales of external and chance factors are considered to have an external locus of control. Questionnaires with more than three missing answers and those with equal internal and external scores were discarded.

Individual socio-demographic variables. Socio-demographic data were collected to obtain an individual profile of each child/family (child's sex, parent's/caregiver's schooling, parent's/caregiver's age, monthly household income and number of children in the family). Parent's/caregiver's schooling was dichotomized as ≤ eight years of study or > eight years of study. Parent's/caregiver's age was dichotomized as ≤ 30 years or > 30 years. Monthly

household income was dichotomized based on the median, which corresponded to US$ 280 at the time of the data collection.

Variables related to oral health. The parents/caregivers were asked about the child's visits to the dentist (regardless of the reason) and tooth brushing frequency, which was dichotomized as < twice a day or ≥ twice a day.

Clinical examination. The clinical examination was performed at the preschools in the knee-to-knee position using school chairs. Prior to the examination, the children performed supervised brushing with an oral hygiene kit provided by the researchers (toothbrush, toothpaste and dental floss) for the removal of dental biofilm and to facilitate the diagnosis of dental caries. The examiners wore individual protective equipment (gloves, masks, hairnet and white coat) and a head lamp (Petzl Zoom head lamp; Petzl America, Clearfield, UT, USA). Gauze was used to dry the teeth. A sterilized mouth mirror (PRISMA, São Paulo, SP, Brazil) and sterilized Williams probe (WHO-621; Trinity, Campo Mourão, PR, Brazil) were used for the examinations. The clinical examinations were performed using criteria established in the literature.

Dental caries was evaluated using the International Caries Detection and Assessment System (ICDAS-II) [30]. This index is used to evaluate caries beginning with the initial stage (white spot) and the score ranges from 0 to 6. Code 0 is used for a sound tooth. Code 1 is used for a white spot diagnosed following air drying of the teeth. Thus, this code was not used, since drying of the teeth was performed with gauze in this epidemiological study. Code 2 refers to a white spot diagnosed following drying the teeth with gauze. Codes 3 to 6 denote increasing degrees of cavitated lesions. In the present study, cavitated lesions were dichotomized as absent (codes 0 and 2) or present (code 3 to 6).

After the clinical examinations, a fluoride varnish (Duraphat® - 5% NaF) was applied to the children's teeth. Moreover, the researchers wrote a letter to the parents/caregivers explaining the oral health status of their child and the importance of seeing a dentist.

Contextual variables. The preschool was the unit of choice for assessing the context of children. Four variables were evaluated to determine the influence of the child's context on the occurrence of cavitated lesions: type of preschool in which the child was enrolled (public or private), number of children

at the preschool and number of general and oral health teams in the administrative district in which the preschool was located. Information on the preschools was obtained from the Anísio Teixeira National Institute of Educational Studies and Research and confirmed during the first visit to each preschool. Information on the number of general and oral health teams in the administration districts was obtained from the municipal Ministry of Education.

Statistical analysis

Data analysis was performed using the STATA 12.0 software program (Stata Corporation, College Station, TX, USA). Descriptive statistics were used for the characterization of the sample. Unadjusted and adjusted multilevel Poisson regression models were used to describe associations between the outcome and predictor variables. The multilevel Poisson regression analysis employed a fixed effects model with random intercepts to evaluate associations between cavitated lesions (primary outcome) and both individual and contextual covariates. This strategy enabled estimates of prevalence ratios (PR) between the comparison groups and respective 95% confidence intervals (CI).

In the first step, an unconditional (null) model was used to estimate the variability in the data before the incorporation of individual and community characteristics [13]. The second model (Model 2) included individual covariables and the final model (Model 3) included both individual and contextual covariables. Individual variables with a p-value < 0.20 in the univariate multilevel Poisson regression were selected for the model and those with a p-value < 0.05 or variables that adjusted the model were maintained in Model 2. Next, contextual variables with a p-value < 0.20 in the univariate multilevel Poisson regression were selected and those with a p-value < 0.05 were maintained in Model 3 (final model). The goodness-of-fit of the models was calculated based on deviance values (–2 log likelihood).

Ethical aspects

This study received approval from the human research ethics committee of State University of Paraíba (certificate number: 38937714.0.0000.5187) and was conducted in compliance with the precepts stipulated in the Declaration of

Helsinki. The legal guardians of the children signed a statement of informed prior to the data collection process. All preschools received clarifications regarding the study protocol and agreed to participate.

Results

The final sample comprised 769 pairs of children and parents/caregivers. Table 1 displays the frequency distribution of the variables analyzed. The majority of parents/caregivers had more than eight years of schooling (70.0%) and was more than 30 of age (56.1%). The mean number of children in the families was 2.1. The male sex accounted for 52.4% of the children and 38.8% of the children studied at public preschools. The majority of parent/caregivers had a strong SOC (58.3%) and internal locus of control (68.1%). Only 43.5% of the children had visited a dentist at least once in their lifetimes. Cavitated lesions were diagnosed in 58.8% of the children examined.

Table 1. Individual and contextual characteristics of sample

Variable	n(%) / mean (SD)
Individual level	
Sex	
Male	403(52.4)
Female	366(47.6)
Parent's/caregiver's schooling	
≤ 8 years of study	230(30.0)
> 8 years of study	536(70.0)
Monthly household income	
< US$ 280	370(50.3)
≥ US$ 280	365(49.7)
Parent's/caregiver's age	
≤ 30 years	323(43.9)
> 30 years	413(56.1)
Number of children in family	2.10(1.17)

Use of dental services	
Yes	334(43.5)
No	434(56.5)
Brushing frequency	
< twice a day	80(10.5)
≥ twice a day	685(89.5)
Sense of coherence	
Weak	321(41.7)
Strong	448(58.3)
Locus of control	
Internal	520(68.1)
External	244(31.9)
Cavitated lesion	
Absent	317(41.2)
Present	452(58.8)
Contextual level	
Type of preschool	
Public	298(38.8)
Private	471(61.2)
Number of children at preschool	107.66(99.16)
Number of general health teams in district of preschool	17.53(4.59)
Number of oral health teams in district of preschool	8.94(2.13)

The univariate multilevel Poisson regression analysis revealed that cavitated lesions in the five-year-old children were associated with parent's/caregiver's schooling, monthly household income, number of children in the family, child's tooth brushing frequency, parent's/caregiver's SOC, type of preschool and number of children at the preschool ($p < 0.05$) (Table 2).

Table 2. Unadjusted assessment of association between cavitated lesions in preschool children and both individual and contextual variables

		Cavitated lesion		
Variable	**N**	**n%**	**p-value**	**PR (95% CI)**
Individual level				
Sex				
Female	366	212(57.9)		1.00
Male	403	240(59.6)	0.819	1.03(0.82-1.20)
Parent's/caregiver's schooling				
≤ 8 years of study	230	175(76.1)	**<0.001**	**1.92(1.39-2.63)**
> 8 years of study	536	274(51.1)		1.00
Monthly household income				
< US$ 280	370	268(72.4)		1.00
≥ US$ 280	365	171(46.8)	**<0.001**	**0.52 (0.41-0.66)**
Parent's/caregiver's age				
≤ 30 years	323	207(64.1)		1.00
> 30 years	413	227(55.0)	0.244	0.87(0.68-1.10)
Number of children	-	-	**0.041**	**0.89(0.79-1.00)**
Use of dental services				
Yes	334	207(62.0)		1.00
No	434	244(56.2)	0.061	0.80(0.63-1.01)
Brushing frequency				
< twice a day	80	67(83.8)	**0.002**	**2.43(1.38-4.27)**
≥ twice a day	685	383(55.9)		1.00
Sense of coherence				
Weak	321	214(66.7)	**0.034**	**1.30(1.02-1.66)**
Strong	448	238(53.1)		1.00
Locus of control				
Internal	520	292(56.2)		1.00
External	244	157(64.3)	0.348	1.13(0.88-1.46)
Contextual level				
Type of preschool				
Public	298	233(78.2)	**<0.001**	**2.45(1.86-3.23)**

Private	471	219(46.5)		1.00
Number of children at preschool	-	-	**0.005**	**1.002(1.001-1.003)**
Number of general health teams in district of preschool	-	-	0.260	1.02 (0.99-1.05)
Number of oral health teams in district of preschool	-	-	0.129	1.05(0.98-1.13)

In the adjusted multilevel Poisson regression of cavitated lesions among the five-year-old preschool children, Model 2 (incorporation of only individual variables) demonstrated associations with lower parent's/caregiver's schooling (PR = 1.54; 95% CI: 1.12-2.12), lower monthly household income (PR = 1.59; 95% CI: 1.23-2.07), not visited to the dentist (PR = 0.76; 95% CI: 0.60-0.97) and lower tooth brushing frequency (PR = 2.17; 95% CI: 1.24-3.81). After adjustment with the contextual variables, only not visited to the dentist and tooth brushing frequency (<2x/day) remained in the model. In the final model (Model 3), the contextual variables public preschool (PR = 1.66; 95% CI: 1.16-2.36) and less number of children at the preschool (PR = 1.01; 95% CI: 1.01-1.02) were determinants that influenced the occurrence of cavitated lesions among the children. The prevalence of cavitated lesions was higher among children who attended public and/or smaller preschools (Table 3)

Table 3. Adjusted multilevel analysis of cavitated lesions among preschool children associating individual and contextual variables

	Model 1 (null)	**Model 2**	**Model 3**
Fixed effects		**PR (95% CI)**	**PR (95% CI)**
Intercept	**0.39 (0.34-0.46)**	**0.11 (0.06-0.20)**	**0.10 (0.05-0.19)**
Individual level			
Parent's/caregiver's schooling			
≤ 8 years of study		**1.54 (1.12-2.12)**	1.23 (0.87-1.75)
> 8 years of study		1.00	1.00
Monthly household income			
< US$ 280		**1.59 (1.23-2.07)**	1.28 (0.96-1.71)

≥ US$ 280		1.00	1.00
Use of dental services			
Yes		1.00	1.00
No		**0.76 (0.60-0.97)**	**0.73 (0.58-0.93)**
Brushing frequency			
< twice a day		**2.17 (1.24-3.81)**	**2.05 (1.18-3.60)**
≥ twice a day		1.00	1.00
Sense of coherence			
Weak		1.17 (0.91-1.50)	1.13 (0.88-1.45)
Strong		1.00	1.00
Contextual level: Preschool			
Type of preschool			
Public			**1.66 (1.16-2.36)**
Private			1.00
Number of children at preschool			**1.01 (1.01-1.02)**
Random effects			
Deviance (-2loglikelihood)	1182.9715	1067.2261	1054.2012

Model 1 (“null”): unconditional model; Model 2: incorporation of individual covariates; Model 3: incorporation of individual and contextual covariates

Discussion

The purpose of this study was to evaluate the influence of individual and contextual determinants on the occurrence of cavitated lesions in five-year-old children. This age is a transition period into the mixed/permanent dentition and the occurrence of dental caries in this age group is a major predictor of caries in the permanent dentition [31]. Therefore, there is a need for analyses that can assist in the drafting of effective public policies directed at the prevention of dental caries. The results of this study demonstrate that contextual variables (type and size of preschool), that can be proxy for socioeconomic conditions of the school, were more important to the occurrence of cavitated lesions than

individual socioeconomic variables. Among the individual factors, parent's/caregiver's schooling, household income, the use of oral health services and brushing frequency were associated with the occurrence of cavitated lesions in the children analyzed.

The non-use of oral health services by the children was associated with a lower probability of exhibiting cavitated lesions. This finding reflects the greater likelihood of seeking dental care for the purposes of treatment, especially in cases of pain in this age group. Indeed, previous studies report the low use of dental services by preschool children [32-34]. This interventionist nature of dental care can result in a failure to invest in health education practices to address etiological determinants of caries and children consequently continue to exhibit cavitated lesions. To visit a dentist, preschool children depend on parents/caregivers, who often fail to give due importance to the primary dentition and only seek dental care in the presence of signs and symptoms [32]. These factors may explain why the prevalence of cavitated lesions was lower among children who had never visited the dentist. Thus, educational campaigns are needed to encourage visits to the dentist for the purposes of prevention and such campaigns should consider contextual factors to assist in the establishment of more effective health promotion measures.

A lower frequency of brushing increased the occurrence of cavitated lesions. Indeed, this is a consolidated measure in the literature. The authors of a systematic review concluded that brushing at least twice a day with fluoride toothpaste reduces the occurrence of dental caries [35]. The early establishment of behaviors that are favorable to oral health, such as an adequate tooth brushing frequency, can facilitate the maintenance of good oral health throughout childhood and into adulthood [36].

Psychological aspects of the parents/caregivers (SOC and locus of control) did not exert an influence on the occurrence of cavitated lesions. Previous studies involving preschool children report an association between dental caries in children and both a weak SOC and external locus of control on the part of parents/caregivers [7,8]. However, the child's social context was not investigated in the studies cited. Thus, the non-association found in the present

study may reflect the greater importance of the social context to the occurrence of dental caries than psychological aspects of parents/caregivers isolatedly.

Socioeconomic inequalities in caries experience among children has been demonstrated in previous studies [10,11]. Parents/caregivers with a low level of education and lower household income were associated with cavitated lesions in the children of the present study. These individual socioeconomic determinants may reflect less access to information and less acquisitive power for the employment of healthy behaviors [37]. Such differences indicate the influence of socioeconomic factors on oral hygiene habits and access to healthcare services [38]. However, parent's/caregiver's schooling and household income did not remain in the final model. Contextual factors may be related to lifestyle and health behaviors. Moreover, individual variables may represent socioeconomic aspects of the surrounding environment. Thus, there may be collinearity in the associated context variables in the present study. Type of school is used as an economic indicator in Brazil [14]. In the present study, contextual socioeconomic variables exerted more influence on the occurrence of cavitated lesions than individual socioeconomic variables, which indicates the need for educational and health promotion strategies based on the social context.

The prevalence of cavitated lesions was higher among children attending public preschools and/or preschools with a smaller number of children enrolled. This finding demonstrates the importance of the school context to the development of healthy oral habits. It is possible that smaller schools are located more in poorer neighborhoods and larger schools may offer more educational services [39]. Type of school can also be used to differentiate oral health status. Children from families with a higher socioeconomic status are generally enrolled in private schools and those from families with a lower socioeconomic status are generally enrolled in public schools [14]. Thus, private preschools and larger preschools likely offer health education activities and stress the importance of adopting healthy habits. Moreover, the children who attend these schools likely belong to families with a higher socioeconomic status, which favors a better oral health status. Thus, oral health education should be stressed throughout the school-age years and should involve

children, educators and parents/caregivers in health promotion activities in the school setting [40]. Indeed, previous studies report that interventions involving health promotion programs at schools increase the adoption of healthy behaviors by children [41-43].

This study has the limitations inherent to the cross-sectional design, but studies of this type are able to determine the prevalence of health problems and associated factors and are therefore important to the scientific community. All norms recommended for the execution of cross-sectional studies were followed [28]. Moreover, the multilevel analysis enabled the determination of contextual factors that can exert an influence on the occurrence of cavitated lesions in children. Thus, the results of this study with a representative sample of the population can be considered tools for public administrators.

As characteristics of a child's school environment may play an important role in the occurrence of cavitated lesions. The present findings can serve a guide for future studies directed at gaining a better understanding of how the type and size of preschools exert an influence on dental caries. Such information can assist in the establishment of more effective oral health policies. Individual oral health promotion strategies can be strengthened if also expand to the community level. The school context should be used as a site for educational activities that encourage the acquisition of healthy behaviors. Indeed, the school is an ideal social environment for the promotion of oral health and children, parents/caregivers and educators should all be included in the process.

Conclusion

The results of the present study indicate that the type and size of preschools are contextual determinants for the occurrence of cavitated lesions in five-year-old children, suggesting that contextual socioeconomic factors are more important than individual socioeconomic factors with regard to this outcome. Thus, prevention programs should be established in accordance with the social context of the children. Healthy behaviors, such as adequate brushing frequency, reduce the occurrence of cavitated lesions among children.

Moreover, the present results indicate the need for health promotion during dental care procedures for this age group.

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Artigo 2

Relationship between a history of toothache and non-clinical factors individual and school context in five-year-old children: a multilevel analysis cross-sectional study

Monalisa Cesarino Gomes[1], Érick Tássio Neves[1], Matheus França Perazzo[2], Saul Martins Paiva[2], Fernanda Morais Ferreira[2], Ana Flávia Granville-Garcia[1]

[1]Department of Dentistry, State University of Paraíba, Campina Grande, Paraíba, Brazil.
[2]Department of Pediatric Dentistry and Orthodontic, Federal University of Minas Gerais, 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

Abstract

Objective: the objective of the present study was to evaluate the influence of individual and contextual factors on the occurrence of toothache in five-year-old children. Methods: a cross-sectional study was conducted with 756 children from public and private preschools in a city in the countryside of the northeast of Brazil. The history of toothache during the life of the child was reported by parents/caregivers. Socioeconomic and psychological questionnaires were completed by parents/caregivers. Variables related to social context were obtained from the preschools in which the children studied and the official publications of the municipal region. Unadjusted and adjusted multilevel Poisson regression models were used to investigate the association between individual and contextual characteristics and history of toothache. Results: the history of toothache in children was found to be 23.8%. Among the individual determinants, the gender of the child, order of birth, and schooling of parent/ caregiver were associated with toothache in children. The individual variables remained associated with the outcome after the addition of the contextual

variables to the model. The type of preschool was the contextual determinant associated with toothache in the final model. Conclusion: The history of toothache was associated with individual (gender, order of birth and schooling of parents/caregivers) and contextual (type of preschool) determinants.

Introduction

Toothache is a subjective indicator of oral health and can have an impact on oral health related quality of life (OHRQoL), causing functional and social impairment.[1] In addition, having children with toothache results in greater absenteeism of parents from work[2], as well as increased financial expenses[3] and parental guilt.[4] Due to the major impact that toothache can have on OHRQoL, one of the aims of the Global Goals for Oral Health 2020 is to reduce the prevalence of tooth pain and its consequences in the population.[5] Thus, studies that evaluate the factors associated with the occurrence of toothache and help achieve this goal are required.

Literature describes the prevalence of toothache in five-year-old children as being between 9.4% and 25.0%.[1,6-10] As cognitive ability is still developing in this age group, the evaluation of tooth pain is performed via the reports of parents.[11] This data is highly reliable, as studies have shown that toothache is the most perceived symptom by parents in children at a young age.[12] In terms of the psychological issues of parents, such as sense of coherence (SOC) and locus of control, previous studies have evaluated their relationship with oral health problems[13,14] but have not provided specific information about the history of toothache.

Most studies with young children evaluate toothache in terms of clinical aspects and/or socioeconomic issues addressed at the individual level.[6-8,10] These individual clinical and socioeconomic factors have therefore already been well demonstrated in literature. Dental caries and dental trauma are the main clinical conditions presented by children in this age group, and are related to toothache.[8,15] Individuals with worse socioeconomic conditions at an individual level are more exposed to risk factors for oral health problems.[7] However, this socioeconomic issue needs to be better addressed within a social context. In

studies with adolescents and adults a direct relationship between the context in which the individual is inserted and toothache has already been demonstrated.[16-18] Adolescents from areas with a low Human Development Index (HDI) had a higher prevalence of toothache than those in more developed areas, regardless of individual characteristics.[16] In pre-school children, there is only one study that assesses toothache through a multilevel approach.[9] This study was based on data from the national oral health survey conducted in 2010, and identified an association between toothache and a low level of HDI and literacy in the city.[9]

New studies of this theme will allow a better understanding of the relationship between the non-clinical individual and contextual determinants of children's oral health conditions. Brazil is a country with considerable social disparities, and researchers have sought to determine factors that may explain differences in the oral health status of the population.[19] Type of school can be considered a contextual determinant, since this variable is sensitive for the discrimination of different oral health conditions.[20] Thus, understanding the role of the school environment in children's health is important when planning preventive strategies.[21] To date, there are no studies that evaluate toothache in preschool children based on the school context. Therefore, the results of the present study can help in the elaboration of new health policies based on the context in which the child is inserted.[22]

The aim of the present study was therefore to evaluate non-clinical factors individual and school contextual factors relating to the occurrence of toothache in five-year-old children.

Methods

This study received approval from the Human Research Ethics Committee of the State University of Paraíba (38937714.0.0000.5187) and was conducted in compliance with the guidelines stipulated in the Declaration of Helsinki. All the legal guardians signed a statement of informed consent prior to the data collection process. All the preschools received clarifications regarding the study protocol and agreed to participate.

Sample characteristics and study design

A cross-sectional study was conducted in public and private preschools in Campina Grande, a city located in the eastern part of the northeast of Brazil. This city has about 400,000 inhabitants and an HDI of 0.72. The present study was carried out to evaluate the oral health of five-year-old children, and was conducted between August and December 2015. All stages of this study were performed in accordance with guidelines for cross-sectional studies.[23]

Sample selection was performed through probabilistic sampling in two stages. A total of 263 preschools (129 public and 134 private) are registered with the Ministry of Education. The city is divided into six administrative districts and the preschools were randomly selected according to the total number of such preschool in each district in the first stage. Twenty-eight public and 20 private preschools were selected. The second phase consisted of the selection of children for the sample using a simple randomisation procedure. The ratio of the total population enrolled in private and public preschools in each administrative district of the city was maintained in the sample distribution.

The sample size was calculated based on a 5% margin of error, a 95% confidence level and a correction factor of 1.6 to compensate for the design effect. A prevalence rate of 50% for toothache was considered to increase the power and because this value gave the largest sample regardless of the actual prevalence.[24] The required sample size was calculated to be 615 preschool children. This value was increased to compensate for possible dropouts estimated at 20% resulting in a sample of 769 five-year-old children.

Eligibility criteria

Five-year-old children with no systematic diseases (based on the reports of parents/caregivers) enrolled at public and private preschools were included in the sample. Parents/caregivers were required to spend at least 12 hours per day with their children. The exclusion criteria were the presence of one or more erupted permanent tooth and a history of orthodontic treatment.

Pilot study

A pilot study was conducted to test the methodology. The participants in the pilot study (n = 45) 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.

Data collection

Data collection was performed in preschools that were previously selected following contact with the principals of each school to explain the purpose of the study. Parents/caregivers were previously contacted to attend a meeting at the preschool, during which they received clarification on the study and signed an informed consent form. At the same meeting, the parents/caregivers were asked to provide information related to their child's history of toothache and complete questionnaires addressing their psychological aspects and sociodemographic data. Additionally, data regarding variables related to the social context in which the children were inserted were collected.

History of toothache. This information was provided by parents/caregivers and a history of toothache was recorded if this symptom was observed at some time in the child's life. The answer choices were yes or no.

Individual sociodemographic variables. The following sociodemographic variables were collected to obtain an individual profile of the child/family: child's gender, education of parents/caregivers, monthly family income, order of birth and whether the child had siblings.

Psychological aspects of parents/caregivers: To analyze the psychological aspects of parents/caregivers, the SOC and locus of control were evaluated. The SOC of the parents/caregivers was measured using the Brazilian Sense of Coherence Scale (SOC-13), employing the version validated for use on mothers of preschool children.[25] This questionnaire has 13 items, each with five response options that assist in evaluating the components that compose SOC: comprehensibility, manageability and meaningfulness. The total ranges from 13 to 69 points, with higher scores indicative of a stronger SOC and greater capacity to cope with stress. For the purposes of statistical analysis, the score

was dichotomized by the median, as performed in a previous study.[13] Scores below the median were considered indicative of a weak SOC and scores above the median were indicative of a strong SOC. The locus of control of the parents/caregivers was evaluated using the Multidimensional Health Locus of Control index[14], which has 18 items distributed among three subdivisions (internal/external/chance) for the evaluation of the respondent's perception of who or what determines health/illness events: the individual himself/herself (internal) or other forces (external/chance). Each item has five response options (1 = fully agree; 2 = agree in part; 3 = neither agree nor disagree; 4 = disagree in part; 5 = fully disagree). The scores of the items on each subscale are totaled and can range from 6 to 30 points, with higher scores on the subscale indicating a lower degree of each factor (internal and external/chance). An internal locus is considered when the lowest score is on the subscale of internal factors and an external locus is considered when the lowest score is on the subscale of external or chance factors. Questionnaires with missing responses on three or more items and those for which the three subscales were equally divided between internal and external/chance were discarded.

Contextual variables. Five variables were investigated to assess the influence of contextual aspects on children's toothache: type of preschool in which the child was enrolled, number of children in the preschool, average monthly income of the neighborhood in which the preschool was located and number of general and oral health teams in the administrative district where the school was located. Information on the average income of the city's districts was obtained from the Brazilian Institute of Geography and Statistics and the number of general and oral health teams from the administrative districts was obtained from the city's Department of Health. Data on pre-schools were recorded during the first visit to each preschool.

Statistical analysis

The STATA 12.0 program (Stata Corporation, College Station, TX, USA) was used for data analysis. Descriptive statistics were used for the characterization of the sample. Unadjusted and adjusted multilevel Poisson regression models were created to describe the associations between the

outcomes and predictors. Multilevel Poisson regression analysis involved a fixed effects model with random intercepts to evaluate associations between the history of toothache of the children (primary outcome) and both individual and contextual covariates. This strategy enabled the estimation of prevalence ratio (PR) between comparison groups and respective 95% confidence intervals (CI). In the first step, an unconditional (null) model was used to estimate variability in the data before the individual and contextual characteristics were taken into account.[26] The individual covariates were incorporated into model 2 and both the individual and contextual covariates were incorporated into model 3. Individual variables that achieved a p-value < 0.20 in the univariate multilevel Poisson regression analysis were incorporated into model 2 and those with a p-value < 0.05 in the adjusted analysis remained in the model. Next, contextual variables that achieved a p-value < 0.20 in the univariate multilevel Poisson regression analysis were incorporated into model 3 and those with a p-value < 0.05 in the adjusted analysis remained in the final model. The goodness-of-fit of the models was calculated based on deviance values (–2 log likelihood).

Results

A total of 756 pairs of children/parents were included in the present study, representing a response rate of 98.3%. Thirteen children were considered losses due to incomplete questionnaires. Table 1 shows the main characteristics of the sample. A history of toothache during the child's lifetime was reported in 23.8% of cases, and the majority of children were male (52.2%), had parents/caregivers with more than eight years of schooling (70.1%), and attended private preschools (61.4%).

In bivariate analysis of multilevel Poisson regression, the history of toothache was significantly associated with parents'/caregivers' schooling, monthly family income, presence of siblings, order of birth, number of children, locus of control and type of pre- school (p<0.05) (Table 2).

Table 3 shows the results of the multivariable Poisson regression model. In model 2, with the inclusion of individual determinants, the variables associated with the history of toothache were lower levels of schooling of

parents/caregivers (PR= 2.24; CI95%: 1.64-3.06), being a middle child (PR= 1.87; CI95%: 1.17-2.99) and the female gender (PR= 1.36; CI95%: 1.01-1.82). Following adjustment for the contextual determinants, the individual variables remained associated with the result after the addition of the contextual variables to the model (Model 3). Attending private preschools was a protective factor in relation to the history of toothache at some time in the child's life (PR= 0.61; CI95%: 0.42-0.88).

Discussion

A history of toothache was more prevalent among children living in an unfavorable social context. The schooling of parents/caregivers and the type of preschool can be used as a means of intervention to improve the oral health of children and consequently decrease the prevalence of toothache. The results of the present study are therefore valid for the support of oral health policies.

According to parents/caregivers, 23.8% of children had a history of toothache. This prevalence agrees with other studies conducted in the same age group.[6,9] However, other reports of toothache in preschool children have found a lower prevalence.[1,7,8,10] Caution should be exercised when performing comparisons with these studies, as they are based on different methodologies, especially in relation to the time considered for the reporting of toothache[7] and feature age groups involving children under 5 years of age[1,8,10] These factors may result in a less frequent reporting of toothache.

Toothache was reported more frequently among female children. Possible, parents may tend to be more careful with their daughters, and thus, they are more attentive to the reported pain of female children. In addition to the child's gender, birth order also influenced this problem. Middle children were associated with a more prevalent history of toothache. An earlier study with pre-school children revealed that being a middle child led to an approximately ten times greater chance of suffering an impact on OHRQoL.[1] It can therefore be concluded that the prevalence of oral health problems, including toothache, tends to be greater among such children. One possible explanation for this relationship is the fact that financial resources and the attention of

parents/caregivers are divided among the siblings as more children are born into the family.[27]

A lower level of schooling of parents/caregivers was an individual socioeconomic predictor that influenced the history of toothache in five-year-old children. However, the psychological aspects of the parents/caregivers evaluated (SOC and control locus) were not associated with a history of toothache. This result confirms the significant influence of social inequality on the oral health of the Brazilian population. Parents/caregivers with a lower educational level may have lower oral health knowledge and reduced financial conditions.[28] Parents with lowest education only take their children to the dentist when problems arise.[29] These factors can result in poorer oral health conditions for children. It is worth mentioning that this individual determinant remained associated with a history of toothache even after adjustment with the contextual variables. There is therefore a need for public health programs that educate parents to seek preventive oral health care on an ongoing basis, rather than in response to oral problems.

The type of preschool was the only contextual variable that presented an association with the history of toothache in children. Children in private preschools had a lower prevalence of history of toothache than children in public preschools. The school context may possibly reflect inequalities associated with oral conditions, such as dental caries and the use of the health service. Thus, public preschools can be considered a social determinant for five-year-old children within the Brazilian context. Oral health is determined by a variety of activities associated with relationships, self-esteem and the opportunities to make healthier decisions.[21] Thus, public health policies should prioritize the incorporation of measures that encourage healthy habits and the creation of healthy environments in public schools to promote health among this population[20], because on that socioeconomic context, these children are more vulnerable to oral health problems. The other contextual variables analyzed in the present study did not exhibit an association with a history of toothache, perhaps because they did not reflect the contextual differences between the environments in which the children were inserted.

One limitation of this study is that it is a cross-sectional study that prevents causal inferences. However, it includes a representative sample of the population, followed the norms established for cross-sectional studies, and performs differentiated analyzes to evaluate the social context. Although the history of toothache was reported by proxy measure, this is a reliable alternative for the evaluation of this condition in young children. Further studies should aim to establish the influence of the school context, such as structure and methods of teaching children, on the child's oral health conditions.

The results found in the present study can help to identify the individual and contextual characteristics that should be explored further, and support interventions to improve oral health. Some characteristics associated with the history of toothache are immutable factors such as gender and birth order. However, public health policies that address social inequalities can be elaborated. The present study warns of the importance of establishing healthy measures and changes in behavior in public preschools, as children in this context had a higher prevalence of toothache.

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Table 1. Individual and contextual level characteristics of the sample.

Variable	n(%)/ Mean (SD)
Individual Level	
Gender	
Female	361(47.8)
Male	395(52.2)
Parent's/caregiver's schooling	
≤ 8 years of study	225(29.9)
> 8 years of study	528(70.1)
Monthly household income	
< US$ 280.00	361(50.0)
≥ US$ 280.00	361(50.0)
Only child	
Yes	258(34.4)
No	492(65.6)
Birth order	
Only child	258(34.5)
Youngest child	277(37.0)
Oldest child	125(16.7)
Middle child	88(11.8)
Number of children	2.10(1.17)
Sense of coherence	
Weak	317(41.9)
Strong	439(58.1)
Locus of control	
Internal	513(68.3)
External	238(31.7)
History of toothache	
No	576(76.2)
Yes	180(23.8)
Contextual-level variables	
Type of preschool	
Public	292(38.6)

Private	464(61.4)
Number of children in preschool	107.88(99.71)
Mean monthly income of neighborhood	1091.85(253.83)
Number of general health teams	17.50(4.60)
Number of oral health teams	8.94(2.13)

Table 2. Unadjusted assessment of the association of history of toothache among preschool children with individual and contextual-level variables.

		History of toothache		
Variable	**N**	**n%**	**p-value**	**PR(95%CI)**
Individual-level variable				
Gender				
Female	361	97(26.9)	0,098	1.29(0.95-1.73)
Male	395	83(21.0)		1.00
Parent's/caregiver's schooling				
≤ 8 years of study	225	92(40.9)	**p<0.001**	**2.45(1.83-3.29)**
> 8 years of study	528	88(16.7)		1.00
Monthly household income				
< US$ 280.00	361	115(31.9)	**p<0.001**	**1.92(1.40-2.62)**
≥ US$ 280.00	361	60(16.6)		1.00
Only child				
Yes	258	41(15.9)	**0.007**	**0.61(0.43-0.88)**
No	492	135(27.4)		1.00
Order of birth				
Only child	258	41(15.9)		1.00
Youngest child	277	68(24.5)	0.055	1,47(0,99-2,19)
Oldest child	125	33(26.4)	**0.040**	**1,62(1,02-2,58)**
Middle child	88	35(39.8)	**0.001**	**2,25(1,41-3,61)**
Number of children	**-**	**-**	**0.013**	**1,15(1,03-1,29)**
Sense of coherence				
Weak	317	91(28.7)		1.00
Strong	439	89(20.3)	0.072	0.76(0.56-1.03)
Locus of control				
Internal	513	106(20.7)	**0.031**	**0.71(0.53-0.97)**
External	238	73(30.7)		1.00
Contextual-level variables				
Type of preschool				
Public	292	108(37.0)	**p<0.001**	**2.38(1.77-3.21)**
Private	464	72(15.5)		1.00

Number of children in preschool	-	-	**0.025**	**0.99(0.99-1.00)**
Mean monthly income of neighborhood	-	-	0.220	0,99(0,99-1,00)
Number of general health teams	-	-	0.535	0.95(0.87-1.04)
Number of oral health teams	-	-	0.288	0.99(0.95-1.03)

Table 3. Multilevel Adjusted Assessment of cavitation of toothache among preschool children associating individual and contextual variables.

	Model 1 ("null")	**Model 2**	**Model 3**
Fixed effects		**PR (CI 95%)**	**PR (CI 95%)**
Intercept	0.24(0.21-0.27)	0.11(0.08-0.17)	0.18(0.11-0.27)
Individual level			
Parent's/caregiver's schooling			
≤ 8 years of study		**2.24(1.64-3.06)**	**1.65(1.14-2.39)**
> 8 years of study		1.00	1.00
Order of birth			
Only child		1.00	1.00
Youngest child		1.19(0.79-1.77)	1.16(0.78-1.74)
Oldest child		1.50(0.95-2.38)	1.50(0.95-2.38)
Middle child		**1.87(1.17-2.99)**	**1.73(1.08-2.77)**
Gender			
Male		1.00	1.00
Female		**1.36(1.01-1.82)**	**1.37(1.02-1.85)**
Contextual level: Preschool			
Type of preschool			
Public			1.00
Private			**0.58(0.40-0.84)**
Random effects			
Deviance (-2loglikelihood)	870.0276	817.2961	809.1280

Model 1 ("null"): represents the unconditional model; Model 2: represents individual covariates; Model 3: represents subject and contextual-level covariates.

Artigo 3

Contextual and individual determinants of oral health-related quality of life among five-year-old children: a multilevel analysis

Monalisa Cesarino Gomes[1], Érick Tássio Neves[1], Matheus França Perazzo[2], Saul Martins Paiva[2], Fernanda Morais Ferreira[2], Ana Flávia Granville-Garcia[1]

[1]Department of Dentistry, State University of Paraíba, Campina Grande, Paraíba, Brazil.
[2]Department of Pediatric Dentistry and Orthodontic, Federal University of Minas Gerais, 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

Abstract

Background: Contextual factors may influence oral health-related quality of life (OHRQoL) in children. **Aim:** Evaluate the influence of individual and contextual determinants of OHRQoL based on the perceptions of children. **Design:** A cross-sectional study was conducted with a representative sample of 769 five-year-old children. Parents/caregivers answered questionnaires addressing psychological aspects, sociodemographic data and aspects of the child's oral health. The children answered the child version of the Scale of Oral Health Outcomes for five-year-old children and are submitted to oral examinations. Variables related to the context were obtained from the schools and official municipal publications. Unadjusted and adjusted multilevel Poisson regression models were used to investigate associations between variables. Results: In the adjusted analysis, parent's/caregiver's schooling, monthly household income, parent's/caregiver's age, a history of dental pain, dental caries and its consequences and traumatic dental injury were considered individual determinants of OHRQoL according to the children's self-reports. After the

incorporation of the contextual determinants, the association between parent's/caregiver's schooling and OHRQoL lost its significance. Type of school was the context variable that remained associated with OHRQoL. Conclusion: Besides the clinical and sociodemographic individual characteristics, characteristics of the school environment in which the child studies are associated with self-reported impacts on OHRQoL.
Keywords: Quality of life; Dental caries; Oral health; Children.

Introduction

The oral health status of preschool children has been the object of diverse studies due to the high prevalence of oral problems in this age group, such as dental caries, traumatic dental injury (TDI) and malocclusion[1,2]. Moreover, these conditions can cause impacts on oral health-related quality of life (OHRQoL) among children and their families[1-3].

OHRQoL is a multidimensional concept that reflects functional, psychological and social aspects[4]. Studies involving preschool children have evaluated OHRQoL using two previously validated questionnaires. The Early Childhood Oral Health Impact Scale (ECOHIS) was the first questionnaire to emerge for the evaluation of OHRQoL among children aged two to five years and their families based on the reports of parents/caregivers[5]. More recently, the Scale of Oral Health Outcomes for 5-year-old children (SOHO-5) was developed for the evaluation of the OHRQoL of five-year-olds[4,6], which considers the perceptions of parents/caregivers as well as the perceptions of children (self-report). A previous study reports that this questionnaire has good psychometric properties and a good correlation is found between the two versions (parental and child)[7]. Thus, this scale enables a better evaluation of the impact of oral health conditions on the OHRQoL of five-year-old children.

Besides clinical conditions, the relationship between the psychological aspects of parents/caregivers and the OHRQoL of children has been explored. One's sense of coherence and the locus of control have been studied with regard to associations between these two concepts and both clinical conditions and OHRQoL[8-13]. Sense of coherence (SOC) regards the ability to adapt to

stress, which can be reflected in the oral health of individuals and their children[14]. Locus of control regards the perception one has in relation to who or what controls life events[10]. Studies that have addressed the influence of SOC in preschool children have used the perceptions of parents/caregivers regarding OHRQoL (proxy measure)[11,13]. Study addressing locus of control have demonstrated a relationship with OHRQoL in other age group[12].

Previous investigations conducted with preschool children have demonstrated the impact of dental caries, TDI and malocclusion on the OHRQoL of children[1-3,15-17]. Most studies focused on the evaluation of the characteristics of the children and their families for the determination of OHRQoL[1-3,16,17]. However, it is possible to find explanations for the impact on OHRQoL not only in individual characteristics, but also contextual characteristics. Only one study that evaluated the impact of both individual and contextual factors on the OHRQoL of preschool children was found[15]. The study investigated the perceptions of parents using the ECOHIS and found that unfavorable social conditions have a negative impact on the reports of parents/caregivers regarding the OHRQoL of children[15]. In addition, this study did not investigate the influence of the school environment on OHRQoL[15]. However, no previous studies have evaluated the influence of individual and contextual factors on the self-reports of five-year-old children regarding OHRQoL. Thus, there is a need for a clearer understanding of the impact of oral conditions based on the self-reports of children.

Contextual factors seem to be strongly associated with different oral health outcomes[18,19] and the study of these factors is undoubtedly important to the planning of services as well as the investigation of health inequalities[20]. The school setting is important to the intellectual development of children and also exerts an influence on health behaviors. Moreover, there is a relationship between economic status and the type of preschool a child attends[19]. Thus, understanding these contextual disparities could be the basis for directed interventions and health policies. The use of statistical methods for a multilevel analysis assists in better data treatment because the findings begin to demonstrate a hierarchical structure[21].

Considering the gaps found in the literature, the aim of the present study was to evaluate the influence of individual and contextual determinants on OHRQoL according to the perceptions of five-year-old children.

Materials and Methods

Sample and study design

A cross-sectional study was conducted to evaluate the oral health status of five-year-old children and the impact on OHRQoL. This study was conducted at public and private preschools between August and December 2015 in the city of Campina Grande, which is located in northeast Brazil, with approximately 400,000 inhabitants and a Human Development Index of 0.72. The present report conforms to the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE Statement).

The sample was selected using a complex two-stage (preschools and children) probabilistic sampling method. Two hundred sixty-three preschools (129 public and 134 private) were registered with the Ministry of Education. The city is divided into six administrative districts and preschools were randomly selected proportional to the total number in each district. Twenty-eight public and 20 private preschools were selected. In the second stage, five-year-old children enrolled in these preschools were randomly selected using a simple lottery procedure.

The sample size was calculated considering a 5% margin of error, 95% confidence interval and a 1.6 design effect to account for the change in the precision of the estimates due to the two-stage sampling process. Moreover, a 50% prevalence of the impact on OHRQoL was used to maximize the sample size and enhance statistical power of the results. The minimum sample was determined to be 615 children. This value was increased to compensate for possible dropouts estimated at 20% resulting in a sample of 769 five-year-old children.

Eligibility criteria

Children aged five years attending public and private preschools were included in the study. Those with a systemic adverse health conditions according to the reports of parents/caregivers, those with permanent teeth and those having been submitted to orthodontic treatment were excluded from the study. Moreover, the parent/caregiver needed to spend at least 12 hours a day with the child.

Training and calibration exercises

The training and calibration process involved theoretical explanations and clinical examinations. Two researchers who performed the data collection and an experienced specialist in the field participated in this phase. The researchers first evaluated photographs of oral conditions (dental caries, TDI, malocclusion and tooth wear) and group discussions were held. In the clinical phase, 40 children were randomly selected from a preschool that did not participate in the main study. These children were examined twice. The first examination was used for the calculation of inter-examiner agreement (Kappa statistic) between the researchers and the experienced specialist [K = 0.89 to 0.90 for dental caries; K = 0.89 to 1.00 for the pufa index (consequences of untreated dental caries); K = 0.88 to 0.90 for TDI; K = 0.86 to 0.91 for malocclusion and K = 0.68 to 0.73 for tooth wear]. After a seven-day interval, the same children were examined a second time for the calculation of intra-examiner agreement [K = 0.87 to 1.00 for dental caries; K = 1.00 for the pufa index (consequences of untreated dental caries); K = 0.82 to 0.87 for TDI; K = 0.94 to 1.00 for malocclusion and K = 0.81 to 1.00 for tooth wear]. The Kappa coefficients demonstrated good reliability for the clinical examinations, as coefficients between 0.61 and 0.80 are considered good and those between 0.81 and 1.00 are considered very good[22].

Pilot study

A pilot study was conducted prior to the data collection process of the main study to determine the applicability of the questionnaires and dynamics of the clinical examinations. In this step, the entire proposed methodology was applied to 45 children from two preschools (one public and one private), who

were not selected for the main study. The findings of this pilot study revealed no need to alter any of the methods.

Data collection

Data collection was performed at the previously selected preschools following contact with the principals of each preschool to explain the study and dynamics of the data collection process. Parents/caregivers were then asked to participate in a meeting at their child's preschool for clarifications regarding the objectives of the study and obtain written consent for the examination of the children. At the same meeting, the parents/caregivers were asked to fill out the questionnaires addressing psychological aspects, sociodemographic data and characteristics related to the children's oral health. After the questionnaires were collected, the children were examined for the assessment of the oral conditions (dental caries, TDI, malocclusion and tooth wear).

Individual sociodemographic variables. To obtain an individual profile of each child/family, the following sociodemographic data were collected: child's sex, parent's/caregiver's schooling, parent's/caregiver's age, monthly household income and whether the child had siblings. Parent's/caregiver's schooling was dichotomized as ≤ eight years of study or > eight years of study.

Oral health-related variables. Some aspects of the children's oral health were collected from the parents/caregivers. A history of dental pain was recorded if this symptom was reported/observed sometime in the child's life. Visit to the dentist was recorded if this occurred sometime in the child's life, independently of the reason. Tooth brushing frequency was investigated and dichotomized as < 2 times a day or ≥ 2 times a day.

Oral health-related quality of life. Quality of life was evaluated using the Scale of Oral Health Outcomes for 5-year-old children (SOHO-5), which is a validated questionnaire for the evaluation of the impact of oral problems on the OHRQoL of children aged five years[4,6] and is divided into two versions: child version and parental version. As the aim of the present study was to evaluate self-reports of children with regard to OHRQoL, only the child version of the SOHO-5 was considered. The questionnaire addresses difficulty eating, difficulty speaking, difficulty playing, difficulty sleeping, the avoidance of smiling due to pain, the

avoidance of smiling due to appearance and difficulty drinking. The answers are scored on a three-point scale (no = 0, a little = 1 and a lot = 2). To facilitate the child's responses, a self-explanatory drawing for each type of answer may be used. The sum of all answers is used for the final score, which ranges from 0 to 14 points on the child version of the questionnaire.

Sense of coherence. The SOC of the parents/caregivers was measured using the Sense of Coherence Scale (SOC-13), employing the version validated for use on mothers of preschool children[14]. This questionnaire has 13 items, each with five response options that assist in evaluating the components that compose SOC: comprehensibility, manageability and meaningfulness. The total ranges from 13 to 69 points, with higher scores indicative of a stronger SOC and greater capacity to cope with stress. For the purposes of statistical analysis, the score was dichotomized by the median, as performed in a previous study. Scores below the median were considered indicative of a weak SOC and scores above the median were indicative of a strong SOC.

Locus of control. The locus of control of the parents/caregivers was evaluated using the Multidimensional Health Locus of Control[10], which has 18 items distributed among three subdivisions (internal/external/chance) for the evaluation of the respondent's perception of who or what determines health/illness events: the individual himself/herself (internal) or other forces (external/chance). Each item has five response options (1 = fully agree; 2 = agree in part; 3 = neither agree nor disagree; 4 = disagree in part; 5 = fully disagree). The scores of the items on each subscale are totaled and can range from 6 to 30 points, with higher scores on the subscale indicating a lower degree of each factor (internal and external/chance). An internal locus is considered when the lowest score is on the subscale of internal factors and an external locus is considered when the lowest score is on the subscale of external or chance factors. Questionnaires with missing responses on three or more items and those for which the three subscales were equally divided between internal and external/chance were discarded.

Clinical examination. The clinical examinations were performed at the preschools in the knee-to-knee position. The children were first given a kit with a toothbrush, toothpaste and dental floss and then performed oral hygiene

under the supervision of the researchers. The examiners used individual protective equipment (gloves, masks, caps and lab coats) and a head lamp (Petzl Zoom head lamp; Petzl America, Clearfield, UT, USA). A sterilized mouth mirror (PRISMA, São Paulo, SP, Brazil), sterilized Williams probe (WHO-621; Trinity, Campo Mourão, PR, Brazil) and gauze (to dry the teeth) were used. The clinical examinations were performed using criteria established in the literature. After the examination, a fluoride varnish (Duraphat® - 5% NaF) was applied to the teeth and the researchers sent a letter to the parents/caregivers informing them of their child's oral health status and the importance of visiting a dentist.

Dental caries was evaluated using the International Caries Detection and Assessment System (ICDAS-II)[23], which includes the initial stage of the disease (white spots). The score ranges from 0 to 6. Code 0 refers to a sound tooth. Code 1 refers to a white spot detected after drying the teeth with compressed air and is not used in epidemiological studies in which the teeth were dried with gauze. Code 2 refers to a white spot diagnosed following drying of the teeth with gauze. Codes 3 to 6 are used for increasing degrees of cavitated lesions. In the present study, the children were classified in three dental caries categories coded as follows: 0: absent; 1: white spot (children with caries only in the initial stage); and 2: cavitated lesion [children with at least one cavitated tooth (code 3 to 6)].

Caries activity was also evaluated. Enamel lesions were recorded using the following criteria: lesion is whitish/yellowish; lesion is chalky (lack of luster); lesion may or may not be cavitated; lesion feels rough upon probing; probing may or may not encounter cavity. Dentin lesions were recorded using the following criteria: lesion may appear as shadow below intact, but de-mineralized enamel; if cavity extends into dentin, dentin appears yellowish/brownish; dentin soft upon probing[24].

The pufa index was used to evaluate the consequences of untreated dental caries in the children[25]: visible pulpal (p) involvement, ulceration (u) caused by dislocated tooth fragments, fistula (f) and abscess (a). In the present study, this variable was dichotomized as absent (no consequences of untreated caries) or present (one or more teeth with some consequence of untreated caries).

The determination of TDI was based on the criteria established by Andreasen et al.[26]; enamel fracture, enamel + dentin fracture, complicated crown fracture, luxation (lateral, intrusive and extrusive) and avulsion. Discoloration stemming from trauma was also investigated. This variable was dichotomized as absent or present (one or more teeth diagnosed with some type of TDI or discoloration stemming from a trauma).

For the evaluation of malocclusion, the following types were investigated: increased overbite (> 2 mm), increased overjet (> 2 mm), anterior open bite, anterior crossbite and posterior crossbite[27]. Malocclusion was recorded as present when a child exhibited at least one of these types.

The children were also submitted to a clinical examination for the determination of tooth wear. This oral condition was diagnosed in the presence of wear on the incisal surfaces of the anterior teeth and/or occlusal surfaces of the posterior teeth.

Contextual variables. Four variables were investigated for the evaluation of the contextual aspects of OHRQoL: type of preschool (public or private) in which the child was enrolled, number of children in the preschool, mean monthly income of the neighborhood in which the preschool was located and number of oral health teams in the administrative district in which the school was located. Information on the mean income of the neighborhood was obtained from the Brazilian Institute of Geography and Statistics in the city and the number of oral health teams in the administrative districts was obtained from the Ministry of Health in the city. Data on the preschools (type and number of children) were recorded during the first visit to each preschool.

Statistical analysis

The STATA 12.0 program (Stata Corporation, College Station, TX, USA) was used for the data analysis. Descriptive statistics were used for the characterization of the sample. Unadjusted and adjusted multilevel Poisson regression models were created to describe associations between the outcomes and predictors. The sum of the scores on the SOHO-5 was considered for the evaluation of OHRQoL. Multilevel Poisson regression

analysis involved a fixed effects model with random intercepts to evaluate associations between mean total SOHO-5 score (primary outcome) and both individual and contextual covariates. This strategy enabled the estimation of rate ratios (RR) between comparison groups and respective 95% confidence intervals (CI).

In the first step, an unconditional (null) model was used to estimate the variability in the data before the individual and contextual characteristics were taken into account[21]. The individual covariates were incorporated into model 2 and both the individual and contextual covariates were incorporated into model 3. Individual variables that achieved a p-value < 0.20 in the univariate multilevel Poisson regression analysis were incorporated into model 2 and those with a p-value < 0.05 in the adjusted analysis remained in the model. Next, contextual variables that achieved a p-value < 0.20 in the univariate multilevel Poisson regression analysis were incorporated into model 3 and those with a p-value < 0.05 in the adjusted analysis remained in the final model. The goodness-of-fit of the models was calculated based on deviance values (–2 log likelihood).

Ethical aspects

This study received approval from the Human Research Ethics Committee of the State University of Paraíba (certificate number: 38937714.0.0000.5187) and was conducted in compliance with the guidelines stipulated in the Declaration of Helsinki. All legal guardians signed as statement of informed consent prior to the data collection process. All preschools received clarifications regarding the study protocol and agreed to participate.

Results

A total of 769 pairs of children and parents/caregivers participated in the study, corresponding to a 100% response rate. Table 1 displays the main characteristics of the sample. The male sex accounted for 52.4% of the sample, 30.0% of the parents/caregivers had eight years of schooling or less and the majority of the children (65.7%) had siblings. Regarding characteristics related to oral health, 58.8% of children were diagnosed with dental caries, 52.8% were

diagnosed with TDI, 57.7% had malocclusion and 77.6% exhibited tooth wear. A history of dental pain was reported in 23.8% of the children.

Table 2 displays the results of the unvariate multilevel Poisson regression analysis. Significant associations were found with the following variables: parent's/caregiver's schooling (RR = 1.40; 95% CI: 1.24 to 1.57), monthly household income (RR = 0.99; 95% CI: 0.99 to 0.99), parent's/caregiver's age (RR = 1.01; 95% CI: 1.01 to 1.02), being an only child (RR = 0.87; 95% CI: 0.78 to 0.97), history of dental pain (RR = 1.68; 95% CI: 1.52 to 1.86), white spot (initial stage of dental caries) (RR = 1.47; 95% CI: 1.16 to 1.87), cavitated lesion (RR = 1.84; 95% CI: 1.46 to 2.31), caries activity (RR = 1.68; 95% CI: 1.52 to 1.86), consequence of untreated dental caries (pufa index) (RR = 1.47; 95% CI: 1.30 to 1.65), TDI (RR = 1.24; 95% CI: 1.13 to 1.37), tooth wear (RR = 1.13; 95% CI: 1.01 to 1.27) and type of preschool (RR = 2.10; 95% CI: 1.64 to 2.70).

Table 3 displays the results of the multivariate multilevel Poisson regression analysis. After adjusting for the individual variables (Model 2), a low level of schooling of the parent/caregiver (RR = 1.15; 95% CI: 1.09 to 1.30), lower household income (RR = 0.99; 95% CI: 0.99 to 0.99), younger age of parent/caregiver (RR = 1.01; 95% CI: 1.01 to 1.02), history of dental pain (RR = 1.52; 95% CI: 1.34 to 1.72), white spot (RR = 1.45; 95% CI: 1.13 to 1.87), cavitated lesion (RR = 1.46; 95% CI: 1.14 to 1.87), consequence of untreated dental caries (pufa index) (RR = 1.21; 95% CI: 1.05 to 1.39) and TDI (RR = 1.20; 95% CI: 1.08 to 1.33) were identified as individual determinants of a negative impact on the OHRQoL of the children based on self-reports. After the incorporation of the contextual variables (model 3), only parent's/caregiver's schooling lost its statistical significance. In this model, the influence of the type of preschool is demonstrated on the contextual level, as children who attended public preschools reported a greater impact on OHRQoL (RR = 1.51; 95% CI: 1.17 to 1.93).

Discussion

This study was conducted to evaluate the influence of individual and contextual determinants on OHRQoL based on self-reports by children. To the best of our knowledge, this is the first study with this objective. The main findings demonstrate that individual socioeconomic factors and clinical conditions exert an influence on this perception. In the final model, OHRQoL was associated with household income, parent's/caregiver's age, a history of dental pain, dental caries, consequences of untreated dental caries and TDI. However, the results provide evidence that the social context also exerts an influence on OHRQoL, such as the social environment of the school at which children study. Children who attended public schools demonstrated greater impact on OHRQoL than those who attended private schools.

Clinical conditions, such as dental caries and its consequences (pulpal involvement, ulceration, fistula and abscess) and TDI were associated with OHRQoL according to self-reports by the children, even after adjusting for contextual variables. Previous studies have also demonstrated such associations, reporting that these conditions may be related to impairments with regard to functional, esthetic and social aspects[1-3,15-17]. It is also possible that these relationships were due to the associated symptoms. A history of dental pain was associated with OHRQoL, which is in agreement with data from previous studies involving this age group[28]. However, white spots were also associated with OHRQoL. It is possible that children with white spots on their anterior teeth may perceive a negative esthetic effect. This finding is also described in a previous study, although no such association was found in the perception of parents/caregivers[16]. This may demonstrate that parents/caregiver perceive oral problems in children only in the presence of pain, which underscores the importance of studies that also evaluate children's perceptions to gain a better understanding of OHRQoL in young children.

Parent's/caregiver's schooling, monthly household income and parent's/caregiver's age were individual determinants of OHRQoL according to self-reports by the children. However, after adjusting for contextual variables, only household income and parent's/caregiver's age remained in the final

model. This finding is in agreement with data reported in previous study, which found that a lower income and younger age of parents/caregivers exerted a greater impact on OHRQoL[15]. Individuals with a lower income have smaller access to health services and information and younger parents/caregivers generally have less experience with regard to health care[29]. It is likely that parent's/caregiver's schooling did not remain in the model due to its correlation with household income, since lower educational levels are known to lead to a lower income and poor occupational status[19]. Moreover, type of preschool seems to have a greater influence on the oral health of children than parent's/caregiver's schooling.

Type of preschool was the contextual variable that remained in the final model. Children attending public preschools reported worse OHRQoL, which may demonstrate a lower socioeconomic status of the family. In Brazil, most children and adolescents who study at public schools are from underprivileged families that live in areas of social deprivation and do not have the financial resources to afford a private school[30]. A previous study involving preschool children demonstrated that those who find themselves in an unfavorable social context also have poorer OHRQoL according to the reports of parents/caregivers[15]. It is possible that the other contextual variables analyzed were not associated because they demonstrated a division with a geographical element (such as mean income of the neighborhood), since individuals with different socioeconomic statuses often reside in the same area.

Schools are considered important settings for the promotion of health in children[30], since children spend a large part of their time in such environments. Thus, schools could be used for measures designed to improve health, self-esteem and healthy behaviors in children[18]. Indeed, the present study demonstrates that the school setting could be a good option for the planning of preventive strategies directed at oral problems and, consequently, reduce the negative impact on OHRQoL. It is possible that private schools, besides having children with a better economic status, also develop activities that stress the importance of health care. In a study involving children aged one to five years, children whose mothers had a greater participation in their children's schools were more likely to make use of oral health services[19]. Thus, health programs

for children should consider the school environment. Oral health programs can assist in the implementation of preventive measures, such as healthy behaviors, and consequently exert a beneficial effect on OHRQoL

The cross-sectional design can be considered a limitation of the present study due to the inability to evaluate causality. However, studies with this type of design are important for estimating the prevalence of events in a representative sample of the population. Moreover, cross-sectional studies provide useful data for the planning of public health policies. As a representative sample and validated questionnaires were employed, the results can be extrapolated to the population of Brazilian five-year-old children. Further studies are needed to evaluate the longitudinal aspects of the associations found herein.

Conclusion

Besides the clinical and sociodemographic characteristics of the children, aspects of the school environment in which the children found themselves were associated with self-reported OHRQoL. Children with a history of dental pain, caries and its consequences and TDI who belonged to families with a lower income and whose parents/caregivers were younger reported poorer OHRQoL. Moreover, type of preschool was identified as a contextual determinant in this study, as children attending public preschools reported poorer OHRQoL than those attending private preschools.

Bullet points

Why this paper is important to paediatric dentists:

- It aims to provide evidence on the impact of oral health problems on five-year-old children in the OHRQoL, based on individual and contextual determinants, from a multilevel analysis. These results can help in the elaboration of oral health policies based on the social context of individuals.

Conflict of interest

The authors declare no conflict of interest.

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Table 1. Individual and contextual characteristics of sample

Variable	n(%) / mean (SD)
Individual Level	
Sex	
Female	366(47.6)
Male	403(52.4)
Parent's/caregiver's schooling	
≤ 8 years of study	230(30.0)
> 8 years of study	536(70.0)
Monthly household income	1877.05(2595.29)
Parent's/caregiver's age	32.67(7.82)
Only child	
No	501(65.7)
Yes	262(34.3)
History of dental pain	
No	576(76.2)
Yes	180(23.8)
Dental caries	
Absent	67(8.7)
White spot	250(32.5)
Cavitated lesion	452(58.8)
Consequence of untreated dental caries (pufa index)	
Absent	663(86.2)
Present	106(13.8)
TDI	
Absent	363(47.2)
Present	406(52.8)
Malocclusion	
Absent	325(42.3)
Present	443(57.7)
Tooth wear	
Absent	172(22.4)

Present	597(77.6)
Sense of coherence	
Weak	321(41.7)
Strong	448(58.3)
Locus of control	
Internal	520(68.1)
External	244(31.9)
Contextual Level	
Type of preschool	
Public	298(38.8)
Private	471(61.2)
Mean monthly income of neighborhood	1026.64(474.21)
Number of oral health teams	8.94(2.13)
Number of children in preschool	107.66(99.16)

Table 2. Unadjusted assessment of association between overall SOHO-5 scores and both individual and contextual variables

Variable	SOHO-5 Scores mean (SD)	p-value	RR(95% CI)
Individual Level			
Sex			
Female	2.20(3.22)	0.102	0.92(0.84-1.01)
Male	2.53(3.45)		1.00
Parent's/caregiver's schooling			
≤ 8 years of study	3.53(4.03)	**<0.001**	**1.40(1.24-1.57)**
> 8 years of study	1.88(2.88)		1.00
Monthly household income	-	**<0.001**	**0.99(0.99-0.99)**
Parent's/caregiver's age	-	**<0.001**	**1.01(1.01-1.02)**
Only child			
Yes	1.87(2.97)	**0.010**	**0.87(0.78-0.97)**
No	2.61(3.47)		1.00
Use of dental services			
Yes	2.25(3.22)	0.628	1.02(0.93-1.13)
No	2.47(3.45)		1.00
Tooth brushing frequency			
< Twice a day	2.90(3.47)	0.238	1.09(0.94-1.26)
≥ Twice a day	2.32(3.34)		1.00
History of dental pain			
Yes	3.77(3.88)	**<0.001**	**1.68(1.52-1.86)**
No	1.92(3.01)		1.00
Dental caries			
Absent	1.22(2.04)		1.00
White spot	1.84(2.87)	**0.001**	**1.47(1.16-1.87)**
Cavitated lesion	2.84(3.66)	**<0.001**	**1.84(1.46-2.31)**
Caries activity			
Active	2.68(3.53)	**<0.001**	**1.98(1.62-2.42)**
Inactive	1.18(2.31)		1.00

Consequence of untreated caries (pufa index)			
Absent	2.15(3.22)		1.00
Present	3.79(3.79)	**<0.001**	**1.47(1.30-1.65)**
TDI			
Absent	2.05(3.25)		1.00
Present	2.67(3.41)	**<0.001**	**1.24(1.13-1.37)**
Malocclusion			
Absent	2.31(3.29)		1.00
Present	2.42(3.40)	0.731	1.02(0.92-1.12)
Tooth wear			
Absent	2.22(3.42)		1.00
Present	2.42(3.33)	**0.037**	**1.13(1.01-1.27)**
Sense of coherence			
Weak	2.76(3.56)		1.00
Strong	2.10(3.16)	0.210	0.94(0.85-1.04)
Locus of control			
Internal	2.21(3.19)	0.205	0.94(0.85-1.04)
External	2.70(3.63)		1.00
Contextual Level			
Type of school			
Public	3.54(4.05)	**<0.001**	**2.10(1.64-2.70)**
Private	1.63(2.56)		1.00
Mean monthly income of neighborhood	-	0.520	0.99(0.99-1.00)
Number of oral health teams	-	0.290	0.96(0.88-1.04)
Number of children in preschool	-	0.494	0.99(0.99-1.00)

Table 3. Association between overall SOHO-5 scores and both individual and contextual variables determined by multilevel Poisson regression

	Model 1 ("null")	**Model 2**	**Model 3**
Fixed effects		**RR (IC 95%)**	
Intercept	2.53(2.15-2.98)	0.92(0.65-1.29)	0.79(0.54-1.09)
Individual level			
Parent's/caregiver's schooling			
≤ 8 years of study		**1.15(1.09-1.30)**	1.11(0.98-1.26)
> 8 years of study		1.00	1.00
Monthly household income		**0.99(0.99-0.99)**	**0.99(0.99-0.99)**
Parent's/caregiver's age		**1.01(1.01-1.02)**	**1.01(1.01-1.02)**
History of dental pain			
Absent		1.00	1.00
Present		**1.52(1.34-1.72)**	**1.52(1.35-1.72)**
Dental caries			
Absent		1.00	1.00
White spot		**1.45(1.13-1.87)**	**1.43(1.11-1.85)**
Cavitated lesion		**1.46(1.14-1.87)**	**1.42(1.11-1.82)**
Consequence of untreated caries (pufa index)			
Absent		1.00	1.00
Present		**1.21(1.05-1.39)**	**1.20(1.04-1.38)**
TDI			
Absent		1.00	1.00
Present		**1.20(1.08-1.33)**	**1.20(1.09-1.33)**
Contextual level: Preschool			
Type of preschool			
Public			**1.51(1.17-1.93)**
Private			1.00
Random effects			
Deviance (-2loglikelihood)	4221.4462	3631.1832	3621.7016

Model 1 ("null"): unconditional model; Model 2: individual covariates; Model 3: individual and contextual covariates.

Considerações finais

5. CONSIDERAÇÕES FINAIS

Os fatores contextuais tem sido considerados determinantes importantes de saúde e o aumento das desigualdades sociais em saúde reafirma o valor do estudo desses fatores na determinação do processo saúde-doença. Considerando que o Brasil é um país marcado por desigualdades socioeconômicas, o que produz extensas consequências para a saúde, o monitoramento de indicadores contextuais torna-se importante, pois esses traduzem aspectos das condições de vida da comunidade (DIEZ-ROUX, 2000; PALMIER et al., 2012).

A análise multinível, ao abordar conjuntamente os fatores individuais e contextuais na análise epidemiológica da condição de saúde bucal das crianças, reflete, de modo mais adequado, os fatores que estão influenciando essa condição (DIEZ-ROUX, 2000). Dessa maneira, a priorização em saúde bucal das crianças deve se basear também em indicadores contextuais, importantes como ferramenta para implantação de políticas efetivas de promoção e prevenção de saúde.

Os resultados desse estudo indicam que o tipo de pré-escola pode ser um determinante contextual para a presença de lesões cavitadas, histórico de dor de dente e impacto na QVRSB em crianças de 5 anos de idade, assim como o tamanho da pré-escola pode também influenciar quanto às lesões cavitadas de cárie dentária. Por vezes, sugere-se que a influência de fatores socioeconômicos contextuais é mais importante do que fatores socioeconômicos individuais para a saúde bucal de pré-escolares.

Com base nisso, programas de promoção e prevenção de saúde bucal podem ser elaborados de acordo com o contexto social em que a criança está inserida. Crianças de pré-escolas públicas e/ou com menor número de crianças matriculadas apresentaram uma pior condição de saúde bucal. Assim, as escolas podem ser consideradas locais importantes para a promoção da saúde em crianças. Nesses locais pode-se fornecer medidas para melhorar a saúde, a autoestima e comportamentos de saúde nas crianças (FERNANDÉZ et al., 2015). Ações educativas em saúde bucal com pais, crianças e equipe escolar pode favorecer o aumento das informações em saúde e, consequentemente

reduzir a prevalência dos agravos em saúde bucal. Dessa forma, esta análise multinível demonstra que o meio escolar pode ser uma alternativa para desenvolvimento de políticas de saúde bucal.

Novos estudos são necessários para avaliar o contexto escolar, como a estrutura, atividades e métodos de ensino, na determinação da saúde bucal em pré-escolares. Além disso, por ser uma área ainda pouco estudada, torna-se necessário a análise da influência de diferentes contextos sociais na saúde bucal de pré-escolares, com a finalidade de ampliar a identificação dos grupos vulneráveis a doença.

Os resultados desse trabalho fornecem uma maior compreensão da influência do contexto social em que a criança está inserida nas condições de saúde bucal, bem como o impacto na QVRSB segundo o relato das crianças. Dessa forma, oferecem uma medida complementar que podem auxiliar no desenvolvimento de diretrizes para uma prática baseada em evidências.

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Apêndices

APÊNDICE A
Questionário aplicado aos pais/responsáveis

IDENTIFICAÇÃO
01. Sexo: ( ) menina ( ) menino
02. Escola: _____

DADOS SOBRE A FAMÍLIA DA CRIANÇA
03.Você é que parente da criança?
( ) Mãe ( ) Pai ( ) Irmão (ã) ( ) Tio (a)
( ) Avô (ó) ( ) Vizinho (a) ( ) Amigo (a) ( ) Outro. Qual?_ _____

04. Qual a idade do responsável pela criança: _____

05. A criança é: ( ) único(a) ( ) mais novo(a) ( ) mais velho(a) ( ) filho (a) do meio
06. Quantos filhos você tem? _____

07. O pai/responsáveis 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

08. 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$_____

DADOS SOBRE A CRIANÇA

09. Quando escova os dentes da criança, faz quantas vezes no dia? _____

10. Quem faz a escovação dos dentes da criança? (MARQUE COM UM X)
( ) Mãe ( ) Pai ( ) Irmãos ( ) A própria criança ( ) Outros. Quem?
_____
11. A criança já foi levada ao dentista?
( ) Sim ( ) Não
12. Qual o motivo da criança ter ido ao dentista?
_____
13. Seu filho(a) já sentiu dor de dente alguma vez na vida? ( ) Sim ( )Não

APÊNDICE B

Ficha clínica

Nº _____ Examinador:_____
Pré-escola:_____
Pertencente ao distrito sanitário: _____

Dados Pessoais:
Sexo: ( ) menina ( ) menino
Dia, mês e ano em que a criança nasceu: _____/_____/____

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

MÁ OCLUSÃO
01. *Overjet*:
( ) Ideal ( ) Aumentado ( ) Topo-a-topo ( ) Cruzado

02. *Overbite:*
( ) Ideal ( ) Reduzido ( ) Mordida aberta anterior ( ) Aumentado

03. Mordida Cruzada posterior:
( ) Ausente ( ) Unilateral, lado _____ ( ) Bilateral

DESGASTE DENTÁRIO

Ausente (0) - Presente (1)

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

PUFA

p: envolvimento pulpar **f:** fístula
u: ulceração **a:** abscesso

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

APÊNDICE C

Consentimento da Secretaria Estadual de Educação

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

CARTA DE ANUÊNCIA

Ilma. Sra. Italagitânia Simplício Da Silva

Estamos realizando uma pesquisa que tem como título "Avaliação das alterações bucais e aspectos biopsicossociais em pré-escolares de Campina Grande-PB". Essa pesquisa tem o objetivo de avaliar a condição de saúde bucal, em relação à cárie dentária, má oclusão e traumatismo dentário, e as repercussões nos aspectos biopsicossociais em crianças de cinco anos de idade. Essa pesquisa será realizada por professores da Universidade Estadual da Paraíba, alunos de mestrado e doutorado, com 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 o pai/responsável permitir. Também será realizada aplicação de questionário aos pais/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 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 para os pesquisadores, nem para as instituições.

Solicitamos então, por gentileza, sua autorização para examinar essas crianças e entrevistar os pais/responsáveis. Informamos, que na medida do possível, não iremos interferir na operacionalização e/ou nas atividades cotidianas das creches/pré-escolas, 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 dessa pesquisa para os pais/responsáveis e para a Secretaria da 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 N° 466/2012 do Conselho Nacional de Saúde.

Atenciosamente,

Campina Grande, 12 de novembro de 2014.

Ana Flávia Granville-Garcia
Profª do Programa de Pós-Graduação em Odontologia da UEPB
Pesquisadora responsável

Autorização
Italagitânia Simplício da Silva
Mat. 173.801-1
Gerente Regional de Educação da 3ª Região

Italagitânia Simplício Da Silva
Gerente Regional da Educação - Campina Grande - PB

APÊNDICE D

Consentimento da Secretaria Municipal de Educação

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

CARTA DE ANUÊNCIA

Ilma. Sra. Iolanda Barbosa Silva

Estamos realizando uma pesquisa que tem como título "Avaliação das alterações bucais e aspectos biopsicossociais em pré-escolares de Campina Grande-PB". Essa pesquisa tem o objetivo de avaliar a condição de saúde bucal, em relação à cárie dentária, má oclusão e traumatismo dentário, e as repercussões nos aspectos biopsicossociais em crianças de cinco anos de idade. Essa pesquisa será realizada por professores da Universidade Estadual da Paraíba, alunos de mestrado e doutorado, com 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 o pai/responsável permitir. Também será realizada aplicação de questionário aos pais/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 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 para os pesquisadores, nem para as instituições.

Solicitamos então, por gentileza, sua autorização para examinar essas crianças e entrevistar os pais/responsáveis. Informamos, que na medida do possível, não iremos interferir na operacionalização e/ou nas atividades cotidianas das creches/pré-escolas, 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 dessa pesquisa para os pais/responsáveis e para a Secretaria da 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 Nº 466/2012 do Conselho Nacional de Saúde.

Atenciosamente,

Campina Grande, 12 de novembro de 2014.

Ana Flávia Granville-Garcia
Profª do Programa de Pós-Graduação em Odontologia da UEPB
Pesquisadora responsável

Autorização
Iolanda Barbosa da Silva

Iolanda Barbosa Silva
Secretária de Educação do município de Campina Grande - PB

APÊNDICE E

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 alterações bucais e aspectos biopsicossociais em pré-escolares 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 20 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 alterações bucais e aspectos biopsicossociais em pré-escolares de Campina Grande-PB", autorizo a realização do exame clínico na criança e entrevista em:

Campina Grande,___ de _____2015

Responsável_____RG_____

APÊNDICE F

Termo de compromisso do pesquisador responsável

uepb

TERMO DE COMPROMISSO DO PESQUISADOR RESPONSÁVEL EM CUMPRIR OS TERMOS DA RESOLUÇÃO 466/12 DO CNS/MS

Pesquisa: Avaliação das alterações bucais e aspectos biopsicossociais em pré-escolares de Campina Grande-PB

Eu, Ana Flávia Granville-Garcia, Professor(a) do Curso de Odontologia, da Universidade Estadual da Paraíba, portador(a) do RG: 1326944 e CPF 646.880.704-20 comprometo-me em cumprir integralmente as diretrizes da Resolução Nº. 466/12 do Conselho Nacional de Saúde do Ministério da Saúde/Comissão Nacional de Ética em Pesquisa, que dispõe sobre Ética em Pesquisa que envolve Seres Humanos.

Estou ciente das penalidades que poderei sofrer caso infrinja qualquer um dos itens da referida resolução.

Por ser verdade, assino o presente compromisso.

Campinha Grande,18 de novembro de 2014

Ana Flávia Granville-Garcia (Pesquisador responsável)

APÊNDICE G

Declaração de concordância com projeto de pesquisa

DECLARAÇÃO DE CONCORDÂNCIA COM PROJETO DE PESQUISA

Pesquisa: Avaliação das alterações bucais e aspectos biopsicossociais em pré-escolares de Campina Grande-PB

Eu, **Ana Flávia Granville-Garcia**, Pesquisadora responsável, Professora de Pós-graduação de Odontologia da Universidade Estadual da Paraíba, portador(a) do RG: 1326944, declaro que estou ciente do referido Projeto de Pesquisa e comprometo-me em acompanhar seu desenvolvimento no sentido de que se possam cumprir integralmente as diretrizes da Resolução Nº. 466/12 do Conselho Nacional de Saúde do Ministério da Saúde/Comissão Nacional de Ética em Pesquisa, *que dispõe* sobre Ética em Pesquisa que envolve Seres Humanos.

Campina Grande, 18 de novembro de 2014

Ana Flávia Granville-Garcia
Orientadora

Monalisa da Nóbrega Cesarino Gomes
Orientanda

Anexos

ANEXO A

Questionário SOHO-5

VERSÃO DA CRIANÇA

Nome da criança:_____

ENTREVISTADOR: "**Agora, eu vou te perguntar sobre os seus dentes e as coisas que você faz todos os dias como brincar, comer, conversar".**

ENTREVISTADOR: Por favor, mostre o **cartão A** após as perguntas **1-7**, enquanto explica como assinalar e dá o exemplo:

"Para cada pergunta, eu vou te mostrar um cartão com três carinhas. Se você não teve nenhum problema, aí você escolhe a carinha feliz. Se você teve um pouco de problemas, aí você pode escolher a carinha do meio e se você teve muitos problemas aí você escolhe a carinha triste. Eu quero saber qual é a carinha que melhor mostra o que você sente sobre os seus dentes".

1. Alguma vez foi difícil para você **comer** por causa dos seus dentes/"dentinhos"?

- ☐ **Não**
- ☐ **Um pouco**
- ☐ **Muito**

2. Alguma vez foi difícil para você **beber** por causa dos seus dentes/"dentinhos"?

- ☐ **Não**
- ☐ **Um pouco**
- ☐ **Muito**

3. Alguma vez foi difícil para você **falar** por causa dos seus dentes /"dentinhos?

- ☐ **Não**
- ☐ **Um pouco**
- ☐ **Muito**

4. Alguma vez foi difícil para você **brincar** por causa dos seus dentes /“dentinhos”?

- ☐ **Não**
- ☐ **Um pouco**
- ☐ **Muito**

5. Alguma vez foi difícil para você dormir por causa dos seus dentes/“dentinhos”?

- ☐ **Não**
- ☐ **Um pouco**
- ☐ **Muito**

6. Alguma vez você deixou de **sorrir** porque não gostou dos seus dentes (“dentinhos”)/porque achou seus dentes (“dentinhos”) feios?

- ☐ **Não**
- ☐ **Um pouco**
- ☐ **Muito**

7. Alguma vez você deixou de **sorrir** porque os seus dentes/“dentinhos” estavam doendo?

- ☐ **Não**
- ☐ **Um pouco**
- ☐ **Muito**

ANEXO B

Questionário de Senso de coerência

As perguntas a seguir são muito importantes, pois falam de você, **MAMÃE, suas ideias e sentimentos**, o que é muito importante neste estudo. Peço que respondam com carinho e atenção marcando apenas uma resposta para cada pergunta. Não existem respostas certas ou erradas para nenhuma delas. Preste atenção nas instruções para responder cada tipo de pergunta.

INSTRUÇÕES PARA AS PERGUNTAS:

Aqui estão 13 perguntas sobre vários aspectos da sua vida. Cada pergunta tem cinco respostas possíveis. Marque com um X a opção que melhor expresse a sua maneira de pensar e sentir em relação ao que está sendo falado. Dê apenas **uma única resposta** em cada pergunta, por favor.

		Um enorme aborrecimento e sofrimento	**Um aborrecimento e sofrimento**	**Nem aborrecimento nem satisfação**	**Um prazer e satisfação**	**Um enorme prazer e satisfação**
1	Aquilo que você faz diariamente é:					
		Sem nenhum objetivo	**Com poucos objetivos**	**Com alguns objetivos**	**Com muitos objetivos**	**Repleta de objetivos**
2	Até hoje a sua vida tem sido:					
		Nunca	**Poucas vezes**	**Algumas vezes**	**Muitas vezes**	**Sempre**
3	Você tem interesse pelo que se passa ao seu redor?					
4	Você acha que é tratada com injustiça?					
5	Você tem ideias e sentimentos confusos?					
6	Você acha que as coisas que você faz na sua vida têm pouco sentido?					
7	Já lhe aconteceu ter ficado desapontada com pessoas em quem você confiava?					
8	Você tem sentimentos que gostaria de não					

	ter?					
9	Você tem dúvida se pode controlar seus sentimentos?					
10	Já lhe aconteceu de ficar surpreendida com o comportamento de pessoas que você achava que conhecia bem?					
11	Em algumas situações as pessoas sentem-se fracassadas. Você já se sentiu fracassada?					
12	Você sente que está em uma situação pouco comum, e sem saber o que fazer?					
		Totalmente errada	**Errada**	**Nem correta e nem errada**	**Correta**	**Totalmente correta**
13	Às vezes acontecem coisas na vida da gente que depois achamos que não demos a devida importância. Quando alguma coisa acontece na vida, você acaba achando que deu a importância:					

Obrigada por sua colaboração. Ela foi muito importante!

ANEXO C

Questionário Lócus de controle

As perguntas a seguir são muito importantes, pois falam de você, **MAMÃE, suas ideias e sentimentos**, o que é muito importante neste estudo. Peço que respondam com carinho e atenção marcando apenas uma resposta para cada pergunta. Não existem respostas certas ou erradas para nenhuma delas. Preste atenção nas instruções para responder cada tipo de pergunta.

INSTRUÇÕES PARA AS PERGUNTAS 1 A 21:

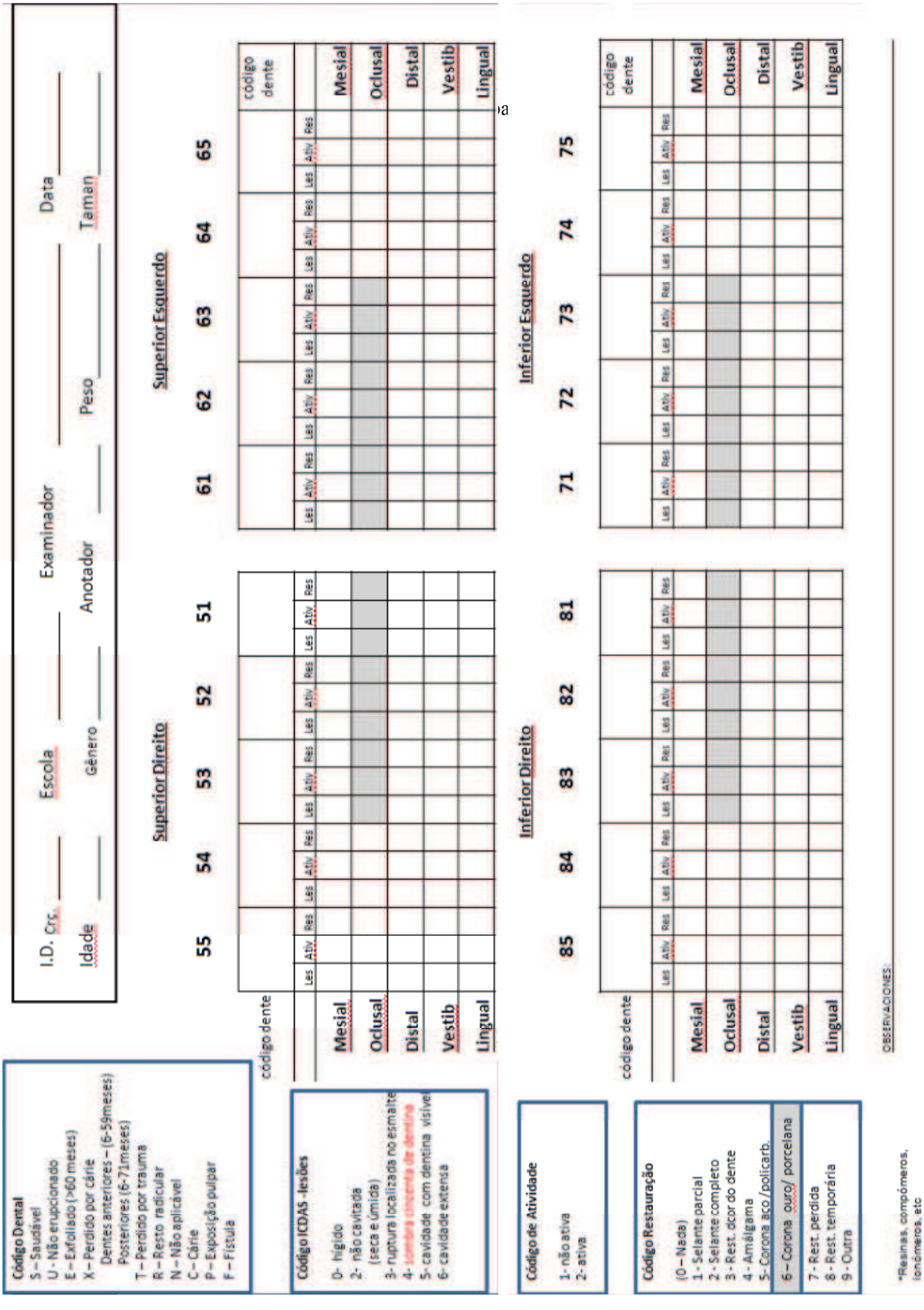
Estas perguntas são sobre o que você pensa sobre saúde. Para cada frase você deve dizer se está de acordo, se concorda em parte (mais ou menos), se está indecisa, se discorda em parte (mais ou menos) ou se discorda, marcando com um X a opção correspondente. Lembramos que não existem respostas certas nem erradas, o que importa é sua opinião pessoal.

		Concordo totalmente	Concordo em parte	Estou indecisa	Discordo em parte	Discordo totalmente
1	Se eu ficar doente, a minha recuperação rápida vai depender de como eu me cuidar.					
2	Não importa o que eu faça, se for para eu ficar doente, eu fico mesmo.					
3	Para mim, a melhor maneira de não ficar doente é ir frequentemente ao médico.					
4	Muitas coisas que afetam minha saúde acontecem por acaso.					
5	Toda vez que eu não me sinto bem de saúde, eu vou ao médico.					
6	Eu posso controlar minha saúde.					
7	Se eu estou doente ou com saúde, minha família tem muito a ver com isto.					
8	Quando eu fico doente, normalmente é porque eu fiz alguma coisa de errado, fiz algum excesso.					

9	Quando eu estou doente, se eu tiver muita sorte me recupero rápido.					
10	Quem controla minha saúde são os médicos.					
11	Ter ou não ter saúde é uma questão de sorte.					
12	A principal coisa que afeta minha saúde é o que eu faço.					
13	Quando eu me cuido bem, fico menos doente.					
14	Quando eu saro de uma doença, em geral, é porque as pessoas cuidaram bem de mim. (Por exemplo: o médico, ou enfermeiros, ou minha família ou amigos).					
15	Não importa o que eu faça, é sempre possível que eu fique doente.					
16	Se for meu destino, eu terei saúde.					
17	Se eu fizer as coisas certas, posso me manter saudável.					
18	Para ter saúde, eu só tenho que obedecer ao meu médico.					
19	Tem pessoas que já nascem com os dentes fracos, nada do que for feito pode mudar isto.					
20	Eu só posso manter minha boca saudável se eu puder ir sempre ao dentista.					
21	Se eu cuidar bem de meus dentes, eles vão durar a vida toda.					

ANEXO D

Ficha ICDAS-II



ANEXO E

Parecer do Comitê de ética em Pesquisa

UNIVERSIDADE ESTADUAL DA PARAÍBA
COMITÊ DE ÉTICA EM PESQUISA ENVOLVENDO SERES HUMANOS – CEP/UEPB
COMISSÃO NACIONAL DE ÉTICA EM PESQUISA.

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

PARECER DO RELATOR
Número do Protocolo: 38937714.0.0000.5187
Data da 1ª relatoria PARECER DO AVALIADOR:25/11/2014
Pesquisador Responsável: Ana Flávia Granville-Garcia
Situação do parecer: Aprovado

Apresentação do Projeto: O projeto é intitulado: AVALIAÇÃO DAS ALTERAÇÕES BUCAIS E ASPECTOS BIOPSICOSSOCIAIS EM PRÉ-ESCOLARES DE CAMPINA GRANDE-PB,*encaminhado ao Comitê de Ética em Pesquisa da Universidade Estadual da Paraíba para Análise e parecer com fins de pesquisa do Programa de Pós-Graduação em Odontologia da Universidade Estadual da Paraíba.*

Objetivo da Pesquisa:Avaliar as alterações bucais e aspectos biopsicossociais em pré-escolares de Campina Grande-PB.

Avaliação dos Riscos e Benefícios: Considerando a justificativa e os aportes teóricos e metodologia apresentados no presente projeto, e ainda considerando a relevância do estudo as quais são explícitas suas possíveis contribuições, percebe-se que a mesma não apresenta riscos aos participantes a serem pesquisados.

Comentários e Considerações sobre a Pesquisa: A presente proposta de pesquisa é de suma importância quanto papel e atribuições das Instituições de Ensino Superior (IES), mormente pesquisa a nível de mestrado, estando dentro do perfil das pesquisas de construção do ensino-aprendizagem significativa, perfilando a formação profissional baseada na tríade conhecimento-habilidade-competência, preconizada pelo MEC. Portanto, tem retorno social, caráter de pesquisa científica e, contribuição na formação de mestres em Odontologia.

Considerações sobre os Termos de apresentação obrigatória e Parecer do Avaliador: Encontram-se anexados os termos de autorização necessários para o estudo. Diante do exposto, somos pela aprovação do referido projeto. Salvo melhor juízo.

Recomendações: O estudo encontra-se com uma fundamentação teórica estruturada atendendo as exigências protocolares do CEP-UEPB mediante a Resolução 466/12 do Conselho Nacional de Saúde/Ministério da Saúde e RESOLUÇÃO/UEPB/CONSEPE/10/2001 que rege e disciplina este CEP. Portanto, não há recomendações.

Conclusões ou Pendências e Lista de Inadequações: O presente estudo encontra-se sem pendências, devendo o mesmo prosseguir com a execução na íntegra de seu cronograma de atividades.

ANEXO F

Normas de publicação do periódico Plos One

Submission Guidelines
Style and Format

File format	Manuscript files can be in the following formats: DOC, DOCX, RTF, or PDF. Microsoft Word documents should not be locked or protected. LaTeX manuscripts must be submitted as PDFs. Read the LaTeX guidelines.
Length	Manuscripts can be any length. There are no restrictions on word count, number of figures, or amount of supporting information. We encourage you to present and discuss your findings concisely.
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Page and line numbers	Include page numbers and line numbers in the manuscript file. Use continuous line numbers (do not restart the numbering on each page).
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Language	Manuscripts must be submitted in English. You may submit translations of the manuscript or abstract as supporting information. Read the supporting information guidelines.
Abbreviations	Define abbreviations upon first appearance in the text. Do not use non-standard abbreviations unless they appear at least three times in the text. Keep abbreviations to a minimum.
Reference style	PLOS uses "Vancouver" style, as outlined in the ICMJE sample references. See reference formatting examples and additional instructions below.
Equations	We recommend using MathType for display and inline equations, as it will provide the most reliable outcome. If this is not possible, Equation Editor is acceptable. Avoid using MathType or Equation Editor to insert single variables (e.g., "$a^2 + b^2 = c^2$"), Greek or other symbols (e.g., β, Δ, or ′ [prime]), or mathematical operators (e.g., x, ≥, or ±) in running text. Wherever possible, insert single symbols as normal text with the correct Unicode (hex) values. Do not use MathType or Equation Editor for only a portion of an equation. Rather, ensure that the entire equation is included. Avoid "hybrid" inline or display equations, in which part is text and part is MathType, or part is MathType and part is Equation Editor.
Nomenclature	Use correct and established nomenclature wherever possible.

Units of measurement	Use SI units. If you do not use these exclusively, provide the SI value in parentheses after each value. Read more about SI units.
Drugs	Provide the Recommended International Non-Proprietary Name (rINN).
Species names	Write in italics (e.g., *Homo sapiens*). Write out in full the

		genus and species, both in the title of the manuscript and at the first mention of an organism in a paper. After first mention, the first letter of the genus name followed by the full species name may be used (e.g., *H. sapiens*).
	Genes, mutations, genotypes, and alleles	Write in italics. Use the recommended name by consulting the appropriate genetic nomenclature database (e.g., HUGO for human genes). It is sometimes advisable to indicate the synonyms for the gene the first time it appears in the text. Gene prefixes such as those used for oncogenes or cellular localization should be shown in roman typeface (e.g., v-fes, c-MYC).

Parts of a Submission

Title

Include a full title and a short title for the manuscript.

Title	Length	Guidelines	Examples
Full title	250 characters	Specific, descriptive, concise, and comprehensible to readers outside the field	Impact of cigarette smoke exposure on innate immunity: A *Caenorhabditis elegans* model Solar drinking water disinfection (SODIS) to reduce childhood diarrhoea in rural Bolivia: A cluster-randomized, controlled trial
Short title	100 characters	State the topic of the study	Cigarette smoke exposure and innate immunity SODIS and childhood diarrhoea

Titles should be written in sentence case (only the first word of the text, proper nouns, and genus names are capitalized). Avoid specialist abbreviations if possible. For clinical trials, systematic reviews, or meta-analyses, the subtitle should include the study design.

Author List

Author names and affiliations

Enter author names on the title page of the manuscript and in the online submission system.

On the title page, write author names in the following order:

- First name (or initials, if used)
- Middle name (or initials, if used)
- Last name (surname, family name)

Each author on the list must have an affiliation. The affiliation includes department, university, or organizational affiliation and its location, including city, state/province (if applicable), and country. Authors have the option to include a current address in addition to the address of their affiliation at the time of the study. The current address should be listed in the byline and clearly labeled “current address.” At a minimum, the address must include the author’s current institution, city, and country.

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Author names will be published exactly as they appear in the manuscript file. Please double-check the information carefully to make sure it is correct.

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The submitting author is automatically designated as the corresponding author in the submission system. The corresponding author is the primary contact for the journal

office and the only author able to view or change the manuscript while it is under editorial consideration.
The corresponding author role may be transferred to another coauthor. However, note that transferring the corresponding author role also transfers access to the manuscript. (To designate a new corresponding author while the manuscript is still under consideration, watch the video tutorial below.)
Only one corresponding author can be designated in the submission system, but this does not restrict the number of corresponding authors that may be listed on the article in the event of publication. Whoever is designated as a corresponding author on the title page of the manuscript file will be listed as such upon publication. Include an email address for each corresponding author listed on the title page of the manuscript.
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If a manuscript is submitted on behalf of a consortium or group, include the consortium or group name in the author list, and include the full list of members in the Acknowledgments or in a supporting information file. Read the group authorship policy.

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Provide at minimum one contribution for each author in the submission system. Use the CRediT taxonomy to describe each contribution. Read the policy and the full list of roles.
Contributions will be published with the final article, and they should accurately reflect contributions to the work. The submitting author is responsible for completing this information at submission, and we expect that all authors will have reviewed, discussed, and agreed to their individual contributions ahead of this time.
PLOS ONE will contact all authors by email at submission to ensure that they are aware of the submission.

Cover letter

Upload a cover letter as a separate file in the online system. The length limit is 1 page.
The cover letter should include the following information:

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- Relate the study to previously published work
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- Describe any prior interactions with PLOS regarding the submitted manuscript
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- List any opposed reviewers

Title page

The title, authors, and affiliations should all be included on a title page as the first page of the manuscript file.

Abstract

The Abstract comes after the title page in the manuscript file. The abstract text is also entered in a separate field in the submission system.
The Abstract should:

- Describe the main objective(s) of the study
- Explain how the study was done, including any model organisms used, without methodological detail
- Summarize the most important results and their significance
- Not exceed 300 words

Abstracts should not include:

- Citations
- Abbreviations, if possible

Introduction

The introduction should:

- Provide background that puts the manuscript into context and allows readers outside the field to understand the purpose and significance of the study
- Define the problem addressed and why it is important
- Include a brief review of the key literature
- Note any relevant controversies or disagreements in the field
- Conclude with a brief statement of the overall aim of the work and a comment about whether that aim was achieved

Materials and Methods

The Materials and Methods section should provide enough detail to allow suitably skilled investigators to fully replicate your study. Specific information and/or protocols for new methods should be included in detail. If materials, methods, and protocols are well established, authors may cite articles where those protocols are described in detail, but the submission should include sufficient information to be understood independent of these references.

Protocol documents for clinical trials, observational studies, and other **non-laboratory** investigations may be uploaded as supporting information. Read the supporting information guidelines for formatting instructions. We recommend depositing **laboratory protocols** at protocols.io. Read detailed instructions for depositing and sharing your laboratory protocols.

Human or animal subjects and/or tissue or field sampling

Methods sections describing research using human or animal subjects and/or tissue or field sampling must include required ethics statements. See the reporting guidelines for human research, clinical trials, animal research, and observational and field studies for more information.

Data

PLOS journals require authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception.

Large data sets, including raw data, may be deposited in an appropriate public repository. See our list of recommended repositories.

For smaller data sets and certain data types, authors may provide their data within supporting information files accompanying the manuscript. Authors should take care to maximize the accessibility and reusability of the data by selecting a file format from which data can be efficiently extracted (for example, spreadsheets or flat files should be provided rather than PDFs when providing tabulated data).

For more information on how best to provide data, read our policy on data availability.

PLOS does not accept references to “data not shown.”

Cell lines

Methods sections describing research using cell lines must state the origin of the cell lines used. See the reporting guidelines for cell line research for more information.

Laboratory Protocols

To enhance the reproducibility of your results, we recommend and encourage you to deposit laboratory protocols in protocols.io, where protocols can be assigned their own persistent digital object identifiers (DOIs).

To include a link to a protocol in your article:

1. Describe your step-by-step protocol on protocols.io
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At this stage, your protocol is only visible to those with the link. This allows editors and reviewers to consult your protocol when evaluating the manuscript. You can make your protocols public at any time by selecting **Publish** on the protocols.io site. Any referenced protocol(s) will automatically be made public when your article is published.

New taxon names

Methods sections of manuscripts adding new taxon names to the literature must follow the reporting guidelines below for a new zoological taxon, botanical taxon, or fungal taxon.

Results, Discussion, Conclusions

These sections may all be separate, or may be combined to create a mixed Results/Discussion section (commonly labeled "Results and Discussion") or a mixed Discussion/Conclusions section (commonly labeled "Discussion"). These sections may be further divided into subsections, each with a concise subheading, as appropriate. These sections have no word limit, but the language should be clear and concise. Together, these sections should describe the results of the experiments, the interpretation of these results, and the conclusions that can be drawn.

Authors should explain how the results relate to the hypothesis presented as the basis of the study and provide a succinct explanation of the implications of the findings, particularly in relation to previous related studies and potential future directions for research.

PLOS ONE editorial decisions do not rely on perceived significance or impact, so authors should avoid overstating their conclusions. See the *PLOS ONE* Criteria for Publication for more information.

Acknowledgments

Those who contributed to the work but do not meet our authorship criteria should be listed in the Acknowledgments with a description of the contribution.

Authors are responsible for ensuring that anyone named in the Acknowledgments agrees to be named.

References

Any and all available works can be cited in the reference list. Acceptable sources include:

- Published or accepted manuscripts
- Manuscripts on preprint servers, if the manuscript is submitted to a journal and also publicly available as a preprint

Do not cite the following sources in the reference list:

- Unavailable and unpublished work, including manuscripts that have been submitted but not yet accepted (e.g., "unpublished work," "data not shown"). Instead, include those data as supplementary material or deposit the data in a publicly available database.
- Personal communications (these should be supported by a letter from the relevant authors but not included in the reference list)

References are listed at the end of the manuscript and numbered in the order that they appear in the text. In the text, cite the reference number in square brackets (e.g., "We used the techniques developed by our colleagues [19] to analyze the data"). PLOS uses the numbered citation (citation-sequence) method and first six authors, et al.

Do not include citations in abstracts or author summaries.

Make sure the parts of the manuscript are in the correct order *before* ordering the citations.

Formatting references

PLOS uses the reference style outlined by the International Committee of Medical Journal Editors (ICMJE), also referred to as the "Vancouver" style. Example formats are listed below. Additional examples are in the ICMJE sample references.

Journal name abbreviations should be those found in the National Center for Biotechnology Information (NCBI) databases.

Source	Format
Published articles	Hou WR, Hou YL, Wu GF, Song Y, Su XL, Sun B, et al. cDNA, genomic sequence cloning and overexpression of ribosomal protein gene L9 (rpL9) of the giant panda (*Ailuropoda melanoleuca*). Genet Mol Res. 2011;10: 1576-1588.

Source	Format
	Devaraju P, Gulati R, Antony PT, Mithun CB, Negi VS. Susceptibility to SLE in South Indian Tamils may be influenced by genetic selection pressure on TLR2 and TLR9 genes. Mol Immunol. 2014 Nov 22. pii: S0161-5890(14)00313-7. doi: 10.1016/j.molimm.2014.11.005 *Note: A DOI number for the full-text article is acceptable as an alternative to or in addition to traditional volume and page numbers.*
Accepted, unpublished articles	Same as published articles, but substitute "Forthcoming" for page numbers or DOI.
Web sites or online articles	Huynen MMTE, Martens P, Hilderlink HBM. The health impacts of globalisation: a conceptual framework. Global Health. 2005;1: 14. Available from: http://www.globalizationandhealth.com/content/1/1/14.
Books	Bates B. Bargaining for life: A social history of tuberculosis. 1st ed. Philadelphia: University of Pennsylvania Press; 1992.
Book chapters	Hansen B. New York City epidemics and history for the public. In: Harden VA, Risse GB, editors. AIDS and the historian. Bethesda: National Institutes of Health; 1991. pp. 21-28.
Deposited articles (preprints, e-prints, or arXiv)	Krick T, Shub DA, Verstraete N, Ferreiro DU, Alonso LG, Shub M, et al. Amino acid metabolism conflicts with protein diversity; 1991. Preprint. Available from: arXiv:1403.3301v1. Cited 17 March 2014.
Published media (print or online newspapers and magazine articles)	Fountain H. For Already Vulnerable Penguins, Study Finds Climate Change Is Another Danger. The New York Times. 29 Jan 2014. Available from: http://www.nytimes.com/2014/01/30/science/earth/climate-change-taking-toll-on-penguins-study-finds.html. Cited 17 March 2014.
New media (blogs, web sites, or other written works)	Allen L. Announcing PLOS Blogs. 2010 Sep 1 [cited 17 March 2014]. In: PLOS Blogs [Internet]. San Francisco: PLOS 2006 - . [about 2 screens]. Available from: http://blogs.plos.org/plos/2010/09/announcing-plos-blogs/.
Masters' theses or doctoral dissertations	Wells A. Exploring the development of the independent, electronic, scholarly journal. M.Sc. Thesis, The University of Sheffield. 1999. Available from: http://cumincad.scix.net/cgi-bin/works/Show?2e09
Databases and repositories (Figshare, arXiv)	Roberts SB. QPX Genome Browser Feature Tracks; 2013 [cited 2013 Oct 5]. Database: figshare [Internet]. Available from: http://figshare.com/articles/QPX_Genome_Browser_Feature_Tracks/701214.
Multimedia (videos, movies, or TV shows)	Hitchcock A, producer and director. Rear Window [Film]; 1954. Los Angeles: MGM.

Supporting Information

Authors can submit essential supporting files and multimedia files along with their manuscripts. All supporting information will be subject to peer review. All file types can be submitted, but files must be smaller than 10 MB in size.

Authors may use almost any description as the item name for a supporting information file as long as it contains an "S" and number. For example, "S1 Appendix" and "S2 Appendix," "S1 Table" and "S2 Table," and so forth.

Supporting information files are published exactly as provided, and are not copyedited.

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Example caption

S1 Text. Title is strongly recommended. Legend is optional.

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Figures

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Tables require a label (e.g., "Table 1") and brief descriptive title to be placed above the table. Place legends, footnotes, and other text below the table.

Data reporting

All data and related metadata underlying the findings reported in a submitted manuscript should be deposited in an appropriate public repository, unless already provided as part of the submitted article.

Repositories may be either subject-specific (where these exist) and accept specific types of structured data, or generalist repositories that accept multiple data types. We recommend that authors select repositories appropriate to their field. Repositories may be subject-specific (e.g., GenBank for sequences and PDB for structures), general, or institutional, as long as DOIs or accession numbers are provided and the data are at least as open as CC BY. Authors are encouraged to select repositories that meet accepted criteria as trustworthy digital repositories, such as criteria of the Centre for Research Libraries or Data Seal of Approval. Large, international databases are more likely to persist than small, local ones.

To support data sharing and author compliance of the PLOS data policy, we have integrated our submission process with a select set of data repositories. The list is neither representative nor exhaustive of the suitable repositories available to authors. Current repository integration partners include Dryad and FlowRepository. Please contact data@plos.org to make recommendations for further partnerships.

Instructions for PLOS submissions with data deposited in an integration partner repository:

- Deposit data in the integrated repository of choice.
- Once deposition is final and complete, the repository will provide you with a dataset DOI (provisional) and private URL for reviewers to gain access to the data.

- Enter the given data DOI into the full Data Availability Statement, which is requested in the Additional Information section of the PLOS submission form. Then provide the URL passcode in the Attach Files section.

If you have any questions, please email us.

Accession numbers

All appropriate data sets, images, and information should be deposited in an appropriate public repository. See our list of recommended repositories.

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In some cases authors may not be able to obtain accession numbers of DOIs until the manuscript is accepted; in these cases, the authors must provide these numbers at acceptance. In all other cases, these numbers must be provided at submission.

Identifiers

As much as possible, please provide accession numbers or identifiers for all entities such as genes, proteins, mutants, diseases, etc., for which there is an entry in a public database, for example:

- Ensembl
- Entrez Gene
- FlyBase
- InterPro
- Mouse Genome Database (MGD)
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This information should not be in your manuscript file; you will provide it via our submission system.

This information will be published with the final manuscript, if accepted, so please make sure that this is accurate and as detailed as possible. You should not include this information in your manuscript file, but it is important to gather it prior to submission, because your financial disclosure statement cannot be changed after initial submission.

Your statement should include relevant grant numbers and the URL of any funder's web site. Please also state whether any individuals employed or contracted by the funders (other than the named authors) played any role in: study design, data collection and analysis, decision to publish, or preparation of the manuscript. If so, please name the individual and describe their role.

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For manuscripts disputing previously published work, it is *PLOS ONE* policy to invite a signed review by the disputed author during the peer review process. This procedure is aimed at ensuring a thorough, transparent, and productive review process.
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Upon submission, authors must confirm that the manuscript, or any related manuscript, is not currently under consideration or accepted elsewhere. If related work has been submitted to *PLOS ONE* or elsewhere, authors must include a copy with the submitted article. Reviewers will be asked to comment on the overlap between related submissions.
We strongly discourage the unnecessary division of related work into separate manuscripts, and we will not consider manuscripts that are divided into "parts." Each submission to *PLOS ONE* must be written as an independent unit and should not rely on any work that has not already been accepted for publication. If related manuscripts are submitted to *PLOS ONE*, the authors may be advised to combine them into a single manuscript at the editor's discretion.
PLOS does support authors who wish to share their work early and receive feedback before formal peer review. Deposition of manuscripts with preprint servers does not impact consideration of the manuscript at any PLOS journal.
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Human subjects research

All research involving human participants must have been approved by the authors' Institutional Review Board (IRB) or by equivalent ethics committee(s), and must have been conducted according to the principles expressed in the Declaration of Helsinki. Authors should be able to submit, upon request, a statement from the IRB or ethics committee indicating approval of the research. We reserve the right to reject work that we believe has not been conducted to a high ethical standard, even when formal approval has been obtained.

Subjects must have been properly instructed and have indicated that they consent to participate by signing the appropriate informed consent paperwork. Authors may be asked to submit a blank, sample copy of a subject consent form. If consent was verbal instead of written, or if consent could not be obtained, the authors must explain the reason in the manuscript, and the use of verbal consent or the lack of consent must have been approved by the IRB or ethics committee.

All efforts should be made to protect patient privacy and anonymity. Identifying information, including photos, should not be included in the manuscript unless the information is crucial and the individual has provided written consent by completing the Consent Form for Publication in a PLOS Journal (PDF). Download additional translations of the form from the Downloads and Translations page. More information about patient privacy, anonymity, and informed consent can be found in theInternational Committee of Medical Journal Editors (ICMJE) Privacy and Confidentiality guidelines.
Manuscripts should conform to the following reporting guidelines:

- Studies of diagnostic accuracy: STARD
- Observational studies: STROBE

- Microarray experiments: MIAME
- Other types of health-related research: Consult the EQUATOR web site for appropriate reporting guidelines

Methods sections of papers on research using human subjects or samples must include ethics statements that specify:

- **The name of the approving institutional review board or equivalent committee(s)**. If approval was not obtained, the authors must provide a detailed statement explaining why it was not needed
- **Whether informed consent was written or oral**. If informed consent was oral, it must be stated in the manuscript:
    - Why written consent could not be obtained
    - That the Institutional Review Board (IRB) approved use of oral consent
    - How oral consent was documented

For studies involving humans categorized by race/ethnicity, age, disease/disabilities, religion, sex/gender, sexual orientation, or other socially constructed groupings, authors should:

- Explicitly describe their methods of categorizing human populations
- Define categories in as much detail as the study protocol allows
- Justify their choices of definitions and categories, including for example whether any rules of human categorization were required by their funding agency
- Explain whether (and if so, how) they controlled for confounding variables such as socioeconomic status, nutrition, environmental exposures, or similar factors in their analysis

In addition, outmoded terms and potentially stigmatizing labels should be changed to more current, acceptable terminology. Examples: “Caucasian” should be changed to “white” or “of [Western] European descent” (as appropriate); “cancer victims” should be changed to “patients with cancer.”

For papers that include identifying, or potentially identifying, information, authors must download the Consent Form for Publication in a PLOS Journal, which the individual, parent, or guardian must sign once they have read the paper and been informed about the terms of PLOS open-access license. The signed consent form should not be submitted with the manuscript, but authors should securely file it in the individual's case notes and the methods section of the manuscript should explicitly state that consent authorization for publication is on file, using wording like:

The individual in this manuscript has given written informed consent (as outlined in PLOS consent form) to publish these case details.

For more information about *PLOS ONE* policies regarding human subjects research, see the Publication Criteria and Editorial Policies.

Clinical trials

Clinical trials are subject to all policies regarding human research. *PLOS ONE* follows the World Health Organization's (WHO) definition of a clinical trial:

A clinical trial is any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes [...] Interventions include but are not restricted to drugs, cells and other biological products, surgical procedures, radiologic procedures, devices, behavioural treatments, process-of-care changes, preventive care, etc.

All clinical trials must be registered in one of the publicly-accessible registries approved by the WHO or ICMJE (International Committee of Medical Journal Editors). Authors must provide the trial registration number. Prior disclosure of results on a clinical trial registry site will not affect consideration for publication. We reserve the right to inform authors' institutions or ethics committees, and to reject the manuscript, if we become aware of unregistered trials.

PLOS ONE supports prospective trial registration (i.e. before participant recruitment has begun) as recommended by the ICMJE's clinical trial registration policy. **Where**

trials were not publicly registered before participant recruitment began, authors must:

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- Explain in the Methods the reason for failing to register before participant recruitment

Clinical trials must be reported according to the relevant reporting guidelines, i.e. CONSORT for randomized controlled trials, TREND for non-randomized trials, and other specialized guidelines as appropriate. The intervention should be described according to the requirements of the TIDieR checklist and guide. Submissions must also include the study protocol as supporting information, which will be published with the manuscript if accepted.

Authors of manuscripts describing the results of clinical trials must adhere to the CONSORT reporting guidelines appropriate to their trial design, available on the CONSORT Statement web site. Before the paper can enter peer review, authors must:

- Provide the registry name and number in the methods section of the manuscript
- Provide a copy of the trial protocol as approved by the ethics committee and a completed CONSORT checklist as supporting information (which will be published alongside the paper, if accepted). This should be named S1 CONSORT Checklist.
- Include the CONSORT flow diagram as the manuscript's “Fig 1”

Any deviation from the trial protocol must be explained in the paper. Authors must explicitly discuss informed consent in their paper, and we reserve the right to ask for a copy of the patient consent form.

The methods section must include the name of the registry, the registry number, and the URL of your trial in the registry database for each location in which the trial is registered.

Animal research

We work in consultation with the *PLOS ONE* Animal Research Advisory Group to develop policies. Animal Research Advisory Group members may also be consulted on individual submissions.

All research involving vertebrates or cephalopods must have approval from the authors' Institutional Animal Care and Use Committee (IACUC) or equivalent ethics committee(s), and must have been conducted according to applicable national and international guidelines. Approval must be received prior to beginning research.

If we note differences between an IACUC-approved protocol and the methods reported in a submitted manuscript, we may report these discrepancies to the relevant institution or committee.

Methods sections of manuscripts reporting results of animal research must include required ethics statements that specify:

- The full name of the relevant ethics committee that approved the work, and the associated permit number(s). Where ethical approval is not required, the manuscript should include a clear statement of this and the reason why.
- Relevant details for efforts taken to ameliorate animal suffering

Example ethics statement

This study was carried out in strict accordance with the recommendations in the Guide for the Care and Use of Laboratory Animals of the National Institutes of Health. The protocol was approved by the Committee on the Ethics of Animal Experiments of the University of Minnesota (Permit Number: 27-2956). All surgery was performed under sodium pentobarbital anesthesia, and all efforts were made to minimize suffering.

The organism(s) studied should always be stated in the abstract. Where research may be confused as pertaining to clinical research, the animal model should also be stated in the title.

Where unregulated animals are used or ethics approval is not required, authors should make this clear in submitted articles and explain why ethical approval was not required. Relevant regulations that grant exemptions should be cited in full. It is the authors' responsibility to understand and comply with all relevant regulations.

We reserve the right to reject work that the editors believe has not been conducted to a high ethical standard, even if authors have obtained formal approval or approval is not required under local regulations.

We encourage authors to follow the Animal Research: Reporting of *In Vivo* Experiments (ARRIVE) guidelines for all submissions describing laboratory-based animal research and to upload a completed ARRIVE Guidelines Checklist to be published as supporting information. Please note that inclusion of a completed ARRIVE Checklist may be a formal requirement for publication at a later date.

Non-human primates

Manuscripts describing research involving non-human primates must include details of animal welfare, including information about housing, feeding, and environmental enrichment, and steps taken to minimize suffering, including use of anesthesia and method of sacrifice if appropriate, in accordance with the recommendations of the Weatherall report, *The use of non-human primates in research* (PDF).

Random source animals

Manuscripts describing studies that use random source (e.g. Class B dealer-sourced in the USA), shelter, or stray animals will be subject to additional ethics consideration and may be rejected if sufficient ethical and scientific justification for the study design is lacking.

Unacceptable euthanasia methods and anesthetic agents

Manuscripts reporting use of a euthanasia method(s) classified as unacceptable by the American Veterinary Medical Association(e.g., chloral hydrate, ether, chloroform) will not be considered at *PLOS ONE* unless authors also provide, at the time of initial submission, scientific and ethical justification for use in the specific study design, as well as confirmation of approval for specific use from their Institutional Animal Care and Use Committee (IACUC) or animal research ethics committee. Manuscripts reporting use of an anesthesia method(s) that is widely prohibited or of potential concern (chloral hydrate, ether, chloroform) should include a statement of scientific and ethical justification for use in the specific study design, as well as confirmation of approval for specific use from the authors' IACUC or animal research ethics committee. These manuscripts may be subject to additional ethics considerations prior to publication.

For additional guidance on appropriate euthanasia methods, authors may also refer to:

- Annex IV of the EU Directive 2010/EU/63 (PDF)
- CCAC Guidelines: on euthanasia of animals used in science (PDF)
- Report on the Second Newcastle Meeting on Laboratory Animal Euthanasia

Humane endpoints

For studies in which death of a regulated animal (vertebrate, cephalopod) is a likely outcome or a planned experimental endpoint, *PLOS ONE* asks authors to report additional details related to the study design. This applies to research that involves, for instance, assessment of survival, toxicity, longevity, terminal disease, or high rates of incidental mortality. These studies may be subject to additional ethical considerations, and *PLOS ONE* may reject submissions if they lack sufficient reporting, appropriate justification for the study design, or adequate consideration of humane endpoints, regardless of study-specific institutional animal ethics committee approval.

Definition of a humane endpoint

A humane endpoint is an experimental endpoint at which animals are euthanized when

they display early markers associated with death or poor prognosis of quality of life, or specific signs of severe suffering or distress. Humane endpoints are used as an alternative to allowing such conditions to continue or progress to death following the experimental intervention ("death as an endpoint"), or only euthanizing animals at the end of an experiment. Before a study begins, researchers define the practical observations or measurements that will be used during the study to recognize a humane endpoint, based on anticipated clinical, physiological, and behavioral signs. These may include, for instance, body temperature or weight changes, tumor size or appearance, abnormal behaviors, pathological changes, ruffled fur, reduced mobility, body posture, or expression of specific body fluid markers. Please see the NC3Rs guidelines for more information.
Authors of these studies should report all of the following information in the Methods section:

1. Describe whether humane endpoints were used for all animals involved in the study

If humane endpoints were used, report the following:

- The specific criteria used to determine when animals should be euthanized
- Once animals reached endpoint criteria, the amount of time elapsed before euthanasia
- Whether any animals died before meeting criteria for euthanasia

If humane endpoints were not used, report the following:

- A scientific and ethical justification for the study design, including the reasons why humane endpoints could not be used, and discussion of alternatives that were considered but could not be used
- Whether the institutional animal ethics committee specifically reviewed and approved the anticipated mortality in the study design

2. Include the following details of the study design and outcomes:

- The duration of the experiment
- The numbers of animals used, euthanized, and found dead (if any); the cause of death for all animals
- How frequently animal health and behavior were monitored
- All animal welfare considerations taken, including efforts to minimize suffering and distress, use of analgesics or anaesthetics, or special housing conditions
- Any special training in animal care or handling provided for research staff

Observational and field studies

Methods sections for submissions reporting on any type of field study must include ethics statements that specify:

- Permits and approvals obtained for the work, including the full name of the authority that approved the study; if none were required, authors should explain why
- Whether the land accessed is privately owned or protected
- Whether any protected species were sampled
- Full details of animal husbandry, experimentation, and care/welfare, where relevant

Paleontology and archaeology research

Manuscripts reporting paleontology and archaeology research must include descriptions of methods and specimens in sufficient detail to allow the work to be reproduced. Data sets supporting statistical and phylogenetic analyses should be provided, preferably in a format that allows easy re-use. Read the policy.
Specimen numbers and complete repository information, including museum name and geographic location, are required for publication. Locality information should be provided in the manuscript as legally allowable, or a statement should be included giving details of the availability of such information to qualified researchers.

If permits were required for any aspect of the work, details should be given of all permits that were obtained, including the full name of the issuing authority. This should be accompanied by the following statement:
All necessary permits were obtained for the described study, which complied with all relevant regulations.
If no permits were required, please include the following statement:
No permits were required for the described study, which complied with all relevant regulations.
Manuscripts describing paleontology and archaeology research are subject to the following policies:

- **Sharing of data and materials.** Any specimen that is erected as a new species, described, or figured must be deposited in an accessible, permanent repository (i.e., public museum or similar institution). If study conclusions depend on specimens that do not fit these criteria, the article will be rejected under *PLOS ONE*'s data availability criterion.
- **Ethics.** *PLOS ONE* will not publish research on specimens that were obtained without necessary permission or were illegally exported.

Systematic reviews and meta-analyses
A systematic review paper, as defined by The Cochrane Collaboration, is a review of a clearly formulated question that uses explicit, systematic methods to identify, select, and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review. These reviews differ substantially from narrative-based reviews or synthesis articles. Statistical methods (meta-analysis) may or may not be used to analyze and summarize the results of the included studies.
Reports of systematic reviews and meta-analyses must include a completed PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) checklist and flow diagram to accompany the main text. Blank templates are available here:

- Checklist: PDF or Word document
- Flow diagram: PDF or Word document

Authors must also state in their "Methods" section whether a protocol exists for their systematic review, and if so, provide a copy of the protocol as supporting information and provide the registry number in the abstract.
If your article is a systematic review or a meta-analysis you should:

- State this in your cover letter
- Select "Research Article" as your article type when submitting
- Include the PRISMA flow diagram as Fig 1 (required where applicable)
- Include the PRISMA checklist as supporting information

Meta-analysis of genetic association studies
Manuscripts reporting a meta-analysis of genetic association studies must report results of value to the field and should be reported according to the guidelines presented in *Systematic Reviews of Genetic Association Studies* by Sagoo *et al.*
On submission, authors will be asked to justify the rationale for the meta-analysis and how it contributes to the base of scientific knowledge in the light of previously published results. Authors will also be asked to complete a checklist (DOCX) outlining information about the justification for the study and the methodology employed. Meta-analyses that replicate published studies will be rejected if the authors do not provide adequate justification.
Personal data from third-party sources
For all studies using personal data from internet-based and other third-party sources (e.g., social media, blogs, other internet sources, mobile phone companies), data must be collected and used according to company/website Terms and Conditions, with appropriate permissions. All data sources must be acknowledged clearly in the Materials and Methods section.

In the Ethics Statement, authors should declare any potential risks to individuals or individual privacy, or affirm that in their assessment, the study posed no such risks. In addition, the following Ethics and Data Protection requirements must be met.
For interventional studies, which impact participants' experiences or data, the study design must have been prospectively approved by an Ethics Committee, and informed consent is required. The Ethics Committee may waive the requirement for approval and/or consent.
For observational studies in which personal experiences and accounts are not manipulated, consultation with an Ethics or Data Protection Committee is recommended. Additional requirements apply in the following circumstances:

- If information used could threaten personal privacy or damage the reputation of individuals whose data are used, an Ethics Committee should be consulted and informed consent obtained or specifically addressed.
- If authors accessed any personal identifying information, an Ethics or Data Protection Committee should oversee data anonymization. If data were anonymized and/or aggregated before access and analysis, informed consent is generally not required.

Cell lines
Authors reporting research using cell lines should state when and where they obtained the cells, giving the date and the name of the researcher, cell line repository, or commercial source (company) who provided the cells, as appropriate.
Authors must also include the following information for each cell line:
For *de novo* (new) cell lines, including those given to the researchers as a gift, authors must follow our policies for human subjects research or animal research, as appropriate. The ethics statement must include:

- Details of institutional review board or ethics committee approval; AND
- For human cells, confirmation of written informed consent from the donor, guardian, or next of kin

For established cell lines, the Methods section should include:

- A reference to the published article that first described the cell line; AND/OR
- The cell line repository or company the cell line was obtained from, the catalogue number, and whether the cell line was obtained directly from the repository/company or from another laboratory

Authors should check established cell lines using the ICLAC Database of Cross-contaminated or Misidentified Cell Lines to confirm they are not misidentified or contaminated. Cell line authentication is recommended – e.g., by karyotyping, isozyme analysis, or short tandem repeats (STR) analysis – and may be required during peer review or after publication.
Blots and gels
Manuscripts reporting results from blots (including Western blots) and electrophoretic gels should follow these guidelines:

- In accordance with our policy on image manipulation, the image should not be adjusted in any way that could affect the scientific information displayed, e.g. by modifying the background or contrast.
- All blots and gels that support results reported in the manuscript should be provided.
- Original uncropped and unadjusted blots and gels, including molecular size markers, should be provided in either the figures or the supplementary files.
- Lanes should not be overcropped around the bands; the image should show most or all of the blot or gel. Any non-specific bands should be shown and an explanation of their nature should be given.
- The image should include all relevant controls, and controls should be run on the same blot or gel as the samples.

- A figure panel should not include composite images of bands originating from different blots or gels. If the figure shows non-adjacent bands from the same blot or gel, this should be clearly denoted by vertical black lines and the figure legend should provide details of how the figure was made.

Antibodies

Manuscripts reporting experiments using antibodies should include the following information:

- The name of each antibody, a description of whether it is monoclonal or polyclonal, and the host species.
- The commercial supplier or source laboratory.
- The catalogue or clone number and, if known, the batch number.
- The antigen(s) used to raise the antibody.
- For established antibodies, a stable public identifier from the Antibody Registry.

The manuscript should also report the following experimental details:

- The final antibody concentration or dilution.
- A reference to the validation study if the antibody was previously validated. If not, provide details of how the authors validated the antibody for the applications and species used.

Methods, software, databases, and tools

PLOS ONE will consider submissions that present new methods, software, or databases as the primary focus of the manuscript if they meet the following criteria:

Utility

The tool must be of use to the community and must present a proven advantage over existing alternatives, where applicable. Recapitulation of existing methods, software, or databases is not useful and will not be considered for publication. Combining data and/or functionalities from other sources may be acceptable, but simpler instances (i.e. presenting a subset of an already existing database) may not be considered. For software, databases, and online tools, the long-term utility should also be discussed, as relevant. This discussion may include maintenance, the potential for future growth, and the stability of the hosting, as applicable.

Validation

Submissions presenting methods, software, databases, or tools must demonstrate that the new tool achieves its intended purpose. If similar options already exist, the submitted manuscript must demonstrate that the new tool is an improvement over existing options in some way. This requirement may be met by including a proof-of-principle experiment or analysis; if this is not possible, a discussion of the possible applications and some preliminary analysis may be sufficient.

Availability

Software should be open source, deposited in an appropriate archive, and conform to the Open Source Definition. Databases must be open-access and hosted somewhere publicly accessible, and any software used to generate a database should also be open source. If relevant, databases should be open for appropriate deposition of additional data. Dependency on commercial software such as Mathematica and MATLAB does not preclude a paper from consideration, although complete open source solutions are preferred. Authors should provide a direct link to the deposited software or the database hosting site from within the paper.

Software submissions

Manuscripts describing software should provide full details of the algorithms designed. Describe any dependencies on commercial products or operating system. Include details of the supplied test data and explain how to install and run the software. A brief description of enhancements made in the major releases of the software may also be

given. Authors should provide a direct link to the deposited software from within the paper.

Database submissions

For descriptions of databases, provide details about how the data were curated, as well as plans for long-term database maintenance, growth, and stability. Authors should provide a direct link to the database hosting site from within the paper.

New taxon names

Zoological names

When publishing papers that describe a new zoological taxon name, PLOS aims to comply with the requirements of the International Commission on Zoological Nomenclature (ICZN). Effective 1 January 2012, the ICZN considers an online-only publication to be legitimate if it meets the criteria of archiving and is registered in ZooBank, the ICZN's official registry.

For proper registration of a new zoological taxon, we require two specific statements to be included in your manuscript.

In the **Results** section, the globally unique identifier (GUID), currently in the form of a Life Science Identifier (LSID), should be listed under the new species name, for example:

Anochetus boltoni *Fisher* ***sp. nov.*** *urn:lsid:zoobank.org:act:B6C072CF-1CA6-40C7-8396-534E91EF7FBB*

You will need to contact Zoobank to obtain a GUID (LSID). Please do this as early as possible to avoid delay of publication upon acceptance of your manuscript. It is your responsibility to provide us with this information so we can include it in the final published paper.

Please also insert the following text into the **Methods** section, in a sub-section to be called “Nomenclatural Acts”:

The electronic edition of this article conforms to the requirements of the amended International Code of Zoological Nomenclature, and hence the new names contained herein are available under that Code from the electronic edition of this article. This published work and the nomenclatural acts it contains have been registered in ZooBank, the online registration system for the ICZN. The ZooBank LSIDs (Life Science Identifiers) can be resolved and the associated information viewed through any standard web browser by appending the LSID to the prefix “http://zoobank.org/”. The LSID for this publication is: urn:lsid:zoobank.org:pub: XXXXXXX. The electronic edition of this work was published in a journal with an ISSN, and has been archived and is available from the following digital repositories: PubMed Central, LOCKSS [author to insert any additional repositories].

All PLOS articles are deposited in PubMed Central and LOCKSS. If your institute, or those of your co-authors, has its own repository, we recommend that you also deposit the published online article there and include the name in your article.

Botanical names

When publishing papers that describe a new botanical taxon, PLOS aims to comply with the requirements of the International Code of Nomenclature for algae, fungi, and plants (ICN). The following guidelines for publication in an online-only journal have been agreed such that any scientific botanical name published by us is considered effectively published under the rules of the Code. Please note that these guidelines differ from those for zoological nomenclature, and apply only to seed plants, ferns, and lycophytes.

Effective January 2012, the description or diagnosis of a new taxon can be in either Latin or English. This does not affect the requirements for scientific names, which are still to be Latin.

Also effective January 2012, the electronic PDF represents a published work according to the ICN for algae, fungi, and plants. Therefore the new names contained in the

electronic publication of PLOS article are effectively published under that Code from the electronic edition alone, so there is no longer any need to provide printed copies.
Additional information describing recent changes to the Code can be found here.
For proper registration of the new taxon, we require two specific statements to be included in your manuscript.
In the **Results** section, the globally unique identifier (GUID), currently in the form of a Life Science Identifier (LSID), should be listed under the new species name, for example:
Solanum aspersum S.Knapp, sp. nov. [urn:lsid:ipni.org:names:77103633-1] Type: Colombia. Putumayo: vertiente oriental de la Cordillera, entre Sachamates y San Francisco de Sibundoy, 1600-1750 m, 30 Dec 1940, J. Cuatrecasas 11471 (holotype, COL; isotypes, F [F-1335119], US [US-1799731]).
Journal staff will contact IPNI to obtain the GUID (LSID) after your manuscript is accepted for publication, and this information will then be added to the manuscript during the production phase
In the **Methods** section, include a sub-section called “Nomenclature” using the following wording:
The electronic version of this article in Portable Document Format (PDF) in a work with an ISSN or ISBN will represent a published work according to the International Code of Nomenclature for algae, fungi, and plants, and hence the new names contained in the electronic publication of a PLOS article are effectively published under that Code from the electronic edition alone, so there is no longer any need to provide printed copies.

In addition, new names contained in this work have been submitted to IPNI, from where they will be made available to the Global Names Index. The IPNI LSIDs can be resolved and the associated information viewed through any standard web browser by appending the LSID contained in this publication to the prefix http://ipni.org/. The online version of this work is archived and available from the following digital repositories: [INSERT NAMES OF DIGITAL REPOSITORIES WHERE ACCEPTED MANUSCRIPT WILL BE SUBMITTED (PubMed Central, LOCKSS etc)].
All PLOS articles are deposited in PubMed Central and LOCKSS. If your institute, or those of your co-authors, has its own repository, we recommend that you also deposit the published online article there and include the name in your article.
Fungal names
When publishing papers that describe a new botanical taxon, PLOS aims to comply with the requirements of the International Code of Nomenclature for algae, fungi, and plants (ICN). The following guidelines for publication in an online-only journal have been agreed such that any scientific botanical name published by us is considered effectively published under the rules of the Code. Please note that these guidelines differ from those for zoological nomenclature.
Effective January 2012, the description or diagnosis of a new taxon can be in either Latin or English. This does not affect the requirements for scientific names, which are still to be Latin.
Also effective January 2012, the electronic PDF represents a published work according to the ICN for algae, fungi, and plants. Therefore the new names contained in the electronic publication of PLOS article are effectively published under that Code from the electronic edition alone, so there is no longer any need to provide printed copies.
Additional information describing recent changes to the Code can be found here.
For proper registration of the new taxon, we require two specific statements to be included in your manuscript.
In the **Results** section, the globally unique identifier (GUID), currently in the form of a Life Science Identifier (LSID), should be listed under the new species name, for example:

Hymenogaster huthii. Stielow et al. 2010, sp. nov.
[urn:lsid:indexfungorum.org:names:518624]
You will need to contact either Mycobank or Index Fungorum to obtain the GUID (LSID). Please do this as early as possible to avoid delay of publication upon acceptance of your manuscript. It is your responsibility to provide us with this information so we can include it in the final published paper. Effective January 2013, all papers describing new fungal species must reference the identifier issued by a recognized repository in the protologue in order to be considered effectively published.
In the **Methods** section, include a sub-section called “Nomenclature” using the following wording (this example is for taxon names submitted to MycoBank; please substitute appropriately if you have submitted to Index Fungorum):
The electronic version of this article in Portable Document Format (PDF) in a work with an ISSN or ISBN will represent a published work according to the International Code of Nomenclature for algae, fungi, and plants, and hence the new names contained in the electronic publication of a PLOS article are effectively published under that Code from the electronic edition alone, so there is no longer any need to provide printed copies.

In addition, new names contained in this work have been submitted to MycoBank from where they will be made available to the Global Names Index. The unique MycoBank number can be resolved and the associated information viewed through any standard web browser by appending the MycoBank number contained in this publication to the prefix http://www.mycobank.org/MB/. The online version of this work is archived and available from the following digital repositories: [INSERT NAMES OF DIGITAL REPOSITORIES WHERE ACCEPTED MANUSCRIPT WILL BE SUBMITTED (PubMed Central, LOCKSS etc)].
All PLOS articles are deposited in PubMed Central and LOCKSS. If your institute, or those of your co-authors, has its own repository, we recommend that you also deposit the published online article there and include the name in your article.

Qualitative research

Qualitative research studies use non-quantitative methods to address a defined research question that may not be accessible by quantitative methods, such as people's interpretations, experiences, and perspectives. The analysis methods are explicit, systematic, and reproducible, but the results do not involve numerical values or use statistics. Examples of qualitative data sources include, but are not limited to, interviews, text documents, audio/video recordings, and free-form answers to questionnaires and surveys.
Qualitative research studies should be reported in accordance to the Consolidated criteria for reporting qualitative research (COREQ) checklist. Further reporting guidelines can be found in the Equator Network's Guidelines for reporting qualitative research.

ANEXO G

Normas de publicação do periódico Community Dentistry and Oral Epidemiology

Author Guidelines

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

Relevant Documents: Colour Work Agreement Form

Useful Websites: Submission Site, Articles published in *Community Dentistry and Oral Epidemiology*, Author Services, Wiley Blackwell's Ethical Guidelines, Guidelines for Figures

1. GENERAL

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

The journal encourages manuscripts which present methodologically detailed scientific research findings from original data collection or analysis of existing databases. Preference is given to new findings. Confirmation of previous findings can be of value, but the journal seeks to avoid needless repetition. It also encourages thoughtful, provocative commentaries on subjects ranging from research methods to public policies. Purely descriptive reports are not encouraged, and neither are behavioural science reports with only marginal application to dentistry.

Knowledge in any field advances only when research findings and policies are held up to critical scrutiny. To be consistent with that view, the journal encourages scientific debate on a wide range of subjects. Responses to research findings and views expressed in the journal are always welcome, whether in the form of a manuscript or a commentary. Prompt publication will be sought for these submissions. Book reviews and short reports from international conferences are also welcome, and publication of conference proceedings can be arranged with the publisher.

Please read the instructions below carefully for details on the submission of manuscripts, and the journal's requirements and standards, as well as information on the procedure after acceptance of a manuscript for publication in *Community Dentistry and Oral Epidemiology*. Authors are encouraged to visit Wiley Blackwell Author Services for further information on the preparation and submission of articles and figures.

2. GUIDELINES FOR RESEARCH REPORTING

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

publication and research.

2.1. Authorship and Acknowledgements

Authorship: Authors submitting a manuscript do so on the understanding that the manuscript has been read and approved by all authors, and that all authors agree to the submission of the manuscript to the Journal.
Community Dentistry and Oral Epidemiology adheres to the definition of authorship set up by the International Committee of Medical Journal Editors (ICMJE). According to the ICMJE criteria, authorship should be based on (1) substantial contributions to conception and design of, or acquisition of data or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content and (3) final approval of the version to be published. Authors should meet conditions 1, 2 and 3.
It is a requirement that all authors have been accredited as appropriate upon submission of the manuscript. Contributors who do not qualify as authors should be mentioned under Acknowledgments.

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

2.2. Ethical Approvals

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

Research participants: research involving human participants will be published only 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 participant and according to the above mentioned principles.
All studies should include an explicit statement in the Methods section identifying the review and ethics committee approval for each study, if applicable. Editors reserve the right to reject papers if there is doubt as to whether appropriate procedures have been used.

Ethics of investigation: Manuscripts not in agreement with the guidelines of the Helsinki Declaration (as revised in 1975) will not be accepted for publication.

Animal Studies: 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 in respect of 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 **http://www.consort-statement.org**. A CONSORT checklist should also be included in the submission material.

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

2.4. Observational and Other Studies
Reports on observational studies such as cohort, case-control and cross-sectional studies should be consistent with guidelines such as STROBE. Meta-analysis for systematic reviews should be reported consistent with guidelines such as QUOROM or MOOSE. These guidelines can be accessed at www.equator-network.org. Authors of analytical studies are strongly encouraged to submit a Directed Acyclic Graph as a supplementary file for the reviewers and editors. This serves to outline the rationale for their modelling approach and to ensure that authors consider carefully the analyses that they conduct.

2.5. Appeal of Decision
The decision on a manuscript 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 primary author's responsibility to obtain these in writing and provide copies to the Publishers.

Photographs of People
Community Dentistry and Oral Epidemiology follows current HIPAA guidelines for the protection of patient/participant 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 *Community Dentistry and Oral Epidemiology* to publish the image/photo. Alternatively, a form provided by *Community Dentistry and Oral Epidemiology*(available by clicking the "Instructions and Forms" link in Manuscript central) may be downloaded for your use. You can also download the form here. This 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, etc.).

2.7. 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 log into Author Services, where, via the Wiley Author Licensing Service (WALS), they will be able to complete the licence 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://authorservices.wiley.com/bauthor/faqs_copyright.asp

For authors choosing OnlineOpen
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To preview the terms and conditions of these open access agreements, please visit the Copyright FAQs hosted on Wiley Author Services http://authorservices.wiley.com/bauthor/faqs_copyright.aspand visit http://www.wileyopenaccess.com/details/content/12f25db4c87/Copyright--License.html.

If you select the OnlineOpen option and your research is funded by The Wellcome Trust and members of the Research Councils UK (RCUK) or the Austrian Science 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. SUBMISSION OF MANUSCRIPTS
Manuscripts should be submitted electronically via the online submission site http://mc.manuscriptcentral.com/cdoe. The use of an online submission and peer review site enables immediate distribution of manuscripts and consequentially speeds up the review process. It also allows authors to track the status of their own manuscripts. *Community Dentistry and Oral Epidemiology* requires the submitting/corresponding author (only) to provide an ORCID iD when submitting their manuscript. If the author does not have an ORCID iD, an easy-to-use application to obtain one is available through the journal's ScholarOne system. Complete instructions for submitting a manuscript are available online and below. Further assistance can be obtained from the Editorial Assistant, Natalie Brown, n.brown@otago.ac.nz

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Sir John Walsh Research Institute
Faculty of Dentistry
The University of Otago
Dunedin, New Zealand
E-mail: murray.thomson@otago.ac.nz
Tel: +64 3 479 7116
Fax: +64 3 479 7113

The Editorial Assistant is Natalie Brown: n.brown@otago.ac.nz

3.1. Getting Started

• Launch your web browser (supported browsers include Internet Explorer 6 or higher, Netscape 7.0, 7.1, or 7.2, Safari 1.2.4, or Firefox 1.0.4 or higher) and go to the journal's online Submission Site: http://mc.manuscriptcentral.com/cdoe
• Log-in or click the 'Create Account' option if you are a first-time user.
• If you are creating a new account:
- After clicking on 'Create Account', 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 area of expertise. Click 'Finish'.
• If you have an account but have forgotten your log-in details, go to Password Help on the journals online submission system http://mc.manuscriptcentral.com/cdoe and enter your e-mail address. The system will send you an automatic user ID and a new temporary password.
• Log-in and select 'Corresponding Author Center.'

3.2. Submitting Your Manuscript

• After you have logged in, click the 'Submit a Manuscript' link in the menu bar.
• 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 sending to the Journal. Click the 'Submit' button when you are finished reviewing.

3.3. Manuscript Files Accepted

Manuscripts should be uploaded as Word (.doc or .docx) or Rich Text Format (.rtf) files (not write- protected), along with separate Figure files. For the latter, GIF, JPEG, PICT or Bitmap files are acceptable for submission, but only high- resolution TIF or EPS files are suitable for printing. Tables should be done in Word rather than in Excel. The files will be automatically converted to HTML and a PDF document on upload, and those will be used for the review process. The text file must contain the entire manuscript, including the title page, abstract, text, references, tables, and figure legends, but no embedded figures. Figure tags should be included in the file. Manuscripts should be formatted as described in the Author Guidelines below.

3.4. Suggest Two Reviewers

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

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

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

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

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

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

3.9. Submission of Revised Manuscripts
Revised manuscripts must be uploaded within two or three months of authors being notified of conditional acceptance pending satisfactory Minor or Major revision respectively. Locate your manuscript under 'Manuscripts with Decisions' and click on 'Submit a Revision' to submit your revised manuscript. Please remember to delete any previously-uploaded files when you upload your revised manuscript. Revised manuscripts must show changes to the text in either bold font, coloured font or highlighted text. Do NOT use track changes for this. Prepare and submit a separate “Response to reviewers” document, in which you address EACH of the points raised by the reviewers.

3.10. Conflict of Interest
Community Dentistry & Oral Epidemiology requires that sources of institutional, private and corporate financial support for the work within the manuscript must be fully acknowledged, and any potential grant holders should be listed. Acknowledgements should be brief and should include information concerning conflict of interest and sources of funding. It should not include thanks to anonymous referees and editors.

3.11. Editorial Board Submissions
Manuscripts authored or co-authored by the Editor-in-Chief or by members of the Editorial Board are evaluated using the same criteria determined for all other submitted manuscripts. The process is handled confidentially and measures are taken to avoid real or reasonably perceived conflicts of interest.

4. MANUSCRIPT FORMAT AND STRUCTURE
4.1. Word Limit and Page Charges
Articles should be limited to 3,700 words (including references) and 6 Tables or

Figures; alternatively, 4,000 words and 5 Tables or Figures may be used. This equates to seven published pages, **and authors are strongly encouraged to stay within those limits.** The Methods and Results sections are usually where the word count can "blow out", and authors are encouraged to consider submitting heavily detailed material for inclusion in a separate online Appendix to their article (at no cost). **Articles exceeding seven published pages are subject to a charge of USD 300 per additional page. One published page amounts approximately to 5,500 characters (including spaces) of text but does not include Figures and Tables.**

4.2. Format

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

Font: All submissions must be 1.5 spaced using a standard 12 -point font size, and preferably in the Times Roman font**.**

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

4.3. Structure

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

Title Page: the names and institutional affiliations of all authors of the manuscript should be included.

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

Main Text of Original Articles should include Introduction, Methods, Results and Discussion. Subheadings are not encouraged.

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

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

Discussion: this may usually start with a brief summary of the major findings, but repetition of parts of the Abstract or of the Results sections should be avoided**.** The section should end with a brief conclusion and a comment on the potential clinical program or policy relevance of the findings. Statements and interpretation of the data

should be appropriately supported by original references.

4.4. References
Authors are required to cite all necessary references for the research background, methods and issues discussed. Primary sources should be cited. Relevant references published in CDOE are expected to be among the cited literature.

The list of references begins on a fresh page in the manuscript. All references should be numbered consecutively in order of appearance and should be as complete as possible. In text citations should cite references in consecutive order using Arabic superscript numerals. Sample references follow:

Journal article:

1. King VM, Armstrong DM, Apps R, Trott JR. Numerical aspects of pontine, lateral reticular, and inferior olivary projections to two paravermal cortical zones of the cat cerebellum. J Comp Neurol 1998;390:537-551.

Book:

2. Voet D, Voet JG. *Biochemistry*. New York: John Wiley & Sons; 1990. 1223 p.

Please note that journal title abbreviations should conform to the practices of Chemical Abstracts.

For more information about AMA reference style - AMA Manual of Style

4.5. Tables, Figures and Figure Legends
Tables are part of the text and should be included, one per page, after the References. Please see our Guide to Tables and Figures for guidance on how to lay these out. All graphs, drawings, and photographs are considered figures and should be sequentially numbered with Arabic numerals. Each figure must be on a separate page and each must have a caption. All captions, with necessary references, should be typed together on a separate page and numbered clearly (Fig.1, Fig. 2, etc.).

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). Please submit the data for figures in black and white or submit a colour work agreement form. 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: line art: >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.

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Figure Legends: All captions, with necessary references, should be typed together on a separate page and numbered clearly (Fig.1, Fig. 2, etc.).
Special issues: Larger papers, monographs, and conference proceedings may be published as special issues of the journal. The full cost of these extra issues must be paid by the authors. Further information can be obtained from the editor or publisher.

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

5.1. 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 printed out in order for any corrections to be added. Further instructions will be sent with the proof. Hard copy proofs will be posted if no e-

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5.2. Early View (Publication Prior to Print)
Community Dentistry and Oral Epidemiology is covered by Wiley Blackwell's Early View service. Early View articles are complete full-text articles published online in advance of their publication in a printed issue. They have been fully reviewed, revised and edited for publication, and the authors' 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.

5.3. Author Services
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ANEXO H

Normas de publicação do periódico International Journal of Paediatric Dentistry

Author Guidelines

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

Relevant Documents: Sample Manuscript

Useful Websites: Submission Site, Articles published in *International Journal of Paediatric Dentistry*, Author Services, Wiley-Blackwell's Ethical Guidelines, Guidelines for Figures.

CrossCheck
The journal to which you are submitting your manuscript employs a plagiarism detection system. By submitting your manuscript to this journal you accept that your manuscript may be screened for plagiarism against previously published works.

1. GENERAL

International Journal of Paediatric Dentistry publishes papers on all aspects of paediatric dentistry including: growth and development, behaviour management, prevention, restorative treatment and issue relating to medically compromised children or those with disabilities. This peer-reviewed journal features scientific articles, reviews, clinical techniques, brief clinical reports, short communications and abstracts of current paediatric dental research. Analytical studies with a scientific novelty value are preferred to descriptive studies.

Please read the instructions below carefully for details on the submission of manuscripts, the journal's requirements and standards as well as information concerning the procedure after acceptance of a manuscript for publication in *International Journal of Paediatric Dentistry*. Authors are encouraged to visit Wiley-Blackwell Author Services for further information on the preparation and submission of articles and figures.
In June 2007, the Editors gave a presentation on How to write a successful paper for the *International Journal of Paediatric Dentistry.*

2. ETHICAL GUIDELINES

Submission is considered on the conditions that papers are previously unpublished, and are not offered simultaneously elsewhere; that authors have read and approved the content, and all authors have also declared all

competing interests; and that the work complies with the Ethical Policies of the Journal and has been conducted under internationally accepted ethical standards after relevant ethical review.

3. CONFLICT OF INTEREST AND SOURCE FUNDING

Journal of Oral Rehabilitation requires that all authors (both the corresponding author and co-authors) disclose any potential sources of conflict of interest. Any interest or relationship, financial or otherwise that might be perceived as influencing an author's objectivity is considered a potential source of conflict of interest. These must be disclosed when directly relevant or indirectly related to the work that the authors describe in their manuscript. Potential sources of conflict of interest include but are not limited to patent or stock ownership, membership of a company board of directors, membership of an advisory board or committee for a company, and consultancy for or receipt of speaker's fees from a company. If authors are unsure whether a past or present affiliation or relationship should be disclosed in the manuscript, please contact the editorial office at IJPDedoffice@wiley.com. The existence of a conflict of interest does not preclude publication in this journal.

The above policies are in accordance with the Uniform Requirements for Manuscripts Submitted to Biomedical Journals produced by the International Committee of Medical Journal Editors (http://www.icmje.org/). It is the responsibility of the corresponding author to have all authors of a manuscript fill out a conflict of interest disclosure form, and to upload all forms together with the manuscript on submission. The disclosure statement should be included under Acknowledgements. Please find the form below:

Conflict of Interest Disclosure Form

4. MANUSCRIPT SUBMISSION PROCEDURE

Articles for the *International Journal of Paediatric Dentistry* should be submitted electronically via an online submission site. Full instructions and support are available on the site and a user ID and password can be obtained on the first visit. Support is available by phone (+1 434 817 2040 ext. 167) or here. If you cannot submit online, please contact Daricel Borja in the Editorial Office by e-mail IJPDedoffice@wiley.com.

4.1. Getting Started

Launch your web browser (supported browsers include Internet Explorer 5.5 or higher, Safari 1.2.4, or Firefox 1.0.4 or higher) and go to the journal's online submission site: http://mc.manuscriptcentral.com/ijpd

*Log-in or, if you are a new user, click on 'register here'.

*If you are registering as a new user.

- After clicking on 'Create Account', 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 area of expertise. Click 'Finish'.
*If you are already registered, 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.
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4.2. Submitting Your Manuscript
After you have logged into your 'Author Center', submit your manuscript by clicking on the submission link under 'Author Resources'.
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• Authors' names, professional and academic qualifications, positions and places of work. They must all have actively contributed to the overall design and execution of the study/paper and should be listed in order of importance of their contribution
• Corresponding author address, and telephone and fax numbers and email address

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- 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.

4.3. Manuscript Files Accepted
Manuscripts should be uploaded as Word (.doc) or Rich Text Format (.rtf) files (not write-protected) plus separate figure files. GIF, JPEG, PICT or Bitmap files are acceptable for submission, but only high-resolution TIF or EPS files are suitable for printing. The files will be automatically converted to HTML and a PDF document on upload and will be used for the review process. The text file

must contain the entire manuscript including title page, abstract, text, references, tables, and figure legends, but no embedded figures. In the text, please reference figures as for instance 'Figure 1', 'Figure 2' 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) is now accepted by IPD. As such manuscripts can be submitted in both .doc and .docx file types.

4.4. Review Process

The review process is entirely electronic-based and therefore facilitates faster reviewing of manuscripts. Manuscripts will be reviewed by experts in the field (generally two reviewers), and the Editor-in-Chief makes a final decision. *The International Journal of Paediatric Dentistry* aims to forward reviewers´ comments and to inform the corresponding author of the result of the review process. Manuscripts will be considered for 'fast-track publication' under special circumstances after consultation with the Editor-in-Chief.

4.5. Suggest a Reviewer

International Journal of Paediatric Dentistry attempts to keep the review process as short as possible to enable rapid publication of new scientific data. In order to facilitate this process, please suggest the names and current email addresses of a potential international reviewer whom you consider capable of reviewing your manuscript and their area of expertise. In addition to your choice the journal editor will choose one or two reviewers as well.

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

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

4.7. 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 some sort of 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.

4.8. Manuscript Status

You can access ScholarOne Manuscripts any time to check your 'Author Center' for the status of your manuscript. The Journal will inform you by e-mail once a decision has been made.

4.9. Submission of Revised Manuscripts

Revised manuscripts must be uploaded within 2 months of authors being notified of conditional acceptance pending satisfactory revision. Locate your manuscript under 'Manuscripts with Decisions' and click on 'Submit a Revision' to submit your revised manuscript. Please remember to delete any old files uploaded when you upload your revised manuscript. All revisions must be accompanied by a cover letter to the editor. The letter must a) detail on a point-by-point basis the author's response to each of the referee's comments, and b) a revised manuscript highlighting exactly what has been changed in the manuscript after revision.

4.10 Online Open

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5. MANUSCRIPT TYPES ACCEPTED

Original Articles: Divided into: Summary, Introduction, Material and methods, Results, Discussion, Bullet points, Acknowledgements, References, Figure legends, Tables and Figures arranged in this order. The summary should be structured using the following subheadings: Background, Hypothesis or Aim, Design, Results, and Conclusions and should be less than 200 words. A brief description, in bullet form, should be included at the end of the paper and should describe Why this paper is important to paediatric dentists.

Review Articles: may be invited by the Editor.

Short Communications: should contain important, new, definitive information of sufficient significance to warrant publication. They should not be divided into different parts and summaries are not required.

Clinical Techniques: This type of publication is best suited to describe significant improvements in clinical practice such as introduction of new technology or practical approaches to recognised clinical challenges.

Brief Clinical Reports/Case Reports: Short papers not exceeding 800 words, including a maximum of three illustrations and five references may be accepted for publication if they serve to promote communication between clinicians and researchers. If the paper describes a genetic disorder, the OMIM unique six-digit number should be provided for online cross reference (Online Mendelian Inheritance in Man).

A paper submitted as a Brief Clinical/Case Report should include the following:

- a short **Introduction** (avoid lengthy reviews of literature);
- the **Case report** itself (a brief description of the patient/s, presenting condition, any special investigations and outcomes);
- a **Discussion** which should highlight specific aspects of the case(s), explain/interpret the main findings and provide a scientific appraisal of any previously reported work in the field.
- Please provide up to 3 bullet points for your manuscript under the heading: 1. Why this clinical report is important to paediatric dentists. Bullet points should be added to the end of your manuscript, before the references.

Letters to the Editor: Should be sent directly to the editor for consideration in the journal.

6. MANUSCRIPT FORMAT AND STRUCTURE

6.1. Format

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

6.2. Structure

The whole manuscript should be double-spaced, paginated, and submitted in correct English. The beginning of each paragraph should be properly marked with an indent.

Original Articles (Research Articles): should normally be divided into: Summary, Introduction, Material and methods, Results, Discussion, Bullet

points, Acknowledgements, References, Figure legends, Tables and Figures arranged in this order.

Please include a statement of author contributions, e.g. Author contributions: A.S. and K.J. conceived the ideas; K.J. and R.L.M. collected the data; R.L.M. and P.A.K. analysed the data; and A.S. and K.J. led the writing.

Summary should be structured using the following subheadings: Background, Hypothesis or Aim, Design, Results, and Conclusions.

Introduction should be brief and end with a statement of the aim of the study or hypotheses tested. Describe and cite only the most relevant earlier studies. Avoid presentation of an extensive review of the field.

Material and methods should be clearly described and provide enough detail so that the observations can be critically evaluated and, if necessary repeated. Use section subheadings in a logical order to title each category or method. Use this order also in the results section. Authors should have considered the ethical aspects of their research and should ensure that the project was approved by an appropriate ethical committee, which should be stated. Type of statistical analysis must be described clearly and carefully.

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

(ii) 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 Journal of Paediatric Dentistry 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.

***(iii)DNA Sequences and Crystallographic Structure Determinations*:** Papers reporting protein or DNA sequences and

crystallographic structure determinations will not be accepted without a Genbank or Brookhaven accession number, respectively. Other supporting data sets must be made available on the publication date from the authors directly.

Results should clearly and concisely report the findings, and division using subheadings is encouraged. Double documentation of data in text, tables or figures is not acceptable. Tables and figures should not include data that can be given in the text in one or two sentences.

Discussion section presents the interpretation of the findings. This is the only proper section for subjective comments and reference to previous literature. Avoid repetition of results, do not use subheadings or reference to tables in the results section.

Bullet Points should include one heading:
*Why this paper is important to paediatric dentists.
Please provide maximum 3 bullets per heading.

Review Articles: may be invited by the Editor. Review articles for the *International Journal of Paediatric Dentistry* should include: a) description of search strategy of relevant literature (search terms and databases), b) inclusion criteria (language, type of studies i.e. randomized controlled trial or other, duration of studies and chosen endpoints, c) evaluation of papers and level of evidence. For examples see:
Twetman S, Axelsson S, Dahlgren H et al. Caries-preventive effect of fluoride toothpaste: a systematic review. Acta Odontologica Scandivaica 2003; 61: 347-355.
Paulsson L, Bondemark L, Söderfeldt B. A systematic review of the consequences of premature birth on palatal morphology, dental occlusion, tooth-crown dimensions, and tooth maturity and eruption. Angle Orthodontist 2004; 74: 269-279.

Clinical Techniques: This type of publication is best suited to describe significant improvements in clinical practice such as introduction of new technology or practical approaches to recognised clinical challenges. They should conform to highest scientific and clinical practice standards.

Short Communications: Brief scientific articles or short case reports may be submitted, which should be no longer than three pages of double spaced text, and include a maximum of three ilustrations. They should contain important, new, definitive information of sufficient significance to warrant publication. They should not be divided into different parts and summaries are not required.

Acknowledgements: Under acknowledgements please specify contributors to the article other than the authors accredited. 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.

Supplementary data
Supporting material that is too lengthy for inclusion in the full text of the manuscript, but would nevertheless benefit the reader, can be made available by the publisher as online-only content, linked to the online manuscript. The material should not be essential to understanding the conclusions of the paper, but should contain data that is additional or complementary and directly relevant to the article content. Such information might include the study protocols, more detailed methods, extended data sets/data analysis, or additional figures (including). All material to be considered as supplementary data must be uploaded as such with the manuscript for peer review. It cannot be altered or replaced after the paper has been accepted for publication. Please indicate clearly the material intended as Supplementary Data upon submission. Also ensure that the Supplementary Data is referred to in the main manuscript. Please label these supplementary figures/tables as S1, S2, S3, etc.

Full details on how to submit supporting information, can be found at http://authorservices.wiley.com/bauthor/suppinfo.asp

6.3. References
A maximum of 30 references should be numbered consecutively in the order in which they appear in the text (Vancouver System). They should be identified in the text by superscripted Arabic numbers and listed at the end of the paper in numerical order. Identify references in text, tables and legends. Check and ensure that all listed references are cited in the text. Non-refereed material and, if possible, non-English publications should be avoided. Congress abstracts, unaccepted papers, unpublished observations, and personal communications may not be placed in the reference list. References to unpublished findings and to personal communication (provided that explicit consent has been given by the sources) may be inserted in parenthesis in the text. Journal and book references should be set out as in the following examples:

1. Kronfol NM. Perspectives on the health care system of the United Arab Emirates. East Mediter Health J. 1999; 5: 149-167.
2. Ministry of Health, Department of Planning. Annual Statistical Report. Abu Dhabi: Ministry of Health, 2001.
3. Al-Mughery AS, Attwood D, Blinkhorn A. Dental health of 5-year-old children in Abu Dhabi, United Arab Emirates. Community Dent Oral Epidemiol 1991; 19: 308-309.
4. Al-Hosani E, Rugg-Gunn A. Combination of low parental educational attainment and high parental income related to high caries experience in preschool children in Abu Dhabi. Community Dent Oral Epidemiol 1998; 26: 31-36.

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