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LAIO DA COSTA DUTRA

ASSOCIAÇÃO ENTRE FATORES BIOPSICOSSOCIAIS, ACESSO E UTILIZAÇÃO DOS SERVIÇOS DE SAÚDE BUCAL E A CÁRIE DENTÁRIA EM ADOLESCENTES

CAMPINA GRANDE/PB

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Orientadora: Profª. Dra. Ana Flávia Granville-Garcia

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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.

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Ayrton Senna

Associação entre fatores biopsicossociais, acesso e utilização dos serviços de saúde bucal e a cárie dentária em adolescentes

RESUMO

A cárie dentária é o problema de saúde bucal mais comum mundialmente e mesmo diante dos avanços científicos e das políticas de saúde continua gerando prejuízos à população. É importante reconhecer os fatores associados à cárie dentária em adolescentes, pois, essa fase é dinâmica e de alto risco para comportamentos prejudiciais à saúde bucal. O objetivo deste estudo foi avaliar a associação entre fatores psicossociais, sociodemográficos, ida ao dentista e a cárie dentária em adolescentes de Campina Grande-PB. Foi realizado um estudo transversal com amostra representativa de 769 adolescentes de 15 a 19 anos em escolas públicas e privadas de Campina Grande-PB, Brasil. Os pais/responsáveis responderam questionários sobre dados sociodemográficos. Os adolescentes responderam os questionários sobre a coesão e adaptabilidade familiares (*FACES III),* sobre o consumo de substâncias psicoativas *(ASSIST)* e em relação à utilização dos serviços de saúde bucal. Em seguida, os escolares responderam ao Brazilian Rapid Estimate of Adult Literacy in Dentistry (BREALD-30), para fornecer o nível de alfabetismo em saúde bucal. Dois cirurgiões dentistas foram calibrados para avaliação da cárie dentária nos adolescentes utilizando os critérios de Nyvad (Kappa interexaminadores: 0,89-0,90 e intraexaminadores: 0,88-0,90). Foi realizada estatística descritiva e Regressão de Poisson ($p<0,05$). As variáveis de confusão foram selecionadas para ajuste do modelo estatístico por meio de um Directed Acyclic Graph (DAG). A prevalência de lesões cavitadas de cárie dentária foi de 41,6% e a ida ao dentista foi relatada por 93% dos adolescentes. Em relação ao Alfabetismo em Saúde Bucal (ASB), 37,5% dos adolescentes apresentaram o nível marginal e 33,1% o nível inadequado. O número de moradores em casa foi igual ou maior do que seis pessoas para 16,8% dos adolescentes e 56.9% dos participantes foram de classes sociais desfavorecidas. O nível de coesão familiar desligada foi observado em 46,1% dos adolescentes. Após ajuste de variáveis individuais, o número de lesões cavitadas de cárie dentária foi associado à classe social (C-D-E) (RR= 1,85; IC95%: 1,39-2,47), ASB inadequado (RR= 1,69; IC95%: 1,18-2,41), ASB marginal (RR= 1,42; IC95%: 1,01-1,99), número de pessoas na casa (≥ 6 pessoas)

(RR= 1,31; IC95%: 1,09-1,73), coesão familiar desligada (RP= 3,14; IC95%: 1,44-6,87), separada (RR= 2,67; IC95%: 1,22-5,86) e conectada (RR= 3,63; IC95%: 1,61-8,16). CONCLUSÃO: Uma pior condição socioeconômica, menor coesão familiar e um menor nível de ASB influenciaram o número de lesões cavitadas de cárie dentária em adolescentes, por outro lado, não houve influência da ida ao dentista para esse desfecho de saúde bucal.

Palavras-chave: Adolescente, Saúde bucal, Cárie dentária, Relações familiares, Alfabetização em saúde.

Association between biopsychosocial factors, access and utilization of oral health services and dental caries in adolescents

ABSTRACT

Dental caries is the most common oral health problem worldwide and remains causing harm to the population despite health public policies and scientific advances. It is important to recognize the factors associated with dental caries in adolescents since this is a dynamic and high risk stage for behaviors that are harmful to oral health. This study aimed to evaluate the association between psychosocial and socio-demographic data, dental visit and dental caries in adolescents. A cross-sectional study was carried out with a representative sample of 769 adolescents aged 15 to 19 years from public and private schools in Campina Grande-PB, Brazil. Parents/guardians answered questionnaires about socio-demographic data. Adolescents answered the questionnaires about family cohesion and adaptability (FACES III), on the consumption of psychoactive substances (ASSIST) and about the use of oral health services. Then, adolescents responded to the Brazilian Rapid Estimate of Adult Literacy in Dentistry (BREALD-30) to provide the level of oral health literacy. Two dentists were trained through a calibration process for dental caries examination in the adolescents using Nyvad criteria (Kappa inter-examiner: 0.89-0.90 and intra-examiner: 0.88-0.90). Descriptive statistics and Poisson regression were performed ($p < 0.05$). Confounding variables were selected to adjust the statistical model using a Directed Acyclic Graph (DAG). The prevalence of cavitated lesions of dental caries was 41.6% and 93% of adolescents have had to the dentist. Regarding Oral Health Literacy (OHL), 37.5% of the adolescents presented marginal level and 33.1% had an inadequate level. Adolescents with 6 or more people at home accounted for 16.9% and 56.9% of the participants were from disadvantaged social classes. Disengaged families were observed for 46.1% of adolescents. After adjustment of individual variables, the number of cavitated lesions of dental caries was associated with social class (RR = 1.85, 95% CI: 1.39-2.47), inadequate OHL (RR = 1.69; 95% CI: 1.18-2.41), marginal OHL (RR = 1.42, 95% CI: 1.01-1.99), the number of people in the house (≥ 6 people) (RR = 1.31; 95% CI: 1.09-1.73), Disengaged family cohesion (PR = 3.14, 95% CI: 1.44-6.87), separated family

cohesion (RR = 2.67, 95% CI: 1.22-5 , 86) and connected family cohesion (RR = 3.63, 95% CI: 1.61-8.16). CONCLUSION: A lower socioeconomic status, family cohesion and level of OHL influenced the number of dental caries lesions in adolescents. On the other hand, there was no influence of going to the dentist for dental caries.

Keywords: Adolescent, Oral Health, Dental Caries, Family relationships, Literacy in health.

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

ABEP - Associação Brasileira de Empresas de Pesquisa

ASB - Alfabetismo em Saúde Bucal

ASSIST - Alcohol, Smoking and Substance Involvement Screening Test

BREALD – 30 - Brazilian Rapid Estimate of Adult Literacy in Dentistry

CNS – Conselho Nacional de Saúde

CI – Confidence interval

DAG - Directed Acyclic Graph

FACES III - *Family Adaptability and Cohesion Scales*

IBGE – Instituto Brasileiro de Geografia e Estatística

IC – Intervalo de confiança

INEP (Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira)

MG – Minas Gerais

OHL – Oral Health Literacy

OMS – Organização Mundial de Saúde

PA – Pará

PB – Paraíba

RP – Razão de prevalência

RR – Rate Ratio

SD – Standard deviation

SP – São Paulo

STROBE – Strengthening the Reporting of Observational Studies in Epidemiology

UEPB – Universidade Estadual da Paraíba

USA – United States of America

UT – Utah

WHO – World Health Organization

SUMÁRIO

Considerações iniciais

1. CONSIDERAÇÕES INICIAIS

A cárie dentária é o problema de saúde bucal mais comum mundialmente e apesar de os avanços científicos e das políticas preventivas disponíveis continua sendo um problema relevante de saúde pública (OLIVEIRA et al., 2015; GOENKA et al., 2018). A falta de tratamento da doença repercute em dores desconforto, além de influenciar a função mastigatória, relação social e econômica e a qualidade de vida em crianças e adolescentes (OLIVEIRA et al., 2015; MASHOTO et al., 2010).

No Brasil, apenas 23,9% da população entre 15-19 anos de idade se apresentou livre de cárie dentária no último levantamento epidemiológico de base nacional (BRASIL,2012). Em adição, os estudos têm demonstrado uma alta prevalência de cárie dentária em adolescentes entre12 e 19 anos de idade (39%-58%) (DYE et al., 2015; FELDENS et al., 2015; VEIGA et al., 2015).

Nesse sentido, a adolescência é uma fase importante para estudar os fatores associados à cárie dentária, pois, o adolescente tem maior independência o que resulta em uma menor supervisão dos responsáveis. Além disso, na adolescência são comuns práticas como o abuso de substâncias e atitudes de risco que podem influenciar a manutenção da saúde bucal (JUNG et al., 2018; HEYDARI et al., 2015). Dentre os estudos disponíveis na literatura percebe-se um maior enfoque para o abuso de drogas na fase adulta (YE et al., 2018; LE; PALAMAR., 2018). Um estudo envolvendo adolescentes e adultos jovens demonstrou uma maior prevalência de cárie dentária em usuários de substâncias psicoativas (GIGENA; CORNEJO; FERRER., 2015). Além disso, outro estudo observou que adolescentes que usam álcool possuem dificuldade de aderir a tratamentos odontológicos (FREDDO et al., 2018). Assim, acredita-se que a utilização de drogas na adolescência pode interferir na presença de cárie dentária em adolescentes, por isso devem ser realizados estudos considerando a influência da utilização de drogas lícitas e ilícitas na cárie dentária durante a adolescência.

Dentre os fatores que podem influenciar a cárie dentária na adolescência, os aspectos sociodemográficos tem se destacado na literatura. Previamente foi demonstrado que para adolescentes em privação social há uma maior prevalência da cárie dentária (OSTBERG;

KJELLSTROM; PETZOLD., 2017). Além disso, outros fatores como a etnia do adolescente (DRUMMOND et al., 2015) e a escolaridade materna (SHIN; PARK., 2017) tem sido associados à cárie dentária. Esses resultados variam de acordo com a população e região estudada e esse conhecimento em adolescentes é importante, pois, pode contribuir para reduzir as desigualdades de acesso à saúde bucal em uma fase complexa do desenvolvimento humano. Outro fator que pode influenciar a cárie dentária na adolescência e que tem se destacado na literatura, é a influência do ambiente familiar. Assim, acredita-se que a qualidade das relações estabelecidas entre os membros da família pode desempenhar um papel importante na ocorrência de cárie dentária. Nesse sentido, a coesão familiar pode ser entendida como o vínculo emocional que os integrantes da família possuem entre si, bem como os limites de proximidade e separação estabelecidos (SANTOS et al., 2017; ROSALINI et al., 2019). A coesão familiar pode desempenhar um papel particularmente importante na prevenção de comportamentos de risco dos jovens durante a adolescência, pois, é um período de conflitos e dúvidas marcado por grandes mudanças biológicas, psicológicas e sociais (STEINBERG; MORRIS,2001; COLL et al., 2010; REEB et al., 2015).

A associação entre uma baixa coesão familiar, hábitos de higiene bucal e a cárie dentária foi observada previamente apenas em um estudo com adolescentes de 15 anos provenientes de escolas públicas. Há necessidade de estudos populacionais de base escolar que considerem diferentes fases da adolescência, pois esse tema ainda é pouco explorado (FERREIRA et al., 2013). Outro aspecto importante que tem sido alvo de atenção de pesquisadores é o ASB. Trata-se de um indicador que se refere à percepção das informações de saúde bucal e como são interpretadas e utilizadas, na prática (HARIDAS et al.,2014). Níveis mais altos de alfabetismo em saúde bucal auxiliam no processo de tomada de decisões e dessa forma atuam na prevenção de doenças bucais (NIDCR, 2005; SWIFT et al., 2014). Nesse sentido é importante estudar a associação entre o ASB e a cárie dentária em adolescentes. O alfabetismo em saúde pode melhorar a capacidade de comunicação entre pacientes e profissionais da saúde, além de facilitar a utilização do conhecimento sobre doenças para prevenir e buscar tratamentos, auxiliando a suprir necessidades de saúde (ATCHISON et al., 2017). Os estudos prévios sobre a associação entre o ASB e a cárie dentária foram realizados em crianças segundo o

relato dos pais (medida proxy) (FIRMINO et al., 2018A). Além disso, a associação entre o ASB e hábitos de higiene bucal foi investigada anteriormente e os resultados foram inconclusivos devido às variações metodológicas dos estudos (FIRMINO et al., 2018B). Dessa forma, trata-se de um tema controverso e sem relatos no período da adolescência, por isso a importância de estudos nessa população.

Assim, o objetivo desse estudo foi avaliar a associação entre fatores psicossociais, sociodemográficos, ida ao dentista e a cárie dentária em uma amostra populacional de base escolar de adolescentes de 15 a 19 anos.

Objetivos

2. OBJETIVOS

2.1 OBJETIVO GERAL

Avaliar a associação entre fatores psicossociais, sociodemográficos, ida ao dentista e a cárie dentária em adolescentes de Campina Grande-PB

2.2 OBJETIVOS ESPECÍFICOS

Plano de análise I (Artigo 1)

- Determinar a prevalência da cárie dentária geral e cavitada em adolescentes de 15 a 19 anos.
- Verificar a associação entre a coesão familiar, ida ao dentista, consumo de drogas (lícitas e ilícitas), classe social e o número de lesões de cárie dentária cavitada.
- Investigar a associação entre os fatores sociodemográficos e o número de lesões de cárie dentária cavitada.

Plano de análise II (Artigo 2)

- Determinar a prevalência da cárie dentária geral e cavitada em adolescentes de 15 a 19 anos.
- Verificar a associação entre o alfabetismo em saúde bucal, visita ao dentista, classe social e o número de lesões de cárie dentária cavitada.
- Investigar a associação entre os fatores sociodemográficos e o número de lesões de cárie cavitada.

Metodologia

3. METODOLOGIA

3.1 ÁREA DO ESTUDO

A cidade de Campina Grande está localizada no interior do estado da Paraíba, no agreste paraibano, na parte oriental do Planalto da Borborema (Figura 1). Com uma população estimada de 405,072 habitantes, o município de Campina Grande, apresenta uma área total de 594.182 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 possui 16 instituições de ensino superior, sendo duas da rede pública. Além disso, Campina Grande possui elevados problemas sociais e índices de pobreza, como também apresenta um grande número de desempregados e de trabalhadores do setor informal (IBGE, 2015).

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

3.2 DESENHO DO ESTUDO

Este estudo foi do tipo transversal e analítico. 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

Adolescentes de quinze aos dezenove anos, assistidos em escolas públicas e privadas da cidade de Campina Grande-PB. O município apresenta 131 escolas públicas, perfazendo um total de 13.933 adolescentes matriculados entre 15 a 19 anos, de acordo com o censo escolar de 2014 (INEP, 2015).

3.4 CÁLCULO AMOSTRAL

Nesta pesquisa o cálculo amostral foi realizado por meio de uma amostragem probabilística por conglomerados para amostras complexas, em dois estágios (escolas e adolescentes). O número de alunos foi proporcional para cada um dos Distritos Sanitários. Após o sorteio das escolas, os adolescentes foram selecionados por uma amostra aleatória simples.

A amostra foi obtida por meio do cálculo de estimativa de proporção, de acordo com Kirkwood e Sterne (2003), considerando um nível de significância de 95% e erro admissível de 5%. Foi considerada uma prevalência de agravo de 50% por fornecer a maior amostra possível, aumentando o poder do estudo.

Onde:

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

Então:

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 foi de 384 adolescentes. O processo de amostragem por conglomerados (cluster) altera a precisão das estimativas, já que essas dependem do grau de homogeneidade interna dos conglomerados. Ao se proceder a essa técnica de amostragem, aumenta-se a homogeneidade, 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 valores entre 1,2 a 2,0. Esse procedimento é denomina do efeito de delineamento ou efeito do desenho. Foi utilizado o fator 1,6, que totalizou uma amostra de 615 adolescentes. Além disto, foi prevista uma taxa de perda de 20% ao tamanho amostral. Assim, a amostra final foi de 769 escolares de quinze a dezenove anos.

3.5 CALIBRAÇÃO

A calibração para cárie dentária seguiu a metodologia proposta por Peres, Traebert e Marcenes (2001), segundo os critérios de Nyvad eBaelum (2018) e foi dividida em duas etapas:

Primeira Etapa: consistiu em um momento teórico no qual foram apresentados os índices utilizados e os critérios de diagnóstico. Imagens das condições que poderiam ser observadas no exame foram projetadas por um minuto, sendo solicitado aos examinadores o diagnóstico das alterações bucais. Em seguida, foi realizado o estudo da ficha clínica e da rotina a ser seguida durante o exame clínico. Esta etapa foi coordenada por um expert na área, considerado padrão-ouro para o treinamento de dois cirurgiões-dentistas selecionados para o exercício de calibração.

Segunda Etapa: foram conduzidos os exames clínicos, pelos examinadores e pelo padrão ouro, em 50 adolescentes entre 15 a 19 anos de idade pertencentes a uma escola pública selecionada por conveniência. Os 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. Desses 50 adolescentes, 30 foram reexaminados após um intervalo de sete dias para determinação do grau de concordância intra-examinador.

Com relação à calibração para o ASB, foi realizada em três etapas, segundo a metodologia proposta por Vilella et al (2016). O BREALD-30 é um instrumento utilizado para avaliara identificação de palavras relacionadas à Odontologia. Os examinadores foram treinados para avaliar erros de pronúncia, dificuldades de identificação das palavras, erros na tonicidade das sílabas, tempo utilizado para leitura e troca por palavras semelhantes. Inicialmente foi realizado um treinamento teórico sobre os critérios para aplicação do BREALD-30, seguida de uma fase de treinamento com vídeos de pacientes e da fase de treinamento com 50 adolescentes de 15 a 19 numa escola pública selecionada por conveniência. A concordância inter-examinadores foi calculada com base no padrão-ouro e sete dias depois o BREALD-30 foi reaplicado com os adolescentes para o cálculo do nível de concordância intra-examinador.

A consistência dos diagnósticos foi medida por meio 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 houvera concordância diagnóstica.

Pe - porcentagem de concordância esperada.

Variável	Inter-examinador	Intra-examinador
Cárie Dentária	0,89-0,90	0,88-0,90
ASB	0,88-0,88	0,87 -0,89

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

- Adolescentes entre quinze a dezenove anos matriculados em escolas públicas e privadas de ensino médio da cidade de Campina Grande-PB.

3.7 CRITÉRIOS DE EXCLUSÃO

- Presença de um ou mais dentes decíduos;
- Adolescentes utilizando aparelho ortodôntico no momento do exame;
- Alteração de nível físico, sensorial, mental e de comportamento que necessitem de uma atenção especial, sendo informada pelos educadores.

3.8 ESTUDO PILOTO

Antes de iniciar o estudo principal, foi realizado um estudo piloto para testar e avaliar a metodologia proposta para a realização do estudo (realização dos exames clínicos e aplicabilidade dos questionários). Esta etapa foi realizada em duas escolas selecionadas por conveniência com 50 adolescentes, 25 de escolas públicas e 25 de escolas privadas.

3.9 CONTATO COM AS ESCOLAS

As 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 aos responsáveis pela escola, os objetivos da pesquisa, as atividades a serem realizadas na escola e a metodologia do trabalho proposto. Em cada 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 escolas públicas e privadas selecionadas aleatoriamente para o estudo, sendo executada por 2 examinadores calibrados. Os dados foram anotados por assistentes devidamente treinados. Após o contato com os responsáveis por cada escola para explicar o estudo e a dinâmica do processo de coleta de dados, os pais/responsáveis foram convidados a participar de uma reunião na 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. Após a coleta dos questionários, os adolescentes foram examinados para avaliação da cárie dentária.

3.10.1 Instrumentos para coleta de dados

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

- Questionário dirigido aos pais/responsáveis contendo questões relacionadas às condições sociodemográficas (APÊNDICE A).
- Questionário dirigido aos pais/responsáveis contendo questões relacionadas às condições sociodemográficas, pelo critério da Associação Brasileira de Empresas de Pesquisa (ABEP) (APÊNDICE B).
- Questionário FACES III, dirigido aos adolescentes (ANEXO A).
- Questionário BREALD-30, dirigido aos adolescentes (ANEXO B).
- Questionário ASSIST, dirigido aos adolescentes (ANEXO C).
- Questionário ACESSO E UTILIZAÇÃO DOS SERVIÇOS DE SAÚDE BUCAL, dirigido aos adolescentes (ANEXO D)
- Ficha clínica para anotação dos dados clínicos referentes à cárie dentária (APÊNDICE C)

Questionário de condições sociodemográficas

Foram investigadas as seguintes variáveis sociodemográficas: sexo do adolescente, idade do adolescente, raça/cor autodeclarada, idade dos pais, estado civil do responsável, renda familiar mensal, tipo de moradia, número de pessoas em casa, posição na família, plano de saúde familiar, escolaridades materna e paterna, idade e estado civil do responsável (APÊNDICE A). Para verificar o nível socioeconômico da amostra foi utilizado o critério de classificação econômica do Brasil, desenvolvido pela Associação Brasileira de Empresas de Pesquisa (ABEP) (APÊNDICE B). Esse instrumento verificou a presença de bens de consumo, de acesso à água tratada e presença de rua pavimentada na área de moradia do adolescente. Após assinalar estes itens, foi determinada uma pontuação em que é possível estimar a classe social a qual o adolescente faz parte.

Questionário FACES III

O FACES III, desenvolvido no Departamento de Ciências Sociais da Família da Universidade de Minnesota, foi projetado para medir a coesão familiar (capacidade de a família de manter-se unida frente às modificações do dia-a-dia) (OLSON; TIESEL, 2003).

Este instrumento é parte de uma escala diagnóstica de funcionamento familiar (*Family Adaptability and Cohesion Scales*) consagrada pela literatura internacional e devidamente validado para uso no Brasil (FALCETO; BUSNELLO; BOZZETTI, 2000).

O instrumento é composto por 20 perguntas (ANEXO A), em que o membro da família (sujeito da pesquisa) é convidado a ler cada declaração e decidir sobre qual resposta dará a cada questionamento, sendo possível indicar uma resposta na escala dentre cinco pontuações (quase nunca=1; raramente=2; às vezes=3; frequentemente=4; quase sempre=5), como será explicado pelo examinador antes do início da aplicação do questionário. Os 20 itens são compostos de 10 perguntas de número ímpar correspondente à coesão familiar (nível de união entre os componentes da família), e as 10 perguntas pares que se referem à adaptabilidade familiar, ou seja, à capacidade de os componentes da família de alterar funções de poder na rotina familiar. As perguntas são expressas de forma simples para poderem ser entendidas e respondidas, inclusive por analfabetos (neste caso, o entrevistador lê em voz alta as perguntas, sem interpretá-las) e adolescentes maiores de 12 anos (OLSON; TIESEL, 2003; FALCETO; BUSNELLO; BOZZETTI, 2000).

De acordo com os escores de coesão familiar, as famílias foram classificadas em quatro grupos (OLSON; SPRENKLE; RUSSEL, 1989): famílias desligadas, que apresentavam baixo escore (10-34) de coesão familiar e alta independência entre os familiares; famílias separadas, com escores moderado-baixo (35-40) de coesão e com certo grau de independência entre os familiares; famílias conectadas, com escores moderado-alto (41-45) de coesão e moderada dependência entre os familiares; e famílias aglutinadas, que apresentam alto escore (46-50) de coesão familiar e alto grau de dependência entre os entes familiares.

Questionário BREALD-30

Para avaliar o ASB, foi utilizado o questionário BREALD-30 (ANEXO B). Este é formado por trinta palavras relacionadas à Odontologia, estando distribuídas no instrumento em ordem crescente de dificuldade (LEE et al., 2011; KHAN et al., 2014; JUNKES et al., 2015). Os adolescentes participantes do estudo realizaram a leitura em voz alta das palavras do instrumento. Foi atribuído um ponto para cada palavra pronunciada corretamente e depois, ao finalizar o questionário, foram somados os pontos para totalizar um escore (LEE et al., 2011; JUNKES et al., 2015).

A pontuação BREALD-30 foi categorizada por meio de tercis, variando de um nível inadequado de alfabetismo (pontuação ≤ 18 pontos), nível marginal (variando de 19 a 23 pontos) ou nível adequado (pontuação ≥ 24 pontos).

Questionário ASSIST

Para avaliar a utilização e consumo de substâncias psicoativas, foi utilizado o instrumento ASSIST (ANEXO C). Este instrumento foi desenvolvido pela OMS e já se encontra validado (MENDÉZ, 1999; WHO, 2002; LIMA et al., 2005; HENRIQUE et al., 2004; MORETTI-PIRES; CORRADI-WEBSTE, 2011).

O ASSIST é um questionário estruturado que é composto por oito questões sobre o uso de nove classes de substâncias psicoativas (maconha, tabaco, cocaína, álcool, estimulantes, opiáceos, sedativos, inalantes e alucinógenos). As perguntas se referem à frequência de utilização, durante a vida e nos últimos três meses, alterações relacionadas ao uso, preocupação sobre a utilização por parte de pessoas próximas ao usuário, prejuízo na execução de tarefas esperadas, tentativas sem sucesso ao tentar cessar ou reduzir o uso, sentimento de compulsão e uso por via injetável (WHO, 2002; HENRIQUE et al., 2004). Assim, é possível determinar se o adolescente utilizou alguma substância lícita ou ilícita, de acordo com as suas respostas ao questionário.

Questionário Acesso e Utilização dos Serviços de Saúde Bucal

Os questionamentos utilizados (ANEXO D) para a avaliação da visita/ida ao dentista foram aplicados segundo a metodologia implementada no SB Brasil 2010 (BRASIL 2012), sendo realizado questionamentos aos entrevistados.

3.10.2 Exame clínico

Antes do exame clínico, foi realizada uma escovação supervisionada nos adolescentes participantes do estudo. Para tal, cada adolescente recebeu uma escova de dente e fio dental para remover o biofilme dental das superfícies dentárias e facilitar o diagnóstico. Os adolescentes foram examinados nas escolas, permanecendo na posição sentada em frente ao examinador, com o auxílio de uma lâmpada portátil posicionada na cabeça do examinador (Petzl Zoom headlamp, 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 estéreis para secar os dentes.

Após o exame, os alunos que tinham indicação para tal receberam aplicações tópicas de flúor em gel. Além disso, os pesquisadores enviaram para os pais uma carta explicando a condição de saúde bucal de cada adolescente e a importância da visita ao dentista. Os critérios de diagnósticos utilizados para o exame clínico serão descritos a seguir:

Cárie dentária

Para a cárie dentária, foi utilizado o índice Nyvad (NYVAD; BAELUM, 2018). Os adolescentes foram examinados clinicamente para avaliara atividade (ativa, inativa) e a integridade de superfície (intacta, descontinuidade de superfície, cavidade) das lesões (NYVAD; MACHIULSKIENE; BAELUM, 1999). Todos os dentes permanentes foram registrados no nível superficial, e os dentes que não poderiam ter as suas superfícies registadas, foram assinalados como não irrompido ou extraídos (NYVAD; MACHIULSKIENE; BAELUM, 2003). Na presença de duas ou mais lesões de cárie na mesma superfície dentária, a lesão de cárie mais grave foi registrada (SÉLLOS; SOVIERO, 2011).

Os critérios de diagnósticos utilizados para o exame clínico estão descritos a seguir:

Código	Critério Nyvad	
0	Sadio	Textura e translucidez normal de esmalte (leve mancha permitida em fissura sadia)
1	Cárie ativa (superfície intacta)	Superfície de esmalte é esbranquiçada/amarelada opaca com perda de brilho; sente-se duro quando a ponta da sonda se move gentilmente pela superfície, geralmente coberta com placa. Sem perda detectável de substância. Superfície lisa: lesão de cárie tipicamente perto da margem gengival. Fossa e fissura: morfologia intacta da fissura; lesão estendendo pelas paredes da fissura.
2	Cárie ativa (superfície descontínua)	Mesmo critério que o escore 1. Defeito localizado (microcavidade) em esmalte apenas. Sem esmalte minado ou assoalho amolecido detectado com o explorador.
3	Cárie ativa (cavidade)	Cavidade em esmalte/dentina facilmente visível a olho nu, superfície da cavidade sentida frágil em sondagem leve. Pode haver ou não envolvimento pulpar
4	Cárie inativa (superfície intacta)	Superfície de esmalte esbranquiçada, amarronzada ou preta. Esmalte pode estar brilhante e é sentido duro e liso quando a ponta da sonda é movida pela superfície. Sem perda clínica de substância. Superfície lisa: lesões de cárie tipicamente localizada a alguma distância da margem gengival. Fossas e fissuras: morfologia intacta da fissura; lesões estendendo pelas paredes da fissura.
5	Cárie inativa (superfície descontínua)	Mesmo critério do escore 4. Defeito em superfície localizado (microcavidade) em esmalte apenas. Sem esmalte minado ou assoalho mole detectável com explorador.
6	Cárie inativa (cavidade)	Cavidade em esmalte/dentina facilmente visível a olho nu. Superfície da cavidade pode estar brilhante e dura à sondagem com leve pressão.
7	Restauração	Restaurado (superfície sadia)
8	Restauração + cárie ativa	Restaurado (cárie ativa)
9	Restauração + cárie inativa	Restaurado (cárie inativa)
10	Dente não irrompido ou extraído	

Quadro 2 – Códigos do critério de Nyvad.

*Adaptado de Nyvad et al, 1999

Para efeito da presente análise, os códigos originais da avaliação serão codificados da seguinte forma (NYVAD; MACHIULSKIENE; BAELUM, 2003):

Cárie dentária = códigos 1, 2, 3, 4, 5, 6, 8, 9.

Cárie dentária cavitada = códigos 3 e 6.

Para esse estudo, a variável cárie dentária foi dicotomizada em ausente (todos os dentes com o código 0 em suas faces) e presente (pelo menos uma face de um dente sem o código 0). A variável cárie dentária cavitada foi dicotomizada em ausente (nenhuma face obteve os códigos 3 e 6) e presente (pelo menos uma face de um dente obteve o código 3 ou 6).

3.11 ELENCO DE VARIÁVEIS

O estudo apresenta dois planos de análise. Foi avaliada inicialmente a influência de determinantes socioeconômicos, do ASB e da visita ao dentista na presença de lesões de cárie dentária cavitada. Num segundo plano de análise, foi determinada a influência também dos determinantes individuais, da coesão familiar, do consumo de drogas lícitas e ilícitas e da ida ao dentista na cárie dentária cavitada. Assim, as variáveis foram classificadas em duas etapas distintas, de acordo com os planos de análise descritos a seguir:

3.11.1 Plano de análise I

Variável dependente

A variável dependente selecionada nesta etapa da pesquisa foi a presença de lesões cavitadas de cárie dentária nos adolescentes. O diagnóstico dessas lesões foi realizado pelo índice Nyvad (NYVAD; MACHIULSKIENE; BAELUM, 1999).

Variável dependente	Categorização
Lesão de cavitada de cárie dentária (NYVAD; MACHIULSKIENE; BAELUM,	Ausente (códigos 0, 1, 2, 4, 5, 7, 8, 9, 10)

1999)	Presente (códigos 3 e 6)

Quadro 3. Categorização da variável dependente do plano de análise I.

Variáveis independentes

As variáveis independentes desse plano de análise foram relativas às questões socioeconômicas individuais, ao ASB, a visita ao dentista e a escolaridade materna. A categorização dessas variáveis segue no quadro 4.

Variáveis Independentes	Categorização
Sexo	Feminino Masculino
Classe social	C-D-E A-B
Raça/cor autodeclarada	Branca Não branca
Escolaridade materna	< 8 anos de estudo ≥ 8 anos de estudo
Idade do responsável	≤ 42 anos >42 anos
Número de residentes em casa	1 a 5 ≥6
Ordem de nascimento	Filho mais novo Filho do meio Filho mais velho
Alfabetismo em saúde bucal	Inadequada Marginal Adequada
Visita ao dentista	Sim Não

Quadro 4. Categorização das variáveis independentes do plano de análise I.

3.11.2 Plano de análise II

Variável dependente

A presença de lesões cavitadas de cárie dentária nos adolescentes foi a variável dependente eleita nesta etapa da pesquisa foi. O diagnóstico dessas lesões foi realizado pelo índice Nyvad (NYVAD; MACHIULSKIENE; BAELUM, 1999).

Variável dependente	Categorização
Lesão de cavitada de cárie dentária (NYVAD; MACHIULSKIENE; BAELUM, 1999)	Ausente (códigos 0, 1, 2, 4, 5, 7, 8, 9, 10) Presente (códigos 3 e 6)

Quadro 5. 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. A categorização dessas variáveis segue no quadro 6.

Variáveis Independentes	Categorização
Classe social	C-D-E A-B
Etnia	Branca Não branca
Escolaridade materna	< 8 anos de estudo ≥ 8 anos de estudo
Idade do responsável	≤ 42 anos >42 anos
Número de residentes em casa	1 a 5 ≥ 6
Consumo de drogas lícitas	Sim Não
Consumo de drogas ilícitas	Sim Não
Coesão familiar	Desligadas Separadas Conectadas Aglutinadas
Ida ao dentista	Sim Não

Quadro 6. Categorização das variáveis independentes do plano de análise II.

3.12 PROCESSAMENTO E ANÁLISE DOS DADOS

O software SPSS Statistics (versão 25.0) foi utilizado para análise de dados. Estatísticas descritivas foram utilizadas para caracterização da amostra. Os modelos

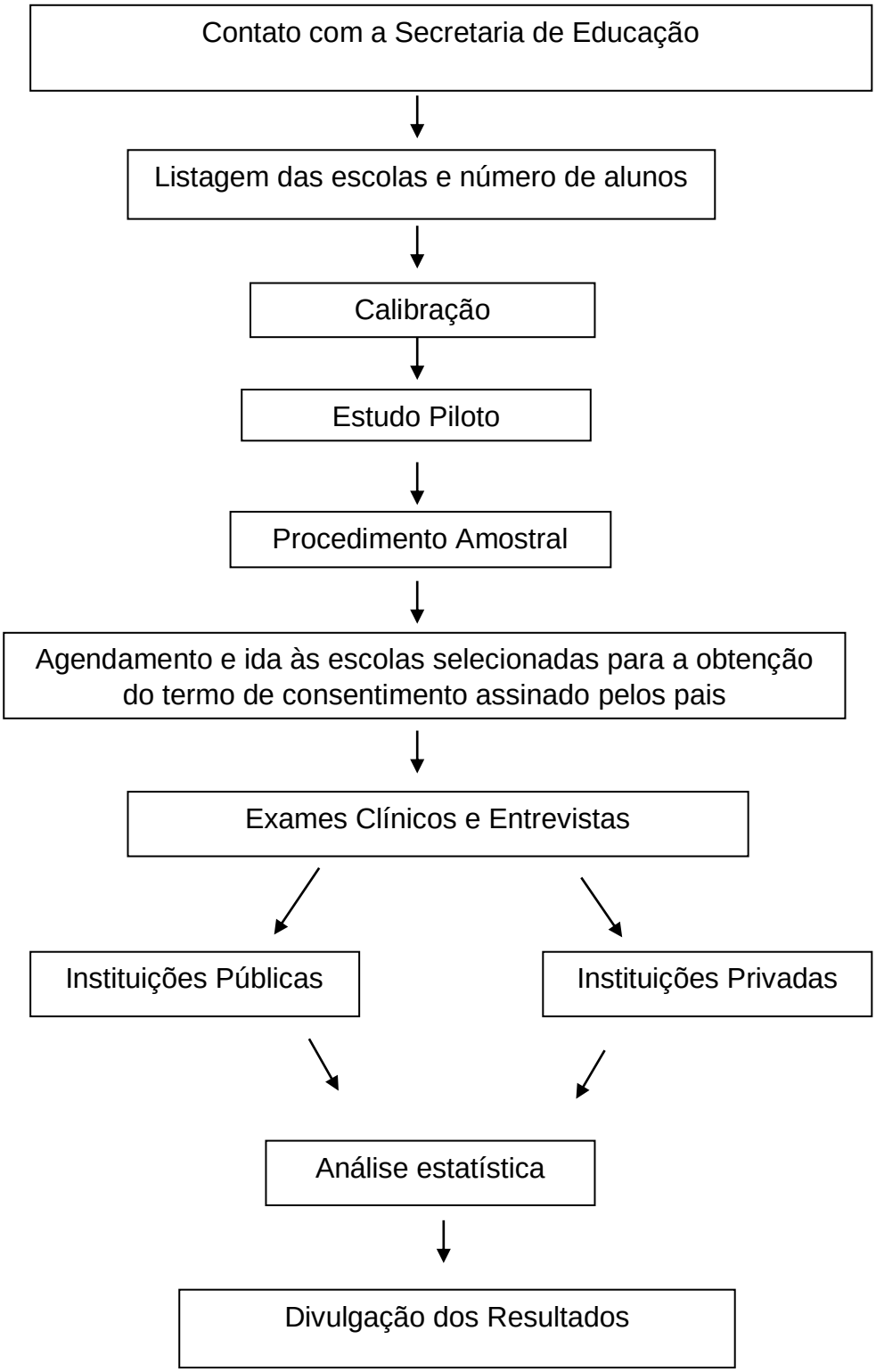
de regressão de Poisson não ajustados e ajusta dos foram utilizados para descrever a associação entre variáveis de desfecho e preditoras. O estudo considerou como variáveis respostas a presença de lesões cavitadas de cárie dentária, nos dois planos de análise explicados. Essa estratégia permitiu a estimativa da razão de prevalência (RP) entre os grupos de comparação e seus respectivos intervalos de confiança de 95% (IC).

As variáveis que apresentaram um valor de p< 0,20 na análise bivariada foram mantidas no modelo multivariado que considerou as variáveis com um p<0,05 associadas ao número de lesões de cárie dentária no modelo final. O Directed Acyclic Graph (DAG) foi utilizado para selecionar covariáveis para ajuste estatístico e suportar a interpretação causal do efeito da exposição no desfecho (SHRIER; PLATT, 2008). Foram inseridos, no modelo, variáveis investigadas e não investigadas que poderiam influenciar no desfecho do estudo. Após esta etapa, foram identificadas as variáveis de confusão a serem controladas no modelo final.

3.13 PRINCÍPIOS ÉTICOS

Este projeto foi submetido ao Comitê de Ética da Universidade Estadual da Paraíba e recebeu aprovação (55953516.2.1001.5187) de acordo com a resolução CNS nº 466/2012 (ANEXO E) e seguiu os princípios estabelecidos pela Declaração de Helsinque (2013). Um documento oficial explicando a natureza da pesquisa foi aprovado pela à Secretaria de Educação Estadual (APÊNDICE D), municipal (APÊNDICE E) e, posteriormente, à direção das escolas. Uma vez obtida as aprovações, foram destinados termos de consentimentos livres e esclarecidos aos pais e/ou responsáveis (APÊNDICE F) para a participação destes, na pesquisa, e os termos de assentimento para os adolescentes (APÊNDICE G). Os pesquisadores envolvidos foram cientes das obrigações cabidas (APÊNDICES H e I). 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 dois artigos. Desse modo, os resultados serão apresentados conforme a apresentação de cada artigo.

Artigo 1

Adolescents with worse levels of oral health literacy have more cavitated carious lesions

Periódico: Plos one

Fator de impacto: 2,806– Qualis A1

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

Artigo 2

Degree of family cohesion and social class influence the number of cavitated dental caries in adolescents

Periódico: Caries Research

Fator de impacto: 2,188 – Qualis A1

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

Artigo 1

Adolescents with worse levels of oral health literacy have more cavitated carious lesions

Oral health literacy and cavitated carious lesions

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Abstract

The aim of the present study was to identify whether the level of oral health literacy (OHL) is associated with the number of teeth with cavitated carious lesions in adolescents. A population-based cross-sectional study was conducted involving a sample of 746 adolescents representative of students aged 15 to 19 years at the public and private school systems in a city in northeast Brazil. Two examiners who had undergone a training and calibration exercise (inter-examiner and intra-examiner Kappa coefficient: 0.87 to 0.93) performed the diagnosis of caries using the NyvadIndex and evaluated the level of OHL (BREALD-30) of the adolescents. The participants answered questions regarding their history of visits to the dentist and the parents/caregivers answered a questionnaire addressing socioeconomic characteristics. A directed acyclic graph was created to direct the selection of covariables for adjustments in the Poisson multiple regression analysis to test the association between dental caries and OHL (α = 5%). Cavitated carious lesions (codes 3 to 6 on the Nyvad index) were found in 41.6% of the adolescents. Only 29.4% had a high level of OHL (BREALD-30 scores between 23 and 30); 42.3% of the families belonged to the A-B social class and 93% of the adolescents had been to the dentist at least once in their lifetimes. In the multivariate analysis, adolescents with inadequate (PR: 1.69; 95% CI: 1.18-2.41; p=0.004) and marginal (PR; 1.42; 95% CI: 1.01-1.99; p=0.042) OHL and those in the lower social classes (C-D-E) (PR: 1.85; 95% CI: 1.39-2.47; p<0.001) had more teeth with cavitated carious lesions. In conclusion, adolescents aged 15 to 19 years with poorer levels of OHL had a larger

number of teeth with cavitated carious lesions, independently of their socioeconomic status and history of visiting a dentist.

Key words: Health literacy, Dental caries, Oral health, Adolescent.

Introduction

Adolescence is a period of considerable transformations in which individuals often reject predetermined norms and create their own language and behaviors [1]. It can be a vulnerable period in terms of health due to inadequate behavior, the underuse of preventive services and greater independence from one's parents [2,3]. With regard to oral health, the most recent Brazilian epidemiological survey found that 13.6% of adolescents aged 15 to 19 years had never visited a dentist [4].

Previous studies reveal that socioeconomic factors may be associated with dental caries in adolescents [5,6]. Such investigations show that an unfavorable economic status is reflected in a lower brushing frequency, inadequate sanitary installations and the consumption of more cariogenic foods and beverages. This fact makes socioeconomic status an important determinant for the greater prevalence of dental caries [7-9].

The influence of oral health literacy (OHL) on dental conditions has currently piqued the interest of researchers [10,11]. OHL is the ability to understand information and use oral health services for decision making [12]. Studies have demonstrated that OHL exerts an influence on seeking dental services, resulting in a better oral health status. A recent study demonstrated the adequate psychometric

capacity of the Brazilian version of the Rapid Estimate of Adult Literacy in Dentistry (BREALD-30) for measuring the level of OHL in Brazilian adolescents [13].

Studies using validated instruments have shown that adolescents with inadequate OHL are more prone to inadequate behavior and practices that place their health at risk, along with medication errors and poor oral hygiene [3,5], which can lead to poor oral health. Thus, an improvement in OHL could contribute to a reduction in disparities regarding oral health in the population [14].

The majority of population-based studies on oral health in Brazil focus on preschoolers and schoolchildren up to 12 years of age, while little is known regarding the oral health of adolescents aged 15 to 19 years [15,16]. It is in this phase that the onset of preventive attitudes arises in a conscious and intentional manner, when the individual begins to associate oral health with aspects of appearance and prestige and no longer accepts parental supervision [17]. To the best of our knowledge, no studies have investigated the influence of OHL in individuals in this age range.

Therefore, the aim of the present study was to investigate whether the level of OHL is associated with the number of teeth with cavitated carious lesions in adolescents aged 15 to 19 years.

Material and methods

Ethical considerations

This study received approval from the Human Research Ethics Committee of *UniversidadeEstadual da Paraíba* (certificate number: 55953516.2.1001.5187) and

was conducted in accordance with the guidelines stipulated in the Declaration of Helsinki.

Study design and sample

An analytical, cross-sectional study was conducted at public and private schools in a city in northeast Brazil with a Human Development Index of 0.72. The planning of this study was based on the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE initiative) [18]. The data were collected between October 2016 and July 2017.

A representative sample was selected using two-stage (schools and adolescents) probabilistic cluster sampling method stratified by administrative district of the city and type of school (public or private). One hundred thirty-one schools were registered with the Ministry of Education. The city is divided into six administrative districts and adolescents aged 15 to 19 years were randomly selected using a simple lottery procedure proportionally to the number of students per district. The sample size was calculated considering a 5% margin of error, 95% confidence interval, 50% prevalence of caries and a design effect of 1.6. A minimum sample of 641 adolescents was determined, which was increased to compensate for an estimated 20% dropout rate, leading to a final sample of 769 adolescents.

Eligibility criteria

Literate male and female adolescents aged 15 to 19 years enrolled and attending the school system a city in northeast Brazil with no systemic or cognitive impairments (information obtained from the adolescent and/or parents).

Training and calibration exercises

The training exercise for the diagnosis of dental caries using the Nyvad Index [19] was conducted by an experienced specialist in two steps based on the method proposed by Peres et al. [20]. In the theoretical step, the criteria for the diagnosis, clinical chart and routine to be followed during the clinical examination were studied. Two examiners also analyzed images of the conditions to be investigated. In the practical step, the examiners were asked to diagnose oral problems. The calibration exercise involved the determination of inter-examiner and intra-examiner agreement using the Kappa statistic (K = 0.89 to 0.90 and 0.88 to 0.90, respectively).

The training and calibration of the two interviewers for the use of the BREALD-30 followed the method proposed by the authors who validated the instrument in Brazil [21], using a video bank of the administration of the instrument to volunteers with different levels of OHL. This phase was coordinated by a researcher with theoretical and practical experience (considered the gold standard) in OHL and the BREALD-30. Kappa coefficients between the examiners and gold standard were 0.889 and 0.884. Agreement between the two examiners was 0.870 and intra-examiner agreement was 0.898 and 0.871. The intraclass correlation coefficient (ICC) was used to evaluate agreement on the total BREALD-30 scores; inter-examiner agreement – ICC = 0.987 (95% CI: 0.970 to 0.995) and 0.874 (95% CI: 0.860 to 0.895); and intra-examiner agreement – ICC = 0.973 (95% CI: 0.921 and 0.991) and 0.994 (95% CI: 0.982 to 0.998).This step was conducted with 50 children in a school chosen by convenience.

Pilot study

A pilot study was conducted with 50 adolescents at a public and private school. These subjects were selected by convenience and were not included in the main study. The results of the pilot study revealed that there was no need to change the methods.

Collection of clinical data

The adolescents performed supervised oral hygiene prior to the clinical examinations to facilitate the diagnosis. The participants were examined individually in a reserved room sitting in front of the examiner, who was duly equipped with individual protective equipment, a head lamp (Petzl Zoom; Petzl America, Clearfield, UT, USA), sterilized mouth mirror (PRISMA, São Paulo, Brazil), sterilized Williams probe (WHO-621; Trindade, Campo Mourão, Brazil) and gauze to dry the teeth.

The Nyvad Index [19] was used for the diagnosis of dental caries. This index is based on visual and tactile findings and uses the following classification: (0) sound tooth; (1) carious lesion with surface intact; (2) active lesion with surface interrupted; (3) active lesion with cavitation; (4) inactive lesion with surface intact; (5) active lesion with surface interrupted; (6) inactive lesion with cavitation; (7) restoration in good state; (8) restoration with active lesion; and (9) restoration with inactive lesion. For statistical purposes, dental caries was only considered in the present study when cavitated lesions were found (codes 3 and 6).

Collection of non-clinical data

Meetings were held with parents to explain the importance of the study. On the occasion, the parents answered a sociodemographic questionnaire addressing the

guardian's age, race and sex of the adolescent, mother's schooling, social class, number of residents in the home and birth order of the adolescent. The adolescents were asked if they had even been to a dentist. Social class was categorized using the questionnaire of the Brazilian Economic Classification Criteria based on the possession of consumer goods. This classification defines the following social classes: A1 (highest), A2, B1, B2, C, D and E (lowest) [22].

The BREALD-30 was administered in interview form to measure the OHL of the adolescents. This instrument is the Brazilian version of the Rapid Estimate of Adult Literacy in Dentistry-30 (REALD-30), which is a pioneering questionnaire based on the recognition of words related to dentistry that has been validated in several different languages [14,16]. The BREALD-30 is composed of 30 words related to dentistry organized in a logical sequence with an increasing level of reading difficulty [14]. The adolescents read the 30 words aloud to the interviewer. One point was awarded for each correctly pronounced word and zero was marked when the word was pronounced incorrectly. Thus, a higher number of correctly pronounced words resulted in a higher score, denoting a higher level of OHL.

Directed Acyclic Graph

A Directed Acyclic Graph (DAG) was used to assist in the selection of covariables for the statistical adjustments and support the causal interpretation of the effect of the exposure on the outcome [23], as displayed in Fig 1.

Fig 1. Adopted causal structure of secondary data analysis of dental caries

Statistical analysis

The organization of the data and the statistical analysis were performed using the Statistical Package for the Social Sciences (SPSS for Windows, version 22.0; IBM Inc., Armonk, NY, USA). The number of teeth with cavitated carious lesions (Nyvad Index) was the dependent variable and was treated as a discrete numeric variable. The codes used to demonstrate the presence of cavitated carious lesions were 3 and 6 on the Nyvard Index.

The independent variables were OHL, sociodemographic characteristics and visit to the dentist. Variables with a p-value < 0.20 in the bivariate model were incorporated in the multivariate model using the backward stepwise method. Variables with $p < 0.05$ in the multivariate model were considered to be significantly associated with the outcome and were maintained in the final model. The total BREALD-30 score was categorized as inadequate, marginal or adequate literacy based on the distribution of the scores: 0-18, 19-22 and 23-30, respectively, using tertiles of the sample distribution as the cutoff points [24].

A DAG was used to guide the selection of covariables for the statistical adjustment (FIGURE 2). Variables not investigated in this study were also included in the DAG. This graphic-theoretical method strengthens the notion of the causal relationship in which the cause influences the outcome [23].

Results

Seven hundred forty-six adolescents participated in the present study, corresponding to a 97% response rate. Twenty-three adolescents were excluded for failing to appear on the days scheduled for the examinations.

Table 1 displays the characteristics of the sample. The majority was female (59.5%), self-declared as non-white (71.7%), was not the oldest child (57.9%), lived with up to five people in the home (83%), had been to a dentist at least once (93%) and had mothers with more than eight years of schooling (59.4%). Dental caries was found in 92.8% of the adolescents and cavitated carious lesions were found in 41.6%. Only 29.4% of the adolescents exhibited an adequate level of OHL.

Inthe bivariate analysis, the following variables were associated with cavitated carious lesions: social class, mother's schooling, number of residents in the home, birth order and OHL. In the multivariate analysis, however, the only variables that remained in the final model were OHL and social class. Adolescents with inadequate OHL (PR: 1.69; 95% CI: 1.18 to 2.41; p = 0.004) and marginal OHL (PR: 1.42; 95% CI: 1.01 to 1.99; p = 0.041) and those in the lower social classes (C-D-E) (PR: 1.85; 95% CI: 1.39 to 2.47; p <0.001) had significantly more teeth with cavitated carious lesions (Table 2).

Discussion

The main findings of the present study demonstrate that, after controlling for confounding variables, lower levels of OHL were associated with an increase in the number of cavitated carious lesions among the adolescents. To the best of our knowledge, this is the first study to perform this evaluation with adolescents.

The Nyvad Index was used for the diagnosis of dental caries [19]. This index was created to evaluate the development of carious lesions on a scale from sound teeth to cavitated dentinal lesions and can used in clinical and epidemiological studies [25]. As occurred in previous studies investigating dental caries from the

emergence of the initial lesions (white spots) [16,26], the prevalence of dental caries was high in the present study, which may be explained by the diagnosis of lesions in the earlier stages as well as the cumulative nature of dental caries.

For the purposes of analysis, codes 3 and 6 of the Nyvad Index were used, which correspond to cavitated lesions. These are the lesions that most often drive the search for treatment. The prevalence was 41.6%, accounting for nearly half of the total prevalence of dental caries in the present study. Thus, although the majority of adolescents had been to a dentist at some time in life, they may not have been receiving adequate dental care. Similar results are found in national studies involving the same age group [15,16].

The prevalence of cavitated carious lesions was higher in the present study compared to that reported in studies conducted in more developed countries, where adolescents likely receive more dental care [27,28]. The findings reflect a need for more effective preventive measures and the use of dental techniques to limit the damage caused by caries when this process has already begun.

Lower levels of OHL can exert a negative influence on caries prevention and control [39,40]. In the present study, adolescents with inadequate or marginal OHL had a greater number of cavitated carious lesions compared to those with adequate OHL. This finding is worrisome, as adolescents constitute a vulnerable population prone to risk behaviors and often reject pre-determined healthy habits [3,10,30]. Previous studies involving other age groups report similar results, as individuals with a lower level of OHL were found to have greater caries experience and greater treatment needs [31].

In studies involving OHL and the oral health of children, particularly preschoolers, the OHL of the parents/caregivers is measured, since they are

responsible for oral health practices in children at this age [32,33]. However, it is necessary to measure the OHL of adolescents, since they have greater autonomy with regard to parents in this period and exhibit changes in oral health interpretations and behaviors [34].

Studies on OHL are necessary, since such investigations go beyond clinical conditions. Recent studies report that a higher level of OHL leads to less expenditures on oral health, fewer missed dental appointments and less anxiety during dental treatment [29,35]. Studies of this type enable the identification of individuals with inadequate OHL, assisting dentists in choosing an adequate language to achieve more effective communication and, consequently, greater assimilation of information related to health [36,37], which would likely result in fewer treatment needs.

The BREALD-30 was used in the present study to measure OHL. This instrument is the Brazilian Portuguese version of the original REALD-30 and has been validated for use on adults and adolescents [12,13]. This is one of the most widely employed instruments in other languages [11,14] as a screening tool for individuals or groups with poorer oral health status [38]. However, its results must be interpreted with caution, as the instrument is used to evaluate the identification of words without testing the comprehension of what is being read. Nonetheless, this instrument is strongly associated with functional literacy and has adequate psychometric properties, making it valid and reliable for measuring this construct [13,39].

Belonging to a lower social class was associated with a greater number of cavitated carious lesions, which is in agreement with data described in previous studies [26,39]. Individuals in lower social classes often have less access to health

information, healthy eating, oral health services and personal hygiene products. Consequently, poorer oral health and more caries experience [27,40]

The present findings suggest the need to invest in oral health promotion strategies that increase the level of OHL. This study also draws attention to the need for dentists to improve their use of language when communicating with patients to assist them with decision making in terms of health and the maintenance of healthy habits [2,10,31].

The major limitation of this study is its cross-sectional design, which does not enable establishing cause and effect relationships. However, the validated instruments and representative population-based sample were used to minimize the possibility of biases. Moreover, a DAG with a causal model was used to identify possible confounding factors and explore the influence of socioeconomic and psychosocial factors on the prevalence of cavitated carious lesions. Longitudinal studies are needed for a higher level of evidence regarding the associations found in the present investigation.

Conclusion

The results of the multivariate analysis revealed that adolescents 15 to 19 years of age with lower levels of oral health literacy had a larger number of teeth with cavitated carious lesions than those with adequate level of OHL, independently of their socioeconomic status and history of visiting a dentist.

Acknowledgments

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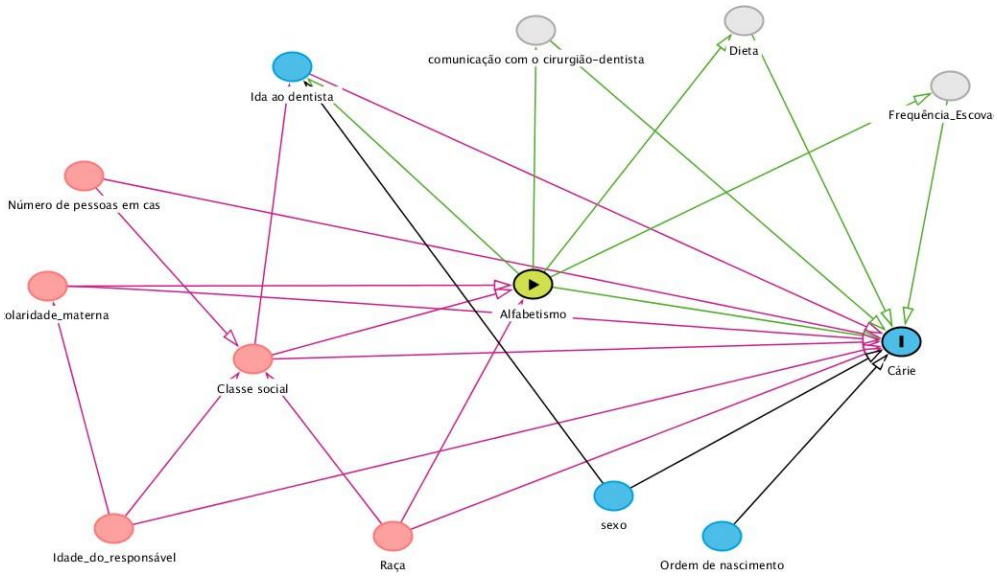

Figure 3. Adopted causal structure of the secondary data analysis of dental carie.

Table 1 – Characterization of sample

Variable	N	%
Sex		
Female	444	59.5
Male	302	40.5
Race		
White	211	28.3
Non-white	535	71.7
Birth order		
Youngest child	248	33.2
Middle child	184	24.7
Oldest child	314	42.1
Visit to dentist		
Yes	694	93.0
No	46	6.2
Mother's schooling		
< 8 years of study	299	40.1
≥ 8 years of study	443	59.4
Social class		
C-D-E	428	56.9
A-B	318	42.3
Guardian's age		
≤ 42 years	384	51.5
> 42 years	360	48.3
Number of residents in home		
1 to 5	619	83.0
6 or more	125	16.8
Dental caries		
Yes	692	92.8
No	54	7.2
Cavitated carious lesions		
Yes	310	41.6
No	436	58.4
Level of oral health literacy		
Inadequate	247	33.1
Marginal	280	37.5
Adequate	219	29.4

Table 2: Poisson regression analyses of variables associated with the number of teeth with cavitated carious lesions in adolescents

Variable	Number of teeth with cavited carious lesions		Bivariate*		Multivariate**	
	Mean	Std. Deviation	p-value	Unadjusted PR (95% CI)	p-value	Adjusted PR (95%CI)
Sex						
Female	0.88	1.35	0.814	1.03 (0.80-1.32)	-	-
Male	0.85	1.57		1.00	-	-
Social class						
C-D-E	1.13	1.62	<0.001	2.14 (1.64-2.79)	<0.001	1.85 (1.39-2.47)
A-B	0.53	1.09		1.00	-	1.00
Mother's schooling						
< 8 years of study	1.07	1.67	0.002	1.46 (1.15-1.85)		
≥ 8 years of study	0.73	1.26		1.00		
Guardian's age						
≤ 42 years	0.86	1.44		1.00	-	-
> 42 years	0.88	1.46	0.841	1.02 (0.80-1.30)	-	-
Race						
White	0.74	1.44		1.00		
Non-white	0.92	1.45	0.143	1.24 (0.92-1.67)		
Number of residents in home						
1 to 5	0.80	1.39		1.00	-	-
≥ 6	1.16	1.67	0.012	1.44 (1.08-1.92)	-	-
Birth order						
Youngest child	0.82	1.44	0.728	1.05 (0.78-1.41)	-	-
Middle child	1.10	1.57	0.017	1.41 (1.06-1.87)	-	-
Oldest child	0.78	1.36		1.00	-	-
Oral health literacy						
Inadequate	1.15	1.71	<0.001	2.07 (1.47-2.90)	0.004	1.69 (1.18-2.41)
Marginal	0.86	1.32	0.010	1.55 (1.11-2.16)	0.041	1.42 (1.01-1.99)
Adequate		1.19		1.00	-	1.00
	0.56					
Visit to dentist						

No	1.00	1.85	0.599	1.15 (0.67-1.99)	-	-
Yes	0.86	1.42		1.00	-	-

Poisson regression analysis adjusted for independent variables and number of teeth with cavitated carious lesions

Variables with $p < 0.20$ in bivariate analysis incorporated into multivariate model: social class, mother's schooling, number of residents in home, birth order, race and oral health literacy. Controlled for confounding effects according to DAG: social class, mother's schooling and race.

Artigo 2

Degree of family cohesion and social class influence the number of cavitated dental caries

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Short Title: Family cohesion and social class influence the dental caries

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Key words: Dental caries, Family relations, Oral health, Adolescent.

Abstract

The aim of the present study was to evaluate the association between the number of cavitated dental caries in adolescents and family cohesion, drug use, sociodemographic factors and visits to the dentist. A cross-sectional study was conducted with 746 adolescents 15 to 19 years of age. The parents answered a questionnaire addressing sociodemographic data and the adolescents answered questionnaires on drug use, type of family cohesion and visits to the dentist. Two examiners

underwent training and calibration exercises (K > 0.80) for the diagnosis of dental caries using the Nyvad criteria. A directed acyclic graph was created for the selection of the variables to be controlled in the statistical model. Associations between the independent variables and outcome were determined using Poisson regression analysis (α = 5%). The prevalence of dental caries and cavitated lesions among the adolescents was 92.8% and 46.1%, respectively. The following variables remained associated to the number of cavitated lesions in the multivariate analysis: six or more residents in the home (RR: 1.31; 95% CI: 1.09-1.73; p=0.040), the disengaged (RR: 3.14; 95% CI: 1.44-6.87; p=0.004), separated (RR: 2.67; 95% CI: 1.22-5.86; p=0.014) and connected (RR: 3.63; 95% CI: 1.61-8.16; p=0.002) levels of family cohesion and a low social class (RR: 2.00; 95% CI: 1.51-2.65; p<0.001). Adolescents with a lower socioeconomic status and those whose family cohesion is classified as disengaged and connected had a larger number of cavitated lesions.

Introduction

Adolescence is a period of transition to adulthood involving psychological changes and strong social influences, along with greater exposure to risk factors, making it a vulnerable phase. Moreover, adolescents seek greater independence and, consequently, receive less attention from parents or guardians [Perry, 2014; Sanders et al., 2009; Schwendicke et al., 2015]. According to a systematic review, the prevalence of dental caries among adolescents 15 to 19 years of age in Brazil and the rest of the world ranges from 59 to 90.4% [Reifur et al., 2017]. These high rates underscore the importance of studies addressing factors associated with dental caries in this phase of life. Moreover, the most recent national oral health survey [Brazil, 2012] reports that 13.6% adolescents had never been to a dentist, which may contribute to a poorer oral health status in this population.

Socioeconomic factors have been associated with dental caries among adolescents [Silveira et al., 2015]. Associations have also been found between drug use and problems such as poor oral hygiene habits and dental caries, especially in adults, with little attention given to the phase of adolescence [Shekarchizadeh et al., 2013; Baghaie et al., 2017]. It is therefore important to investigate the influence of use of drugs on the occurrence of dental caries in adolescents, as substance use is associated with lower adherence to dental treatment in this age group [Freddo et al., 2018]. The influence of family cohesion on oral health in adolescents has been explored little in the literature. One study reports an association between poor oral health behavior, dental caries and low family cohesion, but the sample was limited to 15-year-olds at public schools [Ferreira et al., 2013]. Family cohesion constitutes the emotional ties family members have

with each other. This indicator reflects the level of dependence and independence among the components of a family and should be studied at different times, as it changes with the development of the adolescent [Jaggers et al., 2015; Santos et al., 2017; Olson and Gorall, 2003].

Higher levels of family cohesion are believed to contribute to more adequate behavior on the part of adolescents, which reduces the likelihood of developing impulsive and antisocial behavior [Reeb et al., 2015]. Depending on the degree of family cohesion, family members exert a stronger or weaker influence on each other, which affects beliefs, behaviors and habits [Olson and Gorall, 2003]. Thus, strengthening family cohesion is a valuable strategy for promoting the oral health of adolescents [Franko et al., 2008; Olson and Gorall, 2003; Ferreira et al., 2013; Reeb et al., 2015].

The aim of the present study was to investigate associations between dental caries and family cohesion, drug use, sociodemographic factors and visits to the dentist among adolescents 15 to 19 years of age.

Materials and Methods

Ethical Requirements

This study received approval from the Human Research Ethics Committee of Paraíba State University (certificate number; 55953516.2.1001.5187) and was conducted in accordance with the guidelines established in the Declaration of Helsinki.

Study design and sample size

An analytical cross-sectional study was conducted in a medium-sized city in northeast Brazil. The sample was composed of adolescents 15 to 19 years of age enrolled at public and private schools in the city of Campina Grande. The sample size was calculated considering a 5% margin of error, 95% confidence interval and 50% prevalence of the condition to obtain the largest possible sample. Two-stage probabilistic cluster sampling was performed. Schools were randomly selected first, followed by the selection of students using a simple random sampling method at each school. The sample was proportional to the six administrative districts in the city to reproduce the characteristics of the population. The minimum sample was determined to be 384 adolescents, to which a factor of 1.6 was applied to correct for the study design, resulting in 615 adolescents. Finally, 20% was added to compensate for possible dropouts, leading to a sample of 769 adolescents.

Eligibility criteria

Literate students between 15 and 19 years of age enrolled at public and private schools in the city of Campina Grande with no systemic or cognitive impairments (according to parents/guardians or teachers) not wearing an orthodontic appliance at the time of the study and with the permanent dentition were included in the study.

Training and calibration exercises

The Nyvad criteria were used for the diagnosis of dental caries [Nyvad and Baelum, 2018]. Training was conducted in two steps (theoretical and practical). In the theoretical step, an expert in the field performed an in-depth analysis of the diagnostic criteria with two dentists. In the practical step, 50 children were examined and reexamined after a seven-day interval for the determination of inter-examiner (Kappa = 0.89 to 0.90) and intra-examiner (Kappa = 0.88 to 0.90) agreement.

Pilot study

A pilot study was conducted with 50 adolescents (25 from a public school and 25 from a private school). These participants were selected by convenience and were not included in the main study. The results of the pilot study demonstrated no need to alter the proposed methods.

Collection of non-clinical data

Prior to the data collection, meetings were held with the parents/guardians to clarify the procedures and importance of the study. At this time, the parents answered a questionnaire addressing sociodemographic characteristics (social class, parent's/guardian's age, mother's schooling, adolescent's sex, number of residents in the home and ethnicity). The parents/guardians were also asked whether the adolescent had ever been to a dentist.

The Family Adaptability and Cohesion Evaluation Scales (FACES III) were used for the investigation of family cohesion [Olson et al., 1989; Falceto et al., 2000]. This instrument divides family cohesion on four levels: disengaged – lack of an affective union among family members; separated – moderate affective union among family members; connected – considerable affective union among family members; and enmeshed – maximum affective union among family members [Schmidt et al., 2010].

The Alcohol, Smoking and Substance Involvement Screening Test developed by the World Health Organization [WHO, 2002] was employed for the evaluation of the use of psychoactive substances. For the present study, the item addressing frequent use in the previous three months was considered.

Collection of clinical data

Prior to the clinical examinations, the adolescents brushed their teeth under supervision and received topical fluoride. In a reserved room, the adolescents were examined individually sitting in a school chair in front of the examiner, which was equipped with a head lamp (Petzl Zoom, Petzl America, Clearfield, UT, USA), sterilized mouth mirror (PRISMA, São Paulo, Brazil), sterilized Williams probe (WHO-621, Trindade, Campo Mourão, Brazil) and individual protective equipment.

The Nyvad criteria [Nyvad and Baelum, 2018] were used for the classification of dental caries based on the severity of the lesions. These criteria have been validated for use in clinical practice and research in the field of dentistry. The following is the classification scale: (1) active carious lesion on intact surface; (2) active carious lesion on discontinuous surface; (3) active carious lesion with cavitation; (4) inactive carious lesion on intact surface; (5) inactive carious lesion on discontinuous surface; (6) inactive carious lesion with cavitation; (7) restoration in good state; (8) restoration with active carious lesion. After the examinations, the adolescents received verbal recommendations regarding oral hygiene and, when necessary, were instructed to seek dental care at a public service in their neighborhood.

Directed acyclic graph

The directed acyclic graph was created to select covariables for the statistical adjustment and support the causal interpretation of the effect of exposure on the outcome [Shrier and Platt, 2008]. Both investigated and non-investigated variables were incorporated into the model. This step led to the identification of confounding variables to be controlled in the final model (social class, mother's schooling, number of residents in the home and parent's/guardian's age).

Fig 2. Directed acyclic graph of factors associated with number of caviated lesions in adolescents aged 15 to 19 years.

Statistical analysis

The organization of the data and statistical analysis were performed using SPSS Statistics (SPSS for Windows, version 22.0, IBM Inc., Armonk, NY, USA). The number of cavitated lesions (Nyvad index) was the dependent variable and was treated as a discrete numeric variable. For the present

study, codes 3 and 6 of the Nyvad criteria were used, as these codes represent the worst possible outcome for dental caries and therefore exert a greater impact on adolescents. The independent variables were the sociodemographic characteristics, family cohesion, drug use and visits to the dentist. The association between these variables and the outcome were tested using Poisson regression analysis. Variables with a p-value < 0.20 in the bivariate model were incorporated into the multivariate model using the backward stepwise method those with a p-value < 0.05 in the final model were considered to be significantly associated with the outcome.

Results

The final sample was composed of 746 adolescents (response rate: 97%). Dropouts occurred due to three consecutive failures of adolescents (n = 23) to appear on the days scheduled for the examinations. Table 1 displays the characterization of the sample. Most adolescents had self-declared non-white skin color (71.7%); 42.1% were the oldest child; the female sex accounted for 59.5% of the sample; the majority lived with up to five people in the home (83.2%), had been to a dentist at least once in life (93.8%) and had mothers who had more than eight years of schooling (59.4%). Most adolescents reported having dental treatment needs (88.6%) and 41.6% had cavitated lesions. A large portion of the adolescents reported disengaged family cohesion (46.1%).

In the multivariate analysis (Table 2), the variables that remained in the final model were ≥ 6 residents in the home (RR: 1.31; 95% CI: 1.09 to 1.73; p = 0.040); disengaged (RR: 3.14; 95% CI: 1.44 to 6.87; p = 0.004), separated (RR: 2.67; 95% CI: 1.22 to 5.86; p = 0,014) and connected (RR: 3.63; 95% CI: 1.61 to 8.16; p = 0.002) levels of family cohesion; and low social class (RR: 2.00; 95% CI: 1.51 to 2.65; p < 0.001).

Discussion

In the present study, the prevalence of dental caries in adolescents was high and the number of cavitated lesions was associated with family cohesion, number of residents in the home and social class. This is the first study to associate family cohesion and dental caries in a school-based representative sample of adolescents 15 to 19 years of age. The high prevalence of dental caries (92.8%) may be related to the diagnostic criteria, which also consider carious lesions in the initial

stage (white spots) [Nyvad and Baelum, 2018]. This aspect has been observed in previous studies using the same index [Kim et al., 2018; Marshale et al., 2014; Gushi et al., 2005]. The Nyvad index is proposed for use in clinical practice and research in dentistry and is capable of differentiating the stages of caries, making it useful for epidemiological studies. In the present investigation, a lower social class was associated with a greater number of cavitated lesions. Previous studies report similar results [Schwendicke et al., 2015; Kim et al., 2018; Goenka et al., 2018].

It is possible that belonging to a lower social class exerts a negative influence on access to oral health information and dental services, leading to a poorer oral health status [Bulgareli et al., 2018]. A larger number of people living in the same home with the adolescent was another aspect associated with a larger number of cavitated lesions. This finding is in agreement with data described in previous studies [Lacerda et al., 2008; Silveira et al., 2015]. It is likely that a larger number of residents in the home exerts a financial impact, since it is necessary to share the available resources among all residents. Moreover, a larger number of residents in the home may lead to a reduction in educational support and oral health care offered by parents/guardians to their children [Castilho et al., 2013]. Drug use was r

considered, which may not represent the frequency of use. It is important to conduct longitudinal studies considering the frequency of drug use. Regarding family cohesion, the results show that adolescents with low to moderate levels of family union had more cavitated lesions. A previous study found an association between family cohesion and a cariogenic diet in female adolescents [Franko et al., 2008]. Another study found an association between low levels of family cohesion and dental caries in 15-year-old adolescents enrolled at public schools [Ferreira et al., 2013].

In the present investigation, adolescents 15 to 19 years of age enrolled at both public and private schools were considered, demonstrating that the influence of family cohesion on the number of dental caries continues to be important in late adolescence. It is likely that the association between dental caries and family cohesion is mediated by the influence of preventive habits related to caries [Pereira et al., 2007; Ferreira et al., 2013]. Thus, a higher degree of family cohesion exerts a positive influence on the prevention of dental caries. The present findings underscore the importance of oral health promotion actions in the school setting [Veiga et al., 2014] that take into consideration socioeconomic and familial factors regarding the prevention of dental caries in adolescents.

The major limitation of the present study is the cross-sectional design, which does not enable the establishment of cause-and-effect relationships among the variables analyzed. The strengths of this study were the representative school-based sample, the use of validated instruments and the calibration of the examiners. Moreover, this study followed the recommendations of the

Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) initiative [Malta et al., 2010] and demonstrated the importance of evaluating the influence of family relations on dental caries.

Conclusion

Adolescents with a lower socioeconomic status and those whose family cohesion is classified as disengaged or connected had a larger number of cavitated lesions.

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Disclosure Statement

The authors declare no conflict of interest

Author's contributions

Conceived and designed the study: AFGG, LCD, ETBN, SMP, LCML and FMF. Conducted the experiments: LCD, ETBN and LCML. Analyzed the data: AFGG and MNCG. Wrote the article: AFGG, ETBN and LCD. Wrote drafts of the manuscript and approved the final manuscript: AFGG, ETBN, FMF, LCD, LCML, MNCG and SMP.

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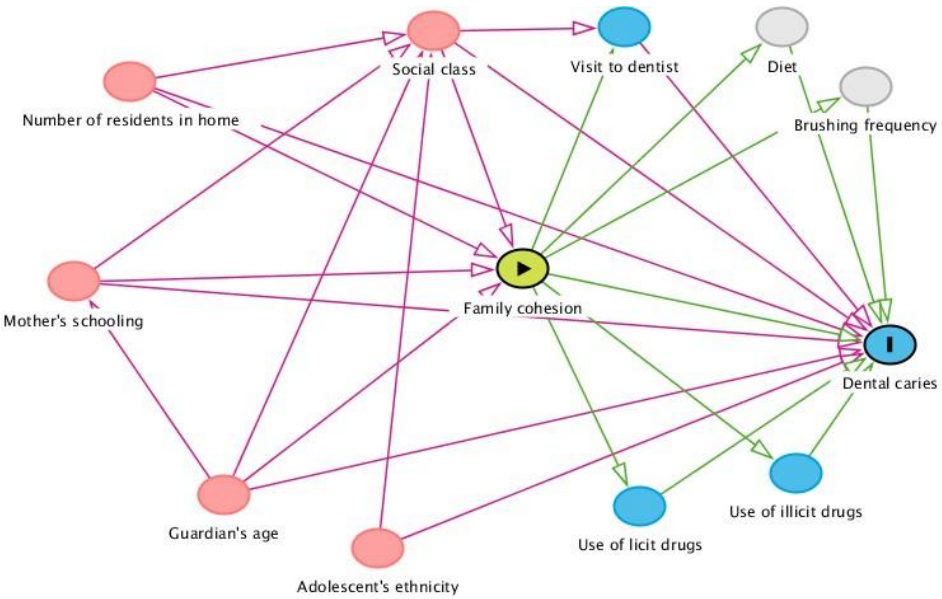

Figure 2. Directed acyclic graph of factors associated with number of caviated lesions in adolescents aged 15 to 19 years.

Table 1. Characterization of sample

Variable	n	%
Sex		
Female	444	59.5
Male	302	40.5
Ethnicity		
White	211	28.3
Non-white	535	71.7
Birth order		
Youngest child	248	33.2
Middle child	184	24.7
Oldest child	314	42.1
Visit to dentist		
Yes	694	93.8
No	46	6.2
Mother's schooling		
< 8 years of study	299	40.1
≥ 8 years of stud	443	59.4
Social class		
Low (C-D-E)	428	57.4
High (A-B)	318	42.6
Guardian's age		
≤ 42 years	384	51.6
> 42 years	360	48.4
Treatment need		
Yes	597	88.6
No	77	11.4
Number of residents in home		

1 to 5	619	83.2
6 or more	125	16.8
Dental caries		
Yes	692	92.8
No	54	7.2
Cavitated lesions		
Yes	310	41.6
No	436	58.4
Use of licit drugs		
Yes	301	40.3
No	445	59.7
Use of illicit drugs		
Yes	54	7.2
No	692	92.8
Family cohesion		
Disengaged	344	46.1
Separated	266	35.7
Connected	121	16.2
Enmeshed	15	2.0

Table 2: Poisson regression for number of cavitated lesions in adolescents and associated factors

Variable	Number of teeth with cavitated lesions		Bivariate		Multivariate
	Mean	Standard deviation	Unadjusted PR* (95% CI)	p-value	Adjusted PR† (95% CI)
Social class					
Low (C-D-E)	1.13	1.62	<0.001	2.14 (1.64-2.79)	<0.001	2.00 (1.51-2.65)
High (A-B)	0.53	1.09		1.00	-	1.00
Mother's schooling					
< 8 years of study	1.07	1.67	0.002	1.46 (1.15-1.87)	-	-
≥ 8 years of study	0.73	1.26		1.00	-	-
Guardian's age					
≤ 42 years	0.86	1.44		1.00	-	-
> 42 years	0.88	1.46	0.841	1.02 (0.80-1.30)	-	-
Ethnicity					
White	0.74	1.44		1.00	-	-
Non-white	0.92	1.45	0.143	1.24 (0.92-1.67)	-	-
Number of residents in home					
1 to 5	0.80	1.39		1.00	-	1.00
≥ 6	1.16	1.67	0.012	1.44 (1.08-1.92)	0.040	1.31 (1.09-1.73)
Use of licit drugs					
Yes	0.82	1.42		1.00	-	-
No	0.90	1.47	0.446	1.10 (0.86-1.41)	-	-
Use of illicit drugs					
Yes	0.96	1.65	0.648	1.11 (0.69-1.78)	-	-
No	0.86	1.43		1.00	-	-
Family cohesion					
Disengaged	0.98	1.55	0.003	3.67 (1.56-8.64)	0.004	3.14 (1.44-6.87)
Separated	0.73	1.25	0.022	2.74 (1.15-6.52)	0.014	2.67 (1.22-5.86)
Connected	0.93	1.57	0.006	3.50 (1.43-8.53)	0.002	3.63 (1.61-8.16)
Enmeshed	0.27	0.45		1.00	-	1.00
Visit to dentist					
No	1.00	1.85	0.599	1.15 (0.67-1.99)	-	-
Yes	0.86	1.42		1.00	-	-

*Unadjusted Poisson regression for independent variables and number of cavitated lesions among adolescents 15-19 years of age

†Variables incorporated into multivariate model ($p < 0.20$): mother's schooling, number of residents in home, family cohesion, social class, guardian's age and ethnicity

(-): variables not selected for final adjusted model (p-value > 0.05)

†Variables incorporated in multivariate model (adjustment factors - directed acyclic graph): social class, mother's schooling, number of residents in home and guardian's age

Considerações finais

5. CONSIDERAÇÕES FINAIS

Portanto, sugere-se que a influência de fatores socioeconômicos e do ASB desempenhou um papel importante na prevalência da cárie dentária e que estes fatores podem ser considerados em políticas públicas de prevenção para cárie dentária na população estudada. É importante que sejam elaboradas medidas educativas para fortalecer a educação em saúde bucal no meio escolar, contribuindo para o nível de ASB dos adolescentes. Além disso, destaca-se a importância da comunicação do cirurgião-dentista com os pacientes, pois, percebe-se que há um baixo uso de diferentes técnicas para comunicação na clínica odontológica, o que prejudica principalmente os pacientes com um baixo nível de alfabetismo.

Os resultados desse estudo para o segundo plano de análise observaram que os fatores associados ao número de lesões cavitadas de cárie dentária em adolescentes foram um maior número de moradores em casa e uma menor coesão familiar. Esses resultados reforçam a importância de uma avaliação do ambiente em que o adolescente está inserido, bem como seu meio familiar. É importante que as políticas de saúde bucal sejam capazes de reduzir as barreiras de acesso aos serviços odontológicos e incluam a família nas ações de promoção e prevenção em saúde bucal. Acredita-se que a adolescência é um período crítico e que muitos hábitos são formados nessa fase.

Por isso, a qualidade das relações familiares estabelecidas (coesão familiar) pelo adolescente e o número de moradores compartilhando o mesmo ambiente são importantes aspectos a serem considerados. Ainda sobre a coesão familiar, é importante destacar que foi um fator associado ao número de lesões de cárie dentária, mesmo em uma faixa tardia da adolescência. Isso sugere a necessidade de maior envolvimento das políticas públicas no funcionamento familiar na tentativa de melhorar as condições de saúde bucal do adolescente. Com relação ao segundo plano de análise, foi observado que a classe social e o ASB foram associados à presença de lesões cavitadas de cárie dentária em adolescentes de 15 a 19 anos. Devido à natureza transversal desse estudo não se pode inferir uma relação de causa e efeito entre as variáveis, no entanto, foram observados fatores importantes associados ao número de lesões de cárie dentária

cavitada em adolescentes de 15 a 19 anos. Dessa forma, mais estudos são necessários nesse sentido com a finalidade de fornecer maior assistência a esta fase carente de cuidados em saúde.

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Apêndices

APÊNDICE A

Questionário aplicado aos pais/responsáveis

IDENTIFICAÇÃO:_____ Pública ( ) Privada ( )

Endereço:_____ Telefone:(83)_____

1. Sexo: ( ) masculino ( ) feminino
2. Idade: _____
3. Raça/cor autodeclarada: ( ) Branca ( ) Preta ( ) Parda ( ) Amarela
4. Idade da mãe: _____ Responsável ( )
5. Idade do pai:_____Responsável ( )
6. Estado civil do responsável: ( ) Solteiro ( ) Casado ( ) Divorciado, viúvo
7. Renda mensal familiar: _____
8. Tipo de moradia: ( ) Própria ( ) Alugada ( ) Cedida
9. Número de pessoas residentes em casa: _____
10. Posição na família: ( ) filho mais novo ( ) filho mais velho ( ) filho do meio
11. Plano de saúde familiar: ( ) Sim ( ) Não
12. Escolaridade da mãe:

( ) Analfabeto / Fundamental I incompleto
( ) Fundamental I completo / Fundamental II incompleto
( ) Fundamental completo/Médio incompleto
( ) Médiocompleto/Superior incompleto
( ) Superior completo

13. Escolaridade do pai:

( ) Analfabeto / Fundamental I incompleto
( ) Fundamental I completo / Fundamental II incompleto
( ) Fundamental completo/Médio incompleto
( ) Médio completo/Superior incompleto
( ) Superior completo

APÊNDICE B

Questionário aplicado aos pais/responsáveis

Agora vou fazer algumas perguntas sobre itens do domicilio para efeito de classificação econômica. Todos os itens de eletroeletrônicos que vou citar devem estar funcionando, incluindo os que estão guardados. Caso não estejam funcionando, considere apenas se tiver intenção de consertar ou repor nos próximos seis meses.

INSTRUÇÃO: Todos os itens devem ser perguntados pelo entrevistador e respondidos pelo entrevistado.

Vamos começar? No domicílio tem_____ (LEIA CADA ITEM)

		QUANTIDADE QUE POSSUI			
ITENS DE CONFORTO	**NÃO POSSUI**	**1**	**2**	**3**	**4+**
Quantidade de automóveis de passeio exclusivamente para uso Particular					
Quantidade de empregados mensalistas, considerando apenas os que trabalham pelo menos cinco dias por semana					
Quantidade de máquinas de lavar roupa, excluindo tanquinho					
Quantidade de banheiros					
DVD, incluindo qualquer dispositivo que leia DVD e desconsiderando DVD de automóvel					
Quantidade de geladeiras					
Quantidade de *freezers* independentes ou parte da geladeira duplex					
Quantidade de microcomputadores, considerando computadores de mesa, laptops, notebooks e netbooks e desconsiderando tablets, palms ou smartphones					
Quantidade de lavadora de louças					
Quantidade de fornos de micro-ondas					
Quantidadede motocicletas, desconsiderando as usadas exclusivamente para uso profissional					
Quantidade de máquinas secadoras de roupas, considerando lava e Seca					

A água utilizada neste domicílio é proveniente de?

1	Rede geral de distribuição
2	Poço ou nascente
3	Outro meio

Considerando o trecho da rua do seu domicílio, você diria que a rua é:

1	Asfaltada/Pavimentada
2	Terra/Cascalho

APÊNDICE C

Ficha clínica

Nº_____ Examinador:_____Data:___/___/_____
Escola:_____
Pertencente ao distrito sanitário: _____

Dados Pessoais:
Sexo: ( ) masculino ( ) feminino
Nome: _____Idade: _____

FICHA DE EXAME BUCAL

	18	17	16	15	14	13	12	11		21	22	23	24	25	26	27	28
PALATINA																	
MESIAL																	
DISTAL																	
OCLUSAL																	
VESTIBULAR																	
	48	**47**	**46**	**45**	**44**	**43**	**42**	**41**		**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**
PALATINA																	
MESIAL																	
DISTAL																	
OCLUSAL																	
VESTIBULAR																	

APÊNDICE D

Consentimento da Secretaria Estadual de Educação

GOVERNO DA PARAÍBA

Secretaria de Estado da Educação
3ª Gerência Regional de Educação

TERMO DE AUTORIZAÇÃO INSTITUCIONAL

Estamos cientes da intenção da realização do projeto intitulado "**ASSOCIAÇÃO ENTRE FATORES BIOPSICOSSOCIAIS, ACESSO E UTILIZAÇÃO DOS SERVIÇOS DE SAÚDE BUCAL E A CÁRIE DENTÁRIA EM ADOLESCENTES**" vinculado à UNIVERSIDADE ESTADUAL DA PARAÍBA sob orientação da Profª. ANA FLÁVIA GRANVILLE-GARCIA e desenvolvido pelo aluno **LAIO DA COSTA DUTRA**, a ser trabalhado nas Escolas da Rede Estadual vinculadas à 3ª GRE.

Informamos que, o desenvolvimento de tal projeto não poderá gerar custos financeiros em nenhuma hipótese e em nenhum sentido tanto para os alunos e professores quanto para a Escola.

E ainda que, é cabível ao Gestor Escolar autorizar a realização do projeto na Unidade Escolar. Assim como, o horário pertinente e viável para tal, sem que haja prejuízos ao andamento das atividades pedagógicas da mesma.

Campina Grande, 18 de maio de 2016.

Giovanna Lopes Marques
Gerente Regional da Educação
da 3ª Região
Mat. 172.804-1

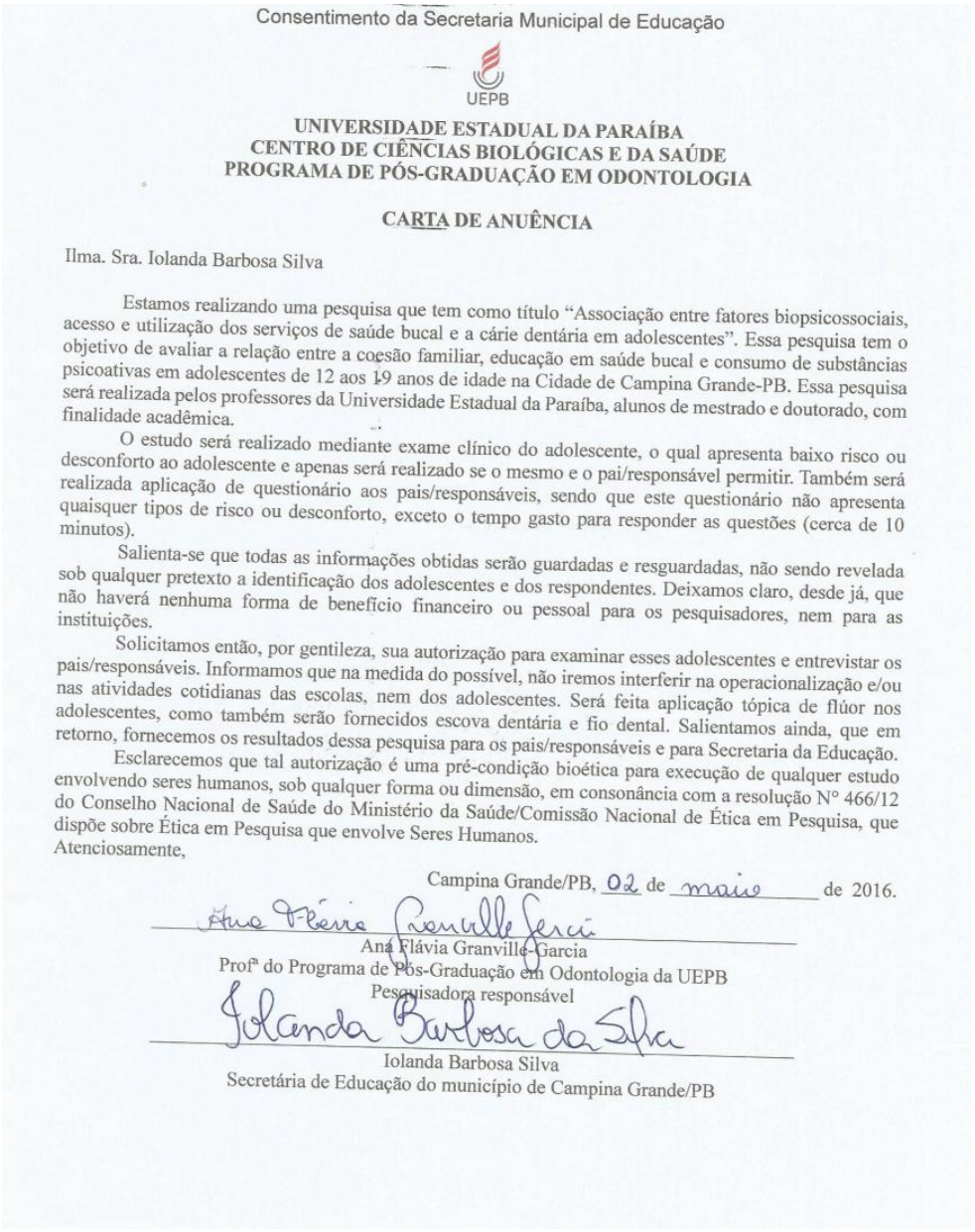
3ª Gerência Regional de Educação
Rua João da Mata, 549 - CEP: 58400-245
Campina Grande /PB. Tel.: (83) 3342-2564
Email: nuad3gre@gmail.com

NÃO DEIXE ÁGUA PARADA.
TODOS CONTRA A DENGUE, CHIKUNGUNYA E ZIKA.

GOVERNO DA PARAÍBA | viva o trabalho.

APÊNDICE E

Consentimento da Secretaria Municipal de Educação



Consentimento da Secretaria Municipal de Educação

UEPB

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 "Associação entre fatores biopsicossociais, acesso e utilização dos serviços de saúde bucal e a cárie dentária em adolescentes". Essa pesquisa tem o objetivo de avaliar a relação entre a coesão familiar, educação em saúde bucal e consumo de substâncias psicoativas em adolescentes de 12 aos 19 anos de idade na Cidade de Campina Grande-PB. Essa pesquisa será realizada pelos professores da Universidade Estadual da Paraíba, alunos de mestrado e doutorado, com finalidade acadêmica.

O estudo será realizado mediante exame clínico do adolescente, o qual apresenta baixo risco ou desconforto ao adolescente e apenas será realizado se o mesmo 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 10 minutos).

Salienta-se que todas as informações obtidas serão guardadas e resguardadas, não sendo revelada sob qualquer pretexto a identificação dos adolescentes 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 esses adolescentes e entrevistar os pais/responsáveis. Informamos que na medida do possível, não iremos interferir na operacionalização e/ou nas atividades cotidianas das escolas, nem dos adolescentes. Será feita aplicação tópica de flúor nos adolescentes, como também serão fornecidos escova dentária e fio dental. Salientamos ainda, que em retorno, fornecemos os resultados dessa pesquisa para os pais/responsáveis e para 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° 466/12 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.

Atenciosamente,

Campina Grande/PB, 02 de maio de 2016.

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

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

APÊNDICE F

Termo de consentimento livre e esclarecido

UEPB

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: "Associação entre fatores biopsicossociais, acesso e utilização dos serviços de saúde bucal e a cárie dentária em adolescentes". Esta pesquisa tem finalidade acadêmica. Será realizada mediante aplicação de um questionário aos pais dos adolescentes, sendo que este procedimento não apresenta quaisquer tipos de risco ou desconforto, exceto o tempo gasto para responder as questões (cerca de 10 minutos); e exame clínico do adolescente, o qual apresenta baixo risco ou desconforto ao mesmo e apenas será realizado se ele permitir. Salienta-se que todas as informações obtidas serão guardadas e resguardadas, não sendo revelada sob qualquer pretexto a identificação dos adolescentes e dos seus responsáveis. 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: "Associação entre fatores biopsicossociais, acesso e utilização dos serviços de saúde bucal e a cárie dentária em adolescentes", autorizo a realização do exame clínico no adolescente e entrevista em:

Campina Grande, ___ de _____201_

Responsável_____RG_____

APÊNDICE G

Termo de assentimento

UEPB

Programa de Pós-Graduação em Odontologia

Termo de Assentimento

*Você está sendo convidado(a) como voluntário(a)a participar da pesquisa "*Associação entre fatores biopsicossociais, acesso e utilização dos serviços de saúde bucal e a cárie dentária em adolescentes*". Neste estudo pretendemos analisar o efeito da união familiar, o conhecimento de saúde bucal, o uso de substâncias legais ou não, o acesso e utilização dos serviços odontológicos na cárie dentária. O motivo que nos leva a estudar esse assunto é que* este será o primeiro estudo que irá avaliar o influência destes aspectos na cárie dentária, *Para este estudo adotaremos o(s) seguinte(s) procedimento(s): Exame clínico bucal para avaliar a presença ou ausência da doença cárie e a aplicação de questionários para avaliar a coesão familiar, educação em saúde bucal, consumo de substâncias psicoativas, acesso e utilização dos serviços de saúde bucal e os fatores sociodemográficos. Para participar deste estudo, o responsável por você deverá autorizar e assinar um termo de consentimento. Você não terá nenhum custo, nem receberá qualquer vantagem financeira. Você será esclarecido(a) em qualquer aspecto que desejar e estará livre para participar ou recusar-se. O responsável por você poderá retirar o consentimento ou interromper a sua participação a qualquer momento. A sua participação é voluntária e a recusa em participar não acarretará qualquer penalidade ou modificação na forma em que é atendido(a) pelo pesquisador que irá tratar a sua identidade com padrões profissionais de sigilo. Você não será identificado em nenhuma publicação. Este estudo não apresenta* quaisquer tipos de risco ou desconforto, exceto o tempo gasto para responder as questões (cerca de 10 minutos), *isto é, o mesmo risco existente em atividades rotineiras como conversar, tomar banho, ler, exames clínicos bucais etc. Apesar disso, você tem assegurado o direito a ressarcimento ou indenização, no caso de quaisquer danos eventualmente produzidos pela pesquisa. Os resultados estarão à sua disposição quando finalizada, sendo que seu nome ou o material que indique sua participação será mantido em sigilo. Os dados e instrumentos utilizados na pesquisa ficarão arquivados com o pesquisador responsável por um período de 5anos, e após esse tempo serão destruídos. Este termo de consentimento encontra-se impresso em duas vias, sendo que uma cópia será arquivada pelo pesquisador responsável, e a outra será fornecida a você. Este termo foi elaborado em conformidade com o Art. 228 da Constituição Federal de 1988; Arts. 2º e 104 do Estatuto da Criança e do Adolescente; e Art. 27 do Código Penal Brasileiro; sem prejuízo dos Arts.3º, 4º e 5º do Código Civil Brasileiro.*

Eu,_____,portador(a) do documento de Identidade_____, residente_____, fone_____, fui informado(a) dos objetivos do presente estudo de maneira clara. Sei que a qualquer momento poderei solicitar novas informações junto ao pesquisador responsável listado abaixo ou com o acadêmico Laio da Costa Dutra, telefone: 33153300 ou ainda com o Comitê de Ética em Pesquisa em Seres Humanos da Universidade Estadual da Paraíba, telefone (83)3315-3373. Estou ciente que o meu responsável poderá modificar a decisão da minha participação na pesquisa, se assim desejar. Tendo o consentimento do meu responsável já assinado, declaro que concordo em participar desse estudo. Recebi uma cópia deste termo assentimento e me foi dada a oportunidade de ler e esclarecer as minhas dúvidas.

_____,____*de*_____*de20*____.

Assinatura:

Assinaturado(a)pesquisador(a)responsável:

APÊNDICE H

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: Associação entre fatores biopsicossociais, acesso e utilização dos serviços de saúde bucal e a cárie dentária em adolescentes

Eu, Ana Flávia Granville-Garcia, Professora 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 N° 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 verdade, assino o presente compromisso.

Campina Grande/PB, 09 de maio de 2016.

Ana Flávia Granville-Garcia
(Pesquisadora Responsável)

APÊNDICE I

Declaração de concordância com o projeto de pesquisa

UEPB

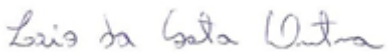
DECLARAÇÃO DE CONCORDÂNCIA COM O PROJETO DE PESQUISA

Pesquisa: Associação entre fatores biopsicossociais, acesso e utilização dos serviços de saúde bucal e a cárie dentária em adolescentes

Eu, **Ana Flávia Granville-Garcia**, Pesquisadora responsável, Professora de Pós-Graduação de Odontologia, da Universidade Estadual da Paraíba, portadora do RG: 1326944 e CPF: 646.880.704-20, 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 N°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/PB, 09 de maio de 2016.

Ana Flávia Granville-Garcia
Orientadora



Laio da Costa Dutra
Orientando

Anexos

ANEXO A

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

Questionário FACES III

Nome:_____ Registro:_____
Entrevistador:_____Data: ___/___/_____

1. Os membros da família pedem ajuda uns aos outros. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )	**2.** Seguem-se as sugestões dos filhos na solução de problemas. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )
3. Aprovamos os amigos que cada um tem. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )	**4.** Os filhos expressam sua opinião quanto a sua disciplina. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )
5. Gostamos de fazer coisas apenas com nossa família. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )	**6.** Diferentes pessoas da família atuam nela como líderes. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )
7. Os membros da família sentem-se mais próximos entre si que com pessoas estranhas à família. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )	**8.** Em nossa família mudamos a forma de executar as tarefas domésticas. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )
9. Os membros da família gostam de passar o tempo livre juntos. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )	**10.** Pai(s) e filhos discutem juntos os castigos. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )
11. Os membros da família se sentem muito próximos uns dos outros. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )	**12.** Os filhos tomam as decisões em nossa família. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )
13. Estamos todos presentes quando compartilhamos atividades em nossa família. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )	**14.** As regras mudam em nossa família. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )
15. Facilmente nos ocorrem coisas que podemos fazer juntos, em família. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )	**16.** Em nossa família fazemos rodízio das responsabilidades domésticas. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )
17. Os membros da família consultam outras pessoas da família para tomarem suas decisões. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( )	**18.** É difícil identificar o(s) líder(es) em nossa família. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )

3. Às vezes ( )	
19. A união familiar é muito importante. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )	**20.** É difícil dizer quem faz cada tarefa doméstica em nossa casa. 1. Quase nunca ( )4. Frequentemente ( ) 2. Raramente ( )5. Quase sempre ( ) 3. Às vezes ( )

POR FAVOR, INDIQUE SEU LUGAR NA FAMÍLIA: MÃE___ PAI ___
FILHO __ (LEMBRE QUE O FILHO MAIS VELHO CORRESPONDE AO Nº1)

ANEXO B
Questionário BREALD-30

BREALD-30

Identificação dorespondente:_____
Entrevistador:_____
Tempo inicial:___Tempo final:___
Tempototal:__
Pontuação REALD-30:_____

"Agora vou te mostrar cartões, com uma palavra em cada. Por favor leia a palavra em voz alta e lentamente. Se você não souber ler alguma palavra, apenas diga 'não sei', não tente adivinhar. Não existem respostas certas ou erradas. Só queremos saber com esta parte do estudo com quais palavras você está acostumado(a)."

1. Açúcar		11. Biópsia		21. Endodontia	
2. Dentadura		12. Enxaguatório		22. Maloclusão	
3. Fumante		13. Bruxismo		23. Abscesso	
4. Esmalte		14. Escovar		24. Biofilme	
5. Dentição		15. Hemorragia		25. Fístula	
6. Erosão		16. Radiografia		26. Hiperemia	
7. Genética		17. Película		27. Ortodontia	
8. Incipiente		18. Halitose		28. Temporomandibular	
9. Gengiva		19. Periodontal		29. Hipoplasia	
10. Restauração		20. Analgesia		30. Apicectomia	

ANEXO C

Questionário ASSIST

Nome:_____ Registro _____ Entrevistador**:** _____
DATA:___/___/____

1. Na sua vida qual(is) dessa(s) substâncias você já usou? *(somente uso não prescrito pelo médico)*	NÃO	SIM
a. derivados do tabaco	0	3
b. bebidas alcoólicas	0	3
c. maconha	0	3
d. cocaína, crack	0	3
e. anfetaminas ou êxtase	0	3
f. inalantes	0	3
g. hipnóticos/sedativos	0	3
h. alucinógenos	0	3
i. opióides	0	3
j. outras, especificar _____	0	3

OBS: Se "NÃO" em todos os itens, pare a entrevista. Se "SIM" para alguma droga, continue com as demais questões

2. Durante os três últimos meses, com que freqüência você utilizou essa(s) substância(s) que mencionou? *(primeira droga, depois a segunda droga, etc)*	NUNCA	1 OU 2 VEZES	MENSALMENTE	SEMANALMENTE	DIARIAMENTE OU QUASE TODOS OS DIAS
a. derivados do tabaco	0	2	3	4	6
b. bebidas alcoólicas	0	2	3	4	6
c. maconha	0	2	3	4	6
d. cocaína, crack	0	2	3	4	6
e. anfetaminas ou êxtase	0	2	3	4	6
f. inalantes	0	2	3	4	6
g. hipnóticos/sedativos	0	2	3	4	6
h. alucinógenos	0	2	3	4	6
i. opióides	0	2	3	4	6
j. outras, especificar _____	0	2	3	4	6

OBS: Se "NUNCA" em todos os itens da questão 2 pule para a questão 6, com outras respostas continue com as demais questões

3. Durante os três últimos meses, com que frequência você teve um forte desejo ou urgência em consumir? *(primeira droga, depois a segunda droga, etc)*	NUNCA	1 OU 2 VEZES	MENSALMENTE	SEMANALMENTE	DIARIAMENTE OU QUASE TODOS OS DIAS
a. derivados do tabaco	0	3	4	5	6
b. bebidas alcoólicas	0	3	4	5	6
c. maconha	0	3	4	5	6
d. cocaína, crack	0	3	4	5	6
e. anfetaminas ou êxtase	0	3	4	5	6
f. inalantes	0	3	4	5	6
g. hipnóticos/sedativos	0	3	4	5	6
h. alucinógenos	0	3	4	5	6
i. opióides	0	3	4	5	6
j. outras, especificar _____	0	3	4	5	6

4. Durante os três últimos meses, com que freqüência o seu consumo de (*primeira droga, depois a segunda droga, etc***) resultou em problema de saúde, social, legal ou financeiro?**	NUNCA	1 OU 2 VEZES	MENSALMENTE	SEMANALMENTE	DIARIAMENTE OU QUASE TODOS OS DIAS
a. derivados do tabaco	0	4	5	6	7
b. bebidas alcoólicas	0	4	5	6	7
c. maconha	0	4	5	6	7
d. cocaína, crack	0	4	5	6	7
e. anfetaminas ou êxtase	0	4	5	6	7
f. inalantes	0	4	5	6	7

g. hipnóticos/sedativos	0	4	5	6	7
h. alucinógenos	0	4	5	6	7
i. opióides	0	4	5	6	7
j. outras, especificar _____	0	4	5	6	7

5. Durante os três últimos meses, com que freqüência, por causa do seu uso de (***primeira droga, depois a segunda droga, etc)***, vocêdeixou de fazer coisas que eram normalmente esperadas de você?	NUNCA	1 OU 2 VEZES	MENSALMENTE	SEMANALMENTE	DIARIAMENTE OU QUASE TODOS OS DIAS
a. derivados do tabaco	0	5	6	7	8
b. bebidas alcoólicas	0	5	6	7	8
c. maconha	0	5	6	7	8
d. cocaína, crack	0	5	6	7	8
e. anfetaminas ou êxtase	0	5	6	7	8
f. inalantes	0	5	6	7	8
g. hipnóticos/sedativos	0	5	6	7	8
h. alucinógenos	0	5	6	7	8
i. opióides	0	5	6	7	8
j. outras, especificar _____	0	5	6	7	8

OBS: FAÇA as questões 6 e 7 para todas as substâncias mencionadas na questão 1

6. Há amigos, parentes ou outra pessoa que tenha demonstrado preocupação com seu uso de ***(primeira droga, depois a segunda droga, etc...)*** ?	NÃO, Nunca	SIM, nos últimos 3 meses	SIM, mas não nos últimos 3 meses
a. derivados do tabaco	0	6	3
b. bebidas alcoólicas	0	6	3
c. maconha	0	6	3
d. cocaína, crack	0	6	3
e. anfetaminas ou êxtase	0	6	3
f. inalantes	0	6	3
g. hipnóticos/sedativos	0	6	3
h. alucinógenos	0	6	3
i. opióides	0	6	3
j. outras, especificar _____	0	6	3

7. Alguma vez você já tentou controlar, diminuir ou parar o uso de ***(primeira droga, depois a segunda droga, etc...)*** e não conseguiu?	NÃO, Nunca	SIM, nos últimos 3 meses	SIM, mas não nos últimos 3 meses
a. derivados do tabaco	0	6	3
b. bebidas alcoólicas	0	6	3
c. maconha	0	6	3
d. cocaína, crack	0	6	3
e. anfetaminas ou êxtase	0	6	3
f. inalantes	0	6	3
g. hipnóticos/sedativos	0	6	3
h. alucinógenos	0	6	3
i. opióides	0	6	3
j. outras, especificar _____	0	6	3

8.Alguma vez você já usou drogas por injeção? (Apenas uso não médico)	NÃO, Nunca ( )	SIM, nos últimos 3 meses ( )	SIM, mas não nos últimos 3 meses ( )
Padrão de uso injetável nos últimos 3 meses	( ) Uma vez por semana ou menos Ou menos de três dias seguidos. ( ) Mais do que uma vez por semana Ou mais do que três dias seguidos.		

PONTUAÇÃO PARA CADA DROGA		**PONTUAÇÃO PARA CADA DROGA**	
a. derivados do tabaco		h. alucinógenos	
b. bebidas alcoólicas		i. opióides	
c. maconha		j. outras, especificar _____	
d. cocaína, crack			
e. anfetaminas ou êxtase			
f. inalantes			
g. hipnóticos/sedativos			

ANEXO D

Questionário - ACESSO E UTILIZAÇÃO DOS SERVIÇOS DE SAÚDE BUCAL

Nome:_____ Registro:_____

Entrevistador:_____ Data: ___/___/____

1 - Você acha que necessita de tratamento dentário atualmente? **0-Não;** **1-Sim;** **9-Não sabe / Não respondeu**	
2 - Nos últimos 6 meses você teve dor de dente? **0-Não;** **1-Sim;** **8-Não se aplica;** **9-Não sabe / Não respondeu**	
3 - Aponte na linha ao lado o quanto foi esta dor 1 (um)significa muito pouca dor e 10 (dez) uma dor muito forte | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |	
4 - Alguma vez na vida você já foi ao consultório do dentista? **0-Não;** **1-Sim;** **9-Não sabe / Não respondeu**	
5 - Quando você consultou o dentista pela última vez? **1-Menos de um ano;** **2-Um a dois anos;** **3-Três anos ou mais;** **8-Não se aplica;** **9-Não sabe / Não respondeu**	
6 - Onde foi a sua última consulta? **1-Serviço público;** **2-Serviço particular;** **3-Plano de Saúde ou Convênios;** **4-Outros;** **8-Não se aplica;** **9-Não sabe / Não respondeu**	
7 - Qual o motivo da sua última consulta? **1-Revisão, prevenção ou check-up;** **2-Dor;** **3-Extração;** **4-Tratamento;** **5-Outros;** **8-Não se aplica;** **9-Não sabe / Não respondeu**	
8 - O que você achou do tratamento na última consulta? **1-Muit** **o Bom;** **2-Bom;** **3-Regular;** **4-Ruim;** **5-Muito Ruim;** **8-Não se aplica;** **9-Não sabe / Não respondeu**	

ANEXO E

Parecer do Comitê de ética em Pesquisa

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

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

PARECER DO RELATOR: 04
Número do parecer: 55953516.2.1001.5187
Pesquisador responsável: Ana Flavia Granville Garcia
Data da relatoria: 16 de maio de 2016
Situação do parecer: Aprovado

Apresentação do Projeto:

O Projeto é intitulado “Associação entre fatores biopsicossociais, acesso e utilização dos Serviços de Saúde Bucal e a cárie dentária em adolescentes”. O Projeto é para fins de elaboração do Trabalho de Conclusão de Curso de Curso de Doutorado em Odontologia / UEPB.

Objetivo da Pesquisa: A pesquisa tem como objetivo geral: avaliar a associação entre fatores biopsicossociais, acesso e utilização dos serviços de saúde bucal e a cárie dentária em adolescentes 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 são previstos riscos mínimos possíveis aos participantes da pesquisa.

Comentários e Considerações sobre a Pesquisa: Será realizada uma pesquisa do tipo transversal e analítica.

Considerações sobre os Termos de apresentação obrigatória: Os termos encontram-se devidamente anexados.

Recomendações: Sem recomendações.

Conclusões ou Pendências e Lista de Inadequações: A presente proposta de estudo é de suma importância quanto papel e atribuições das Instituições de Ensino Superior (IES), 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 profissionais da área de saúde. O projeto encontra-se completo, sem pendências. Diante do exposto, somos pela aprovação.

ANEXO F

Normas de publicação para o 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.
Font	Use a standard font size and any standard font, except for the font named "Symbol". To add symbols to the manuscript, use the Insert → Symbol function in your word processor or paste in the appropriate Unicode character.
Headings	Limit manuscript sections and sub-sections to 3 heading levels. Make sure heading levels are clearly indicated in the manuscript text.
Layout and spacing	Manuscript text should be double-spaced. Do not format text in multiple columns.
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).
Footnotes	Footnotes are not permitted. If your manuscript contains footnotes, move the information into the main text or the reference list, depending on the content.
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.

<table>
<tr><td></td><td>Avoid using MathType or Equation Editor to insert single variables (e.g., “a²
+ b² = c²”), 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.</td></tr>
<tr><td>Nomenclature</td><td>Use correct and established nomenclature wherever possible.
<table>
<tr><td>Units of measurement</td><td>Use SI units. If you do not use these exclusively, provide the SI value in parentheses after each value. Read more about SI units.</td></tr>
<tr><td>Drugs</td><td>Provide the Recommended International Non-Proprietary</td></tr>
</table></td></tr>
</table>

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.
If an author has multiple affiliations, enter all affiliations on the title page only. In the submission system, enter only the preferred or primary affiliation. Author affiliations will be listed in the typeset PDF article in the same order that authors are listed in the submission.
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.
Consortia and group authorship 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.

Author Contributions

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:

• Summarize the study's contribution to the scientific literature

• Relate the study to previously published work

• Specify the type of article (for example, research article, systematic review, meta-analysis, clinical trial)

• Describe any prior interactions with PLOS regarding the submitted manuscript

• Suggest appropriate Academic Editors to handle your manuscript (see the full list of Academic Editors)

• 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 importante

• 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 **nonlaboratory** 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
2.Select **Get DOI** to issue your protocol a persistent digital object identifier (DOI)
3.Include the DOI link in the Methods section of your manuscript using the following format provided by protocols.io: http://dx.doi.org/10.17504/protocols.io.[PROTOCOL DOI]

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-
Source	**Format**
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. Supporting information captions List supporting information captions at the end of the manuscript file. Do not submit captions in a separate file.

The file number and name are required in a caption, and we highly recommend including a one-line title as well. You may also include a legend in your caption, but it is not required.

Example caption S1 Text. Title is strongly recommended. Legend is optional. In-text citations We recommend that you cite supporting information in the manuscript text, but this is not a requirement. If you cite supporting information in the text, citations do not need to be in numerical order.

Figures and Tables

Figures

Do not include figures in the main manuscript file. Each figure must be prepared and submitted as an individual file. Cite figures in ascending numeric order upon first appearance in the manuscript file. Figure captions Figure captions must be inserted in the text of the manuscript, immediately following the paragraph in which the figure is first cited (read order). Do not include captions as part of the figure files themselves or submit them in a separate document.

At a minimum, include the following in your figure captions:

• A figure label with Arabic numerals, and "Figure" abbreviated to "Fig" (e.g. Fig 1, Fig 2, Fig 3, etc). Match the label of your figure with the name of the file uploaded at submission (e.g. a figure citation of "Fig 1" must refer to a figure file named "Fig1.tif").

•A concise, descriptive title The caption may also include a legend as needed.

Tables

Cite tables in ascending numeric order upon first appearance in the manuscript file. Place each table in your manuscript file directly after the paragraph in which it is first cited (read order). Do not submit your tables in separate files. 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. Accession numbers (and version numbers, if appropriate) should be provided in the Data Availability Statement. Accession numbers or a citation to the DOI should also be provided when the data set is mentioned within the manuscript.

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)

•Online Mendelian Inheritance in Man (OMIM)

•PubChem

Identifiers should be provided in parentheses after the entity on first use.

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The striking image must be derived from a figure or supporting information file from the submission, i.e., a cropped portion of an image or the entire image. Striking images should ideally be high resolution, eye-catching, single panel images, and should ideally avoid containing added details such as text, scale bars, and arrows.
If no striking image is uploaded, we will designate a figure from the submission as the striking image. Additional Information Requested at Submission

Funding statement

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.

Competing interests

This information should not be in your manuscript file; you will provide it via our submission system.

All potential competing interests must be declared in full. If the submission is related to any patents, patent applications, or products in development or for market, these details, including patent numbers and titles, must be disclosed in full.

Manuscripts disputing published work

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.
If the disputed author chooses to submit a review, it must be returned in a timely fashion and contain a full declaration of all competing interests. The Academic Editor will consider any such reviews in light of the competing interest.
Authors submitting manuscripts disputing previous work should explain the relationship between the manuscripts in their cover letter, and will be required to confirm that they accept the conditions of this review policy before the manuscript is considered further.

Related manuscripts

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. Authors choosing bioRxiv may now concurrently submit directly to select PLOS journals through bioRxiv's direct transfer to journal service. Guidelines for Specific Study Types

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 equivalente 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: o Why written consent could not be obtained o That the Institutional Review Board (IRB) approved use of oral consent o 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:

• Register all related clinical trials and confirm they have done so in the Methods section
• 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 agentes 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:

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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:

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•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
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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

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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-ofprinciple experiment or analysis; if this is not possible, a discussion of the possible applications and some preliminary analysis may be sufficient.

Availability

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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),

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

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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.

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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 para Caries Research

Caries Research

Author Guidelines

About the Journal

Aims and Scope

Caries Research publishes epidemiological, clinical and laboratory studies in dental caries, fluorosis, erosion and related dental diseases. Some studies build on the considerable advances already made in caries prevention, e.g. through fluoride application. Some aim to improve understanding of the increasingly important problem of dental erosion and the associated tooth wear process. Others monitor the changing pattern of caries in different populations, explore improved methods of diagnosis or evaluate methods of prevention or treatment. Studies using genetic methods to identify human genes or mutations associated with caries prevalence are welcome as are manuscripts using modern high-throughput sequencing methods to characterise microbial biofilms associated with oral health and active caries. The broad coverage of innovative research into dental caries is unique and has given the journal an outstanding international reputation as an indispensable source for both basic scientists and clinicians engaged in understanding, investigating and preventing dental diseases.

Journal Sections

Current Topics
Current topics are concise articles that present critical discussion of a topic of current interest, or a fresh look at a problem, and should aim to stimulate discussion.

Article Types

Research Articles

Research Articles report on primary research. They must describe significant and original observations. Consideration for publication is based on the article's originality, novelty, and scientific soundness, and the appropriateness of its analysis.
Research Articles are reports of original work. Authors are asked to follow the EQUATOR Networkfor Research Articles.
Prior approval from an Institutional Review Board (IRB) or an Ethics Review Committee is required for all investigations involving human subjects.
More information is available in the downloadable Research Article sample below.

Documents

Research Article (DOC, 46.5 KB)

Review Articles

Review Articles are considered reviews of research or summary articles. They are state-of-the-art papers covering a current topic by experts in the field. They should give evidence on and provide answers to a well-defined aspect or question in a particular area. Review Articles must include a critical discussion of the reported data and give a clear conclusion with potential impacts on the standard of care.
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Documents

Review Article (DOC, 40.5 KB)

Systematic Review

Systematic Reviews are literature reviews focused on a research question that synthesizes all high-quality research evidence relevant to that question. Systematic Reviews should be presented in the Introduction, Methods, Results, Discussion format. The subject must be clearly defined. The objective of a Systematic Review should be to arrive at an evidence-based conclusion. The Methods section should give a clear indication of the literature search strategy, data extraction procedure, grading of evidence, and kind of analysis used. We strongly encourage authors to comply with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.
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Documents

Systematic Review (DOC, 43.5 KB)

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Documents

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Documents

Letter (DOC, 38 KB)

Contact Information

Should you have any problems with your submission, please contact the editorial office:

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Conditions

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Abbreviations (with the exception of those clearly well established in the field) should be explained when they are first used both in the abstract and in the main text.

Units of measurement should be expressed in SI units wherever possible.

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Keywords relevant to the article should be listed below the corresponding author information.

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