

NATÁLIA MOREIRA TEIXEIRA

**FATORES DE RISCO DA INCIDÊNCIA DE CÁRIE DENTÁRIA EM
CRIANÇAS PREMATURAS: *UM ESTUDO DE COORTE
PROSPECTIVO***

Faculdade de Odontologia
Universidade Federal de Minas Gerais
Belo Horizonte
2020

NATÁLIA MOREIRA TEIXEIRA

**FATORES DE RISCO DA INCIDÊNCIA DE CÁRIE DENTÁRIA EM
CRIANÇAS PREMATURAS: *UM ESTUDO DE COORTE*
*PROSPECTIVO***

Dissertação apresentada ao Programa de Pós-Graduação em Odontologia da Faculdade de Odontologia da Universidade Federal de Minas Gerais, área de concentração Odontopediatria, como requisito parcial para obtenção do grau de Mestre em Odontologia.

Orientadora: Prof^a. Dr^a. Carolina de Castro Martins
Coorientadora: Prof^a. Dr^a. Fabíola Galbiatti de Carvalho Carlo

Belo Horizonte
2020

Ficha Catalográfica

T266f Teixeira, Natália Moreira.
2020 Fatores de risco de incidência de cárie dentária em
T crianças prematuras: um estudo de coorte prospectivo /
Natália Moreira Teixeira. -- 2020.

76 f. : il.

Orientadora: Carolina de Castro Martins.
Coorientadora: Fábola Galbiatti de Carvalho Carlo.

Dissertação (Mestrado) -- Universidade Federal de Minas
Gerais, Faculdade de Odontologia.

1. Idade gestacional. 2. Cárie dentária. 3.
Odontopediatria. I. Martins, Carolina de Castro. II. Carlo,
Fábola Galbiatti de Carvalho. III. Universidade Federal de
Minas Gerais. Faculdade de Odontologia. IV. Título.

BLACK - D047

Elaborada por: Miriam Cândida de Jesus - CRB: 6-2727.

Biblioteca Faculdade de Odontologia - FAO UFMG



UNIVERSIDADE FEDERAL DE MINAS GERAIS

PROGRAMA DE PÓS-GRADUAÇÃO EM ODONTOLOGIA



FOLHA DE APROVAÇÃO

Fatores de risco da incidência de cárie dentária em crianças prematuras de 4-7 anos: um estudo de coorte prospectivo

NATÁLIA MOREIRA TEIXEIRA

Dissertação submetida à Banca Examinadora designada pelo Colegiado do Programa de Pós-Graduação em Odontologia, como requisito para obtenção do grau de Mestre, área de concentração Odontopediatria.

Aprovada em 25 de junho de 2020, pela banca constituída pelos membros:

Prof(a). Carolina de Castro Martins - Orientadora
FO-UFMG

Prof(a). Fabiola Galbiatti de Carvalho Carlo - Coorientadora
Universidade Federal de Juiz de Fora

Prof(a). Mauro Henrique Nogueira Guimaraes de Abreu
FO-UFMG

Prof(a). Ana Flávia Granville-Garcia
UEPB

Belo Horizonte, 25 de junho de 2020.

Defesa Homologada pela Pós-Graduação em Odontologia em 20 /07/2020.

Isabela Almeida Pordeus
Coordenadora do Programa de Pós-Graduação em Odontologia da UFMG

Dedico este trabalho as crianças e seus pais que participaram da pesquisa, as quais foram examinadas com todo amor e carinho. Vocês foram essenciais para a conclusão desse projeto.

AGRADECIMENTOS

Agradeço,

À Deus, pelas grandes oportunidades vividas e por estar sempre ao meu lado guiando os meus passos.

Aos meus pais, Ariovaldo e Ana Lúcia, e aos meus irmãos Rafael e Júlia, por serem sempre meu ponto de refúgio e de amor. Por acreditarem no meu potencial e sempre me mostrarem o quanto sou forte e batalho para acalçar meus objetivos, amo vocês.

Ao meu namorado Vinícius pelo amor, companheirismo, palavras de incentivo e por sempre estar ao meu lado me apoiando e encorajando a ir em busca dos meus sonhos e objetivos.

À minha família Moreira e Teixeira pelo amor e carinho. Em especial a minha amada avó Irda, que hoje é uma estrela no céu e está ao lado de Deus olhando por mim e guiando os meus. Tenho certeza que a senhora esta muito orgulhosa de mais uma conquista, te amo eternamente.

À minha orientadora Professora Dr^a. Carolina, que me acolheu muito bem, me ensinou com toda calma, paciência e amor os primeiros passos da vida acadêmica de um professor. Serei eternamente grata por tudo, principalmente por acreditar no meu potencial, frente as dificuldades.

À minha coorientadora Professora Dr^a. Fabíola, por ter despertado e acreditado, ainda na graduação, esse desejo de seguir a carreira docente.

Aos professores Drs(a) Cristiane Bendo, Mauro Abreu e Lucas Guimarães, pela colaboração no projeto, auxílio nas análises estatísticas, pela atenção, dedicação e

carinho. À todos os professores do Programa de Pós-Graduação UFMG pelos ensinamentos.

Às médicas Professoras Dr^a. Márcia e Dr^a. Maria Cândida e toda equipe do Hospital das Clínicas (UFMG), em especial aos que trabalham no projeto ACRIAR pelo apoio e colaboração durante a pesquisa.

Ao aluno de iniciação científica, Wallysson que me auxiliou durante a coleta de dados e tornou o trabalho mais leve e eficiente.

Aos meus amigos da Pós-Graduação, em especial a Raquel, Lucas, Tatiane, Heloísa, Thalita, Larissa, Máisa e Renata. A caminhada foi mais leve e prazerosa com vocês ao meu lado. Obrigada pelos ensinamentos e por partilhar os conhecimentos. Aos meus amigos de vida, Kamila, Marjorie, Oldeir, Carol e Ágatha por estarem comigo nessa jornada, amo vocês.

RESUMO

O objetivo deste estudo de coorte prospectivo foi avaliar os fatores de risco da incidência de lesões de cárie dentária em um grupo de crianças nascidas prematuras e/ou com baixo peso ao nascer (BPN). As crianças foram avaliadas no baseline (T1) e após dois anos (T2) para fatores de risco de lesões de cárie dentária, indicadores socioeconômicos e hábitos de dieta. Este estudo incluiu uma amostra de conveniência de 42 crianças prematuras e/ou com BPN entre 2 e 5 anos de idade, encaminhadas para o Hospital Universitário da Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brasil. O estudo foi aprovado pelo Comitê de Ética em Pesquisa em Humanos da UFMG. As mães que concordaram em participar, assinaram o termo de consentimento livre e esclarecido (TCLE). Dois examinadores realizaram o diagnóstico de lesões de cárie dentária usando os critérios da Organização Mundial (OMS): dentes cavitados, extração indicada e obturados (ceod). As crianças foram examinadas pela primeira vez em 2017 no hospital universitário. As crianças são agendadas periodicamente para consultas médicas no hospital após o primeiro ano de vida. A coleta de dados foi realizada nas datas das consultas médicas. Após o preenchimento do questionário, as crianças foram examinadas para o diagnóstico de lesões de cárie dentária. Os prontuários médicos também foram avaliados para coleta de dados sobre condição médica, idade gestacional e peso ao nascer. Após dois anos, as crianças foram examinadas para diagnóstico de lesões de cárie dentária. Nos casos em que as crianças não eram agendadas para consultas médicas no hospital, eram agendadas para exame odontológico na Faculdade de Odontologia da UFMG ou visitadas em casa. Os dados foram tabulados no software SPSS para análise estatística descritiva, modelo binomial não ajustado e ajustado. Foi realizada análise descritiva para a variável dependente incidência de lesões de cárie dentária após dois anos. Modelos de regressão binomial negativa foram utilizados para estimar as taxas ajustada e não ajustada de *rate ratio* (RR) e o intervalo de confiança de 95% (IC) para fatores de confusão e incidência de cárie dentária. Após dois anos, 36 crianças (85%) foram examinadas, com idades variando entre 4 e 7 anos. A incidência de lesões de cárie dentária foi de 36,7%. O modelo binomial negativo ajustado mostrou que crianças nascidas com peso entre 1.000 e 1.500 g (RR: 0,23; 95% 0,08-0,72) e crianças nascidas com peso entre 1.500-2.500 g (RR: 0,06; IC95% 0,01 -0,55) apresentaram menor incidência de lesões de cárie dentária em comparação com crianças nascidas com menos de 1.000 g. Crianças de famílias com menor renda (R = 6,05; 1,05-34,84) apresentaram maior taxa de lesões de cárie dentária, e crianças que não consumiram suco açucarado, chá ou iogurte (RR = 0,21; IC95% 0,07 -0,62) apresentaram menor taxa de lesões de cárie dentária. Houve uma relação dose-resposta inversa entre incidência de lesões de cárie dentária e peso ao nascer. Menor renda e consumo de suco, chá ou iogurte foram fatores de risco para lesão de cárie dentária.

Palavras-chave: Idade gestacional. Cárie dentária. Odontopediatria.

ABSTRACT

Risk factors of the incidence of dental caries in preterm children: a prospective cohort study

The aim of this prospective cohort study was to evaluate the incidence of dental caries lesions in a group of children born preterm and / or low birth weight (LBW). Children were assessed at baseline (T1) and after two years (T2) for risk factors for dental caries lesions, socioeconomic indicators and dietary habits. This study included a convenience sample of 42 premature and / or LBW children aged between 2 and 5 years-old, referred to the University Hospital of the Federal University of Minas Gerais (UFMG), Belo Horizonte, Brazil. The study was approved by the Human Research Ethics Committee of UFMG. Mothers who agreed to participate, signed the informed consent form. Two examiners diagnosed dental caries lesions using the criteria of the World Organization (WHO): cavitated, indicated extraction and filled teeth (dmft). Children were first examined in 2017 at the university hospital. Children are periodically scheduled for medical appointments at the hospital after the first year of life. Data collection was performed on the same day of the medical appointment. After the mothers completed the questionnaire, the children were examined for the diagnosis of dental caries lesions. Medical records were also evaluated to collect data on medical condition, gestational age and birth weight. After two years, the children were examined for a diagnosis of dental caries lesions. In cases where the children were not scheduled for medical appointments at the hospital, they were scheduled for dental examination at the Dental School of UFMG or visited at home. The data were tabulated in the SPSS software for descriptive statistical analysis, unadjusted and adjusted binomial model. Descriptive analysis was performed for the dependent variable incidence of dental caries lesions after two years. Negative binomial regression models were used to estimate the adjusted and unadjusted rate ratios (RR) and 95% confidence interval (CI) for confounding factors and incidence of dental caries lesions. After two years, 36 children (85%) were examined, aged between 4 to 7 years-old. The incidence of dental caries lesions was 36.7%. The adjusted negative binomial model showed that children born weighting between 1,000 to 1,500 g (RR: 0.23; 95% 0.08-0.72) and children born weighting between 1,500-2,500 g (RR: 0.06; 95% CI 0.01 -0.55) had less incidence of dental caries lesions compared to children born with less than 1,000 g. Children from families with lower income (R = 6.05; 1.05-34.84) had a higher ratio of dental caries lesions and children who did not consume sugared juice, tea or yogurt (RR = 0.21; 95% CI 0.07 -0.62) had a lower ratio of dental caries lesions. There was an inverse dose-response relationship between incidence of dental caries lesions and birth weight. Lower income and consumption of juice, tea or yogurt were risk factors for dental caries lesions.

Keywords: Gestational age. Dental caries. Pediatric Dentistry.

LISTA DE FIGURAS

Figura 1 - Número de dentes superiores afetados por lesões de cárie dentária no baseline (T1) e no tempo 2 (T2):.....	46
Figura 2 - Número de dentes inferiores afetados por lesões de cárie dentária baseline (T1) e no tempo 2 (T2):.....	47

LISTA DE TABELA

Tabela 1 - Fatores de risco para experiência de lesões de cárie dentária em crianças pré-termo / BLW, Brasil, baseline (T1) – tempo 2 (T2):.....	48
--	----

LISTA DE ABREVIATURAS E SÍMBOLOS

ABEP	Associação Brasileira das Empresas de Pesquisa
ACRIAR	Ambulatório da Criança de Risco
BPN	Baixo Peso ao Nascer
Ceo-d	Dentes decíduos acometidos por Cárie, Extração e/ou Restaurado
COEP	Comitê de Ética em Pesquisa com Seres Humanos
DDE	Defeito de desenvolvimento do esmalte
HC-UFMG	Hospital das Clínicas da Universidade Federal de Minas Gerais
OMS	Organização Mundial de Saúde
SPSS	Statistical Package for the Social Sciences
TCLE	Termo de Consentimento Livre e Esclarecido
UFMG	Universidade Federal de Minas Gerais

SUMÁRIO

1. CONSIDERAÇÕES INICIAIS	14
2. OBJETIVOS	19
2.1 <i>Objetivo Geral</i>	19
2.2 <i>Objetivos específicos</i>	19
3. HIPÓTESES.....	20
4. METODOLOGIA EXPANDIDA.....	21
4.1 <i>Área de estudo</i>	21
4.2 <i>Amostra</i>	21
4.3 <i>Critérios de inclusão e exclusão</i>	21
4.4 <i>Calibração</i>	22
4.6 <i>Coleta de dados</i>	23
4.5 <i>Variáveis</i>	25
4.7 <i>Análise dos dados</i>	25
4.8 <i>Aspectos éticos</i>	26
5. RESULTADOS, DISCUSSÃO E CONCLUSÃO	27
6. ARTIGO.....	28
Risk factors of the incidence of dental caries in preterm children: a prospective cohort study.	
7. CONSIDERAÇÕES FINAIS	51
REFERÊNCIAS GERAIS	52
APÊNDICE A – Questionário	56
APÊNDICE B – Ficha clínica.....	59
APÊNDICE C – Termo de Consentimento Livre e Esclarecido	60

ANEXO A – Parecer do Comitê de ética em Pesquisa da UFMG.....	61
ANEXO D – Normas para publicação no periódico International Journal of Paediatric Dentistry	63

1. CONSIDERAÇÕES INICIAIS

Segundo a Organização Mundial de Saúde (OMS) cerca de 15 milhões de crianças prematuras nascem no mundo. Um bebê nascido vivo é denominado prematuro antes que as 37 semanas de gestação tenham sido completadas, sendo considerado pré-termo. É a principal causa de morte em todo o mundo para crianças com menos de 5 anos de idade (CHAWANPAIBOON et al., 2019; OMS, 2018). Os bebês a termo são aqueles nascidos entre a 37 e 41 semanas de gestação e seis dias, e os bebês pós termo são aqueles nascidos com 42 semanas ou mais de idade gestacional (OMS, 2018).

A OMS define como baixo peso ao nascer (BPN) bebês que apresentam peso inferior a 2.500 g, independentemente da idade gestacional. Muito baixo peso são os bebês nascidos com peso inferior a 1.500 gramas e extremo baixo peso inferior a 1.000 gramas (OMS, 2018)

Mundialmente, mais de 20 milhões de crianças nascem com baixo peso, representando 15,5% de todos os nascimentos vivos. Cerca de 95,6% dos 20 milhões de crianças nascidas com baixo peso são de países em desenvolvimento (GEBREMEDHIN et al., 2015). Os preditores para o BPN são: nascimento prematuro, histórico de trauma físico ou qualquer complicação durante a gestação (HAILU; KEBEDE, 2018). O nascimento prematuro e o BPN apresentam impactos imediatos e de longo prazo na saúde geral, sendo associado a problemas sistêmicos como: desenvolvimento neurológico e cognitivo, morbidade infantil e comprometimento do crescimento (MENGESHA et al., 2017; ONG et al., 2015).

Os impactos na cavidade oral estão associados com a formação e mineralização dos dentes decíduos. A formação dos dentes decíduos inicia-se durante o período fetal e geralmente é completada 1 ano após o nascimento da criança (HISANO et al., 2018). As condições de nascimento podem afetar a estrutura dos dentes e podem estar associados ao defeito de desenvolvimento de esmalte (DDE) (SCHÜLER et al., 2018). A alteração na formação do esmalte durante a vida intra-uterina pode, por consequência, causar hipoplasia e opacidade do esmalte, o que poderia tornar os dentes mais suscetíveis à

lesões de cárie dentária (DOS SANTOS JUNIOR et al., 2014; PERES et al., 2005; TANAKA; MIYAKE, 2014). O esmalte dentário pode apresentar defeitos estruturais e predispor a formação de locais que facilitam a colonização da placa bacteriana. Além disso, crianças com BPN podem ter função imune reduzida, o que pode resultar na colonização precoce de microrganismos cariogênicos (CHANDRA, 2002; RAQIB et al., 2007).

Crianças que apresentam alteração no esmalte dentário apresentam três vezes mais chances de ter experiência de cárie dentária (COSTA et al., 2017). No Brasil, segundo a Pesquisa Nacional de Saúde Bucal, a prevalência de lesões de cárie dentária aos 5 anos é 53,4% (SB BRASIL, 2010). Embora tenha havido um declínio da cárie dentária na população pré-escolar em todo o mundo, a cárie dentária continua sendo a condição bucal mais comum na infância, causando dor, dificuldades de mastigação, distúrbios gerais de saúde, problemas psicológicos e impacto na qualidade de vida (CLEMENTINO et al., 2015).

Entre os fatores, o baixo nível socioeconômico, condições de nascimento e estado nutricional durante a gestação estão associados com desenvolvimento de lesões de cárie dentária em crianças (CORREA-FARIA et al., 2015; DABAWALA et al., 2016; MOIMAZ et al., 2016; SEERIG et al., 2015; VARGASFERREIRA et al., 2015). A associação da saúde bucal das crianças e o baixo nível socioeconômico pode ter um impacto negativo nas necessidades de autocuidado e no uso dos serviços de saúde (NARANG et al., 2013; SUBRAMANIAM; PRASHANTH, 2012). Estudos mostram que crianças com baixo nível socioeconômico têm duas vezes mais chances de desenvolverem lesões de cárie dentária do que aquelas com renda mais alta (ANIL; ANAND, 2017; GAUR; NAYAK, 2011).

Além disso, os hábitos alimentares também desempenham um papel significativo no desenvolvimento de lesões de cárie dentária. A exposição frequente ao açúcar, aos lanches e as bebidas açucaradas e a higiene bucal precária podem predispor à colonização precoce de bactérias cariogênicas e, conseqüentemente, ao desenvolvimento de lesões de cárie dentária (PAGLIA et al., 2016). A dieta açucarada pode expor os dentes aos carboidratos fermentáveis, o que pode agravar as chances de lesões de cárie dentária (ANIL; ANAND, 2017).

Alguns estudos observaram que crianças com BPN têm mais lesões de cárie dentária (DA SILVA CASTRO et al., 2019; SCHÜLER et al., 2018; ZHOU et al., 2013), enquanto outros estudos observaram que a ocorrência de lesões de cárie dentária é semelhante entre crianças com BPN e crianças com peso normal ao nascer (KAY et al., 2010; NIRUNSITTIRAT et al., 2016). No entanto, as evidências são baseadas em revisões sistemáticas de estudos transversais ou em estudos transversais (CRUVINEL et al., 2010; DOS SANTOS JUNIOR et al., 2014; KAY et al., 2010; OCCHI-ALEXANDRE et al., 2019; SARAIVA et al., 2007; SCHÜLER et al., 2018). Poucos estudos de coorte foram encontrados na literatura e o resultado entre eles é controverso. No estudo de NIRUNSITTIRAT et al., 2016, não houve associação entre BPN e cárie dentária, sendo o grupo de crianças a termo o que apresentou maior incidência da doença. Apesar disso, pouco se sabe sobre o impacto da prematuridade no desenvolvimento de lesões de cárie dentária, especialmente em longo prazo. Desta forma, o objetivo deste estudo foi investigar a incidência de cárie dentária em crianças com BPN de 2 a 5 anos de idade e os possíveis fatores de risco para a doença, como prematuridade, nível socioeconômico e hábitos de dieta.

2. OBJETIVOS

2.1 Objetivo Geral

Avaliar a incidência de cárie dentária das crianças prematuras e/ou baixo peso ao nascer do Ambulatório da Criança de Risco (ACRIAR) do Hospital das Clínicas da Universidade Federal de Minas Gerais.

2.2 Objetivos específicos

- a) Analisar a incidência de lesões de cárie dentária em um período de 2 anos.
- b) Verificar o risco de fatores sociodemográficos no desenvolvimento da cárie dentária.
- c) Analisar o risco do baixo peso ao nascer no desenvolvimento de lesões de cárie dentária.
- d) Analisar o risco de dados pós-natais no desenvolvimento de lesões de cárie dentária.
- e) Analisar o risco de hábitos de dieta e higiene bucal no desenvolvimento de lesões de cárie dentária.

3. HIPÓTESES

- a) Há um aumento de lesões de cárie dentária em 2 anos.
- b) Crianças nascidas com menor peso ao nascer tem maior incidência de lesões de cárie dentária.
- c) Os dados pré-natais, hábitos pós-natais e fatores sociodemográficos aumentam o risco de desenvolvimento de lesões cárie dentária.

A hipótese nula é não existir associação entre peso ao nascer e cárie dentária.

4. METODOLOGIA EXPANDIDA

4.1 Área de estudo

Este estudo foi conduzido no Hospital das clínicas da Universidade Federal de Minas Gerais (UFMG), localizado na cidade de Belo Horizonte, Minas Gerais. O Hospital das Clínicas possui um ambulatório específico para crianças de risco (ACRIAR). As crianças que são acompanhadas neste ambulatório são aquelas que nasceram com idade gestacional menor ou igual a 34 semanas ou que apresentaram um peso ao nascimento menor ou igual a 1.500 gramas. Neste serviço o acompanhamento inicia a partir do nascimento do bebê e se estende até os 7 anos de vida da criança. Há consultas mensais até o primeiro ano de vida da criança, e anuais até o sétimo ano. Os profissionais que fazem parte da equipe são pediatras, fisioterapeutas, fonoaudiólogos e neurologistas.

4.2 Amostra

Para a amostra desse estudo de coorte prospectivo foi realizado coleta de dados com crianças de 2 a 5 anos de idade nascidas prematuras e/ou com baixo peso ao nascer, atendidas no ACRIAR. A coleta ocorreu entre junho de 2017 e dezembro de 2019. Em junho de 2017, baseline (T1), convidamos a participar do estudo uma amostra de conveniência de 42 crianças de ambos os sexos (25 meninas e 17 meninos), com idade média de 3,0 anos. Neste primeiro contato, coletamos informações das crianças através de questionários respondidos pelas mães e avaliamos os prontuários médicos para condições médicas das crianças. O exame bucal para cárie dentária foi realizado em 2 tempos: no baseline (T1) e 2 anos depois (T2) (2019).

4.3 Critérios de inclusão e exclusão

4.3.1 Critérios de inclusão

- a) Todas as crianças encaminhadas para atendimento clínico de crianças prematuras / BPN no Hospital Universitário, com dentes decíduos, com idades entre 2 a 5 anos, nascidas prematuras ou com BPN

4.3.2 Critérios de exclusão

- a) Crianças fora da faixa etária alvo
- b) Crianças cujas mães não souberem ler ou escrever;

4.4 Calibração

Para o exame de cárie dentária, foram utilizados os critérios da Organização Mundial da Saúde (OMS, 2012) para dentes cariados, extração indicada e obturados (ceo-d). Dois examinadores foram treinados e calibrados para o exame clínico: um examinador conduziu os exames no tempo baseline (T1) e o outro no tempo 2 (T2). O processo de calibração foi realizado em três etapas: em uma primeira etapa, os examinadores estudaram os critérios de ceo-d. Na segunda etapa, os examinadores analisaram fotografias de cárie dentária para um treinamento preliminar. Na fase de treinamento clínico, os examinadores examinaram clinicamente 16 crianças com idades entre 2 e 5 anos de idade que estavam em atendimento na clínica de Odontopediatria da Faculdade de Odontologia da Universidade Federal de Minas Gerais, o reexame foi realizado após uma semana. Toda a calibração foi conduzida por um dentista odontopediatra padrão ouro que participou de todo o processo. As crianças que participaram do treinamento foram excluídas do estudo principal.

O coeficiente Cohen Kappa (K) foi utilizado para verificação da concordância inter e intraexaminador. Os valores de K para concordância intraexaminador para cárie dentária em baseline e no tempo 2 foram 0,88. A concordância inter-examinador foi 0,85 (T1) e 0.89 (T2). Os valores foram considerados excelentes e os examinadores foram considerados capazes de conduzir o estudo principal. Toda a calibração foi repetida após dois anos.

4.5 Coleta de dados

4.5.1 Questionário

No ACRIAR, as crianças são agendadas anualmente para consultas após o primeiro ano de vida. Assim, as mães das crianças foram abordadas para participarem da pesquisa de acordo com o agendamento e demanda do ACRIAR, durante as quartas-feiras no período da tarde. As mães foram abordadas na sala de espera do ACRIAR, durante os intervalos das consultas médicas. Após explicação dos objetivos da pesquisa, aquelas que aceitaram participar, foram conduzidas a um consultório no ACRIAR. As mães responderam a um questionário, contendo questões que abordavam: identificação do responsável e do filho (a); educação materna e paterna, condição socioeconômica, aleitamento, hábitos de dieta e higiene bucal. (APÊNDICE A).

As questões referentes à condição socioeconômica (baseline) foram baseadas no questionário do critério padrão de classificação econômica da Associação Brasileira das Empresas de Pesquisa (ABEP, 2015). O questionário permite identificar o real potencial de consumo das famílias brasileiras, através de indicadores de renda permanente e o uso de dados da pesquisa de Orçamento Familiar do IBGE.

4.5.2 Prontuários médicos

Após responderem os questionários, avaliamos os prontuários médicos para coletar informações adicionais sobre: período pós-natal, medidas antropométricas (peso ao nascer e idade). Os prontuários médicos de todas as crianças participantes da pesquisa foram avaliados.

4.5.3 Exame bucal

Os exames bucais foram realizados sob luz natural e artificial para iluminar os dentes, espelho bucal descartável (PRISMA® Instrumentos Odontológicos) e gaze para limpar e secar os dentes. O examinador (NMT) usou equipamento de proteção individual: óculos de proteção, luvas descartáveis, máscara, touca e jaleco branco. Durante o exame clínico, a criança estava sentada, joelho a joelho, em uma cadeira de frente para o examinador. Um assistente de pesquisa anotou os dados durante os exames clínicos.

A sequência de exames da cavidade oral foi na seguinte ordem: avaliação da arcada superior, em quadrantes 51-55, 61-65 e posteriormente avaliação da arcada inferior 71-75 e 81-85 (APÊNDICE B). A condição cárie dentária foi avaliada de acordo com índice de cariados, extração indicada, obturados por dentes (ceo-d) (OMS, 2012). Nenhum exame radiográfico foi utilizado para diagnóstico.

Os exames clínicos no baseline (T1) foram realizados no mesmo dia em que as mães responderam aos questionários.

Após 2 anos, entramos em contato com as mães por telefone, para reagendar as consultas com as crianças. Em primeiro lugar, seguimos a sequência de agendamento de consultas médicas do ACRIAR para re-examinar as crianças. As mães e crianças que não puderam comparecer ao hospital, foram agendadas para exame na clínica de Odontopediatria da Faculdade de Odontologia da UFMG. As mães e crianças que não puderam se deslocar até a Faculdade de Odontologia, foram examinadas em casa mediante visita domiciliar do examinador.

Os pais das crianças que necessitaram de tratamento receberam orientações preventivas e as crianças foram encaminhadas para tratamento odontológico para os serviços públicos de saúde ou para a Faculdade de Odontologia da UFMG, de acordo com a preferência dos pais.

4.6 Variáveis

<i>Variáveis dependentes</i>	<i>Variáveis independentes</i>
Incidência de lesões de cárie dentária	Peso ao nascer;
	Sexo
	Dieta
	Histórico de amamentação
	Dados sociodemográficos
	Escolaridade materna;
	Histórico médico pós-natal;

As variáveis foram coletadas no tempo baseline, através de questionários aplicados aos responsáveis das crianças ou através dos prontuários médicos.

4.7 Análise dos dados

A variável dependente foi a incidência de lesões de cárie dentária em dois anos. Foi realizada uma análise descritiva da frequência de lesões de cárie dentária por dente e nos períodos, em baseline (T1) e tempo 2 (T2). Foram calculados média e mediana para incidência de cárie e de todas as covariáveis contínuas. O modelo de regressão binomial negativa bivariado foi utilizado para estimar as taxas não ajustadas (*rate ratio* - RR) e o intervalo de confiança de 95% para incidência de cárie dentária e cada covariável separadamente. As covariáveis com valor de $p < 0,25$ foram testadas no modelo de regressão binomial negativa ajustada. Testamos todos os modelos possíveis, até que apenas covariáveis com valor de $p < 0,05$ fossem mantidas no modelo final.

4.9 Aspectos éticos

Este projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa em Seres Humanos da UFMG (COEP/UFMG, CAAE #66632817.7.0000.5149) (ANEXO A). As mães que concordaram em participar assinaram um Termo de Consentimento Livre e Esclarecido (TCLE), para autorizar a participação da criança, garantindo o princípio da autonomia (APÊNDICE C).

5. RESULTADOS, DISCUSSÃO E CONCLUSÃO

Estes capítulos serão apresentados em formato de artigo científico e de acordo com as normas de publicação do periódico *International Journal of Paediatric Dentistry*, Qualis A1, fator de impacto 2,057. Estas normas encontram-se em anexo ao final deste documento (ANEXO B).

6. ARTIGO**Title Page****Risk factors of the incidence of dental caries in preterm children: a prospective cohort study**

Natália Moreira Teixeira¹, Fabíola Galbiatti de Carvalho², Mauro Henrique Nogueira Guimarães de Abreu³, Cristiane Baccin Bendo⁴, Elisa Feuser de Arjona⁵, Carolina Castro Martins⁶

¹ Postgraduate Student, Department of Paediatric Dentistry, Dental School, Federal University of Minas Gerais, Belo Horizonte, Brazil.

² Associate Professor, Department of Dentistry, Federal University of Juiz de Fora, Governador Valadares, Minas Gerais, Brazil.

³ Associate Professor, Department of Social and Preventive Dentistry, Dental School, Federal University of Minas Gerais, Belo Horizonte, Brazil.

⁴ Adjunct Professor, Department of Paediatric Dentistry, Dental School, Federal University of Minas Gerais, Belo Horizonte, Brazil.

⁵ Master, Department of Paediatric Dentistry, Dental School, Federal University of Minas Gerais, Belo Horizonte, Brazil.

⁶ Adjunct Professor, Department of Paediatric Dentistry, Dental School, Federal University of Minas Gerais, Belo Horizonte, Brazil.

Corresponding author: Carolina Castro Martins, Department of Paediatric Dentistry, Dental School, Federal University of Minas Gerais

Av. Antônio Carlos 6627, Belo Horizonte, MG, 31270-901, Brazil. **Phone:** +55(31)3409-2470, Fax: +55(31)3409-2472.

E-mail: carolcm10@hotmail.com

Abstract

Aim: This cohort study investigated associations between birth outcomes and the incidence of caries in primary teeth after two years.

Design: This study involved a convenience sample of 42 preterm and/or low birth weight children aged two to five years. Two examiners diagnosed caries using the World Health Organization criteria. Birth weight, socioeconomic indicators, and diet were collected from medical records and questionnaires. Binomial models were used to estimate unadjusted/adjusted rate ratios (RR) and respective 95% confidence intervals for risk factors of dental caries.

Results: After two years, 36 children aged four to seven years of age were re-examined. The incidence of caries was 36.7%. Children born with birth weight between 1,000 to 1,500 g (RR=0.23; 95%CI: 0.08-0.72) and 1,500 to 2,500 g (RR=0.06; 0.01-0.55) had fewer carious lesions compared to children born with <1,000 g. Caries was more frequent among children with a lower income (RR=6.05; 1.05-34.84) and less frequent among those who did not consume juice, tea, or yogurt (RR: 0.21; 0.07-0.62).

Conclusions: An inverse dose-response relation was found between birth weight and the incidence of caries. A lower income and sweetened juice, tea, or yogurt were risk factors for the development of caries.

Keywords: Infant, premature; Early childhood caries; Paediatric dentistry; Oral health.

1 Introduction

Preterm birth is defined as childbirth occurring before 37 complete weeks of gestational age. Low birth weight (LBW) new-borns are those born weighing < 2.500 grams (g) (WHO 2020). The estimated incidence of premature birth is 10.6% of all live births worldwide. Prematurity is the leading cause of death among children less than five years of age (WHO 2020) and can have both immediate and long-term impacts on general and oral health (Seow 1997). Indeed, the entire organism can be affected, especially neurocognitive development and growth (Flood 2012).

Premature birth can exert an impact on the development of the primary dentition, as these teeth begin to develop during the foetal period, with the completion of development around the first year of the child's life (Hisano 2018). Thus, birth conditions can affect the structure of the teeth and may increase the susceptibility to dental caries (Tanaka 2014). The affected enamel may be frail, with structural defects that can facilitate the colonisation of dental plaque (Dos Santos 2014; Targino 2011). Moreover, LBW children may have a compromised immune system that could result in the early colonisation of cariogenic microorganisms (Chandra 2002; Raqib 2007).

Studies addressing the association between LBW and dental caries offer conflicting results (Hisano 2018; Tanaka 2014; Dos Santos 2014; Burt 2001; Kay, 2010; Occhi-Alexandre 2020; Schuler 2018; Da Silva Castro 2019; Zhou 2013; Nirunsittirat 2016). Some cross-sectional studies report that LBW children have more caries experience than children born with a normal birth weight (NBW) (Dos Santos 2014; Schuler 2018), whereas reports show that NBW children have more caries experience than LBW children (Tanaka 2014; Hisano 2018). We found two systematic reviews addressing this subject. The first one was published in 2001 and included four observational studies, none of which found an association between birth weight and dental caries (Burt, 2001). The second systematic review was published 20 years later and included 59 studies, demonstrating a growing interest in the subject. Although cohort studies were included, the authors used the last time point to estimate the prevalence of dental caries (Occhi-Alexandre 2020) and concluded that there was no association between birth weight and dental caries.

The cohort study design enables the determination of the incidence of health outcomes. However, cohort studies also report conflicting results (Kay 2010; Da Silva Castro 2019; Nirunsittirat 2016). Some studies that prospectively collected information through questionnaires and performed a single assessment of dental caries found no association between birth weight and this outcome (Kay, 2010; Nirunsittirat 2018). However, as only a single clinical evaluation was performed, there is no data on the incidence of dental caries. One study prospectively examined children for dental caries and collected information using a questionnaire, reporting a higher incidence of caries among LBW children (Da Silva Castro 2019).

Due to the divergent findings and lack of prospective evaluations of dental caries, further cohort studies are needed to evaluate possible risk factors for the incidence of dental caries in LBW children. Therefore, the aim of the present study was to investigate the incidence of caries in a two-year period among LBW children aged two to five years considering risk factors, such as socioeconomic indicators, dietary factors, and oral hygiene. The following were the alternative hypotheses: 1) there is an increase in caries among LBW children after two years; 2) Birth weight is a risk factor for dental caries; 3) Dietary habits and income can increase the risk of caries in LBW children.

2 Materials and Methods

2.1 Study design and participants

A prospective cohort study was conducted with preterm and/or low birth weight children recruited from the hospital affiliated with the Federal University of Minas Gerais, Belo Horizonte, Brazil. This hospital is reference centre for preterm/LBW children. Data collection was performed between June 2017 and December 2019. In June 2017, we invited a convenience sample of 42 children aged two to five years to participate in the study (25 girls and 17 boys; mean age: 3.0 years \pm 1.08). The power of the sample was calculated using the SPSS program (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY, USA) and considering a type I error of 0.05. All children lived in city Belo Horizonte or metropolitan region and had access to optimally fluoridated drinking water (0.7 ppm F). The children were examined at two time points: 2017 (baseline) and 2019 (follow-up).

The inclusion criteria were children with primary teeth between two and five years of age born prematurely or with LBW referred for clinical care at the university hospital. The exclusion criterion was any age outside the target range of two to five years.

This study received approval from the Human Research Ethics Committee of the Federal University of Minas Gerais (certificate number: 66632817.7.0000.5149). Parents who agreed to their child's participation in the study signed statement of informed consent.

2.2 Calibration

The diagnosis of dental caries was performed using the decayed, missing, and filled teeth (dmft) index recommended by the World Health Organization (Brasil 2012). Two examiners underwent training and calibration exercises for the clinical examination. One examiner conducted the examinations at baseline and the other conducted the examinations at follow-up. The calibration process was performed in three stages: 1) the examiners studied the dmft criteria, 2) analysed photographs of dental caries for preliminary training, and 3) clinically examined 16 children two to five years of age recruited from the university dental clinic on two occasions with a one-week interval between evaluations. The calibration exercises were supervised by an experienced paediatric dentist who served as the "gold standard". The children who participated in stage 3 were not included in the main study. Cohen's Kappa coefficients for intra-examiner ($K = 0.88$) and inter-examiner ($K = 0.89$) agreement were excellent and the examiners were considered able to conduct the study (Altman 1991). During the clinical examination, the child sat in a chair facing the examiner, who used an artificial head lamp, disposable mouth mirror, and gauze to clean and dry the teeth. The entire calibration process was repeated after two years prior to the follow-up examinations.

2.3 Dental caries

The dental examination was first performed in the maxillary arch, followed by the mandibular arch. The quadrants of both arches were evaluated in the following sequence: from distal to mesial teeth on the right side, followed by distal to the mesial teeth on the left side. At baseline, all children only had

primary teeth. At follow-up, some children had also permanent incisors and first molars that were also considered for the incidence of caries. Children with treatment needs were referred to the dental school of the university.

2.4 Data collection

Child's sex and birth weight were collected from medical records. The mothers answered a questionnaire addressing the child's age, mother's age, parent's schooling level, monthly family income, dietary habits, and oral hygiene habits. Birth weight was categorised as extremely low weight (<1,000 g), very low birth weight (1,000 to 1,500 g), or low birth weight (1,500 to 2,500 g).¹ Parental schooling was categorised by the median of the sample: \leq eight or $>$ eight years of study. Family income was defined using the Brazilian monthly minimum wage (BMMW) as the unit of analysis, which corresponded to nearly US\$ 250 at the time of data collection. This variable was dichotomised based on the median as \leq two or $>$ two times the BMMW. The questionnaires also addressed bottle feeding habits, the consumption of milk with sugar using a glass/cup (yes/no), the consumption of juice, tea, or yogurt (yes/no), infant formulas (yes/no), crisps (yes/no), and sweets (yes/no), toothbrushing (yes/no), and the use of a fluoride toothpaste (yes/no).

2.5 Statistical analysis

Data analysis was performed using the Statistical Package for the Social Sciences (IBM Corp. Released 2019, IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY, USA) The dependent variable was the incidence of dental caries in two years (from baseline to follow-up). The frequency of carious lesions per tooth (number of decayed, missing, and filled primary teeth) at baseline and follow-up was analysed descriptively.

Mean and median values were calculated for the incidence of caries and the continuous variables. The independent covariates were child's sex, birth weight, and age at baseline, mothers' and fathers' schooling level, monthly family income, number of children with bottle feeding habits, consumption of milk with sugar using a glass/cup, consumption of sweetened juice, tea, or yogurt, infant formulas, crisps, sweets, toothbrushing habits, and the use of fluoride toothpaste.

Negative binomial regression models were used to estimate unadjusted and adjusted rate ratios (RR) and respective 95% confidence intervals (CI) for each covariate. Unadjusted negative binomial regression models were conducted to estimate the unadjusted RR (95% CI) and p-value for each covariate separately. Covariates with a p-value < 0.25 was incorporated into the adjusted negative binomial regression model and only those with a p-value < 0.05 were maintained in the final model. The ratio between residual deviance and the degree of freedom and the chi-squared test of the residual deviance results were used for the evaluation of goodness of fit of the final model (Js 1997; Hosmer 2013).

3 Results

Thirty-six children (86%) of the baseline sample participated in the follow-up evaluation. Six children (14%) were lost to follow-up due to loss of contact (n = 4) and parents who declined to participate (n = 2). The follow-up sample consisted of 21 girls and 15 boys four to seven years of age (mean: 5.6 ± 1.12 years). The incidence of dental caries in two years was 36.7% (48 teeth affected by new carious lesions).

Figures 1 and 2 describe the frequency of dental caries at baseline and after two years. More primary teeth had caries at follow-up when compared to baseline. For maxillary teeth, the central incisors (n = 3) were the most affected at baseline, followed by the second molars (n = 2); the second molars were the most affected (n = 9) after two years, followed by the first molars (n = 6), central incisors (n = 6), lateral incisors (n = 5), and canines (n = 3). For mandibular teeth, the first molars were the most affected (n = 7) at baseline, followed by second molars (n = 3) and lateral incisors (n = 1); the first molars (n = 9) were the most affected after two years, followed by second molars (n = 6), canines (n = 2), central incisors (n = 1), and lateral incisors (n = 1).

Table 1 displays the binomial regression models for the incidence of dental caries and covariates. In the unadjusted model, the following covariates had a p-value < 0.25 and were therefore incorporated into the adjusted model: age at baseline, birth weight, monthly family income, consumption of juice, tea, or yogurt, sweets, and the use of fluoride toothpaste. The final adjusted model showed that the use of fluoride toothpaste was not associated with dental

caries. Birth weight, monthly family income, and the consumption of juice, tea, or yogurt were risk factors for dental caries. A dose-response relation was found between birth weight and the incidence of dental caries. Children born with a birth weight between 1,000 to 1,500 g had a lower incidence of caries (RR = 0.23; 95% CI: 0.08-0.72) and children born with birth weight between 1,500 to 2,500 g had a lower incidence of caries (RR = 0.06; 95% CI: 0.01-0.55) compared to those born with birth weight < 1,000 g. Children from families with an income \leq two times the BMMW had higher incidence of dental caries (RR = 6.05; 95% CI: 1.05-34.84) compared to those from families with an income > two times the BMMW. Children who did not consume juice, tea, or yogurt had a lower incidence of dental caries (RR = 0.21; 95%CI: 0.07-0.62) compared to those who consumed these items (Table 1). The adjusted model showed a good fit to the data (ratio between residual deviance and degree of freedom = 1.074).

4 Discussion

All hypotheses tested in the present study were accepted, as an increase in dental caries was found among LBW children after two years and some dietary habits as well as a lower socioeconomic status increased the risk of caries in LBW children.

There was an increase in the occurrence of dental caries over the two-year period analysed (Figures 1 and 2). This result can be expected as children get older. Children five years of age are more likely to develop caries compared to younger children (Hallett 2006).²³ The increase in the risk of the development of dental caries with age is due to the prolonged exposure of primary teeth to the oral environment (Hallett 2013).

The present results are in agreement with data from previous studies that found more caries experience in LBW children (Schuler 2018; Da Silva 2019; Zhou 2013). Indeed, children with a birth weight < 1,000 g may be at the greatest risk of developing dental caries (Schuler 2018). Moreover, evidence shows that children with LBW may develop caries in a shorter period of time compared to children with a normal birth weight (NBW) (Da Silva Castro 2019). Other factors can accelerate the development of dental caries in this group of children, such as the presence of hypomineralised teeth, an immature

immunological system, breastfeeding patterns, early weaning, and early colonisation by cariogenic microorganisms (Da Silva 2019; Chandra 2002). Defects during the formation of tooth enamel during intrauterine life may favour the disruption of the enamel structure, predisposing teeth to the colonisation of dental plaque (Targino, 2011).

The literature offers conflicting results. A previous cohort study found that LBW was not associated with the development of dental caries. However, the lack of an association may have been due to inadequate follow-up period. The study prospectively evaluated feeding habits and clinically examined the children at a single time point at three to four years of age (Nirunsittirat 2016). Likewise, a recent systematic review involving a total of 175,170 patients was mainly composed of cross-sectional studies (Occhi-Alexandre 2020) and the majority of studies available had cross-sectional data with a single evaluation of dental caries.

The association between socioeconomic status and the occurrence of dental caries was confirmed in the present investigation (Table 1). It has been previously demonstrated that children from families with a low socioeconomic status are twice as likely to have dental caries than those in higher income strata (Anil 2017). LBW and prematurity are also associated with a low socioeconomic status (Burt 2001). The association between poor oral health in children and a low socioeconomic status is related to the lower access to health services in this population (Narang 2013).

Dietary habits also play a significant role in the development of dental caries, as frequent exposure to sugar, snacks, and sweetened beverages combined with poor oral hygiene facilitates the colonisation of cariogenic bacteria and, consequently, favours the development of caries (Chankanka 2015). In the present study, the non-consumption of juice, tea, and yogurt had a protective effect, minimizing the occurrence of caries (Table 1). Indeed, many parents and caregivers have the habit of sweetening beverages for their children and offering fermented yogurt.

This study has some limitations that should be considered. Recall bias and reporting bias may have occurred, as the mothers may not remember precise details regarding their children's diet, oral health, and hygiene. Indeed, recall and reporting bias are major challenges in epidemiological research, as

many studies involve the collection of data using questionnaires and interviews (Coughlin 1990; Martins 2008). Another limitation was the lack of a control group for the purposes of comparison. As a strong point, we retrieved 86% of the original sample. One may expect the loss of up to 20% of the sample in epidemiological studies (Sacket 1997). Thus, the impact of such loss was minor. Moreover, we performed dental examinations at two time points, which enabled incidence analysis. This study is particularly important, as it offers a dose-response analysis of different cut-off points for birth weight and the incidence of dental caries.

The present findings highlight the importance of the monitoring of low birth weight children by a multidisciplinary team. Further cohort studies with a comparison group and a longer follow-up period are needed to determine whether the incidence of dental caries in this group of children occurs during the mixed and permanent dentition phases.

5 Conclusion

An inverse dose-response relation was found between low birth weight and the incidence of caries. Moreover, a lower socioeconomic status and the consumption of juice, tea, or yogurt were risk factors for dental caries.

Bullet points

- It is important to monitor low birth weight children due to the increased risk of developing caries in the early years of life.
- This study demonstrated that a lower the birth weight increases the risk of the incidence of dental caries in a dose-dependent manner.
- Measures for caries prevention should include the identification of low birth weight children, those from families with a low socioeconomic status, and those with cariogenic dietary habits.

6 References

1. WHO (World Health Organization). March of Dimes. New global estimates

os preterm birth published. Available at: <https://www.who.int/news-room/detail/17-11-2018-new-global-estimates-on-preterm-birth-published>. Accessed: April 18, 2020.

2. Seow WK. Effects of preterm birth on oral growth and development. *Aust Dent J.* 1997;42(2):85–91.
3. Flood K, Malone FD. Prevention of preterm birth. *Semin Fetal Neonatal Med.* 2012;17(1):58–63.
4. Hisano K, Tanaka K, Nagata C, Arakawa M, Miyake Y. High birthweight is associated with increased prevalence of dental caries in Japanese children. *Int J Dent Hyg.* 2018;16(3):404–10.
5. Tanaka K, Miyake Y. Low birth weight, preterm birth or small-for-gestational-age are not associated with dental caries in young Japanese children. *BMC Oral Health.* 2014;14(1):1–6.
6. Dos Santos Junior VE, de Sousa RMB, Oliveira MC, de Caldas Junior AF, Rosenblatt A. Early childhood caries and its relationship with perinatal, socioeconomic and nutritional risks: A cross-sectional study. *BMC Oral Health.* 2014;14(1):1–5.
7. Targino AGR, Rosenblatt A, Oliveira AF, Chaves AMB, Santos VE. The relationship of enamel defects and caries: a cohort study. *Oral diseases* 2011; 17: 420-6.
8. Chandra RK. Nutrition and the immune system from birth to old age. *Eur J Clin Nutr.* 2002;56:S73–6.
9. Raqib R, Alam DS, Sarker P, Ahmad SM, Ara G, Yunus M, et al. Low birth weight is associated with altered immune function in rural Bangladeshi children: A birth cohort study. *Am J Clin Nutr.*

2007;85(3):845–52.

10. Burt BA, Pai S. Does Low Birthweight Increase the Risk of Caries ? A Systematic Review. *J Dent Educ.* 2001;65(10):1024–7.
11. Kay EJ, Northstone K, Ness A, Duncan K, Crean SJ. Is there a relationship between Birthweight and subsequent growth on the development of Dental Caries at 5 years of age? A cohort study. *Community Dent Oral Epidemiol.* 2010;38(5):408–14.
12. Occhi-Alexandre IGP, Cruz PV, Bendo CB, Paiva SM, Pordeus IA, Martins CC. Prevalence of dental caries in preschool children born preterm and/or with low birth weight: A systematic review with meta-analysis of prevalence data. *Int J Paediatr Dent.* 2020;30(3):265-75.
13. Schüler IM, Haberstroh S, Dawczynski K, Lehmann T, Heinrich-Weltzien R. Dental Caries and Developmental Defects of Enamel in the Primary Dentition of Preterm Infants: Case-Control Observational Study. *Caries Res.* 2018;52(1–2):22–31.
14. Da Silva Castro CR, De Sousa Cabral MBB, Mota ELA, Cangussu MCT, Vianna MIP. Analysis of the influence of low birth weight on the time of eruption of dental caries in children in early childhood. *J Public Health Dent.* 2019;79(4):292-7.
15. Zhou Y, Yang JY, Zhi QH, Tao Y, Qiu RM, Lin HC. Factors associated with colonization of *Streptococcus mutans* in 8-to 32-month-old children: A cohort study. *Aust Dent J.* 2013;58(4):507–13.
16. Nirunsittirat A, Pitiphat W, McKinney CM, Derouen TA, Chansamak N, Angwaravong O, et al. Adverse birth outcomes and childhood caries: A cohort study. *Community Dent Oral Epidemiol.* 2016;44(3):239–47.
17. Brasil. Pesquisa Nacional de Saúde Bucal. Ministério da Saúde. Brasília,

2012

18. Altman DG. Editor : Douglas G . Altman. 1991;10:1635–6.
19. JS L. Regression models for categorical and limited dependent variables. 1 st ed. Thousand Oaks; 1997.
20. Hosmer DW, Lemeshow S SR. Applied logistic regression. 3 ed. Sons W&, editor. New York; 2013.
21. Hallett KB, O'Rourke PK. Pattern and severity of early childhood caries. *Community Dent Oral Epidemiol.* 2006;34(1):25–35.
22. Anil S, Anand PS. Early childhood caries: Prevalence, risk factors, and prevention. *Front Pediatr.* 2017;18;5:157.
23. Narang R, Saha S, Jagannath G V., Kumari M, Mohd S, Saha S. The maternal socioeconomic status and the caries experience among 2-6 years old preschool children of Lucknow city, India. *J Clin Diagnostic Res.* 2013;7(7):1511–3.
24. Chankanka O, Levy SM, Marshall TA, Cavanaugh JE, Warren JJ, Broffitt M, Kolker JL. The association between dietary intakes from 36 to 60 months of age and primary dentition non-cavited caries and cavitated caries. *J Public Health Dent.* 2015;75(4): 265-73
25. Coughlin SS. Recall bias in epidemiologic studies. *J Clin Epidemiol.* 1990;43(1):87–91.
26. Martins CC, Ramos-Jorge ML, Cury JA, Pordeus IA, Paiva SM.. Agreement between data obtained from repeated interviews with a six-years interval. *Rev Saude Publica.* 2008;42(2):346–9. 7
27. Cruvinel VRN, Gravina DBL, Azevedo TDPL, Bezerra ACB, de Toledo

- OA. Prevalence of dental caries and caries-related risk factors in premature and term children. *Braz Oral Res.* 2010;24(3):329–35.
28. Sacket DL, Richardson WS, Rosenberg W, et al. Evidence-Based Medicine: How to Practice and Teach EBM. New York: Churchill Livingstone. 1997

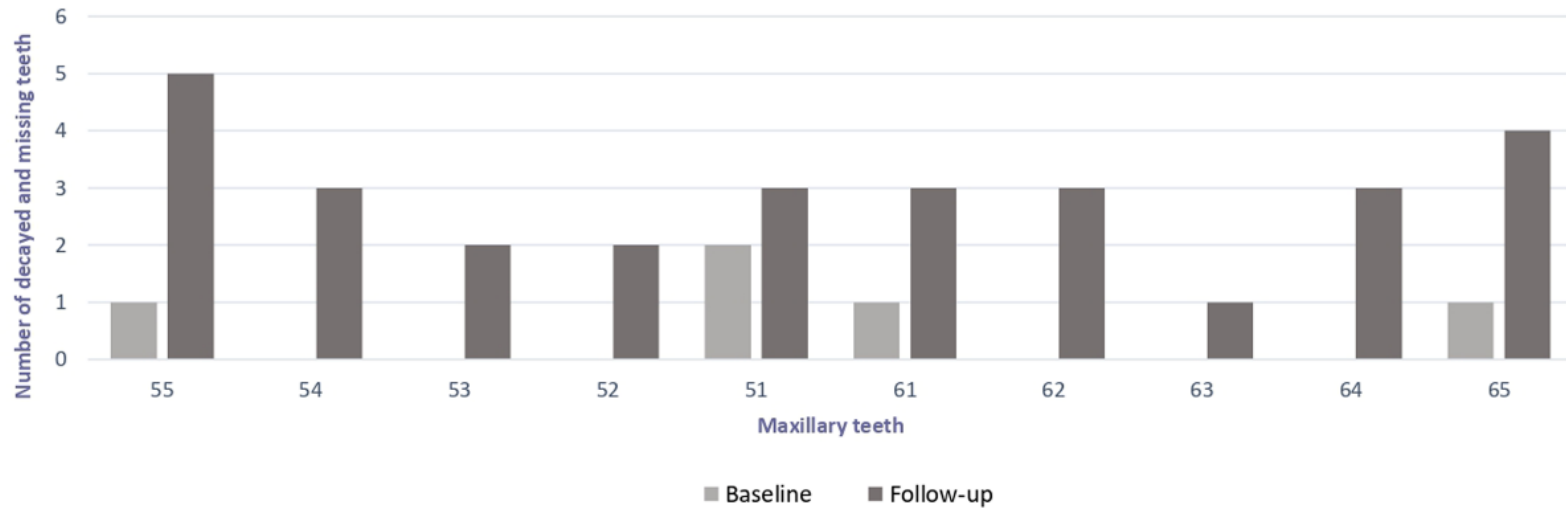


Figure 1– Number of maxillary teeth affected by dental caries at baseline and follow-up.

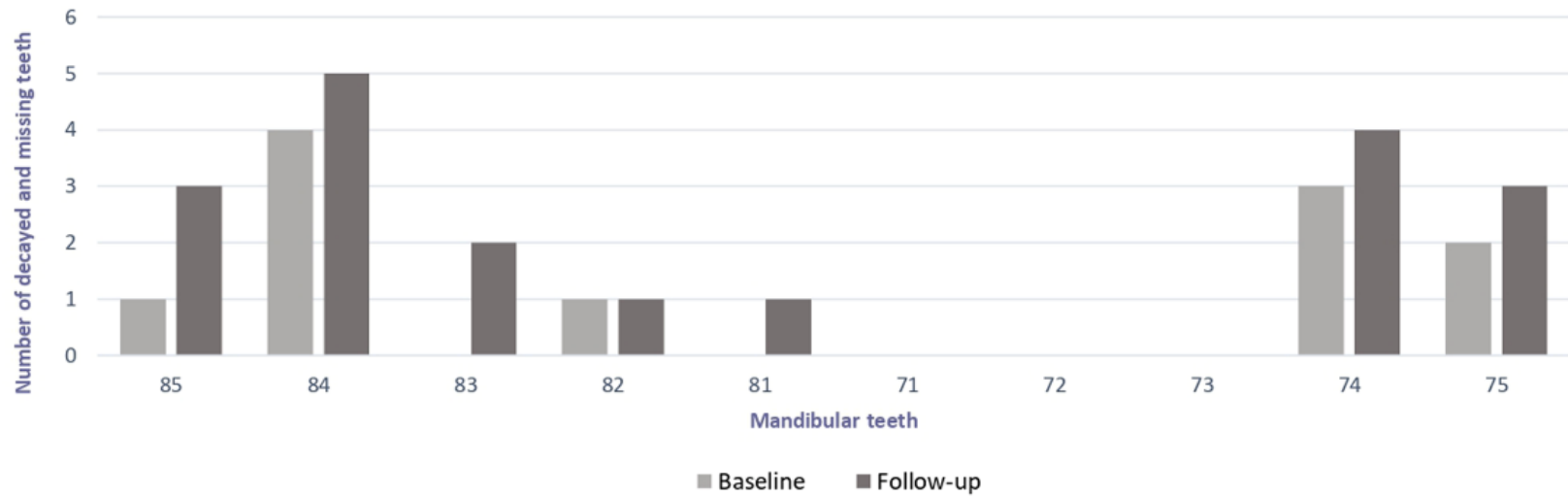


Figure 2. Number of mandibular teeth affected by dental caries at baseline and follow-up.

Table 1 – Risk factors for dental caries experience among preterm/BLW children, Brazil, baseline (T1) – time 2 (T2)

Variable	Incidence of dental caries lesions (mean; median)	Unadjusted RR (CI 95%)	p-value	Adjusted RR (CI 95%)	p-value
Sex					
Male	0.60; 0	1			
		1.28	0.642		
Female	1.24; 0	(0.45-3.68)			
Age at baseline					
		0.54	0.092		
		(0.27-1.11)			
Birth weight					
Less than 1,000 g	1.67; 0	1		1	
		0.87	0.754	0.23	0.012
		(0.36-2.11)		(0.08-0.72)	
1,000 to 1,500 g	1.08; 0	0.17	0.042	0.06	0.012
		(0.03-0.84)		(0.01-0.55)	
More than 1,500 to 2,500 g	0.09; 0				
Mother's schooling (years of study)					
> 8	0.76; 0	1			
		1.33	0.531		

≤ 8	1.86; 0	(0.55-3.24)			
Father's schooling					
(years of study)					
> 8	1.00; 0	1	1.000		
		1.00			
≤ 8	0.93; 0	(0.37-2.70)			
Monthly family income					
(minimum wage)					
> 2 MWs	0.08; 0	1	0.037	1	
		6.18		6.05	0.044
≤ 2 MWs	1.42; 0	(1.12-34.16)		(1.05-34.84)	
Consumption of milk					
using glass with sugar					
yes	1.17; 0	1	0.711		
		0.84			
no	0.78; 0	(0.30-2.26)			
Bottle feeding habits		1.03			
		(0.75-1.41)	0.876		

**Consumption of juice,
tea, or yogurt**

yes	3.25; 0	1	0.118	1	
		0.55		0.21	0.005
no	0.69; 0	(0.26-1.16)		(0.07-0.62)	

Infant formulas

yes	0.73; 0	1	0.753	
		1.20		
no	1.08; 0	(0.39-3.64)		

Chips

yes	2.17; 0	1	0.711	
		0.70		
no	0.85; 0	(0.30-1.64)		

Sweets

yes	2.63; 0	1	0.250	
		0.54		
no	0.58; 0	(0.19-1.55)		

Toothbrushing habits

yes	0.61; 0	1	0.476	
		1.46		

no	1.62; 0	(0.52-4.08)	
Fluoridated dentifrices			
during toothbrushing			
yes	0.52; 0	1	0.241
		1.88	
no	2.86; 0	(0.66-5.37)	

7. CONSIDERAÇÕES FINAIS

O presente estudo demonstrou um aumento da incidência de cárie dentária ao longo de 2 anos, em crianças prematuras e / ou com baixo peso ao nascer. Esse grupo de crianças podem ter mais vulnerabilidade para cárie dentária, por apresentarem uma resposta imune alterada. Além disso, a cárie dentária teve uma relação dose resposta com o BPN, o que demonstra que crianças de extremo BPN podem apresentar mais alterações bucais. Essas alterações da estrutura do dente, provavelmente estão relacionadas ao período de formação do dente, o qual foi interrompido com o parto prematuro e / ou o BPN.

A variável cárie dentária foi associada com os aspectos socioeconômicos e dietéticos. Os fatores socioeconômicos demonstram uma importante relação na desigualdade da distribuição da cárie dentária. Os determinantes sociais podem exercer um grande diferencial em relação ao acesso do serviço de saúde, informações, produtos de higiene e alimentação cariogênica, que muitas das vezes a população mais carente não tem acesso. Apesar da cárie dentária apresentar um declínio na população pré-escolar em todo o mundo, esta doença continua sendo a mais comum na infância, causando dor, dificuldade de mastigação, distúrbios gerais de saúde, problemas psicológicos e impacto na qualidade de vida.

Um fator que pode transformar positivamente o cenário da cárie dentária é a educação dos pais com orientações que estejam voltadas para a prevenção e melhora dos hábitos alimentares. Porém, ter informações não está relacionado a exercê-las. Às vezes por comodidade, preço dos alimentos, acesso e até mesmo cultural, essa população opta por uma dieta cariogênica. Contudo, as crianças pesquisadas estavam inseridas em um contexto favorável para a saúde geral, acompanhadas por uma equipe multiprofissional, o que pode ter refletido no índice da incidência de lesões de doença cárie dentária.

REFERÊNCIAS

ANIL, S.; ANAND, P.S. Early childhood caries: Prevalence, risk factors, and prevention. **Front Pediatr.** v. 18, n. 5, p. 157, 2017.

BERNABÉ, E.; MACRITCHIE, H.; LONGBOTTOM, C.; PITTS, N.B.; SABBAH, W. Birth Weight, Breastfeeding , Maternal Smoking and Caries. **J Dent Res.** v. 96, n. 2, p.171-8, 2017.

BRASIL. Ministério da Saúde (MS). **Secretaria de Atenção à Saúde. Secretaria de Vigilância em Saúde.** SB Brasil 2010: Pesquisa Nacional de Saúde Bucal: resultados principais. Brasília: MS; 2012.

CHANDRA, R.K. Nutrition and the immune system fram birth to old age. **Eur J Clin Nutr.** v. 56 n. 3 p. s73-6, 2002.

CHAWANPAIBOON, S.; VOGEL, J.P.; MOLLER, A.B.; LUMBIGANON, P.; PETZOLD, M.; HOGAN, D. et al. Global, regional, and national estimates of levels of preterm birth in 2014: a systematic review and modelling analysis. **Lancet Glob Health.** v. 7, n. 1, p. 37–46, 2006.

CLEMENTINO. M.A. et. al. Perceived impact of dental pain on the quality of life of preschool children and their families. **Plos One.** v. 10, n. 6, p. 1-13, 2015.

CORREA-FARIA, P. et al. Association between developmental defects of enamel and early childhood caries: A cross-sectional study. **Int J Paediatr Dent.** v. 25, n. 2, p. 103-109, 2015.

COSTA, F.S.; SILVEIRA, E.; PINTO, G.S.; NASCIMENTO, G.G.; THOMSON, W.M.; DEMARCO, F.F. Developmental defects of enamel and dental caries in the primary dentition: a systematic review and meta-analysis. **J Dent.** v. 60, p. 1-7, 2017.

DA SILVA CASTRO, C.S.; CABRAL, M.B.B.D.S.; MOTA, E.L.A.; CANGUSSU, M.C.T.; VIANNA, M.I.P. Analysis of the in fl uence of low birth weight on the time of eruption of dental caries in children in early childhood. **J Public Health Dent.** v. 79, n. 4, p. 292-7, 2019.

CRUVINEL, V.R.N.; GRAVINA, D.B.L.; AZEVEDO, T.D.P.L.; BEZERRA,

A.C.B.; DE TOLEDO, O.A. Prevalence of dental caries and caries-related risk factors in premature and term children. **Braz Oral Res.** v. 24, n. 3, p. 329–35, 2010.

DABAWALA, S. et al. Parenting style and oral health practices in early childhood caries: A case-control study. **Int J Paediatr Dent.** v. 26, n. 3, p. 1-10, 2016.

DOS SANTOS JUNIOR, V.E.; SOUZA, R.M.B.; OLIVEIRA, M.C.; CALDAS JUNIOR, A.F.; ROSENBLATT, A. Early childhood caries and its relationship with perinatal, socioeconomic and nutritional risks: a cross-sectional study. **BMC Oral Health**, v. 14, p. 47, 2014.

GAUR, S.; NAYAK, R. Underweight in low socioeconomic status preschool children with severe early childhood caries. **J Indian Soc Pedod Prev Dent.** v. 29, n. 4 p. 305-9, 2011.

GEBREMEDHIN, M.; AMBAW FENTIE.; ADMASSU, E.; BERHANE, H. Maternal associated factors of low birth weight: a hospital based cross-sectional mixed study in Tigray, Northern Ethiopia. **BMC Pregnancy Childbirth.** v. 17, n. 15, p. 222, 2015.

HAILU, L.D.; KEBEDE, D.L.; Determinants of low birth weight among deliveries at a referral hospital in Northern Ethiopia. **Biomed Res Int.** v. 2018, p. 8169615, 2018.

HISANO, K.; TANAKA, K.; NAGATA, C.; ARAKAWA, M.; MIYAKE, Y. High birthweight is associated with increased prevalence of dental caries in Japanese children. **Int J Dent Hyg.** v. 16, n. 3, p. 404-10, 2018.

KAY, E.J.; NORTHSTONE, K.; NESS, A.; DUNCAN, K.; CREAN, S.J. Is there a relationship between Birthweight and subsequent growth on the development of Dental Caries at 5 years of age? A cohort study. **Community Dent Oral Epidemiol.** v. 38, n. 5, p. 408–14, 2010.

MENGESHA, H.G.; WUNEH, A.D.; WELDEAREGAWI, B.; SELVAKUMAR, D.L. Low birth weight and macrosomia in Tigray, Northern Ethiopia: who are the mothers at risk? **BMC Pediatr.** v. 12, n. 17, p. 144, 2017.

MOIMAZ, S.A. et al. Early childhood caries: Epidemiology, severity and sociobehavioural determinants. **Oral Health Prev Dent.** v. 14, n. 1, p. 77-83, 2016.

NARANG, R.; SAHA, S.; JAGANNATH, G.V.; KUMARI, M.; MOHD, SHAFFAT.; SAHA, SANALI. The maternal socioeconomic status and the caries experience among 2-6 years old preschool children of lucknow city, India. **J Clin Diagn Res.** v. 7, n. 7, p. 1511-3, 2013.

NIRUNSITTIRAT, A.; PITIPHAT, W.; MCKINNEY, C.M.; DEROUEN, T.A.; CHANSAMAK, N.; ANGWARAVONG, O. et al. Adverse birth outcomes and childhood caries: A cohort study. **Community Dent Oral Epidemiol.** v. 44, n. 3, p. 239–47, 2016.

OCCHI-ALEXANDRE, I.G.P.; CRUZ, P.V.; BENDO, C.B.; PAIVA, S.M.; PORDEUS, I.A.; MARTINS, C.C. Prevalence of dental caries in preschool children born preterm and/or with low birth weight: A systematic review with meta-analysis of prevalence data. **IntJ Paediatr Dent** v. 30 n. 3 p. 265-75, 2020.

OMS. Organização Mundial da Saúde. Disponível em:< <https://www.who.int/news-room/detail/17-11-2018-new-global-estimates-on-preterm-birth-published>. Acesso em 18 abril. 2020.

ONG, K.K.; KENNEDY, K.; CASTANEDA-GUITIÉRREZ, E.; FORSYTH, S. et al. Postnatal Growth in preterm infants and later health outcomes: a systematic review. **Acta Paediatr.** v. 104, n. 10, p. 974-86, 2015.

PAGLIA, L.; SCAGLIONI, S.; TORCHIA, V.; DE COSMI, V.; MORETTI, M.; MARZO, G.; GIUCA, M.R. Familial and dietary risk factors in Early Childhood Caries. **Eur J Paediatr Dent.** v. 17 n. 2 p. 93-99, 2016.

PERES, M.A.; LATORRE, M.R.O.; SHEIHAM, A.; PERRES, K.G. et al. Social and biological early life influences on severity of dental caries in children aged 6 years. **Community Dent Oral Epidemiol.** v. 33, n. 1, p. 53-63, 2005.

RAQIB, R.; ALAM, D.S.; SARKER, P.; AHMAD, S.M.; ARA, G.U.L. et al. Low birth weight is associated with altered immune function in rural Bangladeshi children: a birth cohort study. **Am J Clin Nutr.** v. 85, n. 3, p. 845-52, 2007.

SARAIVA, M.C.D.; BETTIOL, H.; BARBIERI, M.A.; SILVA, A.A. Are intrauterine growth restriction and preterm birth associated with dental caries? **Community Dent Oral Epidemiol.** v. 35 n. 5, p. 364–76, 2007.

SCHÜLER, I.M., HABERSTROH, S.; DAWCZYNSKI, K.; LEHMANN, T.; HEINRICH-WELTZIEN, R. Dental caries and developmental defects of enamel in the primary dentition of preterm infants: case-control observational study. **Caries Res.** v. 52, p. 22-31, 2018.

SEERIG, L.M. *et al.* Tooth loss in adults and income: Systematic review and meta-analysis. **J Dent**, v. 43, n. 9, p. 1051- 1059, 2015.

SUBRAMANIAM, P.; PRASHANTH, P. Prevalence of early childhood caries in 8 - 48 month old preschool children of Bangalore city, South India. **Contemp Clin Dent.** v. 3, n. 1, p. 15-21, 2012.

TANAKA, K.; MIYAKE, Y. Low birth weight, preterm birth ou small for gestacional-age are not associated with caries in young Japanese children. **BMC Oral Health.** 2014.

VARGAS-FERREIRA, F. *et al.* Association between developmental defects of enamel and dental caries: A systematic review and meta-analysis. **J Dent.** v. 43, n. 6, p. 619-628, 2015.

ZHOU, Y.; YANG, J.Y.; ZHI, Q.H.; TAO, Y.; QIU, R.M.; LIN, H.C. Factors associated with colonization of *Streptococcus mutans* in 8-to 32-month-old children: A cohort study. **Aust Dent J.** v. 58, n. 4, p. 507-13, 2013.

APÊNDICE A – QUESTIONÁRIO

ATENÇÃO: ESTAS PERGUNTAS SÃO REFERENTES AO PERÍODO DOS ÚLTIMOS 2 ANOS DE IDADE DO SEU FILHO (A)

*Por favor, responda o questionário abaixo. Lembre-se, não há resposta certa ou errada.

- **Identificação do filho**

*As perguntas são para atualização dos dados da criança.	
Nome da criança:	
Idade: _____ anos _____ meses	Sexo: (<input type="checkbox"/>) Masculino (<input type="checkbox"/>) Feminino
Endereço:	
Cidade:	CEP:
Telefones: (<input type="checkbox"/>) _____ / (<input type="checkbox"/>) _____	
Responsável pelas informações:	

- **Aleitamento e hábitos alimentares**

Seu filho(a) faz uso de mamadeira ?	() Sim () Não () Nunca fez uso
	Com quantos anos ele parou? _____
	O que coloca nessa mamadeira? (ex: leite e achocolatado, mucilon e açúcar, suco) _____
Quantas vezes por dia seu filho(a) faz uso da mamadeira?	
Qual o período seu filho(a) mais usa a mamadeira? Você pode marcar mais de uma alternativa	() Manhã () Tarde () Noite () Para dormir.
Seu filho escova os dentes após a última mamadeira antes de dormir?	() Sim () Não
Seu filho(a) faz lanches entre as 3 principais refeições? Ex: Café da manhã, almoço, jantar	() Sim () Não
	O que ele come nesses lanches? (ex: pão, biscoito, iogurte, biscoito recheado, frutas, suco, refrigerante, salgadinho)
Seu filho(a) escova os dentes após as 3 principais refeições do dia?	() Sim () Não. Se NÃO, entre quais refeições o seu filho(a) escova os dentes? () Café da manhã () Almoço () Jantar

Seu filho(a) come doces?	() Sim () Não
	() Todos os dias () 2 a 3 vezes por semana () Uma vez por semana () Uma vez no mês.
Seu filho toma refrigerante?	() Sim () Não
	() Todos os dias () 2 a 3 vezes por semana () Uma vez por semana () Uma vez no mês.

- Hábitos bucais**

Seu filho(a) faz uso de chupeta? Você pode marcar mais de uma	() Sim Qual o período do dia? () Manhã () Tarde () Noite () Para dormir
	() Não, com quantos anos ele parou? _____ () Nunca fez uso
Seu filho(a) chupa dedo?	() Sim () Não
Seu filho(a) tem hábitos de ficar mordendo algum objeto (ex: lápis)	() Sim () Não

- Hábitos escolares**

Qual o período do dia seu filho(a) estuda?	() Manhã () Tarde () Noite
Seu filho lancha na escola?	() Sim () Não

	O que ele come nesse lanche? (ex: biscoito, iogurte, biscoito recheado, frutas, suco, salgadinho) _____ refrigerante,
Na escola do seu filho(a) tem o momento da escovação dos dentes?	<input type="checkbox"/> Sim <input type="checkbox"/> Não
Qual a pasta de dente que o seu filho leva para a escola?	

- **Saúde**

Seu filho(a) teve alguma doença nos últimos 2 anos?	<input type="checkbox"/> Sim, qual o nome da doença _____ <input type="checkbox"/> Faz quanto tempo?	<input type="checkbox"/> Não
Seu filho foi internado nos últimos 2 anos?	<input type="checkbox"/> Sim, por qual motivo? _____ Faz quanto tempo?	<input type="checkbox"/> Não
Seu filho(a) faz ou fez uso de algum medicamento nos últimos 2 anos?	<input type="checkbox"/> Sim, qual o nome? _____ Por quanto tempo?	<input type="checkbox"/> Não

Quantas vezes nos últimos dois anos o seu filho foi ao dentista? Por qual motivo?	
Seu filho sentiu dor de dente alguma vez na vida?	<input type="checkbox"/> Sim <input type="checkbox"/> Não
Seu filho sentiu dor de dente nos últimos seis meses?	<input type="checkbox"/> Sim <input type="checkbox"/> Não
Seu filho fez algum tratamento odontológico nos últimos dois anos?	<input type="checkbox"/> Sim <input type="checkbox"/> Não

Muito obrigada, sua colaboração foi muito importante!

APÊNDICE B – FICHA DE EXAME CLÍNICO

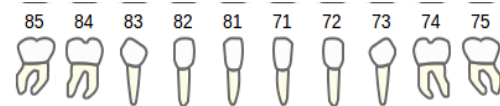
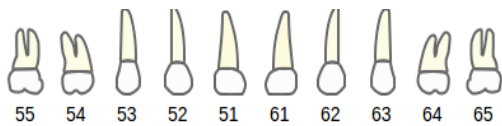
Nome: _____

Data de nascimento: ___/___/___

Sexo: 1-Masculino () 2-Feminino ()

Data do exame: ___/___/___

ceo-d



Códigos

- 0 = coroa hígida
 - 1 = coroa cariada
 - 2 = coroa restaurada, mas cariada
 - 3 = coroa restaurada e sem cárie
 - 4 = dente perdido devido à cárie
 - 5 = dente permanente perdido por outra razão (se for devido à esfoliação código 8)
 - 6 = dente com selante
 - 7 = prótese ou coroa, por razões diferentes de cárie
 - 8 = coroa não erupcionada
 - 9 = dente excluído quando não puder ser examinado (banda ortodôntica ou hipoplasia grave)
- (OMS, 2013)

**APÊNDICE C - TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO
(TCLE) – PAIS**

Título da pesquisa:

**“CONDIÇÕES BUCAIS EM CRIANÇAS COM BAIXO PESO AO NASCER:
UM ESTUDO LONGITUDINAL”**

Local do estudo: Hospital das Clínicas da Universidade Federal de Minas Gerais e Ambulatório da Criança de Risco (ACRIAR)

Pesquisadora Responsável: Natália Moreira Teixeira –
nathaliamoreira13@hotmail.com

Orientadora: Profa. Dra. Carolina Castro Martins

Coorientadora: Profa. Dra. Fabíola Galbiatti de Carvalho Carlo

Convido(a) Sr.(a) _____
responsável pela criança _____
a participar desta pesquisa que tem como objetivo reavaliar a condição bucal de crianças que foram avaliadas no ano de 2017.

A pesquisa será realizada através de dados dos prontuários das crianças e das mães, as mães responderão à um questionário e será feito um exame da boca das crianças. Os exames da boca serão realizados nas crianças com auxílio de espelho clínico e abaixadores de madeira para língua. Estes exames serão feitos utilizando-se todo o equipamento de proteção (luvas para procedimentos, óculos, gorro, máscara e avental) e com material descartável e/ou esterilizado. Os riscos para o exame da boca são mínimos, como por exemplo, o seu filho(a) poderá chorar durante o exame, mas isto é considerado normal para a idade do seu filho(a).

Os dados analisados nesta pesquisa contribuirão para revelar as condições bucais das crianças, além de auxiliar na promoção e prevenção de saúde bucal nessas crianças através de orientação dos dentistas e familiares. Os responsáveis pelas crianças participantes terão liberdade de retirar o consentimento a qualquer momento e deixar de participar da pesquisa sem que

haja prejuízo ou danos ao atendimento no ambulatório ou na escola. A identificação dos participantes da pesquisa será confidencial, assim como informações relacionadas à privacidade dos participantes. As informações serão utilizadas exclusivamente para estudo e pesquisa. Esta pesquisa foi aprovada pelo Comitê de Ética em Pesquisa da UFMG (COEP). Qualquer dúvida ética você pode entrar em contato com o COEP, telefone (31) 3409 - 4592.

- Endereço institucional: Av. Antônio Carlos 6.627, Campus da Pampulha, CEP 31270-901 – Belo Horizonte – MG
- COEP/ UFMG: (31) 3409 – 4592. Av. Antônio Carlos, 6627, Unidade Administrativa II, 2º andar sala 2005. CEP 31270-901

Coloco-me à inteira disposição para resolver qualquer dúvida ou qualquer problema.

Natália Moreira Teixeira

Por este documento, eu _____
RG: _____ CPF: _____
Endereço: _____
Celular 1:(____) _____
Celular 2:(____) _____
E-mail: _____, autorizo a avaliação
clínica do(s) menor(es) _____, nascido(s) em
___/___/____, pelo qual sou responsável. Fui informado (a) que receberei um
questionário para responder. Dou minha permissão para que estes dados
sejam utilizados para fins de pesquisa e ensino.

Belo Horizonte, ___ de _____ de _____

Assinatura da mãe ou responsável

ANEXO A – Parecer do Comitê de ética em Pesquisa da UFMG.

UNIVERSIDADE FEDERAL DE
MINAS GERAIS



PARECER CONSUBSTANCIADO DO CEP

DADOS DA EMENDA

Título da Pesquisa: Condições bucais em crianças prematuras e baixo peso ao nascer: um estudo longitudinal

Pesquisador: CAROLINA C MARTINS

Área Temática:

Versão: 3

CAAE: 66632817.7.0000.5149

Instituição Proponente: UNIVERSIDADE FEDERAL DE MINAS GERAIS

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 3.519.897

Apresentação do Projeto:

Segundo a Organização Mundial de Saúde (OMS) cerca de 15 milhões de crianças prematuras nascem no mundo. Um bebê nascido vivo é denominado prematuro antes que as 37 semanas de gestação tenham sido completadas, sendo considerado pré-termo. Os bebês a termo são aqueles nascidos entre a 37 e 41 semanas e seis dias, e os bebês pós termo são aqueles nascidos com 42 semanas ou mais de idade gestacional.

Este estudo será conduzido no estado de Minas Gerais, na cidade de Belo Horizonte, no Hospital das Clínicas da Universidade Federal de Minas Gerais. Para a amostra dessa pesquisa, serão avaliadas 84 crianças de 4 a 7 anos de idade que serão divididas em dois grupos: (G1) prematuras e/ou com baixo peso ao nascer do Ambulatório da Criança de Risco (ACRIAR) e (G2) com peso normal ao nascer e/ou nascidas a termo de escolas públicas de Belo Horizonte (G2). Foi realizado um estudo transversal com grupo controle (FEUSER, 2018), com crianças de 2 a 5 anos de idade. O grupo 1 (G1) foi composto por crianças prematuras e/ou com baixo peso que nasceram no Hospital das Clínicas da Universidade Federal de Minas Gerais na cidade de Belo Horizonte que estavam em acompanhamento no Ambulatório da Criança de Risco (ACRIAR) no período de coleta de dados. O grupo 2 (G2) foi composto por crianças que nasceram a termo e/ou com peso normal, matriculadas em escolas

públicas de Belo Horizonte. Foram examinadas 42 crianças no grupo (G1) e 42 no grupo (G2). As crianças foram pareadas por sexo e idade, com uma proporção de 1 criança do G1 para 1 criança

Endereço: Av. Presidente Antônio Carlos, 8627 2ª Ad S1 2005

Bairro: Unidade Administrativa II **CEP:** 31.270-901

UF: MG **Município:** BELO HORIZONTE

Telefone: (31)3409-4592

E-mail: coep@prpq.ufmg.br

UNIVERSIDADE FEDERAL DE
MINAS GERAIS



Continuação do Parecer: 3.519.897

Outros	Parecer.pdf	29/03/2017 20:46:23	ELISA FEUSER DE ARJONA	Aceito
Outros	Autorizacao pediatria.pdf	29/03/2017 20:44:15	ELISA FEUSER DE ARJONA	Aceito
Declaração de Instituição e Infraestrutura	cartadeAnuenciaAssinada.pdf	29/03/2017 20:40:36	ELISA FEUSER DE ARJONA	Aceito
Outros	ACRIAR2.pdf	29/03/2017 20:32:58	ELISA FEUSER DE ARJONA	Aceito
Outros	ACRIAR.pdf	29/03/2017 20:26:16	ELISA FEUSER DE ARJONA	Aceito
Declaração de Instituição e Infraestrutura	AutorizacaoHC.pdf	29/03/2017 20:21:03	ELISA FEUSER DE ARJONA	Aceito

Situação do Parecer:

Aprovado

Necessita Apreciação da CONEP:

Não

BELO HORIZONTE, 20 de Agosto de 2019

Assinado por:

Eliane Cristina de Freitas Rocha
(Coordenador(a))

Endereço: Av. Presidente Antônio Carlos, 6627 2º Ad S1 2005
 Bairro: Unidade Administrativa II CEP: 31.270-901
 UF: MG Município: BELO HORIZONTE
 Telefone: (31)3409-4592 E-mail: coep@prpq.ufmg.br

ANEXO B – Normas para publicação no periódico International Journal of Paediatric Dentistry

Author Guidelines

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

1. GENERAL

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

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

In June 2007, the Editors gave a presentation on How to write a successful paper for the International Journal of Paediatric Dentistry.

2. ETHICAL GUIDELINES

Submission is considered on the conditions that papers are previously unpublished, and are not offered simultaneously elsewhere; that authors have read and approved the content, and all authors have also declared all competing interests; and that the work complies with the Ethical Policies of the

Journal and has been conducted under internationally accepted ethical standards after relevant ethical review.

3. CONFLICT OF INTEREST AND SOURCE FUNDING

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

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

Conflict of Interest Disclosure Form

4. MANUSCRIPT SUBMISSION PROCEDURE

Articles for the International Journal of Paediatric Dentistry should be submitted electronically via an online submission site. Full instructions and support are available on the site and a user ID and password can be obtained on the first visit. Support is available by phone (+1 434 817 2040 ext. 167) or here. If you

cannot submit online, please contact Mirlyn Consador in the Editorial Office by e-mail IJPDedoffice@wiley.com.

4.1. Getting Started

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

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

*If you are registering as a new user.

- After clicking on 'Create Account', enter your name and e-mail information and click 'Next'. Your e-mail information is very important.

- Enter your institution and address information as appropriate, and then click 'Next.'

- Enter a user ID and password of your choice (we recommend using your e-mail address as your user ID), and then select your area of expertise. Click 'Finish'.

*If you are already registered, but have forgotten your log in details, enter your e-mail address under 'Password Help'. The system will send you an automatic user ID and a new temporary password.

*Log-in and select 'Author Center'.

4.2. Submitting Your Manuscript

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

* Enter data and answer questions as appropriate.

* You may copy and paste directly from your manuscript and you may upload your pre-prepared covering letter. Please note that a separate Title Page must be submitted as part of the submission process as 'Title Page' and should contain the following:

- Word count (excluding tables)
- Authors' names, professional and academic qualifications, positions and places of work. They must all have actively contributed to the overall design and

execution of the study/paper and should be listed in order of importance of their contribution

- Corresponding author address, and telephone and fax numbers and email address

*Click the 'Next' button on each screen to save your work and advance to the next screen.

*You are required to upload your files.

- Click on the 'Browse' button and locate the file on your computer.

- Select the designation of each file in the drop down next to the Browse button.

- When you have selected all files you wish to upload, click the 'Upload Files' button.

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

4.3. Manuscript Files Accepted

Manuscripts should be uploaded as Word (.doc) or Rich Text Format (.rtf) files (not write-protected) plus separate figure files. GIF, JPEG, PICT or Bitmap files are acceptable for submission, but only high-resolution TIF or EPS files are suitable for printing. The files will be automatically converted to HTML and a PDF document on upload and will be used for the review process. The text file must contain the entire manuscript including title page, abstract, text, references, tables, and figure legends, but no embedded figures. In the text, please reference figures as for instance 'Figure 1', 'Figure 2' to match the tag name you choose for the individual figure files uploaded. Manuscripts should be formatted as described in the Author Guidelines below. Please note that any manuscripts uploaded as Word 2007 (.docx) is now accepted by IPD. As such manuscripts can be submitted in both .doc and .docx file types.

4.4. Review Process

The review process is entirely electronic-based and therefore facilitates faster reviewing of manuscripts. Manuscripts will be reviewed by experts in the field (generally two reviewers), and the Editor-in-Chief makes a final decision. The

International Journal of Paediatric Dentistry aims to forward reviewers' comments and to inform the corresponding author of the result of the review process. Manuscripts will be considered for 'fast-track publication' under special circumstances after consultation with the Editor-in-Chief.

4.5. Suggest a Reviewer

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

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

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

4.7. E-mail Confirmation of Submission

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

4.8. Manuscript Status

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

4.9. Submission of Revised Manuscripts

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

4.10 Online Open

OnlineOpen is available to authors of primary research articles who wish to make their article available to non-subscribers on publication, or whose funding agency requires grantees to archive the final version of their article. With OnlineOpen, the author, the author's funding agency, or the author's institution pays a fee to ensure that the article is made available to non-subscribers upon publication via Wiley Online Library, as well as deposited in the funding agency's preferred archive.

For the full list of terms and conditions, see http://wileyonlinelibrary.com/onlineopen#OnlineOpen_Terms.

Any authors wishing to send their paper OnlineOpen will be required to complete the payment form available from our website at https://authorservices.wiley.com/bauthor/onlineopen_order.asp

Prior to acceptance there is no requirement to inform an Editorial Office that you intend to publish your paper OnlineOpen if you do not wish to. All OnlineOpen articles are treated in the same way as any other article. They go through the journal's standard peer-review process and will be accepted or rejected based on their own merit.

5. MANUSCRIPT TYPES ACCEPTED

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

Review Articles: may be invited by the Editor.

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

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

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

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

- a short **Introduction** (avoid lengthy reviews of literature);
- the **Case report** itself (a brief description of the patient/s, presenting condition, any special investigations and outcomes);

- a **Discussion** which should highlight specific aspects of the case(s), explain/interpret the main findings and provide a scientific appraisal of any previously reported work in the field.
- Please provide up to 3 bullet points for your manuscript under the heading: 1. Why this clinical report is important to paediatric dentists. Bullet points should be added to the end of your manuscript, before the references.

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

6. MANUSCRIPT FORMAT AND STRUCTURE

6.1. Format

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

6.2. Structure

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

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

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

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

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

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

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

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

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

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

(iii) DNA Sequences and Crystallographic Structure Determinations:

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

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

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

Bullet Points should include one heading:

*Why this paper is important to paediatric dentists.

Please provide maximum 3 bullets per heading.

Review Articles: may be invited by the Editor. Review articles for the International Journal of Paediatric Dentistry should include: a) description of search strategy of relevant literature (search terms and databases), b) inclusion criteria (language, type of studies i.e. randomized controlled trial or other,

duration of studies and chosen endpoints, c) evaluation of papers and level of evidence. For examples see:

Twetman S, Axelsson S, Dahlgren H et al. Caries-preventive effect of fluoride toothpaste: a systematic review. *Acta Odontologica Scandinavica* 2003; 61: 347-355.

Paulsson L, Bondemark L, Söderfeldt B. A systematic review of the consequences of premature birth on palatal morphology, dental occlusion, tooth-crown dimensions, and tooth maturity and eruption. *Angle Orthodontist* 2004; 74: 269-279.

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

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

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

Supplementary data

Supporting material that is too lengthy for inclusion in the full text of the manuscript, but would nevertheless benefit the reader, can be made available by the publisher as online-only content, linked to the online manuscript. The material should not be essential to understanding the conclusions of the paper, but should contain data that is additional or complementary and directly relevant to the article content. Such information might include the study protocols, more

detailed methods, extended data sets/data analysis, or additional figures (including). All material to be considered as supplementary data must be uploaded as such with the manuscript for peer review. It cannot be altered or replaced after the paper has been accepted for publication. Please indicate clearly the material intended as Supplementary Data upon submission. Also ensure that the Supplementary Data is referred to in the main manuscript. Please label these supplementary figures/tables as S1, S2, S3, etc.

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

6.3. References

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

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

preschool children in Abu Dhabi. *Community Dent Oral Epidemiol* 1998; 26: 31-36.

If more than 6 authors please, cite the three first and then et al. When citing a web site, list the authors and title if known, then the URL and the date it was accessed (in parenthesis). Include among the references papers accepted but not yet published; designate the journal and add (in press). Please ensure that all journal titles are given in abbreviated form.

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

6.4. Illustrations and Tables

Tables: should be numbered consecutively with Arabic numerals and should have an explanatory title. Each table should be typed on a separate page with regard to the proportion of the printed column/page and contain only horizontal lines

Figures and illustrations: All figures should be submitted electronically with the manuscript via ScholarOne Manuscripts (formerly known as Manuscript Central). Each figure should have a legend and all legends should be typed together on a separate sheet and numbered accordingly with Arabic numerals. Avoid 3-D bar charts.

Preparation of Electronic Figures for Publication: Although low quality images are adequate for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit EPS (lineart) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented programmes. Scans (TIFF only) should have a resolution of 300 dpi (halftone) or 600 to 1200 dpi (line drawings) in relation to the reproduction size (see below). EPS files should be saved with fonts embedded (and with a TIFF preview if possible).

For scanned images, the scanning resolution (at final image size) should be as follows to ensure good reproduction: lineart: >600 dpi; half-tones (including gel photographs): >300 dpi; figures containing both halftone and line images: >600 dpi.

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

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

7. AFTER ACCEPTANCE

7.1. Copyright

If your paper is accepted, the author identified as the formal corresponding author for the paper will receive an email prompting them to login into Author Services; where via the Wiley Author Licensing Service (WALS) they will be able to complete the license agreement on behalf of all authors on the paper.

For authors signing the copyright transfer agreement

If the OnlineOpen option is not selected the corresponding author will be presented with the copyright transfer agreement (CTA) to sign. The terms and conditions of the CTA can be previewed in the samples associated with the Copyright FAQs below:

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

For authors choosing OnlineOpen

If the OnlineOpen option is selected the corresponding author will have a choice of the following Creative Commons License Open Access Agreements (OAA):

Creative Commons Attribution License OAA

Creative Commons Attribution Non-Commercial License OAA

Creative Commons Attribution Non-Commercial -NoDerivs License OAA

To preview the terms and conditions of these open access agreements please visit the Copyright FAQs hosted on Wiley Author Services http://exchanges.wiley.com/authors/faqs---copyright-_301.html and visit <http://www.wileyopenaccess.com/details/content/12f25db4c87/Copyright--License.html>.

If you select the OnlineOpen option and your research is funded by certain funders [e.g. The Wellcome Trust and members of the Research Councils UK (RCUK) or the Austrian Science Fund (FWF)] you will be given the opportunity to publish your article under a CC-BY license supporting you in complying with your Funder requirements. For more information on this policy and the Journal's compliant self-archiving policy please visit: <http://www.wiley.com/go/funderstatement>.

7.2. Permissions

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

7.3. NIH Public Access Mandate

For those interested in the Wiley-Blackwell policy on the NIH Public Access Mandate, please visit our policy statement