UNIVERSIDADE FEDERAL DE PELOTAS

Programa de Pós-Graduação em Odontologia

Tese

CÁRIE NA PRIMEIRA INFÂNCIA: FATORES ASSOCIADOS E O EFEITO DE INTERVENÇÕES EDUCATIVAS

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Tese apresentada ao Programa de Pós-Graduação em Odontologia da Universidade Federal de Pelotas, como requisito parcial à obtenção do título de Doutor em Odontopediatria.

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NOTAS PRELIMINARES

A presente dissertação foi redigida segundo o Manual de Normas para Dissertações, Teses e Trabalhos Científicos da Universidade Federal de Pelotas de 2006, adotando o Nível de Descrição 4 – estruturas em Artigos, que consta no Apêndice D do referido manual. Disponível no endereço eletrônico: (http://www.ufpel.tche.br/prg/sisbi/documentos/Manual_normas_UFPel_2006.

O projeto de pesquisa contido nesta tese é apresentado em sua forma final após qualificação realizada em abril de 2011 e aprovado pela Banca Examinadora composta pelos Professores Doutores Dione Dias Torriani, Flávio Fernando Demarco, Lisandrea Rocha Schardosim e Maximiliano Sérgio Cenci.

Resumo

AZEVEDO, Marina Sousa. **Cárie na primeira infância: fatores associados e o efeito de intervenções educativas.** 2012. 142f. Tese de Doutorado – Programa de Pós- Graduação em Odontologia da Universidade Federal de Pelotas, Pelotas, RS, Brasil.

A cárie na primeira infância (CPI) permanece como uma das doenças mais comuns da infância causando danos à saúde geral e afetando a qualidade de vida da criança. Estratégias educativas podem trazer benefícios importantes para a saúde bucal da criança, já que durante a primeira infância é que se forma o comportamento para a saúde bucal, porém existem divergências acerca da efetividade deste método. Este trabalho tem por objetivo revisar sistematicamente a efetividade de diferentes tipos de intervenções educativas na redução da cárie na dentição decídua; avaliar a efetividade de uma intervenção educacional direcionada às mães na prevenção da CPI através de um ensaio clínico randomizado (ECR) em conglomerado; descrever e analisar o conhecimento e crenças das mães quanto aos fatores associados à CPI e descrever e avaliar a prevalência de cárie, as práticas de higiene bucal e fatores associados. A revisão sistemática buscou nas principais bases de dados (PubMed, Cochrane-Central, EMBASE) e incluiu ECRs e ensaios clínicos controlados, com CPI como desfecho principal, em crianças de 0 a 5 anos. Os estudos foram selecionados e os dados extraídos. Foi realizada avaliação da qualidade dos estudos e metanálise para avaliação quantitativa. No ECR em conglomerado, 24 unidades básicas de saúde foram aleatoriamente sorteadas em dois grupos, intervenção (GI), o qual as mães de crianças de 0 a 12 meses receberam uma intervenção educativa sobre a forma de panfleto e instrução verbal, e controle (GC, sem intervenção). Houve a coleta de dados socioeconômicos e demográficos através de entrevista. No GI foi aplicada uma entrevista para avaliar o conhecimento das mães sobre CPI no *baseline* (2010). Após um ano (2011), as crianças foram examinadas para determinar a presença de cárie e placa dentária. Crianças foram consideradas com CPI quando pelo menos uma superfície não cavitada e/ou uma superfície cavitada foi detectada. No ano de 2011, no CG, uma entrevista para coleta de dados referentes às práticas de higiene bucal foi utilizada. Na revisão 18 artigos foram incluídos. Instrução verbal e escrita foram as formas de intervenção mais utilizadas. A metanálise de 4 ECRs sugere que intervenções educativas reduzem significativamente a CPI (OR 0,18, IC 95% 0,08–0,40). No ECR 533 pares mãe-filho foram incluídos, 445 completaram o seguimento (GI 174, GC 271). Após ajuste pelo número de dentes, o risco de cárie foi 80% maior no GC (p=0,037). Na investigação do conhecimento das mães o açúcar e a falta de higiene bucal foram as principais razões apontadas para CPI. A maioria das mães (90%) sabia quando iniciar a escovar os dentes do seu filho. Mães com mais de um filho tinham mais dificuldade em saber a idade correta de levar seu filho ao dentista pela primeira vez. Com relação às práticas de higiene e cárie, das 262 crianças examinadas, 42 (16%) tinham cárie. A baixa escolaridade materna e baixa renda foram associadas com maior risco de cárie, com a presença de placa

dentária e com o fato de a mãe não relatar prática de higiene bucal (P<0,05). Programas de prevenção são necessários para crianças pequenas e os resultados sugerem que intervenções educativas de saúde bucal são efetivas na prevenção da CPI, porém mais ECRs, com uma maior qualidade metodológica, são necessários para fornecer uma resposta mais definitiva em relação ao tipo de intervenção mais efetiva.

Palavras-chave: cárie dentária, ensaio clínico, educação em saúde bucal, odontologia preventiva, revisão sistemática.

Abstract

AZEVEDO, Marina Sousa. **Early childhood caries: associated factors and effect of educational interventions.** 2012. 142f. Tese de Doutorado – Programa de Pós- Graduação em Odontologia da Universidade Federal de Pelotas, Pelotas, RS, Brasil.

Early childhood caries (ECC) remains as the most common chronic disease of childhood, leading to a debilitating effect on general health and quality of life. Educational strategies can lead to important benefits for children's oral health, because oral health behavior begins to form in early childhood. However, the evidence pertaining the effectiveness of oral health educational interventions remain controversial. The aim of this study was to systematically review the effectiveness of oral health educational interventions in preventing caries in primary teeth; to assess the effectiveness of an oral health educative intervention targeting mothers in preventing ECC by a cluster randomized controlled trial (RCT); to describe and evaluate knowledge and beliefs from mothers about ECC; and to assess the children's caries experience, oral health hygiene practices and associated risk factors. The systematic review searched in electronic databases (PubMed, Cochrane-Central, EMBASE) and included RCT and controlled clinical trials, with dental caries as primary outcome, in 0- to -5-year-old children. Studies were selected and data extracted. Study quality was assessed and meta-analysis was conducted. In the cluster RCT, 24 public health centers were randomly assigned into 2 groups, intervention group (IG), in which mothers of children aged 0- to 12-month-old received an educational intervention by means of pamphlet and verbal instructions, and control group (CG, no intervention). Socioeconomic and demographic variables were collected by interview. In GI baseline (2010) an interview was used to assess the knowledge of mothers about ECC. After one year (2011), children were examined to determine caries and dental plaque status. Children with at least one noncavitated surface and/or at least one cavitated surface were considered as presenting ECC. In the CG, in 2011, to collect data on oral hygiene practices an interview was used. In the review 18 trials were included. Verbal and written information were the educational modalities most widely used. Meta-analysis of four RCTs suggests that educational intervention significantly reduces ECC (OR 0.18, CI 95% 0.08–0.40). In the RCT, of 533 mother-child pairs enrolled, 445 completed the follow-up (IG 174, CG 271). After the adjustment for number of teeth the odds of caries was 80% higher for the CG (p=0.037). In the study of mothers' knowledge sugar intake and lack of hygiene were the most frequently mentioned causes of ECC. Most of the mothers were aware of the need to begin toothbrushing during their children's first year. Mothers who had more children were more likely to not know the correct age for the first dental visit. Relative to oral hygiene practices and caries, of the 262 children examined, 42 (16.0%) presented dental caries. Low maternal education and low income were associated with higher odds of having caries, children presenting dental plaque and mothers not reporting oral hygiene (P<0.05). Preventive programs are needed for young children and the results suggested that educational intervention has an

effect in preventing ECC. However, further RCTs are needed, with greater methodological quality to provide a definitive answer.

Keywords: dental caries, clinical trial, dental health education, preventive dentistry, systematic review.

SUMÁRIO

1 PROJETO DE PESQUISA

1. 1 ANTECEDENTES E JUSTIFICATIVA

Apesar do notável declínio da prevalência da cárie dentária, esta doença ainda é considerada um problema de saúde pública e continua a afetar bebês e crianças por todo o mundo, sendo chamada de cárie na primeira infância (CPI).). A CPI indica a presença de uma ou mais superfícies cariadas (cavitadas ou não), restauradas ou perdidas (por cárie) em qualquer dente decíduo (DRURY et al., 1999). No Brasil, nos últimos 7 anos houve uma redução de apenas 18% no índice de cárie nas crianças de 5 anos, sendo 2,3 o ceo-d médio desta faixa etária (MINISTÉRIO DA SAÚDE, 2010; 2011).

A cárie frequentemente leva a dor e a infecção, afeta o crescimento e a qualidade de vida das crianças (LOW; TAN; SCHWARTZ, 1999; GOETTEMS et al., 2010). Além disso, seu tratamento pode ser de alto custo requerendo tratamento cirúrgico restaurador com intervenções complexas tanto para criança como para o profissional.

Sabendo que a cárie é uma doença prevenível estratégias preventivas podem trazer benefícios importantes para a saúde bucal da criança, principalmente se aplicadas antes do primeiro ano de vida da criança, uma vez que a maior prevalência e incremento de cárie se dão de 1 a 2 anos de idade (FERREIRA et al., 2007).

A alta prevalência de cárie das crianças pré-escolares brasileiras indica a falta de programas e cuidados preventivos apropriados com atenção para sua saúde bucal. Somado a isso, o acesso limitado de crianças aos serviços odontológicos, torna a implementação de estratégias preventivas um grande desafio. Segundo os dados da Pesquisa Nacional por Amostra de Domicílios do Instituto Brasileiro de Geografia e Estatística (Pnad/IBGE), 81,9% das crianças de 0 a 4 anos nunca foram ao dentista (PINHEIRO; TORRES, 2006).

Dentre as estratégias preventivas com efetividade comprovada está a aplicação tópica de flúor (MARINHO et al., 2009) e aplicação de selante de fossas e fissuras em molares (AHOVUO-SALORANTA et al., 2008). Intervenções educativas seriam outra opção para prevenção da cárie, o objetivo da educação em saúde é promover conhecimento, o que pode levar a adoção de comportamentos favoráveis, e com isso, contribuir para uma melhor saúde bucal. E ainda apresenta a vantagem de não necessitar de pessoal especializado para sua aplicação e gerar menor custo.

Vale lembrar que durante a primeira infância é que se forma o comportamento para a saúde bucal e os pais, especialmente as mães, têm papel fundamental como modelos para seus filhos. Embora, as crenças sobre os fatores de risco para CPI possam influenciar a adoção de comportamentos protetores de saúde, o conhecimento adquirido não necessariamente se traduz em mudanças de comportamento (RAJAB et al., 2002), mas podem ser importantes no entendimento de mensagens preventivas (HOEFT; MATERSON; BARKER, 2009).

Segundo Kay e Locker (1996) em sua revisão sistemática, o conhecimento e atitudes podem ser melhorados com educação em saúde Porém, existem divergências acerca da efetividade das diversas estratégias educativas.

Mohebbi et al. (2009) tiveram resultados positivos em sua estratégia de mudança de comportamento direcionada às mães de crianças com idades entre 12-15 meses através da entrega de panfletos incluindo questões sobre hábitos alimentares, ingestão de açúcar, transmissibilidade bacteriana e higiene bucal. Outro estudo demonstrou que aconselhamento de dieta durante 5 visitas domiciliares às mães durante o primeiro ano de vida das crianças ajudou a reduzir a ocorrência de cárie quando comparado ao grupo controle, porém uma proporção relevante de crianças do grupo intervenção ainda mostrou apresentar lesões de cárie (FELDENS et al., 2010).

Ao comparar uma medida educativa tradicional, panfleto e vídeo, com a entrevista motivacional Weinsten et al. (2006) atribuíram um efeito protetor da

entrevista motivacional para CPI ao maior cumprimento das recomendações de aplicações de verniz fluoretado pelas famílias.

Na Austrália, um ensaio controlado randomizado com orientações através de informação impressa iniciadas desde a gravidez foram efetivas em reduzir a incidência de cárie em crianças pequenas, a incidência no grupo teste foi de 1,7% enquanto no grupo controle foi de 9,6% (PLUTZER; SPENCER, 2008). No entanto, medidas preventivas iniciadas durante a gestação para mães de baixa renda no Brasil, como a entrega de kits de higiene semestralmente e material impresso, não se mostraram efetivas em reduzir a experiência de cárie nos seus filhos (ZANATA et al., 2003).

Na Alemanha, uma intervenção estruturada para educação em saúde bucal direcionada aos pais de crianças com menos de 2 anos, aplicada pelos pediatras, os quais passavam instruções verbais, com o apoio de um material ilustrativo, e entregavam folhetos que continham as mesmas informações, não foi efetiva em alterar o comportamento dos pais de forma a impedir a CPI (STRIPPEL, 2010).

Já que a CPI tem etiologia multifatorial qualquer programa educativo deve conter estratégias múltiplas. Dentre os fatores atribuídos a etiologia da CPI está aamamentação prolongada, o consumo frequente de lanches cariogênicos, xaropes infantis, o não uso de creme dental com flúor, ausência de flúor na água potável e aquisição precoce de estreptococos do grupo mutans (EGM) (SEOW, 1998, BERKOWITZ, 2003). Assim, segundo Milgrom (1998) estratégias que são focadas somente em um componente estão condenadas à falha, uma vez que a cárie na primeira infância tem etiologia multifatorial.

Uma revisão sistemática avaliando artigos publicados entre 1982 e 1994 sobre intervenções educativas em saúde bucal verificou que a qualidade de evidência referente à efetividade de intervenções educativas era pobre (KAY, LOCKER, 1996). Twetman (2007) analisando a literatura publicada na década anterior ao seu artigo, sobre a eficácia dos métodos utilizados para a prevenção

da cárie na primeira infância, verificou que nenhum estudo em sua revisão tinha um "elevado nível de evidência".

É importante lembrar que a divergência de hábitos culturais e comportamentais, entre populações, pode gerar resultados diferentes a um programa preventivo em particular (FEJERSKOV, 2004). Existem também diferenças quanto ao tipo de delineamento, tipo de intervenção aplicada, momento da intervenção, quais fatores atribuídos a etiologia da CPI são abordados, a faixa etária das crianças, medição do desfecho, associação de diferentes intervenções, o que impede uma possível comparação entre os estudos.

A diversidade de resultados e o baixo nível de evidência dos estudos indicam a realização de novas investigações sobre a efetividade de ações preventivas na redução da CPI. Além disso, não existe nenhuma revisão sistemática avaliando e comparando a efetividade das principais formas de intervenções educativas, como também comparando sua efetividade na prevenção da cárie na primeira infância com outras formas de intervenção preventiva (selante de fossas e fissuras e aplicações tópicas de flúor) e verificando seu custo-benefício. Assim, uma intervenção educativa para prevenção da cárie, universalmente efetiva, com resultados previsíveis deve ser investigada.

1.2 OBJETIVOS

1.2.1 Objetivo Geral

Avaliar a efetividade de intervenções educativas na prevenção da cárie na primeira infância.

1.2.2 Objetivos Específicos

- Avaliar, através de revisão sistemática, a efetividade de diferentes tipos de intervenções educativas (panfleto, aconselhamento, vídeos) na redução da cárie na dentição decídua, analisar estudos que comparem a intervenção educativa com outras estratégias preventivas (aplicação tópica de flúor ou aplicação de selante de fossas e fissuras) e verificar seu custo-benefício.

- Avaliar a efetividade de uma intervenção educacional direcionada às mães sob a forma de panfleto e instrução verbal na prevenção da cárie na primeira infância após um período de 12 meses.

- Descrever e analisar o conhecimento e crenças das mães quanto aos fatores associados à cárie na primeira infância e associar com variáveis sócio-demográficas.

1.3 HIPÓTESES

As seguintes hipóteses serão testadas:

- Haverá diferença em termos de incremento de cárie entre o grupo intervenção e o grupo controle no ensaio clínico randomizado após 1 ano, onde o grupo intervenção apresentará menor incremento de cárie.

- As mães com baixo conhecimento sobre a cárie na primeira infância terão nível socioeconômico mais baixo e menor escolaridade.

1.4 METODOLOGIA

1.4.1 Delineamento experimental da revisão sistemática (estudo 1)

Com o objetivo de avaliar quais os tipos de intervenção educativa usados para prevenir cárie na primeira infância, e qual a efetividade destas intervenções, será realizada uma revisão sistemática da literatura. Os critérios utilizados para considerar os estudos a serem incluídos nesta revisão serão:

Tipos de estudos

Todos os ensaios clínicos controlados randomizados (ECRs) ou estudos clínicos controlados (ECCs) utilizando avaliação cega do desfecho, nos quais os pacientes e/ou cuidador recebam intervenções educativas, durante a gestação ou durante a primeira infância da criança, e que esses pacientes sejam comparados com pacientes que não receberam intervenção ou receberam intervenção não-educativa. Serão também incluídos ECRs e ECCs cuja intervenção tenha sido aplicada em diferentes situações, como trabalhos de campo, programas de saúde ou intervenções recebidas individualmente em ambiente de consultório odontológico. Os estudos deverão apresentar um tempo de acompanhamento da intervenção de no mínimo 8 semanas.

Tipos de participantes

Crianças de até 71 meses com dentição decídua.

Tipos de Intervenção

Experimental

Todo tipo de intervenção educativa será considerada, tanto a nível individual quanto comunitário, sob a forma de panfleto, vídeo, telefonema, palestra ou instrução verbal, que abordem medidas de prevenção de cárie (instrução de higiene bucal, orientação de dieta etc.) e/ou conhecimento sobre as causas da doença.

Controle

Nenhuma intervenção ou qualquer outro tipo de intervenção para prevenção ou tratamento da cárie na primeira infância que não inclua intervenções educativas.

Desfechos a serem avaliados

Os tipos de desfechos a serem avaliados e que serão considerados compreendem a situação clínica dos pacientes antes *(baseline)* e após as intervenções, redução da incidência de cárie, e fatores econômicos. Os desfechos devem ser avaliados por no mínimo 8 semanas após a intervenção em que o principal desfecho será o incremento de cárie, incluindo manchas brancas na dentição decídua.

Desfecho primário

- Cárie medida pelo incremento de cárie através do índice ceos (superfícies decíduas cariadas, extraídas e obturadas) ou ceod (dentes decíduos cariados, extraídos e obturados) e ainda, lesões não cavitadas ativas, a partir do *baseline*.

Desfechos secundários

Fatores clínicos

- Higiene/limpeza bucal (p. ex. nível de placa supragengival).

- Saúde periodontal (p. ex. presença de cálculo supragengival, presença de sangramento gengival ou gengivite).

- Redução dos níveis de estreptococos do grupo mutans.

Fatores relacionados ao cuidador

- Satisfação quanto à intervenção recebida.

- Aumento do conhecimento sobre as causas da CPI.

- Mudanças de comportamento relatadas pelo cuidador para com a sua ou com a saúde bucal da criança.

- Mudanças relatadas pelo cuidador quanto a sua condição de saúde bucal ou de sua criança.

Fatores econômicos

- Custos/Custo-efetividade das intervenções avaliadas.

Também serão reportados outros desfechos de interesse que venham a ser observados, bem como quaisquer fatores adversos reportados decorrentes das intervenções em estudo.

Estratégias de busca para identificação dos estudos a serem incluídos

A estratégia de busca dos ECRs e ECCs a serem revisados envolverá uma pesquisa nas principais bases de dados (Pubmed, Medline, Biblioteca Cochrane, ISI web, EMBASE), utilizando combinações e variações das seguintes palavras-chave: *early childhood caries, dental caries, effectiveness, oral health education, dental health education, randomized trial, preschool children, deciduous tooth,* buscando também a lista de referências dos artigos encontrados e será restrita a artigos em Inglês. Não serão usados limites para a data de publicação. Os autores serão contatados para informações mais detalhadas quando necessário.

Um pesquisador fará a seleção dos resumos, e dois pesquisadores farão o julgamento de forma independente desses resumos de acordo com os critérios de inclusão descritos. Em caso de desacordo, um terceiro pesquisador fará avaliação dos resumos.

Os dados serão extraídos dos artigos selecionados por dois pesquisadores de forma independente. Além dos desfechos acima mencionados, serão coletados os seguintes dados dos estudos incluídos: tipo de estudo, tipo de intervenção, momento da intervenção, critério de diagnóstico para CPI, período de avaliação.

1.4.2 Delineamento experimental do ensaio clínico randomizado por conglomerado (estudo 2 e 3)

Descrição Geral

Este ensaio randomizado em conglomerado, cego foi construído baseado no *Consort Statement* a fim de garantir sua qualidade. O local de escolha para realização do estudo foi a cidade de Pelotas, Rio Grande do Sul, Brasil. O município, segundo o Instituto Brasileiro de Geografia e Estatística, possui cerca de 345.181 habitantes, dos quais 26.365 possuem de 0 a 4 anos (IBGE, 2010). A intervenção e os retornos ocorrerão durante os dias de Campanha Nacional de Multivacinação que acontecem duas vezes por ano.

Com relação à saúde bucal das crianças da cidade de Pelotas a prevalência de dentes decíduos cariados incluindo lesões em esmalte foi de 22,6% no primeiro ano de vida, de 40,3% aos dois anos e aos cinco anos chegando a 62% (FURTADO et al., 2008). Segundo o Projeto SB Brasil 2003 do Ministério da Saúde 26,53% das crianças de 18 a 36 meses da região sul do Brasil apresentam cárie (MINISTÉRIO DA SAÚDE, 2004).

Aspectos Éticos

O projeto foi encaminhado ao Comitê de Ética e Pesquisa da Faculdade de Odontologia da Universidade Federal de Pelotas atendendo aos requisitos da resolução do Conselho Nacional de Saúde CNS 196/96 (MINISTÉRIO DA SAÚDE, 1996) e foi aprovado (protocolo 164/2010) (ANEXO A). O protocolo foi apresentado à Secretaria Municipal de Saúde e obteve autorização para que o estudo pudesse ser conduzido (ANEXO B).

Durante sua realização, o objetivo do trabalho foi explicado às mães e aquelas que concordaram com a participação sua e de seu filho na pesquisa, assinaram um Termo de Consentimento Livre e Esclarecido (APÊNDICE A).

A Coordenação de Saúde Bucal do município será informada, após análise dos dados, sobre os resultados alcançados.

Delineamento Experimental, amostragem e randomização

Este estudo será conduzido durante a Campanha Nacional de Multivacinação de 2010 e 2011. De acordo com a Secretaria Municipal de Saúde a cobertura de vacinação de 2009 foi de 86,6%.

O município conta com 45 unidades básicas de saúde (UBS) de acordo com os dados fornecidos pela Secretaria Municipal de Saúde. Destas, 24 apresentam consultório odontológico e estão localizadas na zona urbana, considerando que não exista nenhum programa preventivo direcionado às mães nestas UBS, 12 destas UBS foram aleatoriamente sorteadas para receberem esta intervenção educativa.

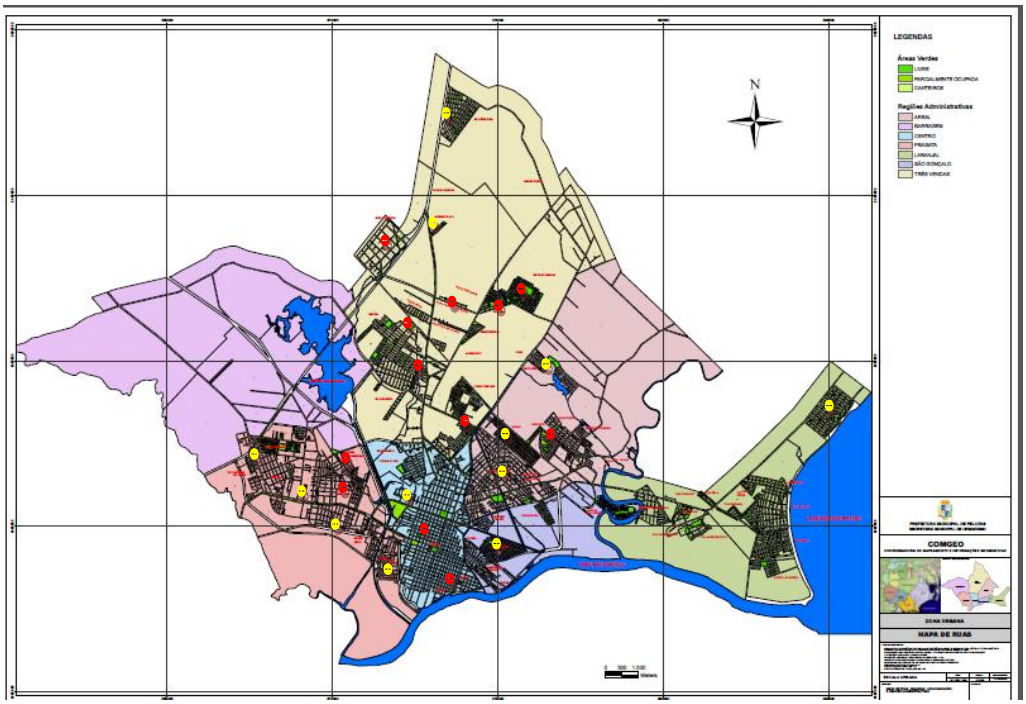

Figura 1. Mapa da cidade de pelotas e localização geográfica dos postos. Em amarelo, postos intervenção; em vermelho, postos controle.

Fonte: www.pelotas.com.br

Para seleção das mães e seus filhos, ficou pré-determinado que a escolha fosse aleatória e que se chegaria a um total de 30 mães e filhos por UBS.

A coleta de dados de desfecho será realizada aproximadamente 1 ano após a intervenção acompanhando a rotina da Campanha Nacional de Vacinação nas mesmas UBS previamente sorteadas. Com o intuito de avaliar se a intervenção foi efetiva, na Campanha de Vacinação de 2011 as outras 12 UBS farão parte do grupo controle, e as mães de crianças, que estiverem com a mesma faixa etária das crianças que receberam a intervenção no ano anterior, serão convidadas a participar. A partir do seu aceite, assinarão o Termo de Consentimento Livre e Esclarecido e seus filhos serão examinados.

- Grupo Intervenção: A intervenção foi realizada na 2º etapa da Campanha Nacional de Multivacinação de 2010. As mães das crianças de 0-12 meses de idade que estavam nas UBS sorteadas foram convidadas a participar. Um total de 277 mães aceitaram participar e receberam a intervenção.

Os critérios para exclusão foram:

(1) Criança com dente decíduo

(2) Residência fora da cidade de Pelotas

(3) Informação insuficiente (telefone, endereço) para permitir acompanhamento

(4) Criança com doença severa que pudesse dificultar os procedimentos necessários à pesquisa

(5) Mãe analfabeta

Foram excluídas 134 crianças que apresentavam dente de leite, 8 que não residiam em Pelotas e 1 por não possuir informação suficiente que permitisse acompanhamento. Obtivemos um total de 19 recusas.

A equipe para realização das entrevistas e aplicação da intervenção contou com 2 duplas por UBS, fizeram parte da equipe alunos da graduação e pós-graduação em Odontologia.

Na 2º etapa da mesma campanha de 2011, após um ano da intervenção, estas crianças serão examinadas por examinadores cegos, pois estes não

saberão se estarão alocados nas unidades básicas do grupo intervenção ou controle.

- Grupo Controle: Em virtude da exigência do Comitê de Ética e Pesquisa que não permitiu o levantamento das crianças do grupo controle, sem que estas recebessem as informações do panfleto, o grupo controle será conduzido na 1º etapa da Campanha Nacional de Multivacinação de 2011. Assim, nas unidades básicas de saúde onde não foi realizada a intervenção as crianças que estarão com a mesma idade do grupo intervenção no exame, 12- 23 meses, serão examinadas e receberão a intervenção (panfleto + instrução verbal).

Entrevista

Uma entrevista com um questionário pré-testado e semi-estruturado foi aplicada às mães (APÊNDICE B). O questionário incluiu questões demográficas (idade e gênero da criança, percepção da mãe quanto a cor da pele do seu filho, idade da mãe) e socioeconômicas (renda familiar, número de filhos, estrutura familiar, nível de educação da mãe), além de dados de identificação (telefones e endereços).

Perguntas para avaliar o conhecimento e crença das mães será coberta por 4 perguntas, 3 perguntas abertas (Qual idade a Sra. acha que seria a ideal para levar seu filho ao dentista pela primeira vez?; Com que idade ou quando a Sra. acha ideal iniciar a escovar os dentinhos do seu filho?; Por que a Sra. acha que algumas crianças têm cárie?), e 1 com opção de resposta sim ou não (A Sra. acha que dar mamadeira na hora de dormir com leite, sucos... pode fazer mal aos dentes das crianças?)

As mães foram solicitadas a retornar no mesmo Posto de Saúde na Campanha de Vacinação do próximo ano para que seus filhos possam ser examinados por um dentista.

Intervenção

Uma intervenção educacional através de panfletos cobrindo os principais tópicos relacionados a prevenção da cárie na infância foi empregada (APÊNDICE C). As informações do panfleto foram baseados em um estudo prévio recente (MOHEBBI et al., 2009), como também em informativos da Academia Americana de Odontopediatria sobre CPI (AAPD, 2008-2009). As recomendações foram traduzidas livremente para o português, adaptadas aos padrões culturais brasileiros e apresentam linguagem simples, ilustrações e cores atrativas para captar a atenção das mães. Em cada UBS, uma pessoa previamente treinada fez a entrega dos panfletos após a entrevista seguindo as informações contidas no manual de instruções (APÊNDICE D), foi ressaltado à mãe que seria muito importante a leitura do panfleto e que o mesmo contêm informações simples que poderão evitar que seu filho tenha cárie e permitirá que ela faça algumas anotações sobre os dentes de seu filho (interativo). Além disso, algumas das informações do panfleto, previamente estabelecidas, foram reforçadas verbalmente (APÊNDICE D).

Exame clínico

Este exame será realizado durante as Campanhas de Vacinação de 2011 nas 24 UBS. Cada UBS contará com um examinador, um anotador e um circulante. Os examinadores e anotadores serão treinados através de uma revisão do conteúdo teórico de 4 horas, onde serão revistos os conceitos e parâmetros importantes para o estudo e, visualmente, com o auxílio de imagens e projeção de casos-clínicos, quando serão estabelecidos os diagnósticos. Após, farão um treinamento prático com 2 crianças cada dupla para fixação dos critérios utilizados durante o exame clínico.

O circulante receberá um treinamento teórico de 4 horas para saber como abordar as mães tanto no grupo controle quanto intervenção e como realizar a entrevista, após fará um treinamento de 2 horas com mães de crianças com menos de 2 anos na sala de espera da Unidade Clínica Infantil.

O processo de calibração será executado na clínica da Unidade Clínica Infantil da Faculdade de Odontologia da UFPel, nos dias de atendimento do Projeto de Extensão Atenção Odontológica Materno-infantil onde 10 crianças serão examinadas por três examinadores e por um professor especialista, que será considerado o padrão “ouro”.

O coeficiente *Kappa* será utilizado para avaliar a concordância intra e inter-examinadores, devendo esta ser superior a 70%.

A equipe examinadora terá o auxílio de um espelho odontológico, sonda da Organização Mundial da Saúde (OMS), gaze e algodão estéreis para limpar e secar a superfície, além do aparato do equipo odontológico. O examinador e mãe sentarão na posição joelho a joelho. Todos os dentes que estiverem presentes na cavidade serão avaliados e seguirão os critérios de diagnóstico para cárie recomendados pela OMS (OMS, 1999). Lesões em esmalte também serão avaliadas examinando somente a superfície vestibular dos dentes ântero-superiores, pois nesta área é mais fácil de controlar a umidade. Além da dupla para exame, um circulante fará parte da equipe para realizar a captação das mães na fila.

As mães serão informadas por escrito sobre a condição bucal das crianças. E receberão orientação e encaminhamento quando necessário (APÊNDICE E).

Aquelas mães do grupo intervenção que não forem localizadas durante a Campanha Nacional de Multivacinação de 2011 serão contatadas por telefone e aquelas que aceitarem receberão a visita de uma dupla examinadora em sua residência para realização do exame bucal do seu filho ou serão convidadas a comparecer na Faculdade de Odontologia para o exame.

Análise dos resultados

Será comparada a distribuição dos dados de *baseline* através do Teste Qui-quadrado para as diferenças de frequência entre os grupos intervenção e controle. Além disso, para avaliar a efetividade da intervenção será usado o teste Mann-Whitney U para analisar se existe diferença das médias de superfície

cariada entre os grupos. Regressão logística será aplicada para estimar o *odds ratios* com intervalo de confiança de 95% no incremento de cárie dos grupos intervenção em comparação ao controle; controlando, se necessário, para o efeito de variáveis da criança (idade, gênero, nível de educação dos pais, renda familiar).

Para os dados do questionário sobre conhecimento e crenças das mães sobre a CPI, será realizada estatística descritiva (distribuição da frequência). O teste qui-quadrado será realizado para determinar se os conhecimentos e crenças das mães sobre a CPI serão associados significativamente com renda familiar, escolaridade materna, número de irmãos, estrutura familiar e idade da mãe.

Será adotado um valor de $p<0,05$ como estatisticamente significante.

1.5 ARTIGOS

1. Educação em saúde bucal é uma intervenção efetiva na prevenção da cárie na primeira infância? Revisão sistemática. (Is oral health education an effective intervention to prevent early childhood caries? A systematic review.)

2. Ensaio randomizado por conglomerado sobre a efetividade de uma intervenção educacional na prevenção da cárie na primeira infância. (A cluster randomized trial of the effectiveness of an educational intervention in preventing early childhood caries.)

3. Conhecimento e crenças das mães sobre cárie na primeira infância. (Mothers' knowledge and beliefs about early childhood caries.)

1.6 ORÇAMENTO

Material	Quantidade	Valor unitário	Valor total
Aluguel ônibus	3	200,00	600,00
Lanche	120 unidades	5,00	600,00
Prancheta	20 unidades	5,00	100,00
Pastas	10 unidades	2,00	40,00
Borracha	20 unidades	1,00	20,00
Lápis preto	30 unidades	2,00	60,00
Caneta esferográfica	30 unidades	2,00	60,00
Cópias xerográficas	3.000	0,08	240,00
Espátulas de madeira	12 pacotes	7,50	90,00
Gorro	03 caixa	16,00	48,00
Máscara	03 caixa	13,00	39,00
Luvas	10 caixas	15,00	150,00
Balões	25 pacotes	2,00	50,00
Solicitação de artigos	20	8,00	160,00
Papel Chamex A4	03 pacotes	15,00	45,00
Cartucho para impressora	02 unidade	50,00	100,00
Impressão Folders	300	0,75	225,00
Arte folder	1	500,00	500,00
Digitadores	02	300,00	600,00
Gaze	10 pacotes	22,70	227,00
Espelho	100	5,00	500,00
Sonda OMS	100	18,00	1800,00
TOTAL			**6.254,00**

Fonte de financiamento:

Recurso dos pesquisadores

1.7 CRONOGRAMA

ANO	2010									2011												2012												2013		
MÊS	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Revisão bibliográfica	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**			
Envio ao CEP		**x**																																		
Contato Sec. de Saúde		**x**																																		
Treinamento intervenção			**x**	**x**																																
Intervenção educativa					**x**																															
Redação artigo 3											**x**	**x**	**x**																							
Envio publicação artigo 3														**x**																						
Revisão sistemática artigo 1														**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**												
Qualificação													**x**																							
Ajustes Projeto														**x**																						
Calibração														**x**	**x**																						
Coleta de dados controle																**x**																				

Coleta de dados intervenção																	**x**																								
Análise dos resultados																		**x**																						
Redaçãoartigo2																			**x**	**x**	**x**																			
Envio Publicação																						**x**																		
Redação artigo 1																								**x**	**x**	**x**														
Envio publicação artigo 1																											**x**													
Redação Tese																												**x**	**x**	**x**	**x**	**x**	**x**	**x**					
Defesa Tese																																				**x**			
Conclusão/ Publicação																																					**X**		

2 RELATÓRIO DO TRABALHO DE CAMPO

Neste capítulo estão relatadas as complementações e as mudanças metodológicas realizadas, como também aspectos relevantes ocorridos durante a pesquisa. Os demais aspectos metodológicos podem ser consultados no projeto original no capítulo anterior ou nos artigos nos capítulos que seguem.

A principal mudança em relação ao projeto inicial foi a inclusão de mais um artigo intitulado “Práticas de higiene bucal e experiência de cárie em crianças de 12 a 18 meses”, o qual foi desenvolvido a partir dos dados coletados da mesma amostra do artigo 2, com relação ao grupo controle do ensaio clínico randomizado no ano de 2011, mais detalhes podem ser vistos no artigo 4.

Com relação ao artigo 1 de revisão sistemática algumas alterações foram realizadas. No projeto estava previsto que o grupo controle deveria ser nenhuma intervenção ou qualquer outro tipo de intervenção para prevenção ou tratamento da cárie na primeira infância que não incluísse intervenções educativas. Porém, houve a inclusão de ensaios com intervenções educativas também no grupo controle para que a revisão ficasse menos restrita. Com relação ao tempo mínimo de acompanhamento, anteriormente previsto para ser de 8 semanas, foi alterado para 6 meses, uma vez que a maioria das intervenções era aplicada mais de uma vez ao longo de um período, de qualquer forma nenhum ensaio clínico foi encontrado com um tempo menor de 6 meses para o desfecho cárie dentária.

Com relação aos desfechos secundários, apesar de alguns artigos incluídos na revisão sistemática apresentarem alguns deles, a dificuldade em sumarizar os dados, que já estava sendo enfrentada na avaliação do desfecho primário, e a não padronização das coletas, fez com que houvesse exclusão destes dados, facilitando tanto a escrita quanto a leitura do artigo 1.

O custo benefício anteriormente previsto para ser avaliado foi descartado, uma vez que nenhum dos artigos incluídos na busca descreveu os custos com as intervenções educativas aplicadas.

Outra mudança metodológica refere-se à inclusão de análise quantitativa neste artigo, anteriormente previsto para ser apenas uma análise qualitativa. A metanálise não foi anteriormente prevista, pois não se conhecia o resultado da busca sistemática nas bases de dados.

Em relação ao artigo 2, no momento da qualificação do projeto de pesquisa, a primeira etapa do trabalho havia sido desenvolvida, portanto alguns detalhes em relação ao que foi desenvolvido após o *baseline* será relatado.

No ano de 2011, um (1) ano após o *baseline*, uma entrevista foi aplicada ao grupo controle e ao grupo intervenção, ambas as ferramentas de coleta de dados utilizadas podem ser vistas nos apêndices F e G, respectivamente. No apêndice H está apresentada a ficha para a coleta dos dados clínicos.

Duas unidades básicas Jardim de Allah e Arco íris, nas quais 2 e 15 crianças respectivamente, receberam a intervenção foram feitas tentativas de contato e o exame, a partir do aceite da mãe, realizado em suas residências para facilitar a logística. Destas crianças, 3 não foram localizadas. Algumas crianças cujas mães não foram localizadas durante a Campanha Nacional de Multivacinação de 2011 foram contatadas por telefone e convidadas a comparecer na Faculdade de Odontologia para o exame, onde receberam 2 vales-transportes para o deslocamento.

No grupo controle, após realização de entrevista e exame clínico, as mães receberam a mesma intervenção anteriormente aplicada ao grupo intervenção, porém algumas modificações foram feitas no panfleto, com o intuito de adequá-lo à idade das crianças (Apêndice I).

3 ARTIGO 1

TITLE PAGE

TITLE

Effectiveness of educational interventions in preventing caries in preschool children: a systematic review and meta-analysis[§]

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SHORT TITLE

Educational intervention in preventing caries

Keywords: Dental Caries. Dental Health Education. Preventive Dentistry. Infant. Primary Health Care. Randomized Controlled Trial. Controlled Clinical Trial.

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[§]Artigo formatado nas normas do periódico Caries Research

Declaration of interests

1- All authors have made substantive contribution to this study and manuscript, and all have reviewed the final paper prior to its submission.

2- The authors of the present study declare that there are no conflicts of interest in relation to this work.

Sincerely yours,

MS Azevedo

ABSTRACT

Background: Early childhood caries (ECC) is still a matter of concern worldwide, and prevention options based on oral health education could help in reducing the burden of the disease. However, the effectiveness of this type of intervention has not been well established. ***Objective:*** To evaluate the effectiveness of educational interventions in preventing ECC in preschool children. ***Search methods:*** All studies up to August 2012 were identified by searching electronic databases (PubMed, Cochrane-Central, EMBASE) and by manual searching. ***Selection criteria*:** Randomised and controlled clinical trials reporting educational interventions, considering dental caries in children aged 71 months or less, and with a minimum follow-up of 6 months were included. ***Data collection*:** Abstract screening, eligibility screening and data extraction decisions were all carried out in duplicate by two authors. Data from these included studies were extracted and included: study design, location, sample size, age of the participants, educational intervention method, trial duration period, parameter of caries examination and main results of caries incidence and conclusions. ***Main results*:** Eighteen studies met the inclusion criteria. Twelve trials found a positive effect favoring educational interventions. Verbal and written information were the educational interventions most widely used. Meta-analysis of 4 trials suggested that educational intervention significantly reduced ECC [odd ratio (OR) 0.18, (95%CI 0.08–0.40)]. ***Author's conclusions:*** This meta-analysis showed that oral health educational interventions reduce ECC incidence amongst preschool children. However, the type of the educational interventions was very mixed in the studies, thus the best educational form to prevent ECC remains unavailable.

INTRODUCTION

Despite the decline in prevalence and severity of caries [Marthaler, 2004] in child population, preventive strategies should remain active in public health. The prevention of caries is considered cost-saving compared to treatment cost [Ramos-Gomez and Shepard, 1999].

The introduction of fluoride in drinking water is considered the major population-based caries-preventive strategy and, because of that, one of the major advances for public oral health [CDC, 1900-1999]. Besides that, the benefits of other topical fluoride sources in caries inibition have been well established on a sizeable number of systematic reviews [Marinho et al., 2002, 2003].

Fluoride in drinking water, salt and milk have been successfully used as a community method and are the most effective and equitable strategy for the prevention of dental caries, as well as the widespread use of fluoridated toothpastes [Petersen and Lennon, 2004; Petersen and Phantumvanit, 2012]. However, other fluoride sources professionally applied, such as fluoride varnish, gel and solutions can be used for patients at caries risk, but their relatively high cost do not provide support for their widespread recomendation [Lo et al., 2012].

Among children 0-6 years of age, the utilization and access to dental services are low [Barros and Bertoldi, 2002], and other preventive strategies such as dental health education could be more efficient to targeting this age group. However the effectiveness of these interventions on preventing early childhood caries has not been well established. This intervention approach can be delivered by any trained people and do not need specialized dental staff, which is a good advantage [Selwitz et al., 2007].

Kay and Locker [Kay and Locker, 1996] assessed the dental literature from the years 1982 and 1994 to examine paper relating to dental health education interventions and concluded that the quality of the evidence of the studies was poor. Nowadays, although the quality of dental randomised controlled trial reports is still poor [Cioffi and Farella, 2011] an increasing improvement has been shown and a systematic quantitative evaluation of the available evidence

on the preventive effect of oral health educational interventions on caries in primary dentition has never been undertaken. Thus, the aim of this systematic review was to evaluate the effectiveness of an oral health educational intervention in preventing early childhood caries in preschool children in randomised and non-randomised controlled clinical trials.

METHODS

Criteria for considering studies for this review

Types of studies

Randomised controlled trial (RCTs) or controlled clinical trials (CCTs), in which oral health education is compared concurrently to no intervention group or any other educational intervention group.

Studies with no indication of dental caries assessment and lasting less than 6 months of follow-up were excluded.

Types of participants

Children aged 71 months or less at the start of the study with primary teeth.

Types of intervention

All educational intervention for preventing early childhood caries, both individually or community-based, directed to the children, their mothers or caregivers, including supervised toothbrushing, pamphlet, leaflet, video, counseling, postcard, phone call, lecture or audiotape, with measures that address any form of caries prevention, as hygiene instruction and diet information.

Types of outcome measures

The primary outcome measure was caries increment in deciduous teeth surfaces, as measured by change in the decayed (cavitated or non-cavitated), (missing/extraction indicated), and filled surface or teeth d(e/m)fs/t index in all primary teeth erupted.

Search methods for identification of studies

The search attempted to identify all relevant randomised or controlled clinical trials irrespective of language and published date. The following data sources were searched: PubMed, EMBASE and The Cochrane Central Register of Controlled Trials (Central). These electronic databases were searched until the second week of August of 2012. The detailed search strategies used in this review for each database is shown in Table 1.

All references cited in the included trials were checked and after the electronic databases search, a hand search to identify recent but uncited publications was undertaken.

Data collection and analysis

Identification of relevant reports

Because multiple databases were searched, the downloaded set of records from each database was imported into the commercial reference management software package EndNote X1, where duplicates were identified and removed.

Study selection

The identified titles and their abstracts were independently reviewed by two authors (Marina Sousa Azevedo (MSA) and (Maximiliano Sérgio Cenci (MSC)) to identify eligible papers. Disagreements were discussed by the two authors for consensus. The full text of eligible articles was obtained. Two authors (MSC and MSA) assessed the full articles independently and selected articles that met the inclusion criteria. Disagreements were resolved by discussion. All studies meeting the inclusion criteria underwent a data extraction. Any studies rejected at this or subsequent stages were recorded, with the reason for exclusion (Figure 1).

Data extraction

Data from all included studies were extracted by two review authors (MSA and MSC) using a pre-designed and pre-tested data extraction form. Any

disagreement of inclusion, exclusion and quality assessment criteria was discussed to be resolved; if not a third reviewer (ARR) was consulted. Data presented only in graphs and figures were extracted whenever possible. Attempts were made to contact authors by e-mail in order to obtain missing information or for clarification whenever necessary.

For each trial the following information was extracted: year of publication, study design, location where the study was conducted, sample size, age of the study participants, educational intervention method, trial duration period, parameter of caries examination and main results of caries incidence and conclusions (Table 2). Besides that, different ways of assessing/reporting early childhood caries outcome, the components of the index and units, diagnostic thresholds used (cavitated/dentine lesions, non-cavitated incipient lesions) and methods of examination adopted (clinical and/or radiographic) were recorded.

Characteristics of the intervention that were extracted were: different intervention comparisons (educational intervention versus control without any intervention or educational intervention versus fluoride therapy or comparisons among 2 or more type of educational intervention), technique used in the educational intervention (supervised toothbrushing, pamphlet, video, counseling, postcard, phone call, audiotape), fluoride recommendation, fluoride agents and concentration used, gifts received, such as toothbrush or finger toothbrush and toothpaste (fluoride agent and concentration) and the local where intervention was applied (home, public health center, school). These data are described in the characteristics of the educational intervention of included studies (Table 3).

Risk of bias assessment

The methodological quality of included studies was assessed by two authors (MSA and MSC) using the tool recommended in the Cochrane Handbook for Systematic Reviews of Interventions 5.0.0 [Higgins and Green, 2008].

The assessment took into consideration the following characteristics of included studies: randomization sequence generation, allocation concealment, blinding, blinding of outcome assessors, incomplete (or missing) outcome data and

selective reporting bias. Studies without a clear description of these features were considered as unclear or not reporting.

Data analysis

We conducted all meta-analysis using RevMan version 5.1 software [RevMan, 2011]. We used risk differences computed on the basis of odds ratios from each of the randomized trials and their respective 95% confidence interval (CI) for dichotomous datasets. Studies were assigned a Mantel-Haenszel weight in direct proportion to their sample size. Heterogeneity between studies was summarized using the I_2 statistic, in that values above 25% and 50% were considered indicative of moderate and high heterogeneity, respectively. After attempts at author contact to achieve incomplete data, meta-analyses have been done only with RCT studies fulfilling data necessary, such as data of number of cases (ECC) and non-cases (without ECC) and total patients in each group, with control group as no intervention and without any fluoride intervention associated.

RESULTS

Searching the databases a total of 1279 studies were identified, the search of non-electronic sources (reference lists of relevant studies) produced other 5 records. After removing duplicates, 1149 records were maintained, of which 1118 were considered to be ineligible from the information provided in the title or abstract. The full texts of 31 papers considered potentially relevant to the review were obtained. Of the 31 potentially relevant papers considered, 13 were excluded. Five did not presented clinical data on early childhood caries [Bird and Hazel, 1976; Hamilton et al., 1999; Martignon et al., 2006; Harrison et al., 2010; Esfahanizadeh, 2011], one performed follow-up under 6 months [Kang et al., 2008], two did not provide educational intervention [Gunay et al., 1998; Rodrigues et al., 1999], one did not have the study design of interest [Holm, 1990], one the sample was over 6 years of age [Pine et al., 2000] and three were double publications [Schwarz et al., 1998; Weinstein et al., 2004; Feldens et al., 2007]. The flow diagram of the systematic article selection and evaluation

is illustrated in Figure 1. After attempts at author contact to achieve the full-text record, one abstract/ title was excluded [Schinder et al., 1992].

Description of included studies

The trials included were published between 1985 and 2011. Study duration ranged from 6 months to five years. The review included 18 studies and the combined total number of children included in the trials was 8355. The number of children reported lost to follow up was (2813) 33.7%. Participants were not restricted to sex/gender in any study. Information and individual details regarding included studies is displayed in table 2 and 3.

Three of the included studies were controlled clinical trials, the others were randomized clinical trials. Of the 18 included studies, 7 were conducted in Europe [Holt et al., 1985; Ekman and Persson, 1990; Rayner, 1992; Kowash et al., 2000; Blinkhorn et al., 2003; Davies et al., 2007; Whittle et al., 2008], two in South America [Hochstetter et al., 2007; Feldens et al., 2010], four in North America [Harrison, 2003; Weinstein et al., 2006; Harrison et al., 2007; Ismail et al., 2011], four in Asia [Lo et al., 1998; Rong et al., 2003; Vachirarojpisan et al., 2005; Mohebbi et al., 2009] and one in Oceania [Plutzer and Spencer, 2008; Pacey et al., 2010].

There was substantial variation in the intervention in the trials included; the details of the intervention in included studies are described in table 3. Only in one trial the educational intervention was given initially during pregnancy [Plutzer and Spencer, 2008]. Participants were aged 71 months or less at the start (in all trials), with similar numbers from both sexes (where these data were reported).

Verbal (counseling and advice) and written information (pamphlet and leaflet) were the educational modalities most widely used in trials included. Lecture was not described by any trial included. In four studies supervised toothbrushing was implemented daily at school or kindergarten [Rayner, 1992; Lo et al., 1998; Rong et al., 2003; Hochstetter et al., 2007]. Fluoride toothpaste was given and reported in 8 trials and toothpaste fluoride concentrations ranged from 450 ppm

F to 1450 ppm F [Rayner, 1992; Lo et al., 1998; Blinkhorn et al., 2003; Rong et al., 2003; Vachirarojpisan et al., 2005; Davies et al., 2007; Hochstetter et al., 2007; Whittle et al., 2008]. Children received free issue of toothbrush in 8 studies [Lo et al., 1998; Blinkhorn et al., 2003; Harrison, 2003; Rong et al., 2003; Vachirarojpisan et al., 2005; Davies et al., 2007; Plutzer and Spencer, 2008; Whittle et al., 2008]. Two trials described that the counselors recommended mothers for fluoride varnish applications, one study reported that fluoride tablets were prescribed and recommended to children, in another study free supply of fluoride drops were offered to their babies and one trial described application of acidulated sodium fluoride phosphate gel every six months, performed by a dentist in all groups. Six studies had no fluoride influence, as fluorides were not applied, prescribed or recommended [Kowash et al., 2000; Harrison, 2003; Plutzer and Spencer, 2008; Mohebbi et al., 2009; Feldens et al., 2010; Ismail et al., 2011].

The main outcome measure in the review is the effects of the interventions on ECC increment. Clinical (all trials included) and radiographic examinations (two trials) were performed. Eight trials reported caries increment at the tooth surface level, seven trials reported caries increment at the tooth level and three trials used both caries increment levels. Nine trials also evaluated non cavitated caries lesions. No data were reported on adverse effects.

Twelve trials found a positive effect favoring educational interventions. No study reported costs or enumerated resource use.

Risk of bias in included studies

There were clear differences in the quality of the studies in this review (using the reported information). Random sequence was adequately generated and described in 10 trials, allocation adequately concealed was described in 6 studies and blinding for the outcome assessment was clear in 10 trials (Figure 2). The quality of the studies was very mixed and some of the studies had some methodological weaknesses, or did not provide good information about methods.

Effect of educational intervention

A total of 4 studies met the inclusion criteria and were included in the meta-analysis. Figure 3 shows a forest plot for the studies included in meta-analysis. Three studies reported reductions in early childhood caries although there is evidence of high heterogeneity across trials (I_2: 63%, P<0.0001). Educational intervention was associated with a reduction in early childhood caries (OR: 0.18, 95% CI 0.08–0.40).

We could not perform a sensitivity analyzes in relation to educational interventions, due to the educational intervention used greatly differ among the included trials, and thus were difficult to compare, as it can be seen in table 3.

DISCUSSION

A systematic review was published in 1996 covering this topic with 37 studies [Kay and Locker, 1996], but in this new systematic literature search 17 different trials were included. The reasons for this was the cut-off date of the other trial, from the years 1982 to 1995, data source used, just Medline was searched and type of participants, not only children. Furthermore, in the review carried out by Kay and Locker only four studies had ECC as an outcome.

It was observed that most of the included RCTs e CCTs were methodologically limited because just two trials were in full the items noted in the assessment of risk of bias.

The main question addressed by this review is how effective the dental health educational intervention is for the prevention of caries in preschool children and what kind of the educational intervention is more effective. This is the first published meta-analysis showing results around this issue. In this study, we found that educational intervention reduced ECC amongst preschool children. However, the type of the educational intervention that is more effective remains unclear, since the educational intervention used in the trials included greatly differ among them.

In terms of summarizing the findings from studies included in the systematic review; inferences from these are limited by a lot of reasons. The age when the

first educational intervention was applied varied from before child's birth, during pregnancy, until 5 years old. According to Rayner [Rayner, 1992], educating very young preschool children can had some advantages, at this age they are learning other skills associated with personal hygiene, which it is hoped will become established habits and lead to the adoption of good health practices in later life. However, in this systematic review we could not explore this hypothesis.

The type of interventions also varied widely as we can see in table 3 in the qualitative analyses, which can cause differences in results. Verbal instructions, as counseling and advice and written information, as pamphlet and leaflet were the most used by trials included. According to Plutzer and Spencer [Plutzer and Spencer, 2008] the method of delivering the information to home address via the mail presented several advantages: gave the opportunity to examine the information in private and at a suitable time. Besides that, other family members had the opportunity to inspect the information.

In this systematic review, it was not possible to withdraw any conclusion about the timing and regularity for applying educational intervention and their effect on the caries outcome. Even the study that gave dental health counseling over the course of two visits and then recalled parents and children every 4 months over the next 2 years to reinforce the counseling and to issue more toothpaste and toothbrushes was not effective to prevent ECC [Blinkhorn et al., 2003]. It is striking the wide variety of interventions used, even where the focus is only the prevention of dental caries. Since dental caries is a multi-factorial disease, a lot of issues was addressed by the studies aiming prevent dental caries, such as fluoride exposure, dental hygiene, plaque removal, sugar intake, healthy feeding, diet and dental visit.

Recent clinical trials [Davies et al., 2002; Lawrence et al., 2008] showed that providing fluoride toothpaste and professional use of fluoride in early childhood reduces the incidence of ECC. This way, most of the trials included in this review incorporated such measures together with educational intervention, recommending the use of fluoride, prescribing some fluoride source, applying

professional fluoride or giving fluoride toothpaste. Thus, these measures may have masked the real effect of solely educational interventions. For this reason, in the quantitative analysis we imputed trials without this potentially contamination, and even so the results of the meta-analyses showed the protective effect of educational intervention on ECC.

In conclusion, this systematic review and meta-analysis provides evidence that educational intervention has an effect in preventing ECC. Educational intervention may be recommended as additional preventive method for ECC in early childhood. However, further RCTs are needed, with greater methodological quality to provide a definitive and more detailed answer on which type of educational intervention is more effective.

References

Barros AJD, Bertoldi AD: Inequalities in utilization and access to dental
services: A nationwide assessment. Ciência e Saúde Coletiva 2002;7:709-717. [In Portuguese].

Bird WF, Hazel DR: Parental dental health education. Non-effect on oral hygiene among american indian pre-school (headstart) children. J Prev Dent 1976;3:5-8.

Blinkhorn AS, Gratrix D, Holloway PJ, Wainwright-Stringer YM, Ward SJ, Worthington HV: A cluster randomised, controlled trial of the value of dental health educators in general dental practice. Br Dent J 2003;195:395-400; discussion 385.

CDC: (centers for disease control and prevention). Ten great public health achievements in, 1900-1999.

Cioffi I, Farella M: Quality of randomised controlled trials in dentistry. Int Dent J 2011;61:37-42.

Davies GM, Duxbury JT, Boothman NJ, Davies RM: Challenges associated with the evaluation of a dental health promotion programme in a deprived urban area. Community Dent Health 2007;24:117-121.

Davies GM, Worthington HV, Ellwood RP, Bentley EM, Blinkhorn AS, Taylor GO, Davies RM: A randomised controlled trial of the effectiveness of providing free fluoride toothpaste from the age of 12 months on reducing caries in 5-6 year old children. Community Dent Health 2002;19:131-136.

Ekman A, Persson B: Effect of early dental health education for finnish immigrant families. Swed Dent J 1990;14:143-151.

Esfahanizadeh N: Dental health education programme for 6-year-olds: A cluster randomised controlled trial. Eur J Paediatr Dent 2011;12:167-170.

Feldens CA, Giugliani ER, Duncan BB, Drachler Mde L, Vitolo MR: Long-term effectiveness of a nutritional program in reducing early childhood caries: A randomized trial. Community Dent Oral Epidemiol 2010;38:324-332.

Feldens CA, Vitolo MR, Drachler Mde L: A randomized trial of the effectiveness of home visits in preventing early childhood caries. Community Dent Oral Epidemiol 2007;35:215-223.

Gunay H, Dmoch-Bockhorn K, Gunay Y, Geurtsen W: Effect on caries experience of a long-term preventive program for mothers and children starting during pregnancy. Clin Oral Investig 1998;2:137-142.

Hamilton FA, Davis KE, Blinkhorn AS: An oral health promotion programme for nursing caries. Int J Paediatr Dent 1999;9:195-200.

Harrison R: Oral health promotion for high-risk children: Case studies from british columbia. J Can Dent Assoc 2003;69:292-296.

Harrison R, Benton T, Everson-Stewart S, Weinstein P: Effect of motivational interviewing on rates of early childhood caries: A randomized trial. Pediatr Dent 2007;29:16-22.

Harrison R, Veronneau J, Leroux B: Design and implementation of a dental caries prevention trial in remote canadian aboriginal communities. Trials 2010;11:54.

Higgins JPT, Green S: Cochrane handbook for systematic reviews of interventions.; in 5.0 (ed). Chichester:John Wiley & Sons, 2008.

Hochstetter AS, Lombardo MJ, D'Eramo L, Piovano S, Bordoni N: Effectiveness of a preventive educational programme on the oral health of preschool children. Promot Educ 2007;14:155-158.

Holm AK: Education and diet in the prevention of caries in the preschool child. J Dent 1990;18:308-314.

Holt RD, Winter GB, Fox B, Askew R: Effects of dental health education for mothers with young children in london. Community Dent Oral Epidemiol 1985;13:148-151.

Ismail AI, Ondersma S, Jedele JM, Little RJ, Lepkowski JM: Evaluation of a brief tailored motivational intervention to prevent early childhood caries. Community Dent Oral Epidemiol 2011;39:433-448.

Kang BH, Park SN, Sohng KY, Moon JS: [effect of a toothbrushing education program on oral health of preschool children]. J Korean Acad Nurs 2008;38:914-922.

Kay EJ, Locker D: Is dental health education effective? A systematic review of current evidence. Community Dent Oral Epidemiol 1996;24:231-235.

Kowash MB, Pinfield A, Smith J, Curzon ME: Effectiveness on oral health of a long-term health education programme for mothers with young children. Br Dent J 2000;188:201-205.

Lawrence HP, Binguis D, Douglas J, McKeown L, Switzer B, Figueiredo R, Laporte A: A 2-year community-randomized controlled trial of fluoride varnish to prevent early childhood caries in aboriginal children. Community Dent Oral Epidemiol 2008;36:503-516.

Lo EC, Schwarz E, Wong MC: Arresting dentine caries in chinese preschool children. Int J Paediatr Dent 1998;8:253-260.

Lo EC, Tenuta LM, Fox CH: Use of professionally administered topical fluorides in asia. Adv Dent Res 2012;24:11-15.

Marinho VC, Higgins JP, Logan S, Sheiham A: Fluoride gels for preventing dental caries in children and adolescents. Cochrane Database Syst Rev 2002:CD002280.

Marinho VC, Higgins JP, Logan S, Sheiham A: Systematic review of controlled trials on the effectiveness of fluoride gels for the prevention of dental caries in children. J Dent Educ 2003;67:448-458.

Marthaler TM: Changes in dental caries 1953-2003. Caries Res 2004;38:173-181.

Martignon S, Gonzalez MC, Santamaria RM, Jacome-Lievano S, Munoz Y, Moreno P: Oral-health workshop targeted at 0-5-yr. Old deprived children's parents and caregivers: Effect on knowledge and practices. J Clin Pediatr Dent 2006;31:104-108.

Mohebbi SZ, Virtanen JI, Vahid-Golpayegani M, Vehkalahti MM: A cluster randomised trial of effectiveness of educational intervention in primary health care on early childhood caries. Caries Res 2009;43:110-118.

Moher D, Liberati A, Tetzlaff J, Altman DG: Preferred reporting items for systematic reviews and meta-analyses: The prisma statement. J Clin Epidemiol 2009;62:1006-1012.

Pacey A, Nancarrow T, Egeland GM: Prevalence and risk factors for parental-reported oral health of inuit preschoolers: Nunavut inuit child health survey, 2007-2008. Rural Remote Health 2010;10:1368.

Petersen PE, Lennon MA: Effective use of fluorides for the prevention of dental caries in the 21st century: The who approach. Community Dent Oral Epidemiol 2004;32:319-321.

Petersen PE, Phantumvanit P: Perspectives in the effective use of fluoride in asia. J Dent Res 2012;91:119-121.

Pine CM, McGoldrick PM, Burnside G, Curnow MM, Chesters RK, Nicholson J, Huntington E: An intervention programme to establish regular toothbrushing: Understanding parents' beliefs and motivating children. Int Dent J 2000;Suppl Creating A Successful:312-323.

Plutzer K, Spencer AJ: Efficacy of an oral health promotion intervention in the prevention of early childhood caries. Community Dent Oral Epidemiol 2008;36:335-346.

Ramos-Gomez FJ, Shepard DS: Cost-effectiveness model for prevention of early childhood caries. J Calif Dent Assoc 1999;27:539-544.

Rayner JA: A dental health education programme, including home visits, for nursery school children. Br Dent J 1992;172:57-62.

RevMan: Review manager; in. The Cochrane Collaboration, 2011.

Rodrigues CS, Watt RG, Sheiham A: Effects of dietary guidelines on sugar intake and dental caries in 3-year-olds attending nurseries in brazil. Health Promotion International 1999;14:329-335.

Rong WS, Bian JY, Wang WJ, Wang JD: Effectiveness of an oral health education and caries prevention program in kindergartens in china. Community Dent Oral Epidemiol 2003;31:412-416.

Schinder EOM, Rosenberg M, Zangwill L: Educational approach to modifying dental habits in pre-school children. Review Association Odontologica Argentina 1992.

Schwarz E, Lo EC, Wong MC: Prevention of early childhood caries--results of a fluoride toothpaste demonstration trial on chinese preschool children after three years. J Public Health Dent 1998;58:12-18.

Selwitz RH, Ismail AI, Pitts NB: Dental caries. Lancet 2007;369:51-59.

Vachirarojpisan T, Shinada K, Kawaguchi Y: The process and outcome of a programme for preventing early childhood caries in thailand. Community Dent Health 2005;22:253-259.

Weinstein P, Harrison R, Benton T: Motivating parents to prevent caries in their young children: One-year findings. J Am Dent Assoc 2004;135:731-738.

Weinstein P, Harrison R, Benton T: Motivating mothers to prevent caries: Confirming the beneficial effect of counseling. J Am Dent Assoc 2006;137:789-793.

Whittle JG, Whitehead HF, Bishop CM: A randomised control trial of oral health education provided by a health visitor to parents of pre-school children. Community Dent Health 2008;25:28-32.

Legends

Figure 1. Flow diagram for study selection. Adapted from the PRISMA statement [Moher et al., 2009].

Figure 2. Risk of bias summary: review authors' judgements about each risk of bias item for each included study and the percentages across all included studies.

Figure 3. A meta-analysis of RCTs comparing educational intervention with no intervention showing effect on early childhood caries prevention. Studies that reported more than one educational intervention were duplicated in the meta-analysis.

Table 1. Electronic databases used and search strategy.

Table 2. Characteristics of the included studies.

Table 3. Characteristics and details of educational intervention of the included studies.

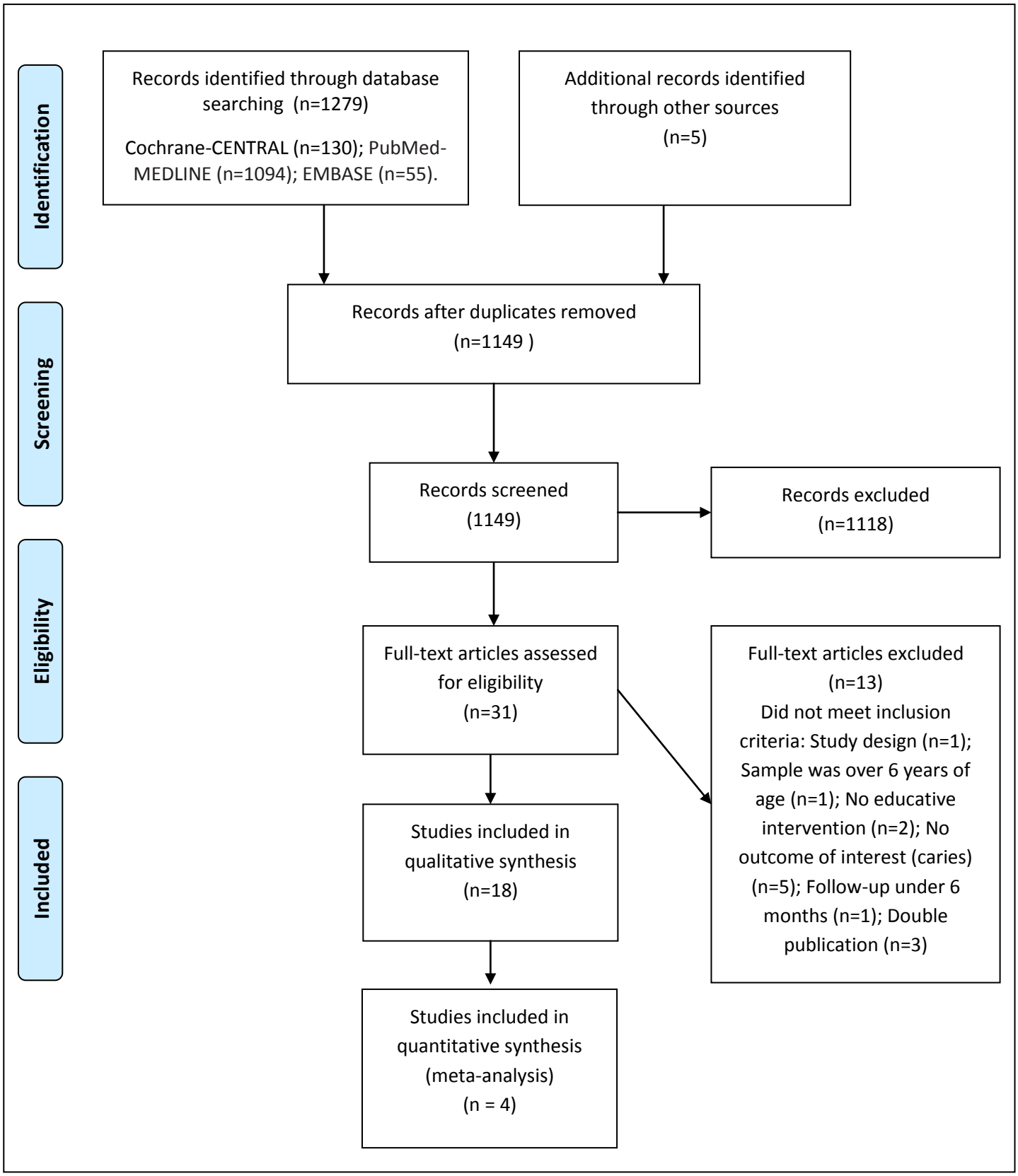

Figure 1. Flow diagram for study selection. Adapted from the PRISMA statement [Moher et al., 2009].

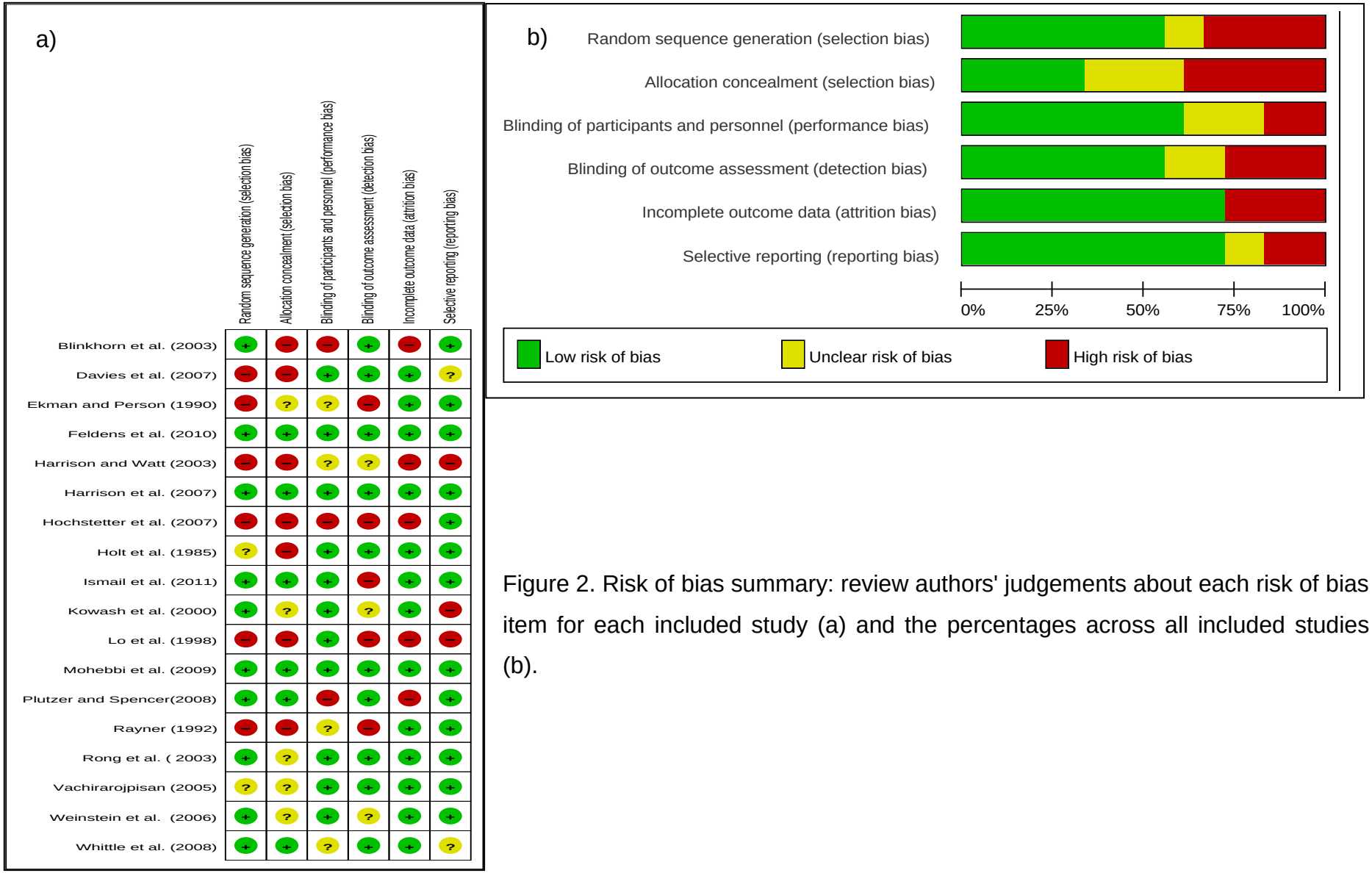

Figure 2. Risk of bias summary: review authors' judgements about each risk of bias item for each included study (a) and the percentages across all included studies (b).

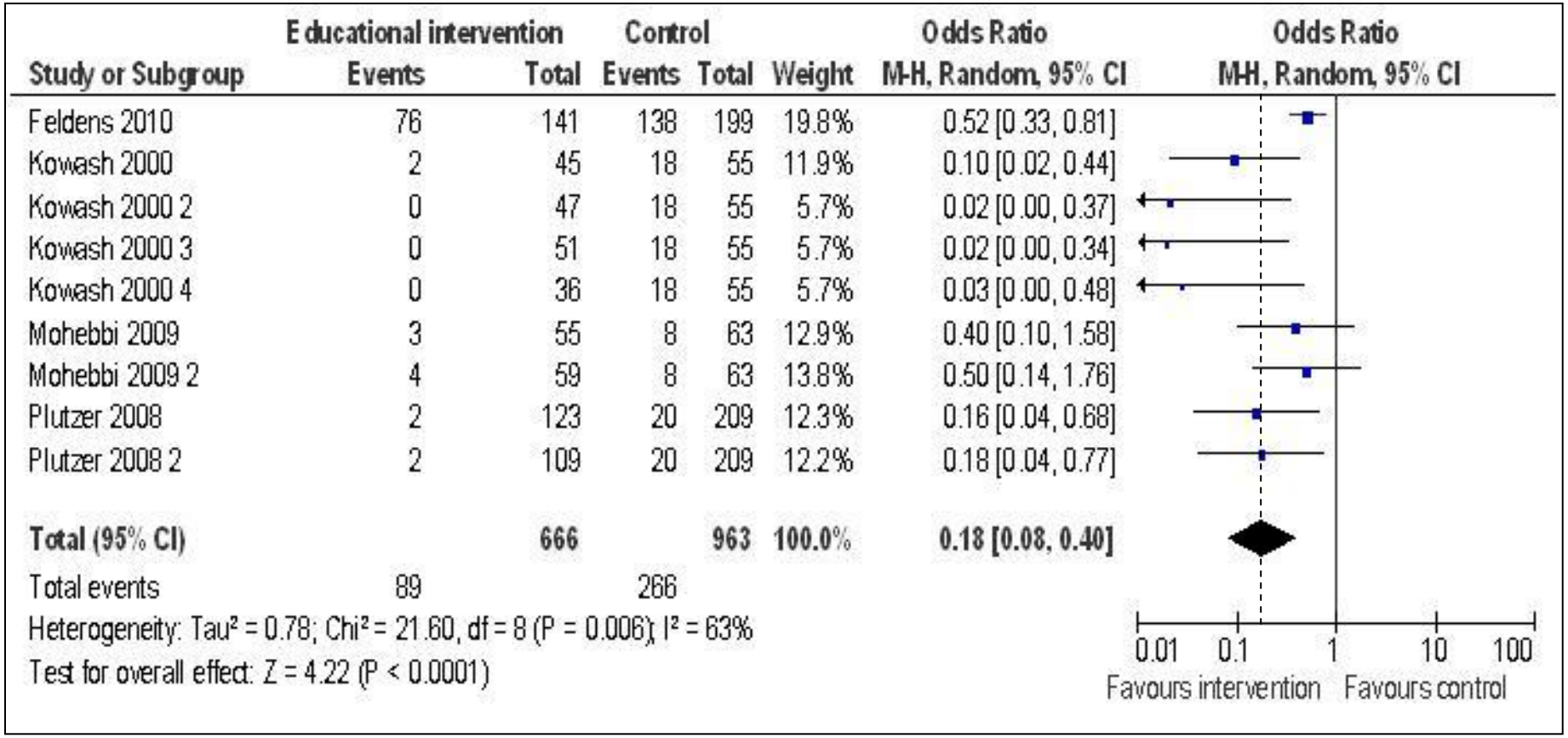

Figure 3. A meta-analysis of RCTs comparing educational intervention with no intervention showing effect on early childhood caries prevention. Studies that reported more than one educational intervention were duplicated in the meta-analysis.

Table 1. Electronic databases used and search strategy

Database	Search strategy (Key Words)
PubMed	((("Child, Preschool"[Mesh] OR "Preschool Child" OR "Children, Preschool" OR "Preschool Children" OR "Infant"[Mesh] OR "Infants") OR ("Infant, Newborn"[Mesh] OR "Infants, Newborn" OR "Newborn Infant" OR "Newborn Infants" OR "Newborns" OR "Newborn" OR "Neonate" OR "Neonates") OR ("Children" OR "Toddler" OR "Toddlers" OR "Baby" OR "Babies"))) AND ("Dental Caries"[Mesh] OR "Decay, Dental" OR "Dental Decay" OR "Caries, Dental" OR "Dental White Spot" OR "White Spots, Dental" OR "White Spots" OR "Spot, White" OR "Spots, White" OR "White Spot" OR "Dental White Spots" OR "White Spot, Dental" OR "Early Childhood Caries") AND (("Health Education"[Mesh] OR "Education, Health" OR "Community Health Education" OR "Health Education, Community" OR "Education, Community Health") OR ("Health Education, Dental"[Mesh] OR "Dental Health Education" OR "Education, Dental Health") OR (Educat*)) AND (randomized controlled trial[pt] OR controlled clinical trial[pt] OR randomized controlled trials[mh] OR random allocation[mh] OR double-blind method[mh] OR single-blind method[mh] OR clinical trial[pt] OR clinical trials[mh] OR ("clinical trial"[tw]) OR ((singl*[tw] OR doubl*[tw] OR trebl*[tw] OR tripl*[tw]) AND (mask*[tw] OR blind*[tw])) OR ("latin square"[tw]) OR placebos[mh] OR placebo*[tw] OR random*[tw] OR research design[mh:noexp] OR follow-up studies[mh] OR prospective studies[mh] OR cross-over studies[mh] OR control*[tw] OR prospectiv*[tw] OR volunteer*[tw]) NOT (animal[mh] NOT human[mh])
EMBASE	'dental caries'/exp OR 'dental caries' AND 'preschool child'/exp OR 'preschool child' OR 'infant'/exp OR 'infant' OR 'newborn'/exp OR 'newborn' OR 'child'/exp OR 'child' OR 'toddler'/exp OR 'toddler' OR 'baby'/exp OR 'baby' AND 'crossover procedure'/exp OR 'crossover procedure' AND [embase]/lim OR ('prospective study'/exp OR 'prospective study' AND [embase]/lim) OR ('follow up'/exp OR 'follow up' AND [embase]/lim) OR ('placebo'/exp OR 'placebo' AND [embase]/lim) OR ('single blind procedure'/exp OR 'single blind procedure' AND [embase]/lim) OR ('double blind procedure'/exp OR 'double blind procedure' AND [embase]/lim) OR ('randomization'/exp OR 'randomization' AND [embase]/lim) OR ('controlled clinical trial'/exp OR 'controlled clinical trial' AND [embase]/lim) OR ('randomized controlled trial'/exp OR 'randomized controlled trial' AND [embase]/lim) AND 'dental health education'/exp OR 'dental health education' OR 'health education'/exp OR 'health education' OR (educat* AND [embase]/lim)
Cochrane-Central	((("Child, Preschool"[Mesh] OR "Preschool Child" OR "Children, Preschool" OR "Preschool Children" OR "Infant"[Mesh] OR "Infants") OR ("Infant, Newborn"[Mesh] OR "Infants, Newborn" OR "Newborn Infant" OR "Newborn Infants" OR "Newborns" OR "Newborn" OR "Neonate" OR "Neonates") OR ("Children" OR "Toddler" OR "Toddlers" OR "Baby" OR "Babies"))) AND ("Dental Caries"[Mesh] OR "Decay, Dental" OR "Dental Decay" OR "Caries, Dental" OR "Dental White Spot" OR "White Spots, Dental" OR "White Spots" OR "Spot, White" OR "Spots, White" OR "White Spot" OR "Dental White Spots" OR "White Spot, Dental" OR "Early Childhood Caries") AND (("Health Education"[Mesh] OR "Education, Health" OR "Community Health Education" OR "Health Education, Community" OR "Education, Community Health") OR ("Health Education, Dental"[Mesh] OR "Dental Health Education" OR "Education, Dental Health") OR (Educat*))

Table 2. Characteristics of the included studies

Trial (year) Study design	Local	Age of subjects at baseline	Number of subjects at baseline (end)	Trial duration	Parameters of caries outcome	Caries outcome*	Main conclusions
Blinkhorn et al. (2003) RCT	West Pennine District of North-West England, United Kingdom	Mean: IG=4.1 years CG=4.2 years/	269 (248) mothers 334 (271) children	2 years	dmft in deciduous molars and canines. Criteria was not described.	Mean dmft: IG=2.65 (2.56) CG= 3.22 (2.85)	The model tested failed to reveal a substantial improvement in dental health over a 2-year period. However, there were clear benefits in relation to dental health knowledge, attitudes and toothbrushing skills among these mothers.
Davies et al. (2007) RCT	Manchester, United Kingdom	8 months Mean: IG=3.97 CG=4.02/	1207 (539)	5 years	Caries at the dentinal level using visual criteria alone (dmft).	Mean dmft (SD): (P<0.001) IG= 2.23(3.25) CG= 3.72(4.17) Caries experience-dmft>0 (N/%): (p=0.03) IG= 138(54%) CG= 183 (64%)	The impact of non-participation in a deprived, urban conurbation with high levels of population mobility are sufficient to dilute the impact of a health intervention such that few benefits are discernible at a population level.
Ekman and Person (1990) RCT	Finnish immigrants in Luleâ, Norrbotten (N) and Botkyrka, Stockholm (S), Sweden	6 months	324 (281)	3 years	Decayed, missing and filled teeth and surfaces were recorded. Clinical caries was recorded according to Koch (1961). Posterior bitewing radiographs were required for diagnosis in only three children.	Dfs (mean/±SD): FF group: N=1.7(3.0) S=1.2(2.2) FS group: N=2.7(4.5) S=2.1(3.2) FC group: N=6.0(5.3) S=4.6(4.6) SC group: N=0.9(2.1) S=0.7(1.8) dfs(N): FF-FC, FC-SC (p<0.001), FS-FC (p<0.01), FS-SC (p<0.05). dfs(S): FF-FC (p<0.01), FC-SC (p<0.001), FS-FC, FS-SC (p<0.05).	Early information tailored to the parents' needs and given in their own language is one way to obtain a substantial reduction of the caries frequency in immigrant children. If information in the mother tongue cannot be offered , an extra information session to the parents could benefit the dental health of the child.
Feldens et al. (2010) RCT	São Leopoldo, Brazil	At child's birth	500 (340)	4 years	Dental caries: the number of decayed (d1+:noncavitated or cavitated), missing (because of caries) and filled (f) teeth (d1+mft). Severe dental caries: d1+mft≥5	D1+mft (N/%): IG:76/53.9% CG: 138/69.3% D1+mft≥5: IG:41/29.1% CG:85/42.7%	Home nutritional advice during the first year of life decreases caries incidence and severity at four years of age in a low income community.
Harrison and Watt (2003) CCT	British Columbia (Vietnamese immigrants), Canada	2-18 months	51 (39)	3 years	Dental caries: A tooth was considered to be carious, if there was a visible evidence of cavity involving dentine. Interview: to determine parenting practices	Mean (SD): IG:3.25(4.25) CG: 4.15(4.57) defs (mean/±SD): IG= 1.1(4.3) CG1= 1.9(5.8) CG2= 5.1(7.2) (NSD) Percentage of caries-free children: IG= 93.8% CG1= 42.9% CG2= 50.0% (P<0.05)	One-to-one counseling with regular follow-up provided by a lay person of similar background and culture to the participants is an effective way to facilitate adoption of healthy behaviors and to improve oral health of children.
Harrison et al. (2007) RCT	South Asian immigrants in Surrey, Canada	6- to- 18-month-old	240 (205)	1 and 2 years	Caries was assessed with a visual examination using a modification of the criteria of Radike. Surfaces were coded as: (1) decayed; (2) missing due to caries; (3) filled; or (4) "white-spot, noncavitated.	dmfs (mean±SD): IG= 3.35±7.8 CG= 7.59±14.2 (P<0.001) dmfs plus White spots (mean ±SD): IG= 3.52+8.0 CG= 7.91±14.2 (P<0.01)	Subjects in the MI group had a 46% lower rate of dmfs after 2 years than did subjects in the control group. As a sensitivity analysis, decayed surfaces, decayed and missing. Motivational interviewing shows promise as a behavioral intervention to promote preventive dental health behaviors in mothers of young children at high risk for caries.

Trial (year) Study design	Local	Age of subjects at baseline	Number of subjects at baseline (end)	Trial duration	Parameters of caries outcome	Caries outcome*	Main conclusions
Hochstetter et al. (2007) RCT	Buenos Aires, Argentina	Aged between 3.5 and 5 years Mean: 4.17 years	58	1 year	Dental status (Bordoni et al., 2003- dmft and dmfs), including non cavitated white spot in smooth surface.	Baseline and 12 months¥: Dental status (dmft and dmfs): -IG= 5.5 and 5.8 -CG= 5.4 and 6.4 ($p<0.05$)	An educational component implemented by dentists and teachers significantly increases the effectiveness of measures aimed at preventing caries and gingivitis. The programme is suitable for application on a wider scale.
Holt et al. (1985) RCT	London, England, United Kingdom	At child's birth	1321 (302)	5 years	Children were examined for the presence of caries (defs and deft and two bitewing radiographs were taken for each children) and used the criteria described by Shaw and Murray.	defs (mean/±SD): G=1.81(4.56) G2=2.36 (4.50) G3=3.19 (8.21) deft (mean/±sd): G1=1.12(2.28) G2=1.60(2.51) CG=1.73(3.33) defs and deft (NSD)	The findings suggest trends for better dental health amongst children whose mothers had been given dental health education at home. Children who had received supplements showed less caries and lower levels of gingivitis.
Ismail et al. (2011) RCT	African-American children in Detroit, Michigan, EUA	0–5 years Mean: IG: 4.63 CG: 4.51	1021 (599)	2 years	Increments in untreated caries (ICDAS). Caries were defined as the number of new noncavitated, new cavitated, and new untreated lesions	Mean (increment-new lesions): Noncavitated: IG= 4.0 CG=4.1 Cavitated IG= 2.5 CG= 2.3 Development of untreated caries in children (NSD)	This study found that a single motivational interviewing intervention may change some reported oral health behaviors.
Kowash et al. (2000) RCT	Leeds, United Kingdom	Mean: 11.4 months	283 (234)	3 years	Dental caries (Palmer et al. criteria). Initial caries was defined as a demineralised area with loss of translucency and manifested caries as the presence of actual cavitation.	Mean dmfs (SD): IGA= 0.29 (1.64) IGB=0 IGC=0 IGD=0 CG= 1.75 (5.09)	Regular home visits to mothers with infants, commencing at or soon after the time of the eruption of the first deciduous teeth, was shown to be effective in preventing the occurrence of caries, improving oral hygiene and dental attendance. There was no difference in effect between a visit every 3 months or every 12 months between the ages of 1 and 3 years.
Mohebbi et al. (2009) RCT	Tehran, Iran	Mean: 12.3 months Range: 12-15 months	242 (177)	6 months	Dental caries (increment). Dentinal caries for all teeth (dt) and enamel caries for the upper central incisors (de). Number need to treat (NNT).	Children with new dt (N/%): IGA=3/5% IGB=4/7% IGC=8/13% Children with new de (N/%): IGA=0/0% IGB=8/14% IGC=16/26% NNT: IGA= 4 IGB= 9	This study recommends that non-dental staff working in general health settings provide mothers with education in infant and toddler oral health care as a feasible way of preventing or slowing caries increments in early childhood in countries with developing oral health systems.
Plutzer and Spencer (2008) RCT	South Australian, Australian	Nulliparous women (pregnant)	649(441)	During pregnancy	Incidence of severe early childhood caries (S-ECC): one or more upper incisor teeth being carious at the level of a cavitated or noncavitated lesion.	Incidence of S-ECC (N/%): IGA= 2/1.6% IGB= 2/1.8% CG: 20/9.6% No differences between the test A and B groups. P<0.01 (IG's and CG).	An oral health promotion programme provided in the form of anticipatory guidance in 3 rounds (during pregnancy, 6 and 12 months of age) significantly reduced the incidence of S-ECC.

Trial (year) Study design	Local	Age of subjects at baseline	Number of subjects at baseline (end)	Trial duration	Parameters of caries outcome	Caries outcome*	Main conclusions
Rayner (1992) CCT	Edinburgh, United Kingdom	Mean: 3.87	558 (406)	1 academic year	Dental caries (Jackson criteria).	Mean dmft (baseline/final examination): IG2= 2.54/3.53 IG3= 1.61/2.79 IG4= 0.61/2.08 CG= 1.75/2.84	Dental education given to parents by a hygienist at home was associated with an improvement in oral hygiene and a reduction in gingivitis. The beneficial effects of the school-based brushing programme alone relapsed during the holiday, and combining dental health education with toothbrushing at school did not have any additional benefit over the effect of home visiting alone.
Rong et al. (2003) RCT	Beijing, China	Mean: 3 years	731 (514)	2 years	Dental caries (Radike criteria). Carious lesions were recorded only when there was a frank cavity.	dmfs increment (mean/±SD): IG=2.47(4.09) CG=3.56(5.30) (p=0.009)	This education program was effective in establishing good oral health habits among preschool children and in increasing oral health knowledge of their parents, in conjunction with supervised daily tooth brushing with fluoridated toothpaste, which could reduce the development of new dental caries.
Vachiraroj pisan et al. (2005) RCT	Rural district of Suphanburi Province., Thailand	Mean: IG:12.09 CG:12.24 (6-19 month-old)	520 (404)	1 year	Children's dental cavitated carious increment (noncavitated and cavitated decayed teeth).	Cavitated carious increment (mean/±SD): IG= 3.5 (3.4) CG=3.2(3.5) (NSD)	The participatory dental health education model was shown to be a practical and effective method for increasing oral hygiene practice, but was not sufficient to prevent the development of ECC.
Weinstein et al. (2006) RCT	South Asian immigrants in Surrey, British Columbia, Canada	Mean: MI: 11 months CG: 12 months (6-to-18-months)	240 (205)	2 years	Dental Caries (modified Radike criteria), they used explorers periodically to verify cavitation of the enamel.	Caries incidence (decayed and filled surface): MI:35.2% CG:52.0% (P<0.02)	An MI intervention enhanced the preventive behavior of mothers of young children at high risk of developing caries. This approach also may be used to counsel others at high risk of developing dental diseases. MI is a promising approach that warrants further attention in a variety of dental contexts.
Whittle et al. (2008) RCT	Burnley, Pendle and Rossendale, United Kingdom	8 months	501 (352-3 years/276-5years)	3 years/5 years	Pitts criteria (1997)(dmfs): classified teeth as being sound (caries-free), having arrested caries, having caries into dentine or having caries extending into the pulp	dmfs at 3 years (mean): IG=2.03 CG=2.19 (NSD) dmfs at 5 years (mean): IG=3.99 CG=4.84 (NSD)	The mean dmfs score of other 5-year-olds in the area was significantly worse than that of children in the IG. Asking the control parents to take part in the study and examining their children at three years may have had an effect on their dental health status and have made it more difficult to detect any differences achieved by the programme.

PICS= Progressive Intercultural Services Society; MI= Motivational Interviewing; IG=Intervention group.; CG=control group; WHO= World Health Organization; ECC=early childhood caries; DHE=dental health education; NSD= no statistically difference; *=details of the intervention group can be seen in table 3; £= 7-year duration, however the comparison group were analysed at 3 year of follow-up; ¥=estimated values (data abstracted of figures)

Table 3. Characteristics and details of educational intervention of the included studies

Trial (year)	Local	Home-visits	Phone call	Mail/ Post	Counseling/ advice/verbal information	Pamphlet/ leaflet/ written information	Video/ Dvd	Audiotape	Discussion	Supervised toothbrushing	Control	Fluoride toothpaste (ppm f)	Other source of fluoride	Free toothbrush/ fingerbrush
Blinkhorn et al. (2003)Ω	General dental practices				X						Toothbrushing instruction and fluoride toothpaste	X		X
Davies et al. (2007)	Community dental clinic and home			X	X	X					No intervention	X (1450)		X
Ekman and Person (1990)	Child Health Centres				X	X					Information and pamplhet (once unless). Fluoride tablets were prescribed.		Fluoride tablets were prescribed	
Feldens et al. (2010)	Home	X			X	X					No intervention			
Harrison and Watt (2003)	Child Health clinics and home		X		X	X					No intervention			X
Harrison et al. (2007)	Community center and home		X	X	X	X	X				Pamplhet and video. Fluoride varnish was recommended.		Fluoride varnish was recommended	
Hochstetter et al. (2007)	School		NC		NC	NC	NC			X	Application of acidulated sodium fluoride phosphate and supervised daily toothbrushing using fluoride toothpaste	X (540)	Acidulated phosphate fluoride gel application	
Holt et al. (1985)Ω	Home	X*		X£	X*	X£					No intervention		Free fluoride supplements were offered	
Ismail et al. (2011)Ω	Community center and home		X		X	X	X		X	.	DVD and a list of instructions			
Kowash et al. (2000)	Home	X			X						No intervention			
Lo et al. (1998)	Kindergarten		NC		NC	NC	NC			X	No intervention	X (1100)		X
Mohebbi et al. (2009)	Public health centres		X*£		x*£	X£					No intervention			

Trial (year)	Local	Home-visits	Phone call	Mail/ Post	Counseling/ advice/verbal information	Pamphlet/ leaflet/ written information	Video/ Dvd	Audiotape	Discussion	Supervised toothbrushing	Control	Fluoride toothpaste (ppm f)	Other source of fluoride	Free toothbrush/ fingerbrush
Plutzer and Spencer (2008)	Public hospitals and home		X[£]	X*[£]		X*[£]					No intervention			X
Rayner (1992)Ω	School and home	X[¥£]			X[¥£]					X*[£]	No intervention	X (NC)		
Rong et al. (2003)	Kindergarten				X	X	X	X		X	No intervention	X (1100)		X
Vachirarojpisen et al. (2005)Ω	Health Centres								X		National dental health education (didactic teaching about ECC prevention) and free toothbrush distribution	X (500)		X
Weinstein et al. (2006)	Local governmental health unit and home		X		X	X	X				Pamphlet and videotape		Fluoride varnish was recommended	
Whittle et al. (2008)Ω	Home	X			X	X			X		Level of care usually provided by health visitors in the area	X (440)		X

NC=not clear

Ω= studies with negative ECC results

*= one intervention group

£= second intervention group

¥= third intervention group

4 ARTIGO 2

TITLE PAGE

TITLE

Educational intervention in preventing early childhood caries: a cluster randomized trial[§]

RUNNING HEAD

Educational intervention in preventing caries

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ABSTRACT

Objectives: The aim of this cluster randomized trial was to assess the effectiveness of an educational intervention in preventing early childhood caries (ECC). Methods: The trial targeted predentate and healthy children, aged 0- to 12-month-old and their mothers in Pelotas, Brazil. Twenty-four public health centres (PHCs) were randomly selected and assigned to intervention (IG; n=271) or control group (CG; n=251). Mothers were interviewed in order to collect socioeconomic and demographic variables. The IG received by means of a pamphlet oral health instructions with some topics verbally explained. Mothers in CG group received no intervention. After 1 year children were examined to determine caries status at dental offices at PHCs: children with at least one noncavitated lesion on the upper anterior proximal or labial surface and/or at least one cavitated lesion in any tooth surface were considered as presenting ECC. Differences between groups was tested with Chi-square. Logistic regression was used to estimate the effects of the intervention on the odds of ECC Results: Of 522 mother-child pairs enrolled, 445 completed the follow-up (IG 174, CG 271). The incidence of caries in the IG was 12.9% and in the CG 17.9% (p=0.037). The odds of caries was 80% higher for the CG, adjusted for number of teeth. The 'number needed to treat' for the IG was 20. No adverse effects were noted. Conclusions: Oral health education provided by a pamphlet and verbal instructions delivered to mothers during child's first year of life is a valuable tool to prevent ECC.

INTRODUCTION

A marked decrease in caries incidence has been evidenced in several studies worldwide (1, 2). However, in preschool children, in which caries in primary teeth is defined as ‘early childhood caries’ (ECC), the prevalence remains high and there are no substantial signs of improvement (3).

Young children access to oral health care is limited (4) and the treatment cost of ECC is high, sometimes requiring early teeth extraction and extensive restorative treatment (5, 6). Thus, preventive strategies have an important role in preventing ECC, as they are cost-saving compared to operatory treatment (7).

While part of the children are benefited from caries preventive measures (1), as topical fluoride application, educational interventions could be a more efficient strategy to target this age group, with a broader populational range. In developing countries where the health care finances have to be rationally distributed, educational interventions could help on prevention of early childhood caries. Moreover, if this type of intervention could be given by general health staff, with no need of special trainning, a larger number of children could be reached at a very low cost (8).

The evidence pertaining to the effectiveness of oral health education remain controversial and high quality studies assessing this issue are rare (9). Moreover, patterns of oral health behaviour is established early in infancy (10), and this would justify the need for interventions directed to the mothers.

Thus, the aim of this cluster randomized trial was to assess the effectiveness of an oral health educational intervention in preventing ECC in 0- to 12-month old children. The hypothesis tested is that an oral health educational intervention provided to mothers with a pamphlet is able to prevent early childhood caries

MATERIALS AND METHODS

This study was registered at ClinicalTrials.gov (NCT01502566) and followed the CONSORT statement recommendations (11). The research protocol of this study was approved by the local Ethics Committee (Protocol number 164/2010) and written informed consent was obtained from the mothers.

Participants and study design

This cluster randomized trial was carried out in Pelotas, a southern Brazilian city, with 93% of the population living in the urban area (12). The randomization was at the cluster level, and the public health centers (PHCs) were considered clusters. The sample size calculation was based on detecting a reduction in the proportion of children with dental caries (from 26% to 14%) (8). A sample size of 21 children in 12 clusters (public health centers) in each arm of the study was calculated to have a greater than 80% power for this reduction to be detected, based on the assumption that the intra-class correlation coefficient was 0.03.

The randomization was carried out by one author who was not involved in the conduct of the trial. For allocation of the PHC's, a computer-generated list of random numbers was used, in a simple randomization procedure with a 1:1 allocation ratio. In

order to be included PHC's have to be located in the urban area and to present facilities to allow dental examination. These PHCs were selected and randomly assigned to intervention group (IG) or control group (CG). Children from the CG were enrolled in the study one year later than those from the IG (at the time of the study endline evaluation).

The study population comprised predentate infants aged 0-12 months attending the National Children's Vaccination Day in 2010. Children having any tooth in mouth (inquired to mothers), children from outside Pelotas, children unaccompanied by mothers, and those with systemic diseases were not included. In Brasil, children's vaccinations are widely performed in PHCs regardless of the family socioecomic status.

To ensure the representativeness of each cluster in the study and considering losses and refusals, up to 30 children in each public health center were invited to participate. The method of recruitment consisted in inviting the first 30 children and their mothers who arrived for vaccination at the PHC's in that day, according to the inclusion/exclusion criteria, regardless of gender and social background. Figure 1 presents de flowchart of the study protocol.

Interview

In the IG, interviews were carried out before the intervention (baseline); in the CG, interview was carried out at the same time of the clinical examination (at the endline of the study). Graduate and undergraduate dental students carried out the face-to-face interview. All interviewers were previously trained to apply the questionnaires. Training consisted of reading the questionnaires and instruction manuals and simulating interviews (2 sessions of 4h length=8h of training). A pre-tested and structured

questionnaire was used and encompassed socioeconomic status and demographic information. The questions used were the same used in other studies (13, 14). The monthly wages of all economically active members of the family were collected in terms of the Brazilian minimum wage, which corresponded to approximately $280 US dollars at the time of the trial, and were categorized in quartiles. Formal maternal educational level was assessed and the school years were categorized into 2 groups (≤8 years; >8 years). Information about the child's gender and mother's age at child's birth were also collected.

Educational intervention

After the interview, mothers from the IG received a pamphlet created for this study covering the main topics related to ECC prevention together with oral health instructions by the same graduate and undergraduate dental students that carried the interview. They were previously trained to follow a standardised protocol; they received a briefly step by step instruction manual to be used during implementing the intervention. The main topics were: oral bacteria and transmission pathways, oral hygiene (for mothers and children), feeding habits, as avoiding sugar intake (for mothers and children) and sleeping with the bottle at night. The pamphlet was in Portuguese and used plain language. The visual content was developed by a professional designer using attractive and happy colours and contained illustrations to capture the attention of the mothers. Mothers from CG also received the pamphlet and oral instructions after the clinical examination (endline evaluation). All children and mothers enrolled in the study had at

their disposal dental assistance in the PHCs, but there are no standard oral health programs in this province directed to this child age group.

Clinical examination

The clinical examination for both groups was carried out only one year after the intervention applied to the IG when children were 12-24 months old during the National Children's Vaccination Day in 2011, at the same PHC's selected at the baseline. No clinical examination was carried out at baseline because at the enrollment time the included chidren had no erupted teeth. The outcome was the presence or absence of ECC, detected as dentinal caries for all teeth(15) and/or noncavitated lesions (defined as any white spot lesion or enamel caries) for the upper anterior teeth only, in their proximal and labial surfaces.

The fieldwork team was composed of twelve examiners, including dentists and advanced dental students. The examiners were blind to the children's group status and were calibrated compared to a "gold standard" examiner prior to study implementation. All examiners involved completed a theorical and training practice for a 4-h period. In addition, 10 children were examined for each examiner. Kappa statistics was used to test inter- and intra-examiner reliability, the values ranged from 0.75 to 0.92 (mean = 0.83) and 0.86 to 0.97 (mean = 0.93), respectively.

Dental examinations were performed at dental offices at PHCs under artificial light following the WHO recommendations (15). Before examination teeth were cleaned with a gauze and dried with compressed air. Dental caries data in these children were collected as recommended by the US National Institute of Health that defined the term

“early childhood caries” as the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth (16) with modifications ($dmfs^m$).

Children with at least one noncavitated lesion on the upper anterior proximal or labial surface and/or at least one cavitated lesion in any tooth surface were considered as presenting ECC. The number of teeth were registered and calculated for each child.

Statistical analysis

Data analyses were performed using Stata version 11.0 software. The chi-square test was used for assessing the differences in variables frequencies between the intervention and control groups.

The effectiveness of the educational intervention was calculated using the NNT ‘number needed to treat’. NNT was calculated as 1/ARR (ARR = absolute risk reduction), and then rounded up.

Multilevel regression analysis using mixed effects model was conducted to consider the effect of clusters on the model. However, the variance due to clusters [0.12 CI 95% (0.01-1.29)] was not significant and a likelihood-ratio test comparing the multilevel model to ordinary logistic regression showed no differences between models (p=0.147). Thus, logistic regression was used to estimate odds ratios and their 95% confidence intervals of dental caries for the IG compared with the CG, adjusting for number of teeth divided into tercile, because the number of teeth in each chidren could alter the estimates of the effect of the intervention on ECC (17). The odds ratios were not adjusted for the demographic (maternal age at child’s birth, child’s gender) and

background variables (maternal education, family income) because there was no evidence of imbalance between the intervention and control groups in relation to these variables (17). For all the analyses a bicaudal α=0.05 was considered.

RESULTS

A total of 522 children were included in the study. There were 271 children in the IG and 251 in the CG. At the end of the study, 194 (72%) children in the IG and 251 (100%) in the CG were examined. Most children who were lost in the IG changed contact information and/or address not found or the family had moved to another city and could not be examined after 1 year. Refusal represents 10.4% of the losses in the IG (Figure 1).

The characteristics of the participants were well balanced between the intervention and control groups (Table 1). There was statistically significant difference in caries status between groups, with the intervention children having fewer caries lesions: 12.9% among the IG and 17.9% among the CG. The odds of dental caries was 80% higher among the controls compared to children in the IG (OR 1.8; 95%CI 1.02-3.16), after the adjustment for the confounding effect of number of teeth (Table 2). The NNT was 20 [1/(0,18-0,13)] for the IG. No adverse effects were noted.

DISCUSSION

The findings of this study demonstrated that an educational intervention to prevent ECC targeting mothers of children in their first year of life reduces dental caries. The results of this study are difficult to be directly comparable to others in literature.

Studies assessing the effectiveness of educational intervention in preventing ECC used a wide range of educational strategies. Advice-giving sessions, anticipatory guidance, counseling approach, information via pamphlets, mail, postcards, videotape, telephone calls and their combination were used (8, 17-20). Besides that, interventions were apllied at home through home visits or by means of a postcard, mail or telephone call (17, 18, 20) and at the health units (public hospitals and public health centres) (8, 19).

A study which shares some similarities was a cluster randomized trial conducted in Iran that evaluated the impact of a 6-month educational intervention on ECC targeting 12- to 15- month-old children, which in the two intervention groups mothers received educational information by means of a pamphlet and oral health instructions and only one received extra reminders by phone calls. Their findings are similar to our results and they recommend oral health education widely provided with pamphlets as a feasible way of preventing ECC (8).

Other studies have also reported good results in terms of decreasing ECC through educational interventions (18, 19, 21), altough most studies required intensive regular visits or regular interventions or additional staff direct involved. Therefore, the regularity of the information delivery could be an important element in the success of the intervention, but add costs and the cost-effectiveness of the interventions should be taken into account (19).

Although printed materials have been widely used as an educational tool and studies have shown that pamphlet can be effective in changing knowledge, attitudes and behaviour (22), in Brazil and in other developing countries the average literacy of the

most caries affected population could compromise the effectiveness of this type of intervention. However, our results showed that even in these conditions the pamphlet was able to improve oral health conditions for the test group. Also, several cities in Brazil and in other countries do not have a wide oral health educational program to prevent ECC, the use of simple tools such as educational printed material could be an effective alternative to prevent dental caries.

Costs were not calculated in this study, but a possible advantage assigned to our type of intervention is the low cost. A dental health education program to prevent ECC through home visits was shown to give better benefit-costs and cost effectiveness ratios than other preventive programmes, such as fissure sealant program and slow releasing fluoride devices (23). The educational intervention used in present study is very simple, does not require specialized neither additional staff and needs only one regular visit to the health care center. Besides, the cost per pamphlet is low (US$ 0.36); thus we can assume a lower cost to our intervention compared to the interventions previously cited (23).

Although in this study the staff that gave the pamphlet and the verbal oral health instructions had a dental background, this oral health educational intervention could be deliverd by other trained health professionals working in health centers. Also, this intervention could reach children not attending the dental health services, since a Brazilian study verified that the proportion of individuals who had never seen the dentist was significantly higher at six years of age (71.5%) compared to other older age groups (14).

It is worth emphasizing that in children who received the educative pamphlet the incidence of dental caries was lower. This finding should be interpreted with caution because dental caries incidence was still high among the IG, with 12.9% of children presenting dental caries, which indicates that this intervention approach alone is not sufficient to change behaviours in all mothers. As shown in a previous study that assessed home visits for dietary advice, 10% of children in the IG still experienced caries, probably because cariogenic practices are culturally embedded, as the use of sugar as a sweetener which was prevalent also in the IG (17).

Further studies are needed to improve the type of educational intervention employed or explore educational interventions with differential approach or recognize mothers who needs a reinforcement. A randomized trial demonstrated that the best outcome occurred in the group where the mothers received extra motivation: mothers who received the pamphlet and reminder phone calls reported more positive self-perceived behavioural changes than in the group receiving the pamphlet only. Furthermore, children in the former group presented no new enamel caries during the study (8).

The study definition of caries included noncavitated lesions, since these lesions are more prevalent than cavitated carious lesions in primary teeth of children aged 6 to 18 months and can provide more useful data on the caries process in primary teeth (16). In this study, only upper anterior teeth were examined for noncavitated lesions because saliva control is best monitored in this area and because this region was most affected by disease (24).

Some limitations of this research should be emphasized. Mothers were not blind to their group, consequently other outcome measures like knowledge improvement related to caries and changes in behaviour were not used in this study because mothers in the IG were more likely than the controls to report that they followed the pamphlet instructions when they did not carry out just to please the research staff (courtesy bias) (25).

The proportion of losses of participants were not balanced between groups because of the peculiarities of the study design (groups not concurrent at baseline), which did not included a pre-selection of mothers and children at the time of intervention for the CG. In this way, all the included mother/child pairs in the CG were immediately interviewed and examined, preventing any losses for this group. Although this experimental design was adopted because of the ethics committee recommendation, asking control mothers to take part of the study at baseline could have a positive effect in their children oral health because families would focus their attention to oral health knowing that they would be recalled for dental examination after the follow-up period (26).

In conclusion, oral health education provided by a pamphlet and verbal instructions delivered to mothers during child's first year of life is a valuable tool to prevent ECC. However, further research is needed to estimate the cost-effectiveness of the intervention and to assess the sustentability of its effect over time.

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References

1. Marthaler TM. Changes in dental caries 1953-2003. Caries Res. 2004 May-Jun;38(3):173-81.
2. Narvai PC, Frazao P, Roncalli AG, Antunes JL. [Dental caries in Brazil: decline, polarization, inequality and social exclusion]. Rev Panam Salud Publica. 2006 Jun;19(6):385-93.
3. Vargas CM, Crall JJ, Schneider DA. Sociodemographic distribution of pediatric dental caries: NHANES III, 1988-1994. J Am Dent Assoc. 1998 Sep;129(9):1229-38.
4. Seale NS, Casamassimo PS. Access to dental care for children in the United States: a survey of general practitioners. J Am Dent Assoc. 2003 Dec;134(12):1630-40.
5. Weinstein P. Public health issues in early childhood caries. Community Dent Oral Epidemiol. 1998;26(1 Suppl):84-90.
6. Tinanoff N, O'Sullivan DM. Early childhood caries: overview and recent findings. Pediatr Dent. 1997 Jan-Feb;19(1):12-6.
7. Ramos-Gomez FJ, Shepard DS. Cost-effectiveness model for prevention of early childhood caries. J Calif Dent Assoc. 1999 Jul;27(7):539-44.
8. Mohebbi SZ, Virtanen JI, Vahid-Golpayegani M, Vehkalahti MM. A cluster randomised trial of effectiveness of educational intervention in primary health care on early childhood caries. Caries Res. 2009;43(2):110-8.
9. Kay EJ, Locker D. Is dental health education effective? A systematic review of current evidence. Community Dent Oral Epidemiol. 1996 Aug;24(4):231-5.
10. Jones S, Hussey R, Lennon MA. Dental health related behaviours in toddlers in low and high caries areas in St Helens, north west England. Br Dent J. 1996 Jul 6;181(1):13-7.
11. Schulz KF, Altman DG, Moher D. CONSORT 2010 Statement: updated guidelines for reporting parallel group randomised trials. Trials.11:32.
12. IBGE. Estimativas da população.; 2011 [updated 2011 October 10, 2011 cited October 10, 2011]; Available from: http://www.ibge.gov.br/cidadesat/painel/painel.php?codmun=431440.
13. Barros AJ, da Silva dos Santos I, Victora CG, Albernaz EP, Domingues MR, Timm IK, et al. [The 2004 Pelotas birth cohort: methods and description]. Rev Saude Publica. 2006 Jun;40(3):402-13.
14. Franca-Pinto CC, Cenci MS, Correa MB, Romano AR, Peres MA, Peres KG, et al. Association between black stains and dental caries in primary teeth: findings from a Brazilian population-based birth cohort. Caries Res. 2012;46(2):170-6.
15. WHO. World Health Organization. Oral Health Surveys: Basic Methods. In: 3rd., editor. Geneva, Switzerland; 1997.
16. Drury TF, Horowitz AM, Ismail AI, Maertens MP, Rozier RG, Selwitz RH. Diagnosing and reporting early childhood caries for research purposes. A report of a workshop sponsored by the National Institute of Dental and Craniofacial Research, the Health Resources and Services Administration, and the Health Care Financing Administration. J Public Health Dent. 1999 Summer;59(3):192-7.

17. Feldens CA, Vítolo MR, Drachler MeL. A randomized trial of the effectiveness of home visits in preventing early childhood caries. Community Dent Oral Epidemiol. 2007 Jun;35(3):215-23.
18. Kowash MB, Pinfield A, Smith J, Curzon ME. Effectiveness on oral health of a long-term health education programme for mothers with young children. Br Dent J. 2000 Feb 26;188(4):201-5.
19. Plutzer K, Spencer AJ. Efficacy of an oral health promotion intervention in the prevention of early childhood caries. Community Dent Oral Epidemiol. 2008 Aug;36(4):335-46.
20. Weinstein P, Harrison R, Benton T. Motivating mothers to prevent caries: confirming the beneficial effect of counseling. J Am Dent Assoc. 2006 Jun;137(6):789-93.
21. Feldens CA, Giugliani ER, Duncan BB, Drachler MeL, Vítolo MR. Long-term effectiveness of a nutritional program in reducing early childhood caries: a randomized trial. Community Dent Oral Epidemiol. 2010 Aug;38(4):324-32.
22. Paul C, Redman S. A review of the effectiveness of print material in changing health-related knowledge, attitudes and behaviour. Health Promotion Journal of Australia. 1997;7:91-9.
23. Kowash MB, Toumba KJ, Curzon ME. Cost-effectiveness of a long-term dental health education program for the prevention of early childhood caries. Eur Arch Paediatr Dent. 2006 Sep;7(3):130-5.
24. Chan SC, Tsai JS, King NM. Feeding and oral hygiene habits of preschool children in Hong Kong and their caregivers' dental knowledge and attitudes. Int J Paediatr Dent. 2002 Sep;12(5):322-31.
25. Takona JP. Educational Research: Principles and Practice iUniverse, editor. Lincoln; 2002.
26. Whittle JG, Whitehead HF, Bishop CM. A randomised control trial of oral health education provided by a health visitor to parents of pre-school children. Community Dent Health. 2008 Mar;25(1):28-32.

Table 1. Distribution of the participants characteristics in intervention and control groups. Pelotas, Brazil, 2011 (n=522)

Characteristics	**Intervention (n=271)**	**Control (n=251)**	**P-value[π]**
Sex, boys: n (%)	141 (52.0)	139 (55.4)	0.484
Maternal age at child's birth: n (%)			
≥31 years	62 (22.9)	61 (24.6)	0.250
21-30 years	154 (56.8)	124 (50.0)	
≤20 years	55 (20.3)	63 (25.4)	
Family income: n (%)			
≤1BMW*	81 (32.3)	67 (26.7)	0.113
1.1-1.7 BMW	51 (20.3)	62 (24.7)	
1.8-2.8 BMW	70 (27.9)	57 (22.7)	
≥2.9 BMW	49 (19.5)	65 (25.9)	
Mother's educational level: n (%)			
≤8 years	144 (53.3)	149 (59.4)	0.166
>8 years	126 (46.7)	102 (40.6)	

[π]Chi-square two-tailed P-value; SD, standard deviation; BMW, Brazilian Minimum Wage;
*1 BMW= U$ 275.00/month.

Table 2. Association between dental caries increment and the intervention (n= 194) and control groups (n= 251). Pelotas, Brazil, 2011 (n=445)

Variables		**OR**	**(95% CI)[a]**	**P-value [a]**	**OR**	**(95% CI)[b]**	**P-value [b]**
Groups							
	Intervention	1.0		0.149	1.0		0.037
	Control	1.5	(0.87-2.51)		1.8	(1.03-3.12)	
Number of teeth							
	0-8	1.0		<0.001	1.0		<0.001
	9-11	2.9	(1.47-5.88)		3.0	(1.52- 6.13)	
	12-18	3.1	(1.70-5.82)		3.6	(1.90-6.68)	

OR: odds ratio; CI: confidence interval; [a]Unadjusted crude univariate analysis. [b]Adjusted for number of teeth

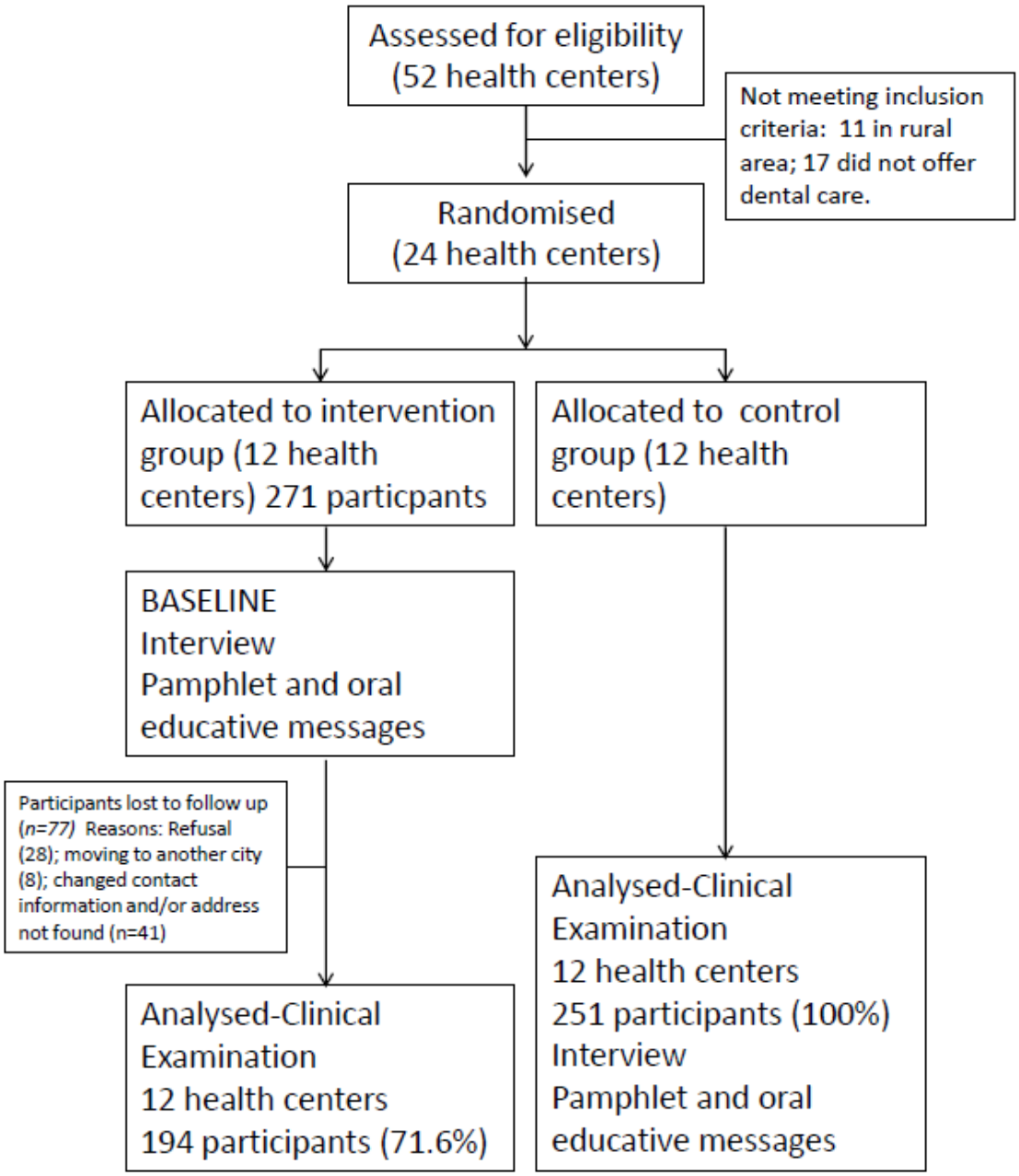

Figure 1. Flowchart of the study protocol

5 ARTIGO 3

Mothers' knowledge of and beliefs on early childhood caries[§]

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ABSTRACT

Purpose: The aims of this study were to assess mothers' knowledge and beliefs about early childhood caries (ECC) and to investigate whether demographic and socioeconomic conditions are related to these maternal aspects. **Methods:** This cross-sectional study targeted mothers of children aged 0 to 12 months visiting 12 public health care centers in Pelotas, Brazil. Information on causes of and recommendations to prevent ECC, as well as socioeconomic and demographic variables, was collected. Chi-square test, univariate and multiple logistic regression analysis were performed. ($p<.05$). **Results:** A total of 275 mothers were interviewed. Sugar intake and lack of oral hygiene were the most frequently mentioned causes of caries. Mothers with lower educational level, lower income and with more children in the family were more probably to indicate sugar intake as the main reason of ECC. Almost 90% of the mothers were aware of the need to begin toothbrushing during their children's first year. Mothers who had more children were more likely to not know the correct age for the first dental visit. **Conclusions:** Our findings highlight the importance of providing preventive orientation to the mothers regarding ECC as this may have an impact on the oral health of their children.

INTRODUCTION

Early childhood caries (ECC), one of the most common chronic diseases of childhood, is a public health problem that continues to affect babies and preschool children worldwide. ECC has a debilitating effect on development, speech, general health, and self-esteem, thus affecting the quality of life of children [1, 2].

In early childhood the dental health behavior begins to form and parents, especially mothers, play the dominant role as models for their children. There are several studies on oral health-related behaviors and how attitudes of mothers relate to their children's oral health status [3-6]. For example, mothers' attitudes toward their own dental hygiene and previous poor dental health history were found to be associated with children with higher caries experience [7]. However, based upon the theory that knowledge will alter attitudes and lead to a change in behavior, further studies specifically addressing the mothers' knowledge on dental caries are important.

One reason for the disproportional caries disease among children is poor understanding of caries etiology or prevention by parents [8]. Li et al. [9] found that less oral knowledge of parents were significantly related to the occurrence of caries in 3–6-year old Chinese children. Also, mothers who were more knowledgeable about their children's oral hygiene needs had children who brushed more frequently their teeth [10]. Moreover, social, demographic and behavioural factors, such as family income, maternal education level directly affects ECC prevalence and severity [11, 12], and also could modulate parental knowledge and beliefs. Actually, evidence suggests that health-damaging behaviors are conditioned by socio-environmental context and lifestyle, which differ across ethnic and socioeconomic groups [13].

Since the knowledge and viewpoints of the mothers are linked to health behaviors and could influence the oral health of their children, this study was designed to assess the

knowledge and beliefs about ECC of mothers with children aged up to 12 months living in the South of Brazil and to investigate whether demographic and socioeconomic conditions are related to knowledge and beliefs about ECC. The hypothesis tested is that mothers with lower socioeconomic levels have less established knowledge on ECC.

METHODS

The research protocol of this study was approved by the Local Human Research Ethics Committee. This cross-sectional study was nested within a randomized clinical trial to assess the effectiveness of an educative intervention in preventing early childhood caries. In this study we used the baseline data of the intervention group. This study was carried out in Pelotas, a city of 328,275 inhabitants in the South of Brazil, with 93% of the population living in the urban area [14]. Among the 52 Municipal Public Health Centers, 35 offer dental care (11 in the rural area and 24 in the urban area). Twelve public health centers were randomly selected from the urban area. The Pelotas vaccination program had an uptake rate of 90% among children up to 59 months living in Pelotas. The study targeted mothers of children aged 0 to 12 months who attended the National Children's Vaccination Day in August 2010. Up to 30 mothers from each public health center were invited to participate in the survey.

According to information provided by local authorities, no preventive or educative oral health program has been undertaken for this age group of children. Information on knowledge of causes of ECC, recommendations to prevent ECC, and socioeconomic and demographic variables was collected using face-to-face interviews with a structured questionnaire in Portuguese. Informed consent was obtained from all mothers prior to the interview process. Twenty-four previously trained dentists and dental students conducted the interviews in a private room after the child had been vaccinated. Following the completion of the interview, mothers received a brief explanation of ECC and its prevention and an educative pamphlet with more

information. Mothers who did not live in Pelotas and children unaccompanied by mothers were not included.

Socioeconomic and demographic information

Information about the child's age (months) and child's gender. The child's age was recorded on the basis of his or her birthday. Information on family income was collected in continuous levels and categorized in quartiles. Maternal schooling was stratified according to years of schooling as 0-4 years, 5-8 years, 9-11 years and ≥12 years. Number of children was also collected and categorized as either one, two or more than two. Family structure was divided into two categories: living with one parent/others (non-nuclear) and living with both parents (nuclear). Mothers' age was categorized in three groups: 19 years or under, 20 to 29 years and 30 years or more.

Knowledge of and beliefs about ECC

Knowledge of and beliefs about ECC were gathered with four questions. The answers to the question about the recommended age for the first dental visit were categorized as correct if mothers indicated either by 12 months or once their child's first tooth came in. Other answers were marked as incorrect. Mothers' knowledge about implementing oral hygiene measures ("When do you think is the best time to begin cleaning your child's teeth?") was collected by an open-ended question and divided into two categories: correct (up to 12 months and no later than the time of eruption of the first primary tooth) and incorrect (child aged 12 or more months). Correct answers were defined according to guidelines of the American Academy of Pediatric Dentistry [15]. After each mother was asked to respond to the open-ended question, "What do you think is the main reason of tooth decay?", all answers were analyzed and tabulated. For the question, "Do you believe that night-bottle feeding could be detrimental to children's oral health?," the answer was either yes or no.

Statistical analysis

Data analyses were performed using STATA version 11.0 software. Analyses included frequencies of responses to questions about knowledge and beliefs. Chi-square analyses or Fisher's Exact test were performed to determine whether the knowledge on causes of ECC were significantly associated with family income, maternal schooling, number of siblings, family structure, and mothers' age. Multiple logistic regression analysis was used to investigate the influence of risk factors to knowledge and beliefs about the recommended age for the first dental visit. Crude analysis was used to investigate the influence of risk factors to implementing oral hygiene measures, adjusted analysis was not performed because just one variable could enter to the model. The corresponding odds ratios (OR) and their 95% confidence intervals (95% CI) were determined. Thereby, the criterion for the independent variables to enter the model was set at .25. Values of $p<.05$ were considered significant.

RESULTS

A total of 275 mothers were enrolled in the study. The response rate was 93.1% of all mothers invited. The mean age for mothers was 26 ± 6.1 years and for the children was 3.6 ± 2.6 months. Table 1 presents socioeconomic and demographic characteristics of mothers. Approximately 5% of children had mothers in the lowest education category. Most families (35.5%) were in the lowest tertile of income. Most of the mothers (82.2%) lived with their partner (nuclear family), had one child (53.5%) and aged between 20 and 29 years old (56.0%). Sugar intake (58.9%) and lack of oral hygiene (56.0%) were the most frequently mentioned causes of caries, but the lack of fluoride and the role of bacteria were not cited by any mother. Other causes of caries cited by mothers were lack of care (9.0%), diet (5.0%), use of medicines (2.2%), heredity (1.8%), and food residue in teeth (1.4%).

The knowledge on the main causes of ECC reported by mothers shows statistically significant difference among different family income and maternal schooling categories (Table 2). High maternal schooling and high family income were associated with a better knowledge on lack of hygiene as an etiologic factor for ECC. Mothers in low socioeconomic position and with low schooling reported more frequently sugar consumption as the main reason of tooth decay (Table 2). Furthermore, having more children in the family was significantly related to the knowledge about sugar as an etiologic factor of ECC (Table 2). Most mothers (66%) believe that night-bottle feeding can be harmful to children's oral health.

Most mothers (68.6%) were aware of the importance of the first visit to the dentist within the first year of life or once the first tooth has come in. Results showed that the fact of having higher educational level and income and small number of children were identified as a protective factor in the lack of mothers' knowledge of the child first dental visit (Table 3). After the adjustment, small number of children in the family was the variable that remained associated. Almost ninety percent of the mothers (89.9%) were aware of the need to begin toothbrushing during their children's first year. Table 4 shows that there are no variables associated with the lack of knowledge about the best time to begin toothbrushing their child's teeth.

DISCUSSION

This study was designed to understand mothers' knowledge and beliefs on ECC to employ effective disease preventive strategies, since dental caries prevalence is still high among young children [16, 17].

Although beliefs regarding the causes or risk factors for disease may influence the adoption of health-protecting behaviors, basic knowledge does not always translate to in-depth understanding or beneficial behaviors [18]. Realizing this can be an important foundation for understanding preventive messages [19].

In general, our findings are in agreement with a qualitative study conducted with Mexican-American mothers in which candy or juice consumption and poor oral hygiene were the most cited specific causes of caries [19]. Another previous study showed that most parents when asked to identify the most important cause of tooth decay in children selected either ‘‘not cleaning teeth everyday’’ (40%) or ‘‘sweet snacks and drinks between meals’’ (39%)[20]. In Brazil, the largest citation of sugar intake as the main reason of tooth decay would be an expected finding because early cariogenic diet is introduced by families in the routine of children because culturally, sweets and candies have connotations of love and affection. For this reason, the effects of sugar are widely published in the media.

The mothers' schooling, income and number of children were associated with their knowledge about sugar intake as a main cause of tooth decay. A study conducted in Singapore to identify caries risk factors, indicators, and protective factors and to develop and validate biopsychosocial caries risk assessment models for preschoolers found that children whose parents held the concept of “tooth worm” as caries pathogen had a lower caries risk, possibly due to the “fear of tooth worm” being a strong motivator for children and parents to strive for good oral health [21]. Once studies have been shown that low income and low educational level are considered risk factors for dental caries in children [22, 23], we can presume that with the survey question as “what do you think is the main reason of tooth decay?”, parents who chose “sugar intake” children were in higher risk to develop ECC, thus this concept might be useful in future oral health education and to target children in higher risk.

In our study mothers with higher educational level and higher income were more probably to indicate lack of hygiene as the main reason of tooth decay. These findings could be explained because cleaning teeth is related to social norms. According to Emmons et al. [24], social influences, such as social class, could affect behavior, and, consequently knowledge, thus identifying variations in the characteristics of norms among groups with different characteristics

may be important for elucidating the underlying determinants of risk patterns among specific subgroups and for developing targeted interventions.

Despite good knowledge regarding oral hygiene and sugar intake the relative role of other factors, such as early transmission of bacteria and lack of fluoride, were virtually unknown in this mother group. As in our study, Mexican-american mothers did not mention the role of bacteria [19]. Since caries is a disease in which multiple factors are involved [25], knowledge on the other roles involved in dental caries etiology would be critical for adoption of adequate preventive measures.

In our study 66% of mothers believe that night-bottle feeding can be harmful to children's oral health. Nevertheless, more than one-third of parents of Latino neighborhood of Washington DC added a sugary flavoring to their infant's milk and many of them used the baby bottle at bedtime [26]. The preliminary findings of a study involving secondary caretakers found that 56% of caretakers thought that night bottle feeding did not cause tooth decay. According to the authors this might be because caretakers were not aware of the hidden sugars in the milk, or that giving the children bottle feed immediately prior to bedtime and when the child woke up in the night was a common cultural practice of the region[27].

It is likely that changes in behavior, including behaviors related to health and disease prevention, are easier to be achieved when mothers believe that a particular factor really affects their children's oral health. Therefore, lack of awareness and knowledge of causes of ECC can affect parents' ability to instill healthy oral habits into a child's daily routine, implying that professionals should put forth more effort to educate and motivate parents on ECC.

Mothers play a vital role in filtering the interaction between children and their environment through the feeding habits, oral hygiene care, and other preventive practices and services they make available to their children [28]. Thus, it is crucial to assess mothers' knowledge and beliefs toward the recommended age of first dental visit; this will help determine the need for and

benefits of early examinations in preventing ECC [29]. In addition, it is important to investigate their knowledge about the best time to begin cleaning their children's teeth because mothers play a key role not only as facilitators of oral cleaning of very young children, but also as transmitters of oral health behavior [30].

Results of our survey showed that, while almost 90% of the mothers were aware of the need to begin toothbrushing during their children's first year, only 56.6% recognized lack of oral hygiene as a cause of ECC. The majority of mothers were aware of the AAPD [15] recommendation. Although this was an encouraging finding, it does not mean that mothers know how to properly clean their children's teeth. A quantitative survey reported that rural Latino fathers typically initiate oral hygiene routines later than the age recommended, these fathers agreed that children's teeth should be taken care of from a young age, however considered to be after 2 years [8].

Our findings also show that mothers with fewer children have better knowledge regarding the recommended age for first dental visit. Smaller family size implies that mother have more time to give proper attention and care to her children. However, it is not clear that larger families per se result in worse outcomes, such as ECC.

More studies are needed to assess whether the same findings occur in other countries and regions with different socioeconomic conditions and cultural aspects, as well with different access to preventive care. Moreover, studies should verify the association between mothers' knowledge of ECC and caries status of their children, which was not addressed in this study.

Based on previous studies [3, 31] and on the results provided in this paper, we suggest that efforts to educate mothers can be effective in changing behavior and, consequently, may contribute to improving the oral health of their children. Also, questioning mothers about their knowledge of and beliefs on ECC could be used as a tool to identify caries risk in children.

CONCLUSIONS

Taken together, our results showed that:

1. Mothers with lower educational level, lower income and with more children in the family were more probably to indicate sugar intake as the main reason of tooth decay, while mothers who had more children were more likely to not know the correct age for the first dental visit.

2. It is noteworthy that none of the mothers interviewed reported the role of microorganisms and lack of fluoride in the caries etiology.

3. Considering that children with caries in their primary teeth were three times more likely to develop caries in their permanent teeth [32], preventive interventions must begin within the first year of life to be successful in preventing dental disease. Our findings highlight the importance of providing preventive orientation regarding ECC and disseminating appropriate and complete information regarding caries etiology, as this may have an impact on the oral health of their children—not only in childhood, but also in adulthood.

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REFERENCES

1. Goettems ML, Ardenghi TM, Romano AR, Demarco FF, Torriani DD. Influence of maternal dental anxiety on oral health-related quality of life of preschool children. Qual Life Res 2011;20(6):951-9.
2. Davies GN. Early childhood caries--a synopsis. Community Dent Oral Epidemiol 1998;26(1 Suppl):106-16.
3. Okada M, Kawamura M, Hayashi Y, Takase N, Kozai K. Simultaneous interrelationship between the oral health behavior and oral health status of mothers and their children. J Oral Sci 2008;50(4):447-52.
4. Okada M, Kawamura M, Kaihara Y, Matsuzaki Y, Kuwahara S, Ishidori H, et al. Influence of parents' oral health behaviour on oral health status of their school children: an exploratory study employing a causal modelling technique. Int J Paediatr Dent 2002;12(2):101-8.
5. Saied-Moallemi Z, Virtanen JI, Ghofranipour F, Murtomaa H. Influence of mothers' oral health knowledge and attitudes on their children's dental health. Eur Arch Paediatr Dent 2008;9(2):79-83.
6. Abiola Adeniyi A, Eyitope Ogunbodede O, Sonny Jeboda O, Morenike Folayan O. Do maternal factors influence the dental health status of Nigerian pre-school children? Int J Paediatr Dent 2009;19(6):448-54.
7. Mattila ML, Rautava P, Sillanpaa M, Paunio P. Caries in five-year-old children and associations with family-related factors. J Dent Res 2000;79(3):875-81.
8. Swan MA, Barker JC, Hoeft KS. Rural Latino farmworker fathers' understanding of children's oral health. Pediatr Dent 2010;32(5):400-6.
9. Li Y, Zhang Y, Yang R, Zhang Q, Zou J, Kang D. Associations of social and behavioural factors with early childhood caries in Xiamen city in China. Int J Paediatr Dent 2011;21(2):103-11.
10. Finlayson TL, Siefert K, Ismail AI, Sohn W. Maternal self-efficacy and 1-5-year-old children's brushing habits. Community Dent Oral Epidemiol 2007;35(4):272-81.
11. Hallett KB, O'Rourke PK. Social and behavioural determinants of early childhood caries. Aust Dent J 2003;48(1):27-33.
12. Tinanoff N, O'Sullivan DM. Early childhood caries: overview and recent findings. Pediatr Dent 1997;19(1):12-6.
13. Sisson KL. Theoretical explanations for social inequalities in oral health. Community Dent Oral Epidemiol 2007;35(2):81-8.
14. IBGE. Instituto Brasileiro de Geografia e Estatística; 2010.
15. AAPD. Policy on Early Childhood Caries (ECC): Classifications, Consequences, and Preventive Strategies. Pediatric Dentistry 2010/2011;32(6):41-44.
16. Roncalli AG. [The SB Brasil 2010 Project: a key strategy for developing an oral health surveillance model]. Cad Saude Publica 2011;26(3):429, 28.
17. Du M, Luo Y, Zeng X, Alkhatib N, Bedi R. Caries in preschool children and its risk factors in 2 provinces in China. Quintessence Int 2007;38(2):143-51.
18. Rajab LD, Petersen PE, Bakaeen G, Hamdan MA. Oral health behaviour of schoolchildren and parents in Jordan. Int J Paediatr Dent 2002;12(3):168-76.
19. Hoeft KS, Barker JC, Masterson EE. Urban Mexican-American mothers' beliefs about caries etiology in children. Community Dent Oral Epidemiol 2010; 38:244-55.
20. Gussy MG, Waters EB, Riggs EM, Lo SK, Kilpatrick NM. Parental knowledge, beliefs and behaviours for oral health of toddlers residing in rural Victoria. Aust Dent J 2008;53(1):52-60.

21. Gao XL, Hsu CY, Xu Y, Hwarng HB, Loh T, Koh D. Building caries risk assessment models for children. J Dent Res 2010;89(6):637-43.
22. Peres MA, de Oliveira Latorre Mdo R, Sheiham A, Peres KG, Barros FC, Hernandez PG, et al. Social and biological early life influences on severity of dental caries in children aged 6 years. Community Dent Oral Epidemiol 2005;33(1):53-63.
23. Traebert J, Guimaraes Ldo A, Durante EZ, Serratine AC. Low maternal schooling and severity of dental caries in Brazilian preschool children. Oral Health Prev Dent 2009;7(1):39-45.
24. Emmons KM, Barbeau EM, Gutheil C, Stryker JE, Stoddard AM. Social influences, social context, and health behaviors among working-class, multi-ethnic adults. Health Educ Behav 2007;34(2):315-34.
25. Fisher-Owens SA, Gansky SA, Platt LJ, Weintraub JA, Soobader MJ, Bramlett MD, et al. Influences on children's oral health: a conceptual model. Pediatrics 2007;120(3):510-20.
26. Watson MR, Horowitz AM, Garcia I, Canto MT. Caries conditions among 2-5-year-old immigrant Latino children related to parents' oral health knowledge, opinions and practices. Community Dent Oral Epidemiol 1999;27(1):8-15.
27. Mani SA, Aziz AA, John J, Ismail NM. Knowledge, attitude and practice of oral health promoting factors among caretakers of children attending day-care centers in Kubang Kerian, Malaysia: a preliminary study. J Indian Soc Pedod Prev Dent 2010;28(2):78-83.
28. Brickhouse TH. Family oral health education. Gen Dent 2010;58(3):212-9; quiz 20-1.
29. Lee JY, Bouwens TJ, Savage MF, Vann WF, Jr. Examining the cost-effectiveness of early dental visits. Pediatr Dent 2006;28(2):102-5; discussion 92-8.
30. Mohebbi SZ, Virtanen JI, Murtomaa H, Vahid-Golpayegani M, Vehkalahti MM. Mothers as facilitators of oral hygiene in early childhood. Int J Paediatr Dent 2008;18(1):48-55.
31. Poutanen R, Lahti S, Tolvanen M, Hausen H. Parental influence on children's oral health-related behavior. Acta Odontol Scand 2006;64(5):286-92.
32. Li Y, Wang W. Predicting caries in permanent teeth from caries in primary teeth: an eight-year cohort study. J Dent Res 2002;81(8):561-6.

Tables

Table 1. Socioeconomic and demographic variables of mothers in Pelotas, Brazil, 2010 (n=277)

Variable	Category	Frequency	
		N	(%)
Family income per month (minimum wage) (tertiles) (256)	≤1.2	91	(35.5)
	1.3-2.0	80	(31.3)
	≥2.1	85	(33.2)
Maternal schooling (274)	0-4 years	15	(5.5)
	5-8 years	114	(41.6)
	9-11 years	120	(43.8)
	≥12 years	25	(9.1)
Number of children (275)	1	147	(53.5)
	2	79	(28.7)
	≥3	49	(17.8)
Family structure (275)	Nuclear	226	(82.2)
	Non-nuclear	49	(17.8)
Mothers age (years) (275)	19 or under	42	(15.3)
	20 to 29	154	(56.0)
	30 or more	79	(28.7)

Table 2. Association between reported main reasons of tooth decay with socioeconomic and demographic variables in Pelotas, RS, Brazil, 2010 (n=277)

Variable	Main reason of tooth decay					
	Sugar Intake			Lack of hygiene		
	N	(%)	P-value	N	(%)	P-value
Family income per month (minimum wage) (tertiles) (256)			P=.010*			P<.001*
≤1.2	66	(77.53)		38	(41.76)	
1.3-2.0	44	(55.0)		56	(70.00)	
≥2.1	44	(51.76)		55	(64.71)	
Maternal schooling (274)			P<.001*			P<.001£
0-4 years	10	(66.67)		3	(20.00)	
5-8 years	79	(69.30)		48	(42.11)	
9-11 years	67	(55.83)		85	(70.83)	
≥12 years	6	(24.0)		17	(68.00)	
Number of children (275)			P=.004*			P=.425*
1	75	(51.02)		82	(55.78)	
2	49	(62.03)		48	(60.76)	
≥3	38	(77.55)		24	(48.98)	
Family structure (275)			P=.216*			P=.648*
Nuclear	137	(60.62)		128	(56.64)	
Non-nuclear	25	(51.02)		26	(53.06)	
Mothers age (years) (275)			P=.257*			P=.721*
19 or under	20	(47.62)		22	(52.38)	
20 to 29	95	(61.69)		85	(55.19)	
30 or more	47	(59.49)		47	(59.49)	

*Chi-square test £Fisher's exact test

Table 3. Unadjusted and adjusted logistic regression to estimate the effects of socioeconomic and demographic characteristics on mothers' knowledge about child first dental visit. Pelotas, Brazil, 2010.

Variable	Unadjusted Analysis - OR (95%CI)		Adjusted Analysis - OR (95%CI)[b]	
	Age for first dental visit[a]*			
Family income per month (minimum wage) (tertiles) (256)	P=.008		P=.109	
≤1.2	1.00		1.00	
1.3-2.0	0.44	(0.23-0.84)	0.48	(0.22 – 1.01)
≥2.1	0.43	(0.22-0.82)	0.48	(0.21 – 1.07)
Maternal schooling (274)	P=.004		P=.619	
0-4 years	1.00		1.00	
5-8 years	0.51	(0.17-1.51)	0.53	(0.16 – 1.75)
9-11 years	0.32	(0.11-0.96)	0.60	(0.17 – 2.13)
≥12 years	0.17	(0.04-0.73)	0.50	(0.90 – 2.73)
Number of children (275)	P<.001		P<.001	
1	1.00		1.00	
2	2.75	(1.50-5.03)	2.77	(1.44 – 5.31)
≥3	4.20	(2.10-8.40)	3.86	(1.77 – 8.42)
Family structure (275)	P=.897		-	
Nuclear	1.00		-	
Non-nuclear	0.96	(0.49-1.87)	-	
Mothers age (years) (275)	P=.381		-	
19 or under	1.00		-	
20 to 29	0.64	(0.31-1.32)	-	
30 or more	1.16	(0.54-2.53)	-	

[a] Reference category is "did not know the correct age for first dental visit" which is not included in the table.

[b] Variables were controlled for each other.

*"correct" (child up to 12 months or once the first tooth has come in)

Table 4. Unadjusted logistic regression to estimate the effects of socioeconomic and demographic characteristics on mothers' knowledge about best time to begin cleaning child's teeth. Pelotas, Brazil, 2010.

Variable	Unadjusted - OR (95%CI) Best time to begin cleaning child's teeth[a]£	
Family income per month (minimum wage) (tertiles) (256)	P=.20	
≤1.2	1.00	
1.3-2.0	0.73	(0.28 - 1.89)
≥2.1	0.51	(0.18- 1.44)
Maternal schooling (274)	P=.53	
0-4 years	1.00	
5-8 years	0.24	(0.06-0.92)
9-11 years	0.29	(0.08-1.06)
≥12 years	0.36	(0.07-1.98)
Number of children (275)	P=.49	
1	1.00	
2	0.51	(0.18-1.44)
≥3	0.84	(0.29-2.40)
Family structure (275)	P=.36	
Nuclear	1.00	
Non-nuclear	0.16	(0.56-1.94)
Mothers age (years) (275)	P=.77	
19 or under	1.00	
20 to 29	0.50	(0.17-1.42)
30 or more	0.73	(0.24-2.21)

[a] Reference category is "did not know the best time to begin cleaning child's teeth" which is not included in the table.
£"correct" (child up to 12 months and no later than the time of eruption of the first primary tooth).

6 ARTIGO 4

Práticas de higiene bucal e experiência de cárie em crianças de 12 a 18 meses

Dental Hygiene Practices and Caries Experience in 12- to 18-Month-Old Children[§]

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Resumo

O objetivo deste estudo foi verificar as práticas de higiene bucal, a experiência de cárie e fatores de risco associados em crianças de 12 a 18 meses. Este estudo transversal foi realizado em Pelotas, Brasil. O exame clínico foi realizado para determinar presença de cárie dentária (OMS+lesões de mancha branca=$c_e$eos>0) e higiene bucal (placa visível). As mães foram entrevistadas para coleta de dados para os fins deste estudo. Foram realizadas análises de regressão logística univariada e multivariada. Das 262 crianças examinadas, 42 (16%) tinham cárie ($c_e$eos>0). A análise de regressão logística multivariada mostrou que crianças cujas mães estudaram menos de 9 anos tiverem um odds ratio 2,7 maior para ter cárie [OR= 2,7 (1,03-4,92)] e crianças com presença de placa tiveram um odds ratio 4 vezes maior para cárie [OR= 4,91 (2,31-10,45)]. Mães que não relataram práticas de higiene bucal (limpar/escovar) mostraram associação significativa com baixa escolaridade materna e baixo nível socioeconômico (p<0,05). Programas de prevenção são necessários para crianças pequenas, focando na importância de um adequado controle de placa e instruções básicas para sua realização, focando em mães de baixa escolaridade e baixo nível socioeconômico.

Palavras-chave: cárie dentária, educação em saúde bucal, fatores socioeconômicos, placa dentária, higiene bucal

Abstract

The aim of this study was to assess the oral health hygiene practices, the caries experience, and associated risk factors in 12- to 18-month-old children. This cross-sectional study was carried out in Pelotas, Brazil. Clinical examination was carried out to determine caries status (WHO+white spot lesion criteria=$d_e$mfs) and oral hygiene status (visible plaque). Mothers were interviewed for the study purposes. Univariate and multiple logistic regression analysis were performed. Of the 262 children examined, 42 (16.0%) presented dental caries ($d_e$mfs>0). The multivariate logistic regression analysis showed that children whose maternal education is lower than 9 years have 2.7 higher odds of having caries [OR= 2.7 (1.03-4.92)] and children presenting dental plaque had more than four times higher odds of caries [OR= 4.91 (2.31-10.45)]. Mothers not reporting oral hygiene (cleaning/toothbrushing) showed significant association with lower maternal schooling and low socioeconomic status ($p<0.05$). Preventive programs are needed for young children, focusing on the importance of good plaque control and basic instructions for performing this practice, with a target group of mothers at low educational/ socioeconomic status.

Key Words: early childhood caries, oral health education, socioeconomic factors, dental plaque

Introduction

Early childhood caries (ECC) has been defined as the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months old or younger (1). Dental caries is still the most common chronic childhood disease leading to pain, chewing difficulties, speech problems, general health disorders, psychological problems, and lower quality of life (2). ECC is a multifactorial disease that has numerous biological, psychosocial, and behavioral risk factors (3). Several socioeconomic factors are associated with high levels of dental caries in children; for example, low educational level and low social class (4, 5).

Despite the decline in dental caries in recent years, the condition remains a serious problem. National epidemiological surveys conducted by the Brazilian Ministry of Health in 2003 and 2010 showed decayed or missing teeth, and filled teeth and surfaces (dmft/dmfs) reduction at every age; however, this was less pronounced among preschool children. Nationally, the mean dmft among children age 5 ranged from 2.8 to 2.3 (6). Another risk factor for dental caries is poor oral hygiene, plaque on teeth and irregular toothbrushing, was associated with poor dental health in children (7). Mothers play a key role in the development of oral hygiene habits in their children (8). Therefore, maternal support is essential in preventing or controlling dental caries through simple and relatively inexpensive methods of personal care: oral hygiene and fluoride use (2).

Fluoridated (F) toothpastes have been considered an important reason for the decline in dental caries (9). However, they are also considered linked to the prevalence of dental fluorosis. Thus, there is resistance among dentists, physicians, and parents to

use regular fluoridated toothpaste for young children; a low-F or non-fluoride toothpaste have been suggested as an alternative, despite unclear evidence about their efficacy (10). Despite the importance of brushing with fluoride toothpaste to prevent dental caries (11), few studies have investigated oral hygiene practices and preventive behaviors among young children and the associated variables. Thus, the purpose of this study was to assess the oral health hygiene practices, the caries experience, and associated risk factors in 12- to 18-month-old children in a southern Brazilian city.

Methods

Ethical Considerations

This study was approved by the Human Research Ethics Committee of the Federal University of Pelotas (Protocol #164/2010), and mothers signed an informed consent form.

Sample and Population

The sample was selected by convenience and comprised children aged 12 to 18 months old and their mothers (n = 246) who visited public health centers in Pelotas, Brazil, in the National Children's Vaccination Day during June 2011. This cross-sectional study was nested within a randomized clinical trial. Using a list provided by the local authorities, 24 out of 29 urban public health centers have dental care and were randomly selected to represent the urban area of Pelotas and were assigned to the two arms (intervention and control) as part of a randomized clinical trial, twelve of them were assigned to control group and were used in this study. Pelotas has an estimated population of 328,275 inhabitants that includes 20,874 children under 5 years old, with

93% of the population living in the urban area (12). The concentration of fluoride in the drinking water ranges from 0.6 to 0.9 ppm F.

The National Children's Vaccination Day occurs in two stages each year, with a resulting coverage of nearly 90% of the population at this age. Vaccinations are administered at public health centers, regardless of socioeconomic status, in children up to 59 months old. Since the population was equally distributed among the public health centers, all target-age children were invited until a maximum of 25 children per center signed up. Mothers who did not live in Pelotas, children unaccompanied by mothers, and those with neurological or systemic diseases were not included.

Interview

Previously trained dental students carried out face-to-face structured interviews with the mothers. The interview instrument was tested prior to the study's commencement. Information about the child's age (months), child's gender, and mother´s age was collected. The variable of mother's age was dichotomized by median split. The monthly wages of all economically active members of the family were collected (in local currency) and classified in two categories: poor (less than the Brazilian minimum wage, which corresponded to $280 USD per month at the time of the study) or non-poor (equal or more than the Brazilian minimum wage per month). Information on maternal schooling was stratified according to years of schooling: ≤ 8 years and > 8 years. Family structure was divided into two categories: living with one parent/others (non-nuclear) and living with both parents (nuclear). Mothers were also asked about their children's dental hygiene habits as follows: "Do you brush or clean your child's teeth?", answer choices were "yes" or "not". Use of toothpaste was obtained by asking

“Do you use toothpaste to brush your child’s teeth?”, answer choices were “yes” or “not”. “Could you indicate in this figure how is the image more similar to the amount of toothpaste that your child usually use?” were asked to obtain the toothpaste amount, using a figure with 3 different images. Use of fluoride toothpaste was obtained with the question “What kind of toothpaste do you use? What brand?”. The brand name of toothpaste was collected to classify as non-fluoride toothpaste, low-fluoride toothpaste (less than 500 ppm F), and conventional toothpaste (1,100 ppm F), if the mother had received any recommendation about use of non-fluoride toothpaste “Have you ever advised to use non-fluoride dentifrice?”, answer choices were “yes” or “not” and mothers’ knowledge of amount of fluoride present in the toothpaste used were obtained by asking “This toothpaste contains fluoride?”, “Yes”, “Not” or “I don’t know” were the answer choices. If mothers answered that they did not perform any cleaning habits, they were asked why. Following the completion of the interview, mothers received a brief explanation of ECC, its prevention, and an educative pamphlet with more information.

Clinical Examination

Caries examinations and assessments for visible plaque were performed in a dental chair by 12 trained examiners using a standard plane dental mirror and a World Health Organization probe. The examinations took place in the public health centers with a knee-to-knee approach (13).

Inter-examiner calibration was carried out prior to the study. The examiners were further trained by an experienced pediatric dentist, the training practice was performed for a 4-h period. Then, the examiners were calibrated by examining 10 children. Inter-

examiner agreement was tested against a gold standard examiner. Inter-examiner Kappa values ranged from 0.75 to 0.92 (mean = 0.83).

Every tooth was recorded as present when visible in the mouth; otherwise, as absent. Dentinal caries was recorded using the WHO (14) caries diagnostic criteria for decayed, missing and filled surfaces (dmfs) for all teeth. The “d” index was also collected for enamel caries and white spot lesion for the upper anterior teeth only, on their labial, mesial, and distal surfaces (1, 15). Caries status was determined as $d_e$mfs>0 (WHO, all tooth + white spot lesion/enamel caries for the upper anterior teeth). After cleaning and drying with sterile gauze or compressed air, the surfaces were visually examined. Before these procedures, the presence of clinically visible plaque on labial surfaces of the maxillary incisors and canines was recorded. The presence of dental plaque was recorded when debris was covering at least one upper anterior tooth surfaces examined.

Statistical Analyses

The data were analysed using Stata software version 9.1 (Stata Corporation, College Station, TX, USA) with descriptive and analytical approaches. Multiple logistic regression analysis with a stepwise selection procedure was used to investigate the influence of risk factors to dental caries and oral cleaning/tooth brushing. The corresponding odds ratios (OR) and their 95% confidence intervals (95% CI) were determined. Thereby, the criterion for the independent variables to enter the model was set at 0.25. Values of $p < 0.05$ were considered significant.

Results

A total of 262 toddlers aged 12 to 18 months old were enrolled in this study. Of these, 6 presented dentinal caries (dmfs>0) and 42 presented enamel+dentinal caries ($d_e$mfs > 0; decayed = white spots/enamel caries for upper anterior teeth or cavitation for all teeth), with a prevalence rate of 16%. Dental plaque was present in 34.9% of children examined.

Toothbrushing or cleaning their children's teeth were reported by 187 (71.4%) mothers. Of those who stated they did not perform oral hygiene in their children, the main given reason was that "this practice is not necessary because the children are too young" or "because children did not have all teeth" (57.9%). Among the mothers who answered that they did brush their children's teeth, 62.7% reported use of toothpaste. Of those, 48% reported use non-fluoride toothpaste and 76.4% put only a pea-sized amount of fluoride toothpaste on their child's toothbrush. When mothers were asked about recommendations for non-fluoride toothpaste, they reported being instructed by a physician (40.9%) or dentist (27.2%). The majority of mothers (80.4%) were aware of the amount of fluoride in their children's toothpaste.

Unadjusted analysis showed that caries were more prevalent in children with mothers with low education level ($p = 0.003$) and in children presenting dental plaque ($p \leq 0.001$) (Table 1). No statistically significant differences were seen among the remaining variables. Table 2 presents the variables in the final multivariate model. Even after adjustment for confounding variables, children whose mothers had low level of education and children presenting dental plaque had 2.7-times and 4.9-times greater chance of having caries, respectively. Unadjusted analysis showed that the mother's

level of schooling ($p < 0.001$) and mother's age ($p < 0.05$) were higher among those who had toothbrushing habit, as well as among families in higher socioeconomic position ($p = 0.009$). The final multivariate logistic regression (Table 2) showed that children whose maternal schooling was equal to or less than 8 years showed 127% greater probability of not reporting toothbrushing their children's teeth compared to children whose mothers had studied more than 8 years. In relation to family income, after the adjustment for the confounding effect, the multivariate model revealed greater odds of mothers not reporting oral hygiene (cleaning/toothbrushing) practice in the lower income category compared to income higher than 1 BMW. Further, a child living with one parent was associated with toothbrushing children's teeth (OR = 0.43; CI = 0.19-0.93). In Table 2, all variables included remained statistically significant except for the mother's age.

Discussion

The present study found that the mother's lower educational level and presence of visible plaque were associated with ECC. These findings are in agreement with the results of an earlier study with 1- to 3-year-old Hong Kong children in which a significant association were found between ECC and poor oral hygiene, manifested by the presence of visible plaque, and lower educational level of the mother (16). Habibian et al. (17) also reported that visible plaque in 18-month-olds was highly correlated with the prevalence of caries.

However, neither the simple nor the multiple logistic regression analyses revealed significant association between oral hygiene practices and ECC. In the same way, this study failed to show an association between visible plaque and oral hygiene practices.

Although the majority of mothers reported cleaning/tooth brushing their children's teeth, this may not necessarily reflect real representations of their behaviors since self-reported measures might be highly subject to "socially desirable" response biases (18). It is worthwhile to note that on the results of the multivariate analyses, a significant positive association was found between mothers' reported rate of brushing and their educational level. This result is not surprising, since mothers with high educational qualification were shown to have a better knowledge about the importance of oral hygiene practices (19)—thus, more positive responses are expected.

In addition, reported cleaning/brushing may not necessarily reflect effective plaque removal. This is consistent with earlier work showing any significant association between toothbrushing behavior of 2-year-old children and ECC (20). Further, the association between plaque levels and caries may reflect the difficulties in effectively brushing very young children's teeth (21). A previous study with parents or caregivers of Hispanic children in the United States showed that mothers might lack knowledge about recommended brushing techniques: length of time, type of toothpaste, parental role, and frequency for brushing children teeth (22).

Oral hygiene questions are commonly used in epidemiological studies; however, a study answered by mothers of 5-year-olds children, determining the validity of these questions, showed an unsatisfactory performance (23). When data are collected by interviews or questionnaires, the possibility of bias should not be overlooked; clinical examination of dental plaque is a more reliable tool of actual teeth-cleaning behavior. Consequently, in our study, a relationship between mothers reporting teeth cleaning and ECC was not directly observed.

It is worth mentioning that other oral health-related factors—such as toothbrushing frequency, use of fluoride toothpaste, age at start brushing, and help with brushing—can also interfere in the ECC outcome (7, 24, 25, 26). Few studies have assessed socioeconomic variables associated with oral hygiene practices in this age group. Results of the multiple analyses revealed that children whose mothers had a higher level of education, whose family income was high, and who lived with one parent/others were associated with oral cleaning/toothbrushing practice. These findings partially concur with the results of others, showing mother's level of education and family income to be strongly associated with toothbrushing frequency (27). According to Weinstein (28), mothers completing higher levels of education may be more likely to maintain good dietary and hygiene behaviors and have more positive health attitudes. Kumar et al. (29) found that frequency of teeth cleaning was significantly lower among children of parents with a low level of education and less annual income as compared with those of high education and more annual income.

The disagreement between the results of the present study and those of a previous study, which revealed that the use of toothpaste was associated with caries-free status (16), might be due to differences in the type of toothpaste used by the children. In this study, of the children who used toothpaste, only 52% used fluoridated toothpaste (conventional and low-F-concentration toothpastes) as show by the brand name in the reply, while all children in the Chan et al. study used the fluoridated type. In a recent study, the type of toothpaste used by 3- to 6-year-old children was also not significantly associated with less caries (30).

Fluoride (F) toothpaste use is considered the main reason for the worldwide dental caries decline observed over recent decades (9). However, toothpaste has been considered as a risk factor for dental fluorosis. Thus, toothpastes containing a low concentration or without F have been recommended for young children. It could be expected that children using non-fluoride toothpaste were at high risk of caries development; however, in the current study, this association was not confirmed. Toothpastes without F were more expensive than regular toothpastes; thus, children in a lower socioeconomic position tended to use more regular toothpaste, which could lead to an additional caries protective effect than for those in a better socioeconomic position. A Brazilian cross-sectional study found a social influence over the choice of dentifrice, children with a high socioeconomic status tend to use a children's dentifrice, thus these children have a greater chance to consume dentifrices with low concentration or without F (31). Further research using a larger sample size should be conducted to elucidate this issue.

A systematic review evaluated the relative effect of toothpastes containing fluoride of different concentrations for preventing caries in children and adolescents, concluding that it may not be appropriate to recommend the use of 440/500/550 ppm fluoride toothpaste for caries prevention in deciduous dentition. This review stated, in the implications for research, that the number of studies evaluating the effects on the deciduous dentition is small; more research is needed into the effects of fluoride toothpastes at lower levels of fluoride concentration. Therefore, children who were identified as using low-fluoride or non-fluoride toothpastes could be more at higher risk

for caries development in the future. This hypothesis should be explored in samples comprising older children (24).

Several studies have measured early or noncavitated lesions and have pointed to the importance of scoring caries at this level because noncavitated caries is more prevalent than cavitated during the first two years of life; its detection might contribute to early interventions (32). Although applying recordings of enamel caries adds significantly to the time required for data collection (1) and a lower reliability of applying the enamel criteria rather than the dentine criteria (2) it should be considered when interpreting the results. In this study, we included noncavitated lesions in the clinical examination (1, 15) because in children younger than 36 months of age, the identification of any sign of dental caries in smooth tooth surfaces indicates the presence of, or susceptibility to, severe ECC (1). Thus, in this study all children classified as $d_e$mfs>0 have severe ECC. In addition, only the upper anterior teeth were examined because saliva control is best monitored in this area and because maxillary incisors are most frequently affected by the disease (16).

There are certain study limitations. Parents' reports may lead to information bias, one example was the question about "type of toothpaste", some responses were incomplete and/or difficult to classify the type of toothpaste with reliability, so a high rate of responses was excluded, these findings cannot be generalized to the broader community based on this study alone, because the sample size was relatively small. Besides that, as with any other cross sectional study, any direct cause and effect relationships could not be made.

Low maternal education, lower income, and a nuclear family were associated with non-oral hygiene habits in young children. However, this preventive practice related by mothers was not identified as a protective factor against dental caries. In spite of relative satisfactory oral hygiene practice related by mothers in the present study, presence of dental plaque was a more reliable indication of caries. Further, children whose mothers have a low education level are at a greater risk for caries. Thus, strategies focusing on the importance of good plaque control and basic instructions for performing this practice in this age group of children are needed, targeting mothers of children in educational deprivation.

References

1. Drury TF, Horowitz AM, Ismail AI, Maertens MP, Rozier RG, Selwitz RH. Diagnosing and reporting early childhood caries for research purposes. A report of a workshop sponsored by the National Institute of Dental and Craniofacial Research, the Health Resources and Services Administration, and the Health Care Financing Administration. J Public Health Dent. 1999;59(3):192-7. Epub 2000/01/29.
2. Ismail AI. Prevention of early childhood caries. Community Dent Oral Epidemiol. 1998;26(1 Suppl):49-61. Epub 1998/07/22.
3. Selwitz RH, Ismail AI, Pitts NB. Dental caries. Lancet. 2007;369(9555):51-9. Epub 2007/01/09.
4. Ferreira SH, Beria JU, Kramer PF, Feldens EG, Feldens CA. Dental caries in 0- to 5-year-old Brazilian children: prevalence, severity, and associated factors. Int J Paediatr Dent. 2007;17(4):289-96. Epub 2007/06/15.
5. Fontana M, Jackson R, Eckert G, Swigonski N, Chin J, Zandona AF, et al. Identification of caries risk factors in toddlers. J Dent Res. 2011;90(2):209-14. Epub 2010/12/22.
6. Roncalli AG. National oral health survey in 2010 shows a major decrease in dental caries in Brazil. Cad Saude Publica. 2011;27(1):4-5.
7. Mattila ML, Rautava P, Aromaa M, Ojanlatva A, Paunio P, Hyssala L, et al. Behavioural and demographic factors during early childhood and poor dental health at 10 years of age. Caries Res. 2005;39(2):85-91. Epub 2005/03/03.
8. Astrom AN, Jakobsen R. Stability of dental health behavior: a 3-year prospective cohort study of 15-, 16- and 18-year-old Norwegian adolescents. Community Dent Oral Epidemiol. 1998;26(2):129-38. Epub 1998/06/30.
9. Bratthall D, Hansel-Petersson G, Sundberg H. Reasons for the caries decline: what do the experts believe? Eur J Oral Sci. 1996;104(4 (Pt 2)):416-22; discussion 23-5, 30-2. Epub 1996/08/01.
10. Ammari AB, Bloch-Zupan A, Ashley PF. Systematic review of studies comparing the anti-caries efficacy of children's toothpaste containing 600 ppm of fluoride or less with high fluoride toothpastes of 1,000 ppm or above. Caries Res. 2003;37(2):85-92. Epub 2003/03/26.
11. Reisine ST, Psoter W. Socioeconomic status and selected behavioral determinants as risk factors for dental caries. J Dent Educ. 2001;65(10):1009-16. Epub 2001/11/09.
12. IBGE. Estimativas da população. 2011 [updated October 10, 2011 October 10, 2011]; Available from: http://www.ibge.gov.br/cidadesat/painel/painel.php?codmun=431440.
13. Mohebbi SZ, Virtanen JI, Vahid-Golpayegani M, Vehkalahti MM. Early childhood caries and dental plaque among 1-3-year-olds in Tehran, Iran. J Indian Soc Pedod Prev Dent. 2006;24(4):177-81. Epub 2006/12/22.
14. WHO. Oral health surveys: basic methods, ed 3. Geneva, World Health Organization. 1997.
15. Mohebbi SZ, Virtanen JI, Vahid-Golpayegani M, Vehkalahti MM. A cluster randomised trial of effectiveness of educational intervention in primary health care on early childhood caries. Caries Res. 2009;43(2):110-8. Epub 2009/03/27.

16. Chan SC, Tsai JS, King NM. Feeding and oral hygiene habits of preschool children in Hong Kong and their caregivers' dental knowledge and attitudes. Int J Paediatr Dent. 2002;12(5):322-31. Epub 2002/08/30.
17. Habibian M, Roberts G, Lawson M, Stevenson R, Harris S. Dietary habits and dental health over the first 18 months of life. Community Dent Oral Epidemiol. 2001;29(4):239-46. Epub 2001/08/23.
18. Finlayson TL, Siefert K, Ismail AI, Sohn W. Maternal self-efficacy and 1-5-year-old children's brushing habits. Community Dent Oral Epidemiol. 2007;35(4):272-81. Epub 2007/07/07.
19. Suresh BS, Ravishankar TL, Chaitra TR, Mohapatra AK, Gupta V. Mother's knowledge about pre-school child's oral health. J Indian Soc Pedod Prev Dent. 2010;28(4):282-7. Epub 2011/01/29.
20. Zhou Y, Lin HC, Lo EC, Wong MC. Risk indicators for early childhood caries in 2-year-old children in southern China. Aust Dent J. 2011;56(1):33-9. Epub 2011/02/22.
21. Warren JJ, Weber-Gasparoni K, Marshall TA, Drake DR, Dehkordi-Vakil F, Kolker JL, et al. Factors associated with dental caries experience in 1-year-old children. J Public Health Dent. 2008;68(2):70-5. Epub 2008/01/29.
22. Adams SH, Hyde S, Gansky SA. Caregiver acceptability and preferences for early childhood caries preventive treatments for Hispanic children. J Public Health Dent. 2009;69(4):217-24. Epub 2009/06/03.
23. Cascaes AM, Peres KG, Peres MA, Demarco FF, Santos I, Matijasevich A, et al. Validity of 5-year-old children's oral hygiene pattern referred by mothers. Rev Saude Publica. 2011;45(4):668-75. Epub 2011/06/10.
24. Walsh T, Worthington HV, Glenny AM, Appelbe P, Marinho VC, Shi X. Fluoride toothpastes of different concentrations for preventing dental caries in children and adolescents. Cochrane Database Syst Rev. 2010(1):CD007868. Epub 2010/01/22.
25. Wendt LK, Hallonsten AL, Koch G, Birkhed D. Oral hygiene in relation to caries development and immigrant status in infants and toddlers. Scand J Dent Res. 1994;102(5):269-73.
26. Vanobbergen J, Martens L, Lesaffre E, Bogaerts K, Declerck D. Assessing risk indicators for dental caries in the primary dentition. Community Dent Oral Epidemiol. 2001;29(6):424-34.
27. Vallejos-Sanchez AA, Medina-Solis CE, Maupome G, Casanova-Rosado JF, Minaya-Sanchez M, Villalobos-Rodelo JJ, et al. Sociobehavioral factors influencing toothbrushing frequency among schoolchildren. J Am Dent Assoc. 2008;139(6):743-9. Epub 2008/06/04.
28. Weinstein P. Public health issues in early childhood caries. Community Dent Oral Epidemiol. 1998;26(1 Suppl):84-90. Epub 1998/07/22.
29. Kumar S, Panwar J, Vyas A, Sharma J, Goutham B, Duraiswamy P, et al. Tooth cleaning frequency in relation to socio-demographic variables and personal hygiene measures among school children of Udaipur district, India. Int J Dent Hyg. 2011;9(1):3-8. Epub 2011/01/14.
30. Li Y, Zhang Y, Yang R, Zhang Q, Zou J, Kang D. Associations of social and behavioural factors with early childhood caries in Xiamen city in China. Int J Paediatr Dent. 2011;21(2):103-11. Epub 2010/12/03.

31. Martins CC, Oliveira MJ, Pordeus IA, Cury JA, Paiva SM. Association between socioeconomic factors and the choice of dentifrice and fluoride intake by children. Int J Environ Res Public Health.8(11):4284-99. Epub 2011/12/14.
32. Ismail AI, Sohn W. A systematic review of clinical diagnostic criteria of early childhood caries. J Public Health Dent. 1999;59(3):171-91. Epub 2000/01/29.

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Table 1. Association between dental caries and oral hygiene habits, demographic and socioeconomic factors in young children ages 12 to 18 months old in Pelotas, Brazil. Logistic regression analysis (n = 262).

Variable/Category					OR_{crude} (95% CI)	P-value	$OR_{adjusted}$ (95% CI)	P-value
	$d_e$mfs>0		Total					
Total	42	(16.0)	262	(100)				
Gender						0.068		0.348
Male	29	(19.7)	147	(56.1)	1		1	
Female	13	(11.3)	115	(43.9)	0.52 (0.26 -1.05)		0.69(0.32- 1.49)	
Mothers' age						0.208		
27-53	20	(13.8)	145	(56.0)	1		-	
15-26	22	(19.3)	114	(44.0)	1.53 (0.79-2.97)		-	
Mother's educational level						0.003		0.040
>8 years	16	(10.3)	155	(59.2)	1		1	
≤8 years	26	(24.3)	107	(40.8)	2.8 (0.41 -5.50)		2.7 (1.03 - 4.52)	
Family Income						0.323		
Not poor	28	(14.7)	191	(72.9)	1			
Poor	14	(19.7)	71	(27.1)	1.43 (0.70- 2.90)			
Family Structure						0.498		
Living with both parents	35	(17.1)	205	(78.2)	1			
Living with one parent/others	7	(12.3)	57	(21.8)	0.74 (0.31- 1.86)			
Child's tooth brushing						0.980		
Yes	30	(16.0)	187	(71.4)	1			
No	12	(16.0)	75	(28.6)	0.99 (0.48- 2.13)			
Toothpaste use						0.301		
Yes	63	(18.2)	121	(62.7)	1			
No	9	(12.5)	72	(37.3)	0.64(0.28 - 1.48)			
Toothpaste type*						0.247		
Conventional 1,100 µg F/g	8	(19.1)	42	(41.2)	1		-	
Low fluoride toothpaste (less than 500 µg F/g)	4	(36.4)	11	(10.8)	2.43 (0.57 - 10.35)		-	
Non-fluoride toothpaste	5	(10.2)	49	(48.0)	0.48 (0.41- 1.25)		-	
Dental Plaque						<0.001		<0.001
Absent	12	(7.4)	162	(65.1)	1		1	
Present	27	(31.0)	87	(34.9)	5.62 (2.67 - 11.82)		4.91 (2.31-10.45)	

QR: odds ratio; CI: confidence interval; - Variables not included in the final model after the adjustment; *many mothers who use toothpaste could not tell the brand and the type of toothpaste used

Table 2. Association between demographic and socioeconomic variables with oral cleaning/tooth brushing in young children ages 12 to 18 months old in Pelotas, Brazil. Logistic regression analysis (n = 262).

Variable/Category	Oral hygiene				OR_{crude} (95% CI)	P-value	$OR_{adjusted}$ (95% CI)	P-value
	Yes		Total					
Gender						0.402		
Male	101	(69.2)	146	(55.9)	1			
Female	85	(73.9)	115	(44.1)	0.79 (0.46- 1.36)			
Mothers' age						0.047		0.132
27-53	112	(76.2)	147	(56.3)	1		1	
15-26	74	(64.9)	114	(43.7)	1.73 (1.01- 2.97)		1.55 (0.88- 2.75)	
Mother's educational level						<0.001		0.007
>8 years	123	(79.9)	155	(59.0)	1		1	
≤8 years	63	(58.9)	107	(41.0)	2.77 (1.60-4.81)		2.27 (1.26-4.09)	
Family Income						0.009		0.035
Not poor	144	(75.8)	191	(72.8)	1		1	
Poor	42	(59.2)	71	(27.2)	2.16 (1.21-3.85)		2.01 (1.05-3.85)	
Family Structure						0.133		0.031
Living with both parents	140	(68.3)	205	(79.4)	1		1	
Living with one parent/others	42	(79.2)	57	(20.6)	0.57 (0.28- 1.18)		0.43 (0.19- 0 .93)	
Dental Plaque						0.309		
Absent	59	(67.8)	87	(35.1)	1			
Present	119	(73.9)	162	(64.9)	1.34(0.76- 2.38)			

OR: odds ratio;
CI: confidence interval.

7 CONCLUSÕES

- Os resultados sugerem que intervenções educativas de saúde bucal são efetivas na prevenção da cárie na primeira infância.

- Educação em saúde bucal fornecida através de panfleto e instrução verbal às mães durante o primeiro ano de vida da criança pode ser recomendada como uma medida adicional na prevenção da cárie na primeira infância.

- Apesar das mães terem um relativo conhecimento de que o açúcar e a falta de higiene estão entre as principais razões para o aparecimento da cárie dentária, o papel dos microrganismos e a falta de flúor como fatores de risco para o desenvolvimento da doença não foram mencionados, sugerindo que tais mensagens sejam reforçadas em estratégias educativo-preventivas.

- O fato de a mãe relatar realizar a higiene bucal da criança não foi identificado como um fator de proteção para cárie, enquanto que o exame clínico avaliando a presença ou ausência de placa foi uma medida mais confiável.

- A baixa escolaridade materna foi associada tanto com a ausência de hábitos de higiene, quanto com um maior risco de cárie em crianças pequenas, dessa forma, estratégias focando na importância de uma adequada higiene bucal e instruções básicas de como realizá-la em crianças pequenas são necessárias e devem ser direcionadas às mães com menos anos de estudo.

- Ensaios clínicos randomizados testando intervenções educativas na prevenção da cárie durante a primeira infância, com uma maior qualidade metodológica,

seguindo as recomendações do CONSORT, são necessários para fornecer uma resposta mais definitiva em relação ao tipo de intervenção mais efetiva.

REFERÊNCIAS

AHOVUO-SALORANTA, A.; HIIRI, A.; NORDBLAD, A.; MÄKELÄ, M.; WORTHINGTON, H.V. Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents. **Cochrane Database Syst Rev**, v.8, n.4, Oct 2008:CD001830.

AMERICAN ACADEMY ON PEDIATRIC DENTISTRY COUNCIL ON CLINICAL AFFAIRS. Policy on early childhood caries (ECC): unique challenges and treatment option. Pediatr Dent. 2008-2009;30(7 Suppl):44-6.

BERKOWITZ, R.J. Causes, treatment and prevention of early childhood caries: a microbiologic perspective. **J Can Dent Assoc**, v.69, n.5, p.304-307, may. 2003.

CONSORT Statement. Disponível em: <http://www.consort-statement.org/> Acesso em: 09 mar. 2010.

DRURY, T.F.; HOROWITZ, A.M.; ISMAIL, A.I.; MAERTENS, M.P.; ROZIER, R.G.; SELWITZ, R.H. Diagnosing and reporting early childhood caries for research purposes. A report of a workshop sponsored by the National Institute of Dental and Craniofacial Research, the Health Resources and Services Administration, and the Health Care Financing Administration. **J Public Health Dent**, v.59, n.3, p.192-197, 1999.

FEJERSKOV, O. Changing paradigms in concepts on dental caries: consequences for oral health care. **Caries Res**, v.38, n.3, p.182-191, may./jun. 2004.

FELDENS, C.A.; GIUGLIANI, E.R.; DUNCAN, B.B.; DRACHLER, M. de L.; VÍTOLO, M.R. Long-term effectiveness of a nutritional program in reducing early childhood caries: a randomized trial. **Community Dent Oral Epidemiol**, v. 38, n.4, p. 324-332, aug. 2010.

FERREIRA, S.H.; BÉRIA, J.U.; KRAMER, P.F.; FELDENS, E.G.; FELDENS, C.A. Dental caries in 0- to 5-year-old Brazilian children: prevalence, severity, and associated factors. **Int J PaediatrDent,** v.17, n.4, p.289-96, jul. 2007.

FURTADO, Vanessa. **Cárie dentária e fatores associados em pré-escolares: prevalência e severidade.** 2008. 61f. Dissertação (Mestrado em Odontopediatria) – Faculdade de Odontologia, Universidade Federal de Pelotas, Pelotas.

GOETTEMS, M.L.; ARDENGHI, T.M.; ROMANO, A.R.; DEMARCO, F.F.; TORRIANI, D.D. Influence of maternal dental anxiety on oral health-related quality of life of preschool children. **Qual Life Res**, dec. 2010. [Epubaheadofprint]

HOEFT, K.S.; MASTERSON, E.E.; BARKER, J.C. Mexican American mothers' initiation and understanding of home oral hygiene for young children. **Pediatr Dent**, v.31, n.5, p.396-404, sep./oct. 2009.

IBGE. Estimativas de População. Disponível em: <http://www.ibge.gov.br/home/estatistica/populacao/estimativa2009/POP2009_DOU.pdf> Acesso em: 05 de março de 2009.

KAY, E.J.; LOCKER D. Is dental health education effective? A systematic review of current evidence. **Community Dent Oral Epidemiol,** v. 24, n.4, p.231-235, aug. 1996.

LOW, W.; TAN, S.; SCHWARTZ, S. The effect of severe caries on the quality of life in young children. **Pediatr Dent**, v.21, n.6, p.325-326, sep./oct . 1999.

MARINHO, V.C.; HIGGINS, J.P.; LOGAN, S.; SHEIHAM, A. Topical fluoride (toothpastes, mouthrinses, gels or varnishes) for preventing dental caries in children and adolescents. **Cochrane Database Syst Rev,** n.4, 2003:CD002782.

MILGROM, P. Response to Reisine& Douglass: psychosocial and behavioral issues in early childhood caries. **Community Dent Oral Epidemiol**, v.26, (1Suppl), p.45-48, 1998.

MINISTÉRIO DA SAÚDE. Conselho Nacional de Saúde. Resolução nº 196 de 10 de outubro de 1996. Brasília-DF 1996.

MINISTÉRIO DA SAÚDE. **Projeto SB Brasil 2003**. Condições da Saúde bucal da População Brasileira 2002-2003. Resultados Principais. Brasília-DF 2004.

MINISTÉRIO DA SAÚDE. PROJETO SB BRASIL 2010. Disponível em: <http://189.28.128.100/dab/docs/geral/apresentacao_SB2010.pdf>. Acesso em: 10 de fev. de 2011.

MOHEBBI, S.Z.; VIRTANEN, J.I.; VAHID-GOLPAYRGANI, M.; VEHKALAHTI, M.M. A cluster randomized trial of effectiveness of educational intervention in primary health care on early childhood caries. **Caries Res,** v.43, n.2, p.110-118, 2009.

OMS. **Levantamentos básicos em saúde bucal**. 4. São Paulo: Santos, 1999. 68p.

PINHEIRO, R.S.; TORRES, T.Z.G. Uso de serviços odontológicos entre os Estados do Brasil. **Cienc Saúde Coletiva,** v.11, n.4, p.999-1010, 2006.

PLUTZER, K.; SPENCER,A.J. Efficacy of an oral health promotion intervention in theprevention of early childhood caries. **Community Dent Oral Epidemiol**, v.36, n.4, p.335-346, 2008.

RAJAB LD, PETERSEN PE, BAKAEEN G, HAMDAN MA. Oral health behaviour of schoolchildren and parents in Jordan. **Int J Paediatr Dent,** v.12, n.3, p.168-176, may. 2002.

SEOW, W.K. Biological mechanisms of early childhood caries. **Community Dent Oral Epidemiol,** v.26,(1 Suppl), p.8-27, 1998.

STRIPPEL, H. Effectiveness of structured comprehensive paediatric oral health education for parents of children less than two years of age in Germany. **Community Dental Health**, v. 27, n.2, p.74-80, 2010.

TWETMAN S. Prevention of early childhood caries (ECC)-review of literature published 1998-2007. **Eur Arch Paediatr Dent**, v.9, n.1, p.12-18, mar. 2008.

ZANATA, R.L.; NAVARRO, M.F.; PEREIRA, J.C.; FRANCO, E.B.; LAURIS, J.R;; BARBOSA, S.H. Effect of caries preventive measures directed to expectant mothers on caries experience in their children. **Braz Dent J**, v.14, n.2, p.75-81, 2003.

WEINSTEIN, P.; HARRISON, R.; BENTON, T. Confirming the beneficial effect of counseling Motivating mothers to prevent caries. **J Am Dent Assoc,** v.137, n.6, p.789-793, jun. 2006.

APÊNDICE A

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Prezadas mães, pedimos o favor de dedicar alguns minutos de seu tempo para ler este comunicado. A Faculdade de Odontologia de UFPel, através do programa de pós-graduação, está realizando o estudo denominado "**Eficácia de uma intervenção educacional na prevenção da cárie na primeira infância: ensaio randomizado em conglomerado**". O objetivo é avaliar a eficácia de uma intervenção educativa direcionada às mães na prevenção da cárie na primeira infância. Para isso, solicitamos sua autorização para que seja realizada uma breve entrevista com você e para, na 2º etapa da próxima campanha de vacinação (2011), examinar a boca de seu (sua) filho (filha) na. Os exames serão realizados com toda segurança e higiene, conforme as normas da Organização Mundial de Saúde e do Ministério da Saúde. Este exame não trará problemas para seu (sua) filho (filha). Quando este trabalho for apresentado para outras pessoas, elas não saberão seus nomes.

Sua colaboração é muito importante. Após receber todas as informações que julgar necessárias, se você quiser você e seu (sua) filho (filha) participarão deste estudo. Se você quiser alguma informação durante o estudo ou se depois que você já concordou, não quiser mais participar, fale conosco ou telefone para 9241-0477. Isto não trará nenhum problema para você.

Esperamos contar com seu apoio, e desde já agradecemos em nome de todos que querem melhorar a saúde das nossas crianças.

Atenciosamente,

Programa de Pós-Graduação em Odontologia, área de concentração em Odontopediatria.

Após ter sido informada sobre as finalidades do estudo, eu, (**escrever o nome da responsável**)_____, CONCORDO em participar deste estudo e também AUTORIZO que meu (minha) filho (filha) (**escrever o nome da criança**) _____, participe.

Pelotas, 14 de agosto de 2010.

_____	_____
Documento (carteira de identidade ou CPF)	Assinatura da responsável
Prof. Maximiliano Sérgio Cenci Responsável pelo estudo	Marina Sousa Azevedo Pós-graduanda Fone: 92410477

APÊNDICE B

ENTREVISTA

Número de identificação

*Entrevistador*_____ *Posto*_____

Gostaria de lembrá-la que este é um estudo de acompanhamento e que nós gostaríamos de falar com a Sra. na 2º etapa da Campanha de Vacinação do ano que vem (2011). Por isso, vamos precisar de informações detalhadas de endereço e telefone, além de informações sobre a Sra. e sua família. Estes dados serão usados EXCLUSIVAMENTE para futuros contatos e apenas os coordenadores do projeto terão acesso a eles. Tudo bem? *Se a mãe não quiser dar continuidade, anotar em RECUSA.*

1. Qual seu nome **completo** (mãe) *(maiúsculas sem acento):*
   _____

2. Qual a sua idade (em anos)_____

3. Qual o nome **completo** da criança *(maiúsculas sem acento):*
   _____

4. Qual a data de nascimento do (a) *nome da criança*
   _____

5. *Anotar o sexo da criança*
   (Se ficar em dúvida perguntar)
   masculino 0
   feminino 1

6. Como a Sra. classifica seu filho(a) quanto a cor/raça?
   Leia as opções de resposta
   branca 0
   preta 1
   parda 2
   indígena 3
   amarela 4

7. Qual o seu endereço completo?

   _____
   Endereço

   _____
   Endereço (cont.)

   _____ _____
   Bairro CEP

8.	Por favor, nos dê um ponto de referência que nos ajude a encontrar a sua casa. _____ _____	
9.	A Sra. tem telefone em casa (fixo)? Se sim, qual o número? *(9–9 = não tem telefone)*	[K01] __ __ __ __ - __ __ __ __
10.	Alguém da casa tem telefone celular? ***SE NÃO*** ➔12 _____ _____ Nome da pessoa Relação com a mãe	[K02] não 0 sim 1
11.	Se sim, qual o número?	[K03] __ __ __ __ - __ __ __ __
12.	Há outra pessoa da casa ou próxima (vizinha) que tenha telefone? ***SE NÃO*** ➔14 _____ _____ Nome da pessoa Relação com a mãe	[K04] não 0 sim 1
13.	Se sim, qual o número?	[K05] __ __ __ __ - __ __ __ __
14.	A Sra. pretende ficar morando nesta casa nos próximos meses ou vai morar em outra casa? ***SE VAI CONTINUAR NA MESMA CASA*** ➔18	[K06]vai morar na mesma casa 1 vai morar noutro lugar 2
15.	Qual o endereço para onde a Sra. vai? _____ Endereço _____ Endereço (cont.) _____ _____ Bairro CEP	
16.	Por favor, nos dê um ponto de referência que nos ajude a encontrar esta outra casa. _____ _____	

17. Se tem telefone nesta casa, qual o número? [K07]
(9–9 = não tem telefone) __ __ __ __ - __ __ __ __

18. A Sra. poderia nos fornecer o endereço de um outro parente, para o caso de termos dificuldade em encontrar a Sra. no futuro?

_____
Endereço

_____
Endereço (cont.)

_____ _____
Bairro CEP

_____ _____
Nome do parente Relação com a mãe

19. Se este parente tem telefone, qual o número? [K08]
(9–9 = não tem telefone) __ __ __ __ - __ __ __ __

20. A Sra. poderia nos fornecer o endereço do seu trabalho ou do trabalho de outro familiar?

_____
Endereço

_____
Endereço (cont.)

_____ _____
Bairro CEP

_____ _____
Nome do empregado Telefone

Agora vamos lhe fazer algumas perguntas sobre a Sra. e sua família

21. Quantos filhos a Sra. tem?_____

22. Até que série a Sra. completou a escola?
_____série_____grau

23. No mês passado, quanto receberam em reais ou em salários mínimos as pessoas que moram na sua casa?_____reais OU _____Salário(s) Mínimo(s)
não sei 9

24.	Com quem *nome da criança* mora?	pai e mãe 0 só com a mãe 1 mãe e outro companheiro 2 só com o pai 3 pai e outra companheira 4 outro responsável (avôs,tios...)5
25.	Qual idade a Sra. acha que seria a ideal para levar seu filho ao dentista pela primeira vez?_____	não sei 9
26.	Com que idade ou quando a Sra. acha ideal iniciar a escovar os dentinhos do seu filho?_____ _____ _____	não sei 9
	Para finalizar vamos lhe fazer 2 perguntas sobre a doença cárie	
27.	Qual a principal razão para as crianças terem cárie? (Por que a Sra. acha que algumas crianças têm cárie?/ O que causa cárie nas crianças?) _____ _____ _____ _____ _____ _____	não sei 9
28.	A Sra. acha que dar mamadeira na hora de dormir com leite, sucos... pode fazer mal aos dentes das crianças?	não 0 sim 1 não sei 9

A seguir faça a entrega do panfleto e faça as recomendações:

Será MUITO importante para seu filho que este panfleto seja lido!
As respostas para as perguntas que lhe fizemos estão nele.
Além disso, o panfleto contém informações simples de serem seguidas que ajudarão a prevenir a cárie dentária e a ter uma boa saúde bucal, como por exemplo:

- É importante que a Sra. escove seus dentes (da própria mãe) com uma pasta de dente com flúor pelo menos 2x ao dia.

- Quando o 1° dentinho do seu filho nascer, terá um espaço para a Sra. anotar com quantos meses ele estará e se a Sra. notou algo diferente nele (mostrar onde está no panfleto). A partir disso, é importante que a Sra. escove com uma escova macia ou limpe com um paninho com água limpa os dentinhos dele pelo menos uma vez por dia.

- Evite provar a comida do seu filho com o mesmo talher que irá alimentá-lo e evite compartilhar copos e outros talheres.

- Evite comer e dar lanches açucarados (ex: bolachas, balas, chicletes, fruta amassada com açúcar) e bebidas doces (ex: sucos prontos, sucos de gelatina, refrigerantes, leite com açúcar...) mais do que 2x ao dia (para a mãe e para o filho).

No ano que vem na 2º etapa da Campanha nós voltaremos neste mesmo Posto para que, com seu consentimento, um dentista examine a boquinha e os dentes do seu filho (a). Eu vou lhe dar este *clips* para que a Sra. guarde este panfleto junto com a carteira de vacinação, assim ficará mais fácil de achá-lo para anotar quando o dentinho dele (a) nascer. A Sra. não esqueça de trazer o panfleto com estas anotações no ano que vem. Se a Sra. trocar de endereço ou telefone, atrás do panfleto *(mostra),* tem uns telefones que a Sra. pode ligar para nos informar.

Obrigado (a) pela sua atenção!

APÊNDICE C

Você sabia?

A cárie é uma doença que afeta os dentes e é causada por bactérias que podem ser transmitidas da mãe para o seu filho através da saliva. A falta de higiene e uma alimentação rica em açúcar fazem com que estas bactérias produzam ácidos e destruam os dentes. Porém, a cárie pode ser facilmente evitada. Siga as instruções desta caderneta e você e seu filho terão uma boca saudável!

Importância dos dentes de leite

Ajudam a criança a falar e mastigar

Mantem o sorriso bonito (estética) ajudando no bem-estar e auto-estima da criança

Mantem o caminho que os dentes permanentes (definitivos) precisam quando estão prontos para nascer.

Recomenda-se

Que a primeira visita ao dentista seja feita no primeiro ano de vida, pois é nesta fase que normalmente chegam os dentinhos.

Atenção

Na 2º etapa da próxima campanha de vacinação (2011) seu filho, com seu consentimento, será examinado por um dentista para avaliação da sua saúde bucal.
Procure-nos no mesmo posto da campanha de 2010 no qual lhe foi entregue o panfleto "caderneta de saúde bucal do bebê".

Em caso de dúvidas, mudança de endereço ou telefone ligue para (53) 32224162 ramal 127 deixar recado com Sabrina ou (53)92410477 falar com Marina

Caderneta de Saúde bucal do bebê

Nome do bebê

Guarde junto com a carteira de vacinação.

Para papai e mamãe

Escove seus dentes pelo menos duas vezes por dia com uma pasta de dente com flúor e utilize fio-dental

Evite comer lanches (entre as refeições) ou tomar bebidas doces mais do que duas vezes ao dia.

Evite compartilhar colheres, copos ou qualquer outro utensílio de alimentação com o seu filho

Não coloque mel na chupeta do seu filho, pois o mel contém açúcar

Evite dar lanches ou bebidas doces mais do que 2 X ao dia.

Como evitar que meu filho tenha cárie

Não deixe que seu filho durma com a mamadeira à noite.

Forneça alimentos mais saudáveis e acostume ao sabor natural.

Dê água quando seu filho tiver sede e também após ele tomar qualquer medicamento

Incentive o uso de copos para dar bebida próximo do seu 1º aninho

Evite adicionar açúcar ao conteúdo da mamadeira ou colocar bebidas açucaradas, como suco de gelatina, refrigerantes e sucos prontos.

Procure colocar na mamadeira somente leite puro ou água

Evite provar o alimento da criança com a mesma colher que irá usar para alimentá-lo

Meu primeiro dentinho nasceu quando eu tinha _____meses.
Mamãe notou que quando meu dentinho estava nascendo:

( ) Eu babava muito ( )Tive diarréia ( )Tive febre

( ) Fiquei irritado ( ) Fiquei agitado durante o sono

( ) Fiquei sem vontade de comer

Outro(s)_____

Nasceu meu 1º dentinho. E agora?

Escove diariamente os dentinhos do seu filho com uma escovinha macia ou limpe-os com um paninho com água filtrada ou fervida.

APÊNDICE D

MANUAL DE INSTRUÇÕES PARA REALIZAÇÃO DA ENTREVISTA E ENTREGA DO PANFLETO

ORIENTAÇÕES GERAIS

- O levantamento dos dados para este trabalho será realizado no dia **14 de agosto de 2010,** sábado, durante a 2° etapa da Campanha de Vacinação infantil.

- Neste dia, 14 de agosto, os voluntários deverão estar presentes às **7:00h** da manhã em frente à Faculdade de Odontologia para receberem o material (fichas, lápis, pranchetas, borracha) e o lanche. Um ônibus transportará todos até as Unidades Básicas de Saúde.

- Cada Unidade Básica de Saúde contará com 2 voluntários, os quais devem realizar juntos até **30** entrevistas.

CRITÉRIOS DE INCLUSÃO

- Crianças entre 0-12 meses

- Acompanhadas pela mãe

- Criança, aparentemente, com boa saúde geral

CRITÉRIOS DE EXCLUSÃO

- Mães que não saibam ler

- Mães que não possuam residência em Pelotas

- Crianças que já possuam dentes decíduos.

- Informação insuficiente para permitir acompanhamento (telefone e endereço)

COMO DEVO ABORDAR A MÃE?

Você deve apresentar-se pelo nome, como estudante da Faculdade de Odontologia da Universidade Federal de Pelotas e explicar que está sendo desenvolvido um trabalho sobre a saúde bucal de crianças que ainda não tenham nenhum dente de leite, com o intuito de prevenir cárie. Siga esta sequência:

> **Apresentação:**Meu nome é *<NOME DO ENTREVISTADOR>,* sou aluno (a) da Faculdade de Odontologia da Universidade Federal de Pelotas. Hoje estamos convidando

algumas mães para participar de um trabalho que tem o objetivo de prevenir cárie nas crianças que ainda não tenham nenhum dentinho de leite.

Pergunta 1: Você é a mãe do bebê?

Se NÃO, agradecer a atenção e explicar que o trabalho só pode ser feito com a mãe.

Se **SIM,** fazer a pergunta 2.

Pergunta 2: Quantos meses está seu bebê?

Se responder **13 meses ou mais,** agradecer a atenção e explicar que o trabalho é somente com bebês com menos de 12 meses. Se responder **12 meses ou menos**, fazer a pergunta 3.

Pergunta3: O seu bebê já tem algum dentinho de leite?

Se **SIM,** agradecer a atenção e explicar que o trabalho é somente com bebês que ainda não tenham nenhum dentinho. Anotar em EXCLUÍDO.

Se **NÃO**, fazer a pergunta 4.

Pergunta 4:A Sra. reside em Pelotas?

Se **NÃO,** agradecer a atenção e explicar que o trabalho é somente com família que morem em Pelotas. Anotar em EXCLUÍDO.

Se **SIM**, fazer a pergunta 5.

Pergunta 5:A Sra. sabe ler?

Se **NÃO,** agradecer a atenção e explicar que é necessário saber ler, pois será entregue um panfleto explicativo. Anotar em EXCLUÍDO.

Se **SIM**, fazer a pergunta 6.

Pergunta 6:A Sra. gostaria de participar deste estudo? Nós gostaríamos de examinar a boquinha do seu filho daqui um ano, para isso coletaremos algumas informações detalhadas de endereço e telefone, além de outras perguntas breves. Estes dados serão usados, EXCLUSIVAMENTE, para futuros contatos e apenas os coordenadores do projeto terão acesso a eles. Se a Sra. quiser participar, basta assinar um Termo de Consentimento, após coletaremos algumas informações nós lhe entregaremos um panfleto com algumas informações sobre como prevenir a cárie dentária e ter uma boa saúde bucal. Gostaríamos MUITO e seria muito IMPORTANTE para o seu (ua) filho (a) que ele fosse lido e que as orientações fossem seguidas.

Se não aceitar, anotar em RECUSA.

Se aceitar, a mãe e a criança devem ir com você até uma sala que será destinada para a execução da entrevista. Primeiro, deixar que leia o termo de consentimento, se concordar, fornecer caneta para assinar e solicitar um documento. Entregar uma "cópia" para a mãe.Se não possuir nenhum documento, deixar espaço em branco.

ENTREVISTA

Enfatizar o sigilo da identificação dos dados dos participantes.

Fazer letra legível e de forma.

Seguir a entrevista!

Caso a pessoa não **queira** fornecer alguma informação até a pergunta 20, explicar que as informações serão importantes para que possamos entrar em contato no próximo ano, se insistir em não fornecer agradecer e anotar em EXCLUÍDO. Aquelas que não possuírem/não souberem pelo menos um endereço e um telefone para contato, agradecer e anotar em EXCLUÍDO.

ENTREGA DO PANFLETO

Após a coleta das informações, fazer a entrega do panfleto, enfatizar que será MUITO importante que o panfleto seja lido! Avisar que o panfleto contém informações simples de serem seguidas e que evitarão que seu filho (a) tenha cárie no futuro. Você deve enfatizar SOMENTE as seguintes orientações do panfleto:

- É importante que a Sra. escove seus dentes (da própria mãe) com uma pasta de dente com flúor pelo menos 2x ao dia.

- Quando o 1° dentinho do seu filho nascer, terá um espaço para a Sra. anotar com quantos meses ele estará e se a Sra. notou algo diferente nele (mostrar onde está no panfleto). A partir disso, é importante que a Sra. escove com uma escova macia ou limpe com um paninho com água limpa os dentinhos dele, pelo menos uma vez por dia.

- Evite provar a comida do seu filho com o mesmo talher que irá alimentá-lo e evite compartilhar copos e talheres.

- Evite comer e dar lanches açucarados (ex: bolachas, balas, chicletes) e bebidas doces (ex: sucos prontos, sucos de gelatina, refrigerantes...) mais do que 2 x ao dia (para a mãe e para o filho).

Pedir para que este panfleto seja guardado junto com a carteira de vacinação (dar um *clips* para ela prender junto).

Qualquer dúvida entrar em contato por e-mail: marinasazevedo@hotmail.com ou telefone:(53) 92410477/32734101

APÊNDICE E

UNIVERSIDADE FEDERAL DE PELOTAS
FACULDADE DE ODONTOLOGIA
PROGRAMA DE PÓS-GRADUAÇÃO EM ODONTOLOGIA

LAUDO DIAGNÓSTICO DAS CONDIÇÕES BUCAIS

Prezados pais:

Após realização de um exame odontológico breve em seu(sua) filho(a):_____

☐ Aparentemente seu filho apresenta boas condições de saúde bucal. Entretanto, lembramos que esse exame não dispensa a necessidade de um exame odontológico completo. Procure um dentista para uma consulta preventiva.

☐ Foram diagnosticados em seu filho problemas odontológicos que podem requerer tratamento. Aconselhamos que leve seu (sua) filho(a) a um dentista para tratamento.

Em caso de dúvida ligue: 32226690 Ramal 127 Falar com Sabrina e deixar recado para Marina Azevedo.

APÊNDICE F

ENTREVISTA **nº**

*Entrevistador*_____ *Posto*_____

Gostaria de lembrá-la que este é um estudo de acompanhamento e que nós gostaríamos de falar com a Sra. na 1º etapa da Campanha de Vacinação do ano que vem (2012). Por isso, vamos precisar de informações detalhadas de endereço e telefone, além de informações sobre a Sra. e sua família. Estes dados serão usados EXCLUSIVAMENTE para futuros contatos e apenas os coordenadores do projeto terão acesso a eles. Tudo bem? ***Se a mãe não quiser dar continuidade, anotar em RECUSA.***

29. Qual seu nome **completo** (mãe) *(maiúsculas sem acento):*_____

30. Qual a sua idade (em anos)_____

31. Qual o nome **completo** da criança *(maiúsculas sem acento):*

_____

32. Qual a data de nascimento do (a) *nome da criança*_____

33. *Anotar o sexo da criança*
(Se ficar em dúvida perguntar)
masculino 0
feminino 1

34. Como a Sra. classifica seu filho(a) quanto a cor da pele ou raça?
Leia as opções de resposta
branca 0
preta 1
parda 2
indígena 3
amarela 4

35. Qual o seu endereço completo?

_____
Endereço

_____
Endereço (cont.)

_____ _____
Bairro CEP

36. Por favor, nos dê um ponto de referência que nos ajude a encontrar a sua casa.

_____ ____

_____

37. A Sra. tem telefone em casa (fixo)? Se sim, qual o número?
(9–9 = não tem telefone) __ __ __ __ - __ __ __ __

38. Alguém da casa tem telefone celular? ***SE NÃO→12*** não 0 sim 1

_____ _____
Nome da pessoa Relação com a mãe

39. Se sim, qual o número?
__ __ __ __ - __ __ __ __

40. Há outra pessoa da casa ou próxima (vizinha) que tenha telefone? não 0 sim 1
SE NÃO→14

_____ _____
Nome da pessoa Relação com a mãe

41. Se sim, qual o número?
__ __ __ __ - __ __ __ __

42. A Sra. pretende ficar morando nesta casa nos próximos meses ou vai morar em outra casa? vai morar na mesma casa 1 vai morar noutro lugar 2
SE VAI CONTINUAR NA MESMA CASA →18

43. Qual o endereço para onde a Sra. vai?

_____
Endereço

_____
Endereço (cont.)

_____ _____
Bairro CEP

44. Por favor, nos dê um ponto de referência que nos ajude a encontrar esta outra casa._____

_____

45. Se tem telefone nesta casa, qual o número?
(9–9 = não tem telefone) __ __ __ __ - __ __ __ __

46. A Sra. poderia nos fornecer o endereço de um outro parente, para o caso de termos dificuldade em encontrar a Sra. no futuro?

_____

Endereço

_____

Endereço (cont.)

_____ _____

Bairro CEP

_____ _____

Nome do parente Relação com a mãe

47. Se este parente tem telefone, qual o número? [K09]

(9–9 = não tem telefone) __ __ __ __ - __ __ __ __

48. A Sra. poderia nos fornecer o endereço do seu trabalho ou do trabalho de outro familiar?

_____

Endereço

_____

Endereço (cont.)

_____ _____

Bairro CEP

_____ _____

Nome do empregado Telefone

Agora vamos lhe fazer algumas perguntas sobre a Sra. e sua família

49. **Quantos filhos a Sra. tem**?_____ __ __

50. **Até que série a Sra. completou a escola?**
_____série_____grau __ __

51. **No mês passado, quanto receberam em reais ou em salários mínimos as pessoas que moram na sua casa**?_____reais
OU_____Salário(s) Mínimo(s) não sei 9

52. **Com quem *nome da criança* mora?**
pai e mãe 0
só com a mãe 1
mãe e outro companheiro 2
só com o pai 3
pai e outra companheira 4
outro responsável (avôs,tios...)5

Agora vou lhe fazer algumas perguntas sobre a saúde das crianças

53. **Com que idade ou quando a Sra. acha ideal iniciar a escovação dos dentinhos das crianças**_____ _____	__ __ não sei 9
54. **Qual a principal razão para as crianças terem cárie?** (Por que a Sra. acha que algumas crianças têm cárie?/O que causa cárie nas crianças?) _____	__ __ não sei 9
55. **Qual idade a Sra. acha que seria a ideal para levar a criança ao dentista pela primeira vez?** _____	__ __ não sei 9
56. **A** < criança> **já consultou alguma vez com o dentista?** ***Se (0)ou (9)*** ➔ *pule para a questão **30***	Não 0 Sim 1 IGN 9
57. **Quantos anos tinha a** <criança> **quando foi ao dentista pela primeira vez?**_____	__ __ meses NSA 88 IGN 99
58. **Alguma vez a Sra. recebeu orientação de como evitar que as crianças tenham cárie?** ***Se (0)*** ➔ *pule para a questão **33***	Não 0 Sim 1 IGN 9
59. **Quem foi que orientou a Sra.?** (6) Outro _____ *Se a mãe responder mais de uma pessoa, perguntar de quem foi a primeira orientação recebida.*	Médico 0 Enfermeiro 1 Dentista 2 Um parente/amigo 3 Professor na escola 4 Revistas/Panfletos/Reportagem 5 Outro 6 NSA 8 IGN 9
60. **A Sra. poderia me dizer que orientação a Sra. recebeu?** _____ _____	__ __ NSA 88 IGN 99
61. **Se o dente de leite do seu filho estivesse com cárie, o que a Sra. faria?** (2) Outro _____ *Se **(0)*** ➔ *pule para a questão **35*** *Se **(2)*** ➔ *pule para a questão **36***	Nada 0 Levaria ao dentista 1 Outro 2
62. **Que solução a Sra. espera que o dentista dê para este dente de leite com cárie?** (2) Outro _____	Arrancar/extrair/tirar o dente 0 Pôr massinha/ obturar/ restaurar 1 Outro 2
63. **Por que a Sra. acha que não é preciso fazer nada com este dente?** (2) Outro_____	É um dente temporário 0 Depois vem os dentes definitivos/permanentes 1 Outro 2

64. **Comparando com crianças da mesma idade da** <*nome da criança*>**, a Sra. considera que a saúde da boca e dos dentes dele/a é:** *Ler as alternativas*	muito boa 1 boa 2 regular 3 ruim 4 muito ruim 5 IGN 9
65. **A (O)** <*nome da criança*> **escova, escovou ou alguém já escovou ou limpou os dentes ou a boca da(o)** <*nome da criança*> **alguma vez?** *Se **(1)** ➔ pule para a questão **39***	Não 0 Sim 1
66. **Qual o motivo de a Sra. nunca ter limpado ou escovado a boca ou os dentes dele(a)?**(Por que a Sra. ainda não iniciou a limpar a boca do seu filho?) _____ *Pule para a questão **46***	__ __ NSA 8 IGN 9
67. **Antes de dormir a** <criança> **ou alguém escova os seus dentes?** *Ler as alternativas*	Não 0 Sim, sempre 1 Às vezes 2 NSA 8 IGN 9
68. **Desde quando a Sra. escova/limpa os dentes dele (a)?** _____	__ __
69. **A Sra. usa pasta de dente para limpar os dentes da** <*criança*>**?** ***Se (0)** ➔ pule para a questão **46***	Não 0 Sim 1 IGN 9
70. **A Sra. poderia me apontar neste cartão qual a quantidade de pasta mais parecida que a** <criança> **costuma usar?** *(mostrar a figura, esperar a resposta e anotar)*	1 2 3 NSA 8 IGN 9
71. **Qual o tipo de pasta a Sra usa? Qual a marca?** *Anotar tudo o que a mãe disser.* Ex: É a mesma que eu uso. Colgate. /É uma infantil, com um bichinho cor.../ Malvatrikids/ Tandy/ Barney/Bob Esponja. _____	Pasta comum 0 Pasta sem flúor 1 Pasta com pouco flúor 2 NSA 8 IGN 9
72. **Esta pasta contém flúor?**	Não 0 Sim 1 NSA 8 Não sei 9
73. **Você tem algum critério para escolher a pasta de dente para** <*nome da criança*>*?* (6) Outro_____	Nenhum critério 0 Presença do flúor 1 Preço 2 Sabor 3 Marca 4 Ilustração/Personagem/Embalagem 5 Outro 6

74. **Alguém alguma vez lhe recomendou usar pasta sem flúor?** **Se (0) ou (9)** ➔ *pule para a questão **48***	Não 0 Sim 1 IGN 9
75. **Quem lhe recomendou usar pasta sem flúor?** (6) Outro_____ *Se a mãe responder mais de uma pessoa, perguntar de quem foi a primeira orientação recebida.*	Médico/Pediatra 0 Dentista 2 Um parente/amigo 3 Ninguém 4 Vi na televisão/jornal 5 Outro 6
76. **A Sra. ou alguém usa ou usou algum produto no bico como mel, refrigerante, açúcar para que seu(sua) filho (a) se acalmasse ou pegasse o bico?**	Nunca usou bico 0 Não, nunca usou nenhum produto 1 Sim, já usou 2
77. **A** <*criança*> **toma ou tomava mamadeira com leite, chás ou suco?** ***Se (0)*** ➔ *pule para a questão **51***	Não, nunca tomou 0 Sim, mas já parou 1 Sim, ainda toma 2 IGN 9
78. **A Sra. lembraria aproximadamente com que idade o/a <criança> iniciou a tomar mamadeira ? _____**	__ __ meses NSA 8 IGN 9
Para finalizar, farei poucas perguntas sobre a sua saúde bucal	
79. **Comparando com as pessoas da sua idade, a Sra. considera a saúde dos seus dentes, da boca e das gengivas:** *Ler as alternativas*	muito boa 0 boa 1 regular 2 ruim 3 muito ruim 4 IGN 9
80. **Eu vou ler algumas frases e gostaria que a Sra. dissesse qual delas descreve melhor as suas consultas com o dentista:** *Ler as alternativas* (1) Eu nunca vou ao dentista (2) Eu vou ao dentista quando eu tenho dor ou quando eu tenho um problema nos meus dentes ou na gengiva. (3) Eu vou ao dentista às vezes, tendo um problema ou não. (4) Eu vou ao dentista de maneira regular.	
81. **Lembrando dos seus dentes de cima, a Sra. tem :** *Ler as alternativas*	10 dentes naturais ou mais 0 Menos de 10 dentes naturais 1 Nenhum dente natural 2 IGN 9
82. **Lembrando dos seus dentes de baixo, a Sra. tem :** *Ler as alternativas*	10 dentes naturais ou mais 0 Menos de 10 dentes naturais 1 Nenhum dente natural 2 IGN 9

A seguir faça a entrega do panfleto e faça as recomendações:

Será MUITO importante para seu filho que este panfleto seja lido!
As respostas para as perguntas que lhe fizemos estão nele.

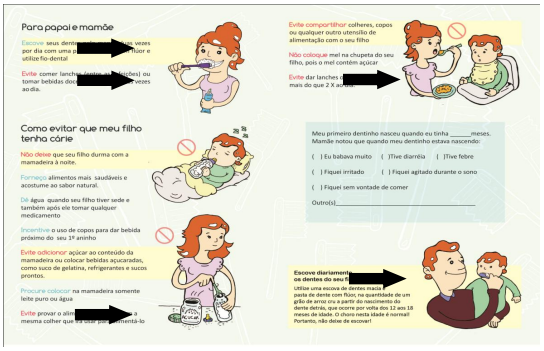
Além disso, o panfleto contém informações simples de serem seguidas que ajudarão a prevenir a cárie dentária e a ter uma boa saúde bucal, como por exemplo *(mostrar no panfleto):*

- É importante que a Sra. escove seus dentes (da própria mãe) com uma pasta de dente com flúor pelo menos 2x ao dia.

- Quando o 1° dentinho detrás do seu filho nascer, por volta dos 12 a 18 meses é importante que a Sra. escove com uma escova macia diariamente com pasta de dente com flúor, na quantidade de um grão de arroz cru.

- Evite provar a comida do seu filho com o mesmo talher que irá alimentá-lo e evite compartilhar copos e talheres.

- Evite comer e dar lanches açucarados (ex: bolachas, balas, chicletes) e bebidas doces (ex: sucos prontos, sucos de gelatina, refrigerantes...) mais do que 2x ao dia (para a mãe e para o filho).



No ano que vem na <u>1º etapa</u> da Campanha nós voltaremos neste mesmo Posto para que, com seu consentimento, um dentista examine novamente a boquinha e os dentes do seu filho (a). Eu vou lhe dar este *clips* para que a Sra. guarde este panfleto junto com a carteira de vacinação. Se a Sra. trocar de endereço ou telefone, atrás do panfleto *(mostrar)*, tem uns telefones que a Sra. pode ligar para nos informar.

Obrigado (a) pela sua atenção, agora nós vamos examinar a boquinha dele(a)!

APÊNDICE G

ENTREVISTA	**nº**
*Entrevistador*_____	*Posto*_____
Gostaria de lembrá-la que no ano passado nós fizemos uma entrevista com a Sra. e que este ano nós gostaríamos de lhe fazer mais algumas perguntas e examinar a boquinha do seu (sua) filho (a). Estes dados serão usados EXCLUSIVAMENTE pelos coordenadores do projeto. Tudo bem? ***Se a mãe não quiser INSISTIR, se não anotar em RECUSA.***	
83. Qual seu nome **completo** (mãe) *(maiúsculas sem acento):*_____	
84. Qual o nome **completo** da criança *(maiúsculas sem acento):* _____	
85. **A Sra. leu o panfleto que foi entregue ano passado na Campanha de Vacinação sobre como prevenir a cárie no seu filho?** ***Se Não (0)*** ➔ *pule para a questão **5***	Não 0 Sim 1
86. **Para a Sra. quanto as informações do panfleto ajudaram no cuidado da boca do(a) <nome da criança> e da sua?** ***Ler as alternativas***	Nada 0 Pouco 1 Mais ou menos 2 Muito 3 Extremamente 4
Agora, farei poucas perguntas sobre a sua saúde bucal	
87. **Comparando com as pessoas da sua idade, a Sra. considera a saúde dos seus dentes, da boca e das gengivas:** *Ler as alternativas*	muito boa 0 boa 1 regular 2 ruim 3 muito ruim 4 IGN 9
88. **Eu vou ler algumas frases e gostaria que a Sra. dissesse qual delas descreve melhor as suas consultas com o dentista:** *Ler as alternativas* (1) Eu nunca vou ao dentista (2) Eu vou ao dentista quando eu tenho dor ou quando eu tenho um problema nos meus dentes ou na gengiva. (3) Eu vou ao dentista às vezes, tendo um problema ou não. (4) Eu vou ao dentista de maneira regular.	__ __
89. **Lembrando dos seus dentes de cima, a Sra. tem :** *Ler as alternativas*	10 dentes naturais ou mais 0 Menos de 10 dentes naturais 1 Nenhum dente natural 2 IGN 9
90. **Lembrando dos seus dentes de baixo, a Sra. tem :** *Ler as alternativas*	10 dentes naturais ou mais 0 Menos de 10 dentes naturais 1 Nenhum dente natural 2 IGN 9

Neste momento, se a mãe estiver com pressa você poderá dispensá-la, porém deverá SEMPRE insistir para que responda todo o questionário. **Agora algumas perguntas sobre o seu (sua) filho (a).**	
91. **A <** criança> **já consultou alguma vez com o dentista?** ***Se (0)ou (9)*** ➔ *pule para a questão **11***	Não 0 Sim 1 IGN 9
92. **Quantos anos tinha a** <criança> **quando foi ao dentista pela primeira vez?_____**	__ __ meses NSA 88 IGN 99
93. **Comparando com crianças da mesma idade da <***nome da criança***>, a Sra. considera que a saúde da boca e dos dentes dele/a é:** *Ler as alternativas*	muito boa 1 boa 2 regular 3 ruim 4 muito ruim 5 IGN 9
94. **A (O)** <*nome da criança*> **escova, escovou ou alguém já escovou ou limpou os dentes ou a boca da(o)** <*nome da criança*> **alguma vez?** *Se **(1)*** ➔ *pule para a questão **14***	Não 0 Sim 1
95. **Qual o motivo de a Sra. nunca ter limpado ou escovado a boca ou os dentes dele(a)?**(Por que a Sra. ainda não iniciou a limpar a boca do seu filho?) _____ *Pule para a questão **23***	__ __ NSA 8 IGN 9
96. **Antes de dormir a** <criança> **ou alguém escova os seus dentes?** *Ler as alternativas*	Não 0 Sim, sempre 1 Às vezes 2 NSA 8 IGN 9
97. **Desde quando a Sra. escova/limpa os dentes dele (a)?** _____	__ __
98. **A Sra. usa pasta de dente para limpar os dentes da** <*criança*>**?** ***Se (0)*** ➔ *pule para a questão **21***	Não 0 Sim 1 IGN 9
99. **A Sra. poderia me apontar neste cartão qual a quantidade de pasta mais parecida que a** <criança> **costuma usar?** *(mostrar a figura, esperar a resposta e anotar)*	1 2 3 NSA 8 IGN 9
100. **Qual o tipo de pasta a Sra usa? Qual a marca?** *Anotar tudo o que a mãe disser.* Ex: É a mesma que eu uso. Colgate. /É uma infantil, com um bichinho cor.../ Malvatrikids/ Tandy/ Barney/Bob Esponja. _____	Pasta comum 0 Pasta sem flúor 1 Pasta com pouco flúor 2 NSA 8 IGN 9

101. **Esta pasta contém flúor?**	Não 0 Sim 1 NSA 8 Não sei 9
102. **Você tem algum critério para escolher a pasta de dente para** *<nome da criança>?* (6) Outro_____	Nenhum critério 0 Presença do flúor 1 Preço 2 Sabor 3 Marca 4 Ilustração/Personagem/Embalagem 5 Outro 6 NSA 8
103. **Alguém alguma vez lhe recomendou usar pasta sem flúor?** **Se (0) ou (9)** ➔ *pule para a questão **23***	Não 0 Sim 1 IGN 9
104. **Quem lhe recomendou usar pasta sem flúor?** (6) Outro_____ *Se a mãe responder mais de uma pessoa, perguntar de quem foi a primeira orientação recebida.*	Médico/Pediatra 0 Dentista 2 Um parente/amigo 3 Ninguém 4 Vi na televisão/jornal 5 Outro 6 NSA 8
105. **A Sra. ou alguém usa ou usou algum produto no bico como mel, refrigerante, açúcar para que seu(sua) filho (a) se acalmasse ou pegasse o bico?**	Nunca usou bico 0 Não, nunca usou nenhum produto 1 Sim, já usou 2
106. **A** *<criança>* **toma ou tomava mamadeira com leite, chás ou suco?** ***Se (0)*** ➔ *encerrar a entrevista*	Não, nunca tomou 0 Sim, mas já parou 1 Sim, ainda toma 2 IGN 9
107. **A Sra. lembraria aproximadamente com que idade o/a <criança> iniciou a tomar mamadeira ? _____**	__ __ meses NSA 8 IGN 9
Perguntar se a mãe está com o panfleto, se estiver pedir para vê-lo. Verificar se ela fez anotações no campo abaixo, se sim anotar como está no panfleto.	
Meu primeiro dentinho nasceu quando eu tinha _____meses. Mamãe notou que quando meu dentinho estava nascendo: ( ) Eu babava muito ( )Tive diarréia ( )Tive febre ( ) Fiquei irritado ( ) Fiquei agitado durante o sono ( ) Fiquei sem vontade de comer Outro(s)_____	__ __meses Babava __ Diarréia__ Febre __ Irritado__ Sono__ Comer __ Outro __

APÊNDICE H

FICHA DO EXAME CLÍNICO

Nome da criança:_____

Posto de saúde_____ Examinador_____

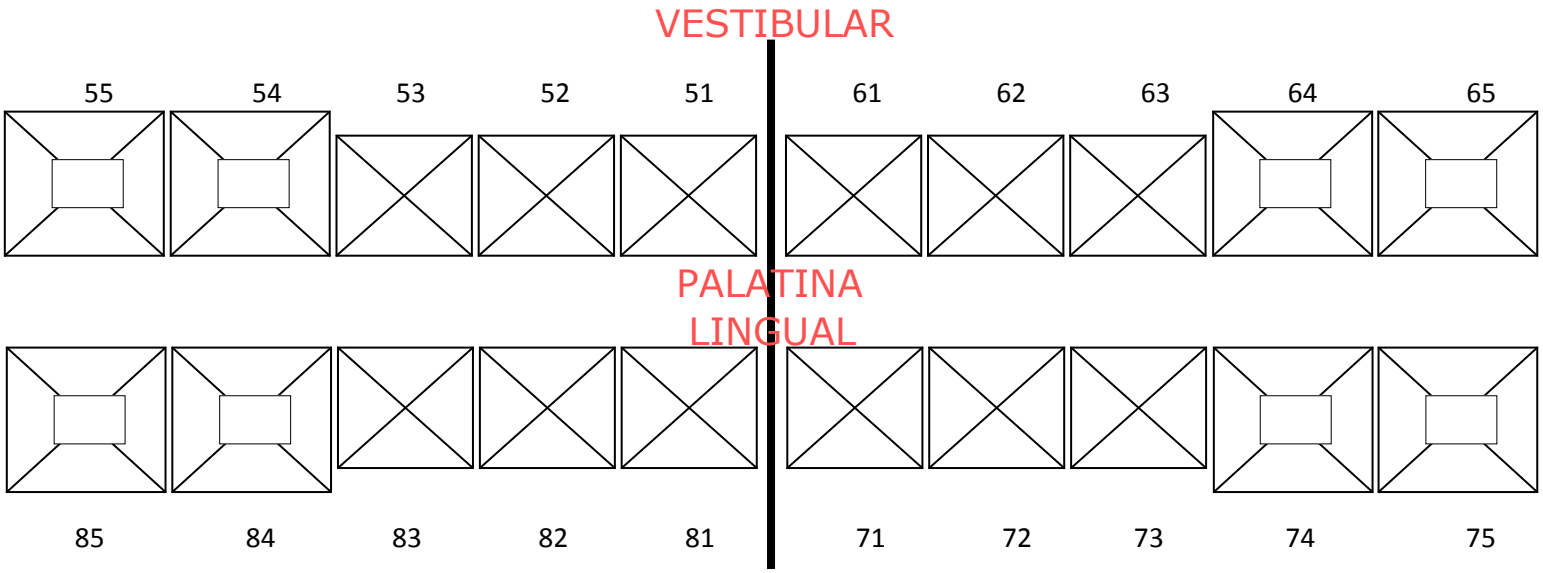
PRESENÇA DE PLACA NA REGIÃO ANTERIOR SUPERIOR: (1) SIM (2) NÃO PLACA_____

Código	Situação (critério)
0	Hígido
1	Cárie em dentina
2	Restaurado, mas com cárie
3	Restaurado e sem cárie
4	Perdido por cárie
9	Dente excluído/impossível avaliar
5	Perdido por outras razões: esfoliado/tad
8	Dente não erupcionado
10	Cárie em esmalte e mancha branca ativa

1.1	**c**(1 + 2)	
1.2	**e** (4)	
1.3	**o** (3)	
1.4 ceod	**=**	

1.5. lesão Esmalte (10)	**=**

1.6. ceos	**=**



APÊNDICE I

Você sabia?

A cárie é uma doença que afeta os dentes e é causada por bactérias que podem ser transmitidas da mãe para o seu filho através da saliva. A falta de higiene e uma alimentação rica em açúcar fazem com que estas bactérias produzam ácidos e destruam os dentes. Porém, a cárie pode ser facilmente evitada. Siga as instruções desta caderneta e você e seu filho terão uma boca saudável!

Importância dos dentes de leite

Ajudam a criança a falar e mastigar

Mantem o sorriso bonito (estética) ajudando no bem-estar e auto-estima da criança

Mantem o caminho que os dentes permanentes (definitivos) precisam quando estão prontos para nascer.

Recomenda-se

Que a primeira visita ao dentista seja feita no primeiro ano de vida, pois é nesta fase que normalmente chegam os dentinhos. Leve seu filho regularmente ao dentista.

Atenção

Na 1º etapa da próxima campanha de vacinação (2012) seu filho, com seu consentimento, será examinado por um dentista para avaliação da sua saúde bucal.
Procure-nos no mesmo posto da Campanha 2011 no qual lhe foi entregue o panfleto "caderneta de saúde bucal do bebê".

Em caso de dúvidas, mudança de endereço
ou telefone ligue para (53) 32224162 ramal 127
deixar recado com Sabrina ou (53) 91431331 falar com Marina.

Caderneta de Saúde bucal do bebê

Nome do bebê

Guarde junto com a carteira de vacinação.

Para papai e mamãe

Escove seus dentes pelo menos duas vezes por dia com uma pasta de dente com flúor e utilize fio-dental

Evite comer lanches (entre as refeições) ou tomar bebidas doces mais do que duas vezes ao dia.

Evite compartilhar colheres, copos ou qualquer outro utensílio de alimentação com o seu filho

Não coloque mel na chupeta do seu filho, pois o mel contém açúcar

Evite dar lanches ou bebidas doces mais do que 2 X ao dia.

Como evitar que meu filho tenha cárie

Não deixe que seu filho durma com a mamadeira à noite.

Forneça alimentos mais saudáveis e acostume ao sabor natural.

Dê água quando seu filho tiver sede e também após ele tomar qualquer medicamento

Incentive o uso de copos para dar bebida próximo do seu 1º aninho

Evite adicionar açúcar ao conteúdo da mamadeira ou colocar bebidas açucaradas, como suco de gelatina, refrigerantes e sucos prontos.

Procure colocar na mamadeira somente leite puro ou água

Evite provar o alimento da criança com a mesma colher que irá usar para alimentá-lo

Meu primeiro dentinho nasceu quando eu tinha _____meses.
Mamãe notou que quando meu dentinho estava nascendo:

( ) Eu babava muito ( )Tive diarréia ( )Tive febre

( ) Fiquei irritado ( ) Fiquei agitado durante o sono

( ) Fiquei sem vontade de comer

Outro(s)_____

Escove diariamente os dentes do seu filho.

Utilize uma escova de dentes macia e pasta de dente com flúor, na quantidade de um grão de arroz cru a partir do nascimento do dente detrás, que ocorre por volta dos 12 aos 18 meses de idade. O choro nesta idade é normal! Portanto, não deixe de escovar!

ANEXO A

MINISTÉRIO DA EDUCAÇÃO
UNIVERSIDADE FEDERAL DE PELOTAS
FACULDADE DE ODONTOLOGIA
COMITÊ DE ÉTICA EM PESQUISA

PELOTAS, 21 de julho de 2010.

PARECER Nº 164/2010

O projeto de pesquisa intitulado **EFICÁCIA DE UMA INTERVENÇÃO EDUCACIONAL NA PREVENÇÃO DA CÁRIE NA PRIMEIRA INFÂNCIA E O PAPEL DA TRANSMISSIBILIDADE BACTERIANA: ENSAIO RANDOMIZADO EM CONGLOMERADO** está constituído de forma adequada, cumprindo, na suas plenitudes preceitos éticos estabelecidos por este Comitê e pela legislação vigente, recebendo, portanto, **PARECER FAVORÁVEL** à sua execução.

Prof°. Marcos Antonio Torriani
Coordenador do CEP/FO/UFPel

Prof. Marcos A. Torriani
Coordenador
Comitê de Ética e Pesquisa

ANEXO B

PREFEITURA DE PELOTAS
SECRETARIA DE SAÚDE
DEPARTAMENTO DE SAÚDE PÚBLICA

Pelotas, 15 de julho de 2010.

Declaro para os devidos fins que o Professor do Programa de Pós-Graduação em Odontologia da Universidade Federal de Pelotas, Prof. Maximiliano Sergio Cenci e a Doutoranda Marina Sousa Azevedo estão autorizados a realizar o trabalho intitulado "Eficácia uma intervenção educacional na prevenção da cárie na primeira infância: ensaio randomizado em conglomerado" nas Unidades Básicas de Saúde de Pelotas que contam com equipamento odontológico durante a 2º etapa da Campanha de Vacinação Infantil, que ocorrerá dia 14 de agosto de 2010.

Alex Teixeira Ferreira
Cirurgião-Dentista
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Alex Teixeira Ferreira

Coordenação de Saúde Bucal