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**TENDÊNCIA E FATORES ASSOCIADOS NA
UTILIZAÇÃO DE SERVIÇOS ODONTOLÓGICOS EM
PRÉ-ESCOLARES BRASILEIROS**

DISSERTAÇÃO DE MESTRADO

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TENDÊNCIA E FATORES ASSOCIADOS NA UTILIZAÇÃO DE SERVIÇOS ODONTOLÓGICOS EM PRÉ-ESCOLARES BRASILEIROS

Bernardo Antonio Agostini

Dissertação apresentada ao Curso de Mestrado do Programa de Pós-Graduação em Ciências Odontológicas, Área de Concentração em Odontologia, ênfase em Odontopediatria, da Universidade Federal de Santa Maria (UFSM, RS), como requisito parcial para obtenção do grau de **Mestre em Ciências Odontológicas**.

Orientador: Prof. Dr. Thiago Machado Ardenghi

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**TENDÊNCIA E FATORES ASSOCIADOS NA UTILIZAÇÃO DE
SERVIÇOS ODONTOLÓGICOS EM PRÉ-ESCOLARES BRASILEIROS**

elaborada por
Bernardo Antonio Agostini

como requisito parcial para a obtenção do grau de
Mestre em Ciências Odontológicas

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Santa Maria, 17 de agosto de 2015.

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“Se queres vencer o mundo inteiro, vence-te a ti mesmo.”

(tradução)

- Fiódor Mikhailovich Dostoiévski

RESUMO

Dissertação de Mestrado
Programa de Pós-Graduação em Ciências Odontológicas
Universidade Federal de Santa Maria

TENDÊNCIA E FATORES ASSOCIADOS NA UTILIZAÇÃO DE SERVIÇOS ODONTOLÓGICOS EM PRÉ-ESCOLARES BRASILEIROS

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O uso de serviços odontológicos pode ser influenciado por fatores contextuais e sua prevalência, por efeitos temporais. Entretanto, há pouca evidência da associação entre diferentes fatores contextuais e uso de serviços, ademais, não existem estudos avaliando a tendência do uso de serviços odontológicos em pré-escolares brasileiros. O objetivo desta dissertação foi avaliar a associação entre fatores socioeconômicos individuais e contextuais e o uso de serviços odontológicos em pré-escolares. Como também, avaliar a tendência no uso de serviços odontológicos, tipo de serviço e motivo da consulta, levando em consideração os efeitos temporais de idade, período e coorte (*Age-period-cohort effect*). Uma amostra representativa de 1765 pré-escolares de Santa Maria-RS, Brasil, foi obtida a partir de 3 levantamentos realizados nos anos de 2008, 2010 e 2013. Os dados dos 3 levantamentos epidemiológicos foram utilizados para verificar a tendência na utilização de serviços odontológicos por pré-escolares considerando *Age-period-cohort effect*. Ademais, foram verificadas possíveis alterações nas associações de fatores individuais com o uso de serviços odontológicos por pré-escolares considerando esses efeitos temporais. Para verificar a associação de fatores contextuais com o uso de serviço, foram utilizados dados do levantamento realizado em 2010 composto por 639 pré-escolares. As variáveis contextuais consideradas foram: número de dentistas do bairro e a presença de associação de trabalhadores. Os dados foram analisados utilizando Modelos Multiníveis de Regressão de Poisson, para avaliar a associação das variáveis preditoras e os desfechos em ambos os estudos. No estudo de tendência também foi realizado o teste qui-quadrado para tendências para verificar a mudança nas prevalências de cada desfecho, de acordo com cada efeito temporal. A presença de associações de trabalhadores no bairro favoreceu o uso de serviços odontológicos por pré-escolares. Os pré-escolares residentes em bairros com associação de trabalhadores tiveram uma prevalência 65% maior de terem visitado o dentista em comparação a quem não morava. No estudo de tendências, verificamos uma influência dos efeitos temporais (*Age-period-cohort effect*) na tendência de uso por pré-escolares brasileiros. O efeito idade, influenciou diretamente o uso de serviços odontológicos por pré-escolares, já o tipo de serviço e o motivo da consulta foi influenciado pelos efeitos período e coorte de forma significativa. Conclui-se que variáveis individuais e contextuais devem ser levadas em consideração, assim como os efeitos temporais que modulam o uso de serviços odontológicos, no planejamento e organização de políticas públicas de saúde bucal.

Palavras-chave: Cuidados básicos de Saúde. Diferenças individuais. Pré-escolares. Serviços Odontológicos. Tendência.

ABSTRACT

Master Course Dissertation
Dental Sciences Post-Graduation Program
Federal University of Santa Maria

TRENDS AND FACTORS INFLUENCING USE OF ORAL HEALTH SERVICES AMONG BRAZILIAN PRE-SCHOOL CHILDREN

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The use of dental care services has been associated with contextual factors and time-related variations. However, there is a lack of studies assessing the association between contextual variables and the use of dental care services as well as the trends of oral health care utilization in preschoolers. This dissertation aimed to assess the association between individual and contextual socioeconomic factors with the use of dental health services in Brazilian preschool children. As well, assess the trend in the use of dental health care, type of service and reasons for dental care utilization considering time-related variations of age, period and cohort ('Age-Period-Cohort effect'). A representative sample of 1,765 preschool children from Santa Maria-RS, Brazil, was collected from 3 oral health surveys performed in 2008, 2010 and 2013. Data from these surveys were used to assess the trend in the use of dental health services among preschool children considering the influence of Age-Period-Cohort effect. A total of 639 participants from the second period of data collection (2010) were used to assess the influence of contextual factors in the use of dental care. Contextual social determinants included the presence of worker's associations and the number of dentists in the neighborhood in which the child was living. Data analysis used multilevel Poisson regression models to assess the association between predictors and the outcomes in both studies. The chi-square for trends was also used to assess the prevalence of each outcome considering time-related changes. Presence of workers' association in the neighborhood favors preschool children to use dental health services. Children who lived in a neighborhood with workers' association visited the dentist 65% more than their counterparts. There is a time-related variation (Age-Period-Cohort effect) in the use of dental health services along the years of study; age influenced straightly the dental visits prevalence, and period and cohort effects influenced significantly the type of service used and the reasons for dental seek. There is a significant association between individual and contextual social determinants and the use of dental care services in preschool children. The study also found a significant age-period-cohort effect in the use of dental care service which may be considered when planning public health strategies that facilitate dental access for this population.

Keywords: Dental health service. Individual difference. Preschool. Primary Health Care. Trends.

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INTRODUÇÃO GERAL

A cárie dental é, dentre as doenças bucais, a mais prevalente (US, 2000). No Brasil, tem sido observado um declínio na ocorrência e severidade de cárie em diversas idades e em diferentes regiões (NARVAI et al., 2006; BÖNECKER et al., 2010; LAURIS, SILVA BASTOS & MAGALHAES BASTOS, 2012; CONSTANTE et al., 2014). Apesar disso, esse declínio não pode ser considerado como uma ausência de necessidade de tratamento, pois os dados do último levantamento nacional de saúde bucal, o Saúde Bucal Brasil 2010 (SBBrasil 2010), mostram que nas idades de 5 e 12 anos o componente predominante do índice ceo/CPO-D é o componente cariado (MINISTÉRIO DA SAÚDE, 2012). Observa-se, assim uma necessidade de uma atenção mais adequada no uso de serviços odontológicos, visto que a maioria das lesões de cárie não foram tratadas.

Dados nacionais da Pesquisa Nacional por Amostra de Domicílios (PNAD) referente ao uso de serviços odontológicos relatam uma expressiva quantidade de pessoas que nunca visitou o dentista, totalizando 29,6 milhões de pessoas no ano de 1998 (18,7% da população brasileira). Na subsequente pesquisa, em 2003, houve uma redução dessa proporção; 15,9% da população brasileira declarou nunca ter ido ao dentista, representando 27,9 milhões de pessoas. Em crianças menores de 5 anos, houve um decréscimo na quantidade de indivíduos que nunca haviam consultado o dentista, sendo 85,6% em 1998, passando a 81,8% em 2002 (MINISTÉRIO DA SAÚDE, 2000, 2005). Esta alta prevalência também foi relatada em outros estudos na região sul do Brasil apresentando proporções de 87,7% (KRAMER, CARDOSO & FELDENS, 2008), 79,3% (GOETTEMS et al., 2012) e 76,3% de pré-escolares que nunca haviam visitado o dentista (MACHRY et al., 2013).

A alta porcentagem de pré-escolares que nunca tiveram uma consulta odontológica é preocupante, tendo em vista que há uma forte recomendação para que a primeira visita ao dentista ocorra até o primeiro ano de vida da criança com revisões semestrais (ISMAIL, NAINAR & SOHN, 2003; AAPD, 2004, 2007; ADA, 2008). Esta primeira visita deve ser vista como uma estratégia para estabelecer a prevenção primária, bem como a intervenção precoce para os efeitos nocivos da doenças bucais (MCGRATH et al., 2008). Um estudo de acompanhamento de 5

anos, realizado com nascidos-vivos na Carolina do Norte-EUA, demonstrou que em crianças cuja a primeira visita se deu por motivos preventivos no primeiro ano de vida, tendem a ter visitas subsequentes pelo mesmo motivo e não por necessidade de tratamento (SAVAGE et al., 2004). Autores também demonstraram que as visitas precoces (até 1 ano de idade) apresentam um maior custo-benefício se comparadas as tardias (SAVAGE et al., 2004; LEE et al., 2006; DARMAWIKARTA et al., 2014). Além disso, o *Healthy People 2020*, programa americano que propõe objetivos nacionais a serem cumpridos em 10 anos para melhorar a saúde da população, elencou o aumento no uso de serviços odontológicos anual para pessoas com 2 ou mais anos de idade como um dos principais indicadores de saúde, sendo esse um assunto de alta prioridade em saúde (US DEPARTMENT OF HEALTH AND HUMAN SERVICES). Estes fatos, por sua vez, salientam a necessidade de uma atenção mais adequada na avaliação do uso de serviços odontológicos, sendo este fator importante a ser considerado no processo de saúde-doença e no planejamento de estratégias de saúde populacional.

O Brasil, historicamente, teve a odontologia à margem das políticas públicas de saúde. Para suprir essa necessidade, a partir do ano de 2004 o ministério da saúde incluiu a atenção odontológica dentro da Política Nacional de Saúde, sendo essa, também, parte do Sistema Único de Saúde (SUS) através da Política Nacional de Saúde Bucal – Programa Brasil Sorridente. O programa tem ação basicamente em duas vertentes: reorganização da atenção básica em saúde e; ampliação e qualificação da atenção especializada (JUNQUEIRA, PANNUTI & RODE, 2008; PUCCA JÚNIOR et al., 2009). Entretanto, apesar do aumento constante dos incentivos e investimentos no programa e esse, tendo atingido números expressivos de profissionais atuantes, 22.139 equipes atuando em 4.907 municípios no ano de 2012 (MINISTÉRIO DA SAÚDE, 2013) e cerca de 30.000 em 2013 (REIS et al., 2015), não há nenhuma política de atenção básica ou atenção especializada para a idade pré-escolar.

A avaliação do uso de serviços em saúde é uma medida que pode ser utilizada para testar a validade preditiva do acesso ao sistema de saúde estudado e, em nível individual, os indicadores de acesso (ADAY & ANDERSEN, 1974). Ademais, a abordagem sobre o uso de serviços em saúde se dá pela necessidade de conhecer o real funcionamento dos serviços de saúde oferecidos, sua eficácia e sua eficiência. Por essa razão, deve-se compreender e diferenciar os conceitos de

uso e de acesso a serviços à saúde ao abordarmos o tema. Travassos (2004) realizou uma revisão sobre os conceitos de uso e acesso, concluindo que acesso e sua terminologia é empregado à acessibilidade, seu conceito está relacionado ao desempenho dos sistemas de saúde e à sua oferta. Para o conceito de uso uma multiplicidade de fatores deve ser considerada, pois ele é dependente de fatores individuais que envolvem questões de predisposição, fatores capacitantes e necessidades de saúde do sujeito (TRAVASSOS, 2004).

Andersen e Newman, em 1973, já afirmavam sobre a multiplicidade de fatores associados ao uso de serviço, propondo um modelo conceitual levando em consideração: as características predisponentes, disponibilidade de recursos e necessidades do indivíduo (ANDERSEN & NEWMAN, 1973). Esse modelo conceitual foi adaptado para uso em serviços odontológicos por Kiyat em 1986, este por sua vez incluiu outros fatores nas três classificações dos determinantes propostas anteriormente, como prioridade da saúde oral em comparação a outras necessidades (KIYAT, 1986). Entretanto, Andersen em 1995, reavaliando seu modelo inicial, define o uso de serviços como parte de um conceito multidimensional em saúde muito mais complexo, considerando: as características do ambiente, as características individuais da população, o comportamento em saúde e os desfechos em saúde (ANDERSEN, 1995). Atualmente a abordagem do uso como um constructo multidimensional vem sendo reafirmada salientando a importância da inclusão de características contextuais no modelo teórico explicativo (CAMPBELL & ROLAND, 1996; ANDERSEN, 2008; BAKER, 2009). Ademais, Andersen (2008) sugere que devem ser dobrados os esforços para conceituar o uso de serviços de saúde, se apropriando de modelos e indicadores que levem em consideração fatores contextuais e individuais de determinada população (ANDERSEN, 2008).

A avaliação do uso de serviços em saúde, sobretudo serviços odontológicos, além de prover dados sobre as características do serviço, também fornece dados sobre o comportamento de saúde da população, visto que o uso regular de serviços em saúde é tido como um hábito de saúde bucal (DAVOGLIO et al., 2009). Estes hábitos e comportamentos em saúde dos indivíduos são moldados a partir das vivências pessoais (FREEMAN, 1999). O uso de serviços odontológicos sendo avaliado como característica de hábito saudável mostrou ser influenciado por fatores socioeconômicos e psicossociais (GOETTEMMS et al., 2012). Além disso, tais fatores influenciam também outros hábitos bucais saudáveis como escovação dentária

(FREDDO et al., 2008; DAVOGLIO et al., 2009; DORRI, SHEIHAM & WALL, 2010; AGOSTINI et al., 2014) e uso adequado do fio dental (FREDDO et al., 2008).

A desigualdade no acesso aos cuidados de saúde e na utilização de serviços odontológicos a partir de modelos conceituais tem despertado o interesse de muitos pesquisadores. Estudos apontam uma clara associação entre status socioeconômico e uso dos serviços, sendo a grande variabilidade do desfecho explicada por fatores como idade, nível de escolaridade da mãe, raça e renda (PINILLA & GONZALEZ, 2006; SOHN et al., 2007; FLORES & TOMANY-KORMAN, 2008; ARAÚJO et al., 2009; BALDANI et al., 2011; ISONG et al., 2012; FLORES & LIN, 2013). Diferenças culturais e psicossociais, como auto-percepção em saúde e impacto negativo de injúrias bucais na qualidade de vida, parecem agir conjuntamente como fatores explicativos destas variabilidades no uso de serviços. Conceitos contemporâneos sugerem que tais necessidades e, conseqüentemente, o planejamento de serviços de atenção e promoção, sejam enfocados tanto nos aspectos clínicos normativos quanto nos indicadores sócio-dentais, que mensuram o impacto das condições de saúde/doença na auto-percepção e qualidade de vida de um indivíduo (WATT, 2007). Sobretudo, promover equidade e diminuir iniquidade não requer apenas um processo de contínua equalização, mas também envolve a abolição de privilégios.

Pesquisas recentes demonstram que fatores sociodemográficos e socioeconômicos são determinantes para a utilização dos serviços odontológicos em diferentes populações brasileiras (ANTUNES, JAHN & CAMARGO, 2005; NORO et al., 2008; PIZARRO et al., 2009; PIOVESAN et al., 2011; ARDENGHI et al., 2012; MACHRY et al., 2013). Além desses fatores, em crianças pré-escolares de diferentes países, as visitas regulares também dependem da vontade e frequência de visita de seus cuidadores à adesão de visitas de rotina (ISONG et al., 2010; GOETTEMS et al., 2012). Estudos anteriores tem salientado a complexa interação entre os determinantes individuais e contextuais nos desfechos relacionados à saúde (AIDA et al., 2008). Alguns estudos têm usado abordagens estatísticas que integram esses determinantes em um único modelo explicativo usando a análise multinível (ANTUNES et al., 2006; CELESTE, NADANOVSKY & DE LEON, 2007; LEVIN et al., 2009; BRAMLETT et al., 2010; BARRIUSO-LAPRESA & SANZ-BARBERO, 2011). No Brasil, diversos autores têm utilizado esta abordagem para ajustar associações em diferentes desfechos relacionados com a saúde bucal (CELESTE, NADANOVSKY & DE LEON, 2007; BRIZON et al., 2013; DEMARCO et

al., 2013; LAMARCA et al., 2013; VETTORE, MARQUES & PERES, 2013; FERREIRA-JUNIOR et al., 2015). Apesar de existirem estudos que utilizaram o método multinível no uso de serviços (PINHEIRO & TORRES, 2006; CELESTE, NADANOVSKY & DE LEON, 2007; BARRIUSO-LAPRESA & SANZ-BARBERO, 2011; LEE et al., 2014), não existem estudos avaliando a associação das variáveis individuais e contextuais com uso de serviços odontológicos em pré-escolares brasileiros.

Os levantamentos epidemiológicos fornecem uma informação importante para o planejamento de estratégias em saúde, uma vez que promovem hipóteses interativas entre possíveis determinantes dos desfechos em saúde. Além de avaliar os fatores relacionados ao uso de serviços odontológicos, é importante que se verifique regularmente a prevalência de determinado desfecho, o que possibilita avaliar a tendência do comportamento da população em diferentes momentos no tempo (BURT, 1997; WHO, 1997). Atualmente a diretriz para os serviços públicos odontológicos brasileiros pressupõe harmonizar ações preventivas com as da assistência e, além disso, acompanhar o impacto das ações, utilizando indicadores adequados (MINISTÉRIO DA SAÚDE, 2004). Dessa forma, a prevalência do uso de serviços em saúde deve ser regularmente avaliada, a fim de quantificar a atuação dos serviços frente à população.

Alguns estudos avaliaram a tendência de uso de serviços em diferentes populações e diferentes países (HONKALA et al., 1997; PINHEIRO & TORRES, 2006; AHACIC, THORSLAND, 2008; CELESTE, NADANOVSKY & FRITZELL, 2011; WALL, VUJICIC & NASSEH, 2012; BARRAZA-LLORENS, PANOPOULOU & DÍAZ, 2013). Um estudo verificou um constante crescimento no uso de serviços por jovens (2-20 anos) nos Estados Unidos, entre os anos de 1997 e 2010 (WALL, VUJICIC & NASSEH, 2012). Este mesmo padrão foi reportado em um estudo brasileiro, considerando dados populacionais de 1998 e 2003, onde a proporção de pessoas que nunca havia visitado o dentista diminuiu, especialmente nos grupos etários mais jovens (PINHEIRO & TORRES, 2006). Todavia, nem todos os estudos apresentam a mesma tendência. Um estudo considerando países com diferentes panoramas de desenvolvimento, Brasil e Suécia, apresentou uma diminuição na prevalência de visitas ao dentista no último ano, por jovens em ambos os países (CELESTE, NADANOVSKY & FRITZELL, 2011). Divergências nos resultados de pesquisas em populações similares persistem, e mais estudos são necessários para obtenção de

um panorama conclusivo do comportamento populacional frente ao uso de cuidados odontológicos.

Além da alteração percentual no uso de serviços odontológicos ao longo dos anos, há também a necessidade de verificar os efeitos de idade, ano e coorte (*age-period-cohort effect (APC)*), quando estudos temporais são realizados. Primeiramente, alterações nas estimativas de determinado desfecho podem variar conforme a idade, uma vez que essa vai pontualmente avançando. Subsequente, podem ser afetadas por um efeito da coorte de nascimento a qual o indivíduo pertence, uma vez que as gerações não são as mesmas. Por fim, as variações podem ser inerentes ao período de coleta, uma vez que características ocasionais do período podem influenciar os resultados. Alguns estudos apresentaram estimativas diferentes em relação a uso de serviços odontológicos considerando o efeito *age-period-cohort (APC)* (AHACIC & THORSLUND, 2007; CHRISPOULOS, LUZZI & BRENNAN, 2013; JU, BRENNAN & SPENCER, 2014). Por sua vez, esse método apesar de necessário, apresenta alguns problemas devido a estes três efeitos ocorrerem simultaneamente e serem matematicamente dependentes (BELL & JONES, 2014). Uma das soluções é o uso desses efeitos em um modelo multinível (YANG & LAND, 2013; BELL & JONES, 2014).

No Brasil não existem estudos avaliando a influência de características contextuais e individuais em seus diferentes níveis no uso de serviços odontológicos em pré-escolares brasileiros ao longo do tempo. Considerando que dados referentes a fatores contextuais, de tendência e possíveis efeitos temporais na utilização de serviços odontológicos por pré-escolares podem contribuir para reorientação dos serviços públicos, justifica-se a realização deste trabalho.

Os objetivos deste trabalho são: avaliar a influência de fatores contextuais e individuais na utilização de serviços odontológicos por pré-escolares brasileiros e, verificar a tendência na utilização de serviços odontológicos pela população referida, considerando os efeitos idade-período-coorte, em uma análise multinível entre os anos de 2008 e 2013.

1 ARTIGO I

Artigo intitulado “Individual and Contextual Factors of Dental Health Care Use Among Preschool Children in Brazil: a Multilevel Analysis.” Redigido conforme as normas da revista *Journal of Public Health Dentistry* (ANEXO B).

Individual and Contextual Factors of Dental Health Care Use Among Preschool Children in Brazil: a Multilevel Analysis.

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Abstract Page**Individual and Contextual Factors of Dental Health Care Nonuse Among Preschool Children in Brazil: a Multilevel Analysis.****ABSTRACT**

Aim: The aim of this study is to investigate the effect of contextual factors on dental care utilization after adjustment for individual characteristics of Brazilian preschool children. **Methods:** A cross sectional study with a representative sample of preschool children in a medium size city in the southern of Brazil was conducted in 2010, selecting the participants randomly from those attending the National Children's Vaccination Day in the largest fifteen health centers of the city. Individual data such as demographics variables, socioeconomic factors and data about the dental care were evaluated. Two community-related variables were used to assess the contextual influences: presence of dentists and presence of workers' associations in the neighborhood. The outcome was measured by a question contained in the questionnaire: "Has your child ever visited the dentist?" **Results:** The prevalence of regular use of dental services was 21.6%. Higher use of dental health services was observed in those living in neighborhoods with the presence of workers' associations. Individual covariates as, child's age, household income, mother's level of education, mothers' participation in children's school activities and dental caries were determinants of use of dental health services and remained associated after adjustment for contextual variables. **Conclusions:** The assessment of the characteristics of the neighborhood is important for oral health inequalities studies. These findings highlight that oral health behaviors can be influenced by neighborhood social support. Moreover, individual and contextual variables must be taken into consideration for redirection of resources in public health and for the formulation of oral health policies.

Introduction

Inequalities in dental health care use among Preschool Children have been showed in developing countries (1-4). Previous studies have suggested that some individual factors, such as being older, having higher income, having their own house, having access to preventive oral health information, having parents with higher level of education and being white-children could explain the reasons for seeking dental care services (3-7). Nevertheless, recent studies have demonstrated the importance of contextual factors for different oral health outcomes, including use of dental services (8-12).

In Brazil, the last official publication showed regional inequality in dental care utilization (SBBRASIL 2010). It is suggested that the economic and social attributes of the community might influence dental care use among people who reside in the community (12). One recent evidence suggests that contextual determinants, such as a higher dentist-to-population ratio, influence dental care utilization in population (12).

Taking into account, the individuals' risk of get sick in a community could be influenced by community context. Therefore, contextual determinants have been used together with individual factors in multilevel analysis. This approach allows adjusting individual characteristics by contextual determinants of communities (5, 13-14). At the present moment, few studies consider individual characteristics and contextual factors for dental care utilization using multilevel analysis (5, 10). Moreover, only one study was carried with preschool children. The results of this study showed that the use of dental care was associated with individual factors (demographic, dental health, habits and socioeconomic factors) and contextual

variables (dental care model) (5). However, new studies are necessary to investigate other contexts in other regions.

Therefore, the aim of this study is to investigate the effect of contextual factors on dental care utilization after adjustment for individual characteristics of Brazilian preschool children.

Methods

Ethics Approval

This study was approved by the Committee for ethics in Research, of Federal University of Santa Maria and School, of Dentistry, University of São Paulo, Brazil. Written informed consent was obtained from all parents.

Study Design and Data Collection

A cross-sectional study involving preschool children with 1- to 5-year-old from city of Santa Maria, RS, located in the south of Brazil was conducted. Sample size was calculated according to the following parameters: 5% standard error, 80% power, 95% confidence interval, 10% non-response rate, 2:1 ratio of unexposed to exposed, and a prevalence ratio to be detected of at least 1.8. Moreover, an adjustment for the sample design of 1.4 was adopted (design effect). The minimum sample size was estimated at 456 children (4). As the present study was part of a survey in which other outcomes were considered, the final sample size was greater than the minimum required.

Participants were randomly selected from children attending the National Children's Vaccination Day. Fifteen health centers were selected for this research and all had a dental chair. These were the largest health center in the city and more than 85% of the children were vaccinated in these centers during the study.

For the data collection, fifteen examiners and thirty assistants performed the clinical examination and administered the questionnaire. They had been trained and calibrated prior to the data collection. More information about the methodology and data obtained in this epidemiological survey was published elsewhere (4, 15-16).

Children were examined for dental caries seated on a dental chair for dental caries. Visual examinations followed the ICDAS criteria (17-18). As the ICDAS has demonstrated comparability with standard criteria (WHO) in an epidemiological survey of preschool children (19), we used the ICDAS cut-off point of 3 (0–2 sound, 3–6 carious) to calculate the number of decayed/missing/ filled teeth (dmft). For the analysis we used only severity criteria, in other words, only teeth with frank cavitation were considered. So, the sample was dichotomized in > 4 decayed teeth and ≤ 4 decayed teeth.

Individual-level predictors

A structured questionnaire was used to obtain individual data such as demographics variables, socioeconomic factors and data about the dental health care use. Parents answered questions including age, children's gender, race (Black and White) (20), family income (less than 1 Brazilian minimum wage (BMW), between 1 and 2 BMW, between 2 and 3 BMW and more than 3 BMW) parents' educational level (≥ 8 years of formal instruction or < 8 years of formal instruction) and mother's participation in school activities of children (Yes or No).

Contextual Predictors

Two community-related variables were used to assess the contextual influences on children's dental care utilization: presence of dentists and presence of workers' associations in the neighborhood (Yes or No). These covariates have previously been used as community factors and community related variables (12-13).

Outcome variable

The outcome was measured by a question contained in the questionnaire: “Has your child ever visited the dentist?” (Yes or No).

Data analysis

The Stata 12.0 software (Stata Corporation, College Station, TX, USA) was used for data analysis. Unadjusted and adjusted multilevel logistic regression models were used to describe the association between outcome and predictor variables. With this approach, odds ratio (OR) and their respective 95% confidence intervals (95% CI) were estimated.

In the analysis, children (first level) were nested in neighborhoods (i.e., 1 of the 15 health centers of the city) (second level). In the first stage, an unconditional model (‘null’ model) estimated the basic partition of data variability between two levels before individual and community characteristics were taken into account (21). The second model (Model 2) added covariates at the individual level; the “full” final model (Model 3) included individual factors and contextual covariates. We considered variables that presented a p value ≤ 0.20 in the unadjusted analyses for entry into the adjusted models. They were retained and considered statistically significant into the final models only if they had a p value ≤ 0.05 after adjustment.

Results

In total, 639 children, 321 (50.2%) male and 318 females (49.8%), were enrolled in this study. The participation rate was 91.3%. Reasons for non-participation was mostly attributable due denied permission by their guardians.

Participants were predominately white and more than half of their caregivers had the high level of education considered. The majority of the parents had a household income \leq 3 Brazilian Minimum Wage (BMW). The prevalence of use of dental service was 21.6%. (Table 1).

Table 2 shows the unadjusted assessment of the associations of dental health care use with individual and contextual – level variables. This analysis observed child's age, household income, father's and mother's level of education, mothers' participation in children's school activities, dental caries, and presence of workers associations in neighborhood as the main covariates of outcome.

After adjusting for the individual covariates (Table 3 - Model 1) child's age, mother's level of education, mothers' participation in children's school activities and dental caries were identified as individual determinants of use of dental health services. These variables remained associated with the outcome after adding the contextual-related variables in the model (model 3). Higher use of dental health services was observed in those living in neighborhoods with the presence of workers' associations.

Discussion

International guidelines recommend that infants should be scheduled for an initial oral health evaluation in early childhood (22-23). Evidences suggested that early visit to the dentist should help to prevent dental disease when administered within the first year of life (6, 24). Moreover, early educational oral programs for mothers could decrease the use of dental services to address problems in preschool children (25). However, previous studies showed that the dental care utilization by preschool children is low and is associated with socioeconomic factors (3-5, 26).

In our study, socioeconomic factors were related with the use of dental care as reported by previous authors (3-5, 26). The current study considered household income and parent's schooling as proxies for socioeconomic status and after adjustment parent's schooling was identified as individual determinants for the outcome. Notwithstanding, only mother's schooling was fitted in the final model after adjustment for contextual variables. Children whose mothers did not complete primary education were less likely to have used dental services. It is known that low educational level may lead to reduced income, unemployment and poor occupational status. Financial cost and the low level of information about the importance of oral health could contribute for barriers to dental care (27). It was observed in table 3 that socioeconomic variables affected the use of oral health services at both individual and contextual levels. This finding confirms previous reports about the importance of also investigate the impact of contextual network on oral health outcomes (8-10, 28).

Moreover, the majority of children who participated of our study had the first dental visit after 4 years old. Only fourteen children of total sample went to the dentist before the first year of life, as it is recommended by International guidelines (22-23). These findings could be related to socioeconomic status and availability of dental care (29-30); In other words, a social gradient is present in the use of dental services.

This study also identify that mothers' participation in school activities of children influenced positively the dental care utilization. Participative mothers were more likely to take their children to the dentist. We suggested that mothers that keep up the school activities are more concerned with all that involves their children, including oral health. Socioeconomic factors could be a pathway of this relation. Generally, mothers with higher household income are more informed and have financial ability

to monitor their children in all aspects. Therefore, the participation in the children's school activities could be strongly modulated by socioeconomic position. Nevertheless, more studies are necessary to compare our results. To our knowledge, no earlier study investigated this association in literature.

Furthermore, a significant effect of neighborhood social context on dental care utilization by preschool children was verified by our analysis. In final model, the number of workers' association located in the neighborhood could be noted at the contextual level, as children who lived in areas with workers' association were more likely to go to the dentist. This contextual variable could be related with social support. Neighborhood connection, such as time spent with friends that attending meetings of an association can be a proxy to social support and social capital (31-32). We suggest that and frequency of contact with friends may reduce social isolation, which plays an important role in maintaining oral health. In other words, oral health behaviors can be influenced by social aspects. Participate of workers associations imply in interaction between individuals and this may suggest the transmission of good ideas and healthier choices (13, 33).

Regarding contextual variables, in this study the prevalence of dental health care use was not influenced by presence of dentists on neighborhood (Table 3), which is in disagreement with one previous study (12). Our study was conducted only in Santa Maria, Brazil, whereas that another previous study was performed with data from the six largest metropolitan counties of Ohio, USA (12). In Santa Maria there are a high number of dentists per inhabitants. Almost all our sample lived in areas where there were dentists. Moreover, the study was conducted with the older adults of Ohio, in opposite from our preschool children sample. We suggested that these issues could explain our findings.

A possible limitation is that our study followed a cross-sectional design. Therefore, our results should be interpreted in conjunction with the limitations of this type of study. Moreover, the number of workers' associations was provided by the local authorities and it is possible that is not perfectly correct. However, this information has been used in official city publications.

In our analysis, we used the multilevel approach to verify the extent to which the outcome is accounted for by contextual and subject-level variables. We adjusted the models according to the region where the children lived. Recent researches reported that variables related to contextual determinants, such as city level variables (suburbs with the worst social exclusion indices; living in socially-deprived areas) can influence negatively oral health outcomes (34-35). Therefore, to assess the characteristics of the neighborhood is important for different oral health outcomes and inequalities studies.

In conclusion, individual and contextual variables are associated with dental health care use among preschool children; hence, both of them must be taken into consideration for redirection of resources allocated to public health and for the formulation of oral health policies.

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Table 1. Individual and Contextual Level characteristics of the sample.

Variable	N	(%)
Individual Level (Child)		
Gender	639	
Male	321	50.2
Female	318	49.8
Age	639	
≤ 1year	129	20.2
2 years	124	19.4
3 years	161	25.2
≥ 4 years	225	35.2
Skin Color	639	
White	501	78.4
Black	138	21.2
Household Income	602	
Less than 1 BMW	158	26.2
Between 1 BMW and 2 BMW	151	25.1
Between 2 BMW and 2 BMW	171	28.4
More than 3 BMW	122	20.3
Mother's schooling	633	
≥ 8 years	357	56.4
< 8 years	276	43.6
Father's schooling	601	
≥ 8 years	321	53.4
< 8 years	280	46.6
Mothers' participation in school	632	
Yes	247	39.1
No	385	60.9
Dental Caries	639	
≤ 4 decayed teeth	551	86.2
> 4 decayed teeth	88	13.7
Contextual Level (Neighborhood)		
Workers' association	639	
Present	245	38.4
Absent	394	63.7
Presence of Dentists	639	
Present	548	85.8
Absent	91	14.2

Table 2. Unadjusted assessment of the association of dental health care use among preschool children with individual and contextual-level variables.

Variable	N	Have never gone to the dentist	
		N (%)	OR (95%CI)
Individual-level variables			
Gender	639	497 (78.39)	
Male	321	247 (77.39)	1
Female	318	250 (79.62)	1.15 (0.79 – 1.68)
Age	639	497 (78.39)	
≤ 1 year	129	114 (89.06)	1
2 years	124	104 (84.55)	0.67 (0.32 – 1.40)
3 years	161	128 (80.50)	0.80 (0.25 – 1.00)
≥ 4 years	225	151 (67.41)	0.25 (0.13 – 0.47)
Skin Color	639	497 (78.39)	
White	501	394 (78.96)	1
Black	138	103 (76.30)	0.85 (0.54 – 1.34)
Household Income	602	468 (78.39)	
Less than 1 BMW	158	134 (85.90)	1
Between 1 BMW and 2 BMW	151	116 (77.85)	0.57 (0.31 – 1.04)
Between 2 BMW and 2 BMW	171	132 (77.65)	0.57 (0.32 – 1.01)
More than 3 BMW	122	86 (70.49)	0.39 (0.21 – 0.71)
Mother's schooling	633	492 (78.34)	
≥ 8 years	357	262 (73.80)	1
< 8 years	276	230 (84.25)	1.89 (1.26 – 2.83)
Father's schooling	601	465 (77.89)	
≥ 8 years	321	233 (72.81)	1
< 8 years	280	232 (83.75)	1.92 (1.28 – 2.88)
Mothers' participation in school	632	491 (78.31)	
Yes	247	172 (69.92)	1
No	385	319 (83.73)	2.21 (1.50 – 3.25)
Dental Caries	639	497 (78.39)	
< 4 decayed teeth	551	439 (80.40)	1
≥ 4 decayed teeth	88	58 (65.91)	0.47 (0.28 – 0.76)
Contextual-level variables (children living in the neighborhood)			
Workers' association	639	497 (78.39)	
Present	245	176 (72.43)	1
Absent	394	321 (82.10)	1.74 (1.19 – 2.55)
Presence of Dentists	639	497 (78.39)	
Present	548	425 (78.13)	1
Absent	91	72 (80.00)	1.12 (0.64 – 1.95)

Table 3. Multilevel Adjusted Assessment of dental health care use among preschool children associating individual and contextual variables.

Fixed Effects	Model 1 ("null")	Model 2	Model 3
	OR(CI 95%)	OR(CI 95%)	OR(CI 95%)
Intercept	3.55 (2.73 – 4.63)	6.62 (2.75 – 15.93)	4.86 (1.96 – 12.07)
Individual level (child)			
Gender			
Male		1	1
Female		1.08 (0.71 - 1.64)	1.07 (0.70 - 1.63)
Age			
≤ 1 year		1	1
2 years		0.74 (0.34 – 1.62)	0.76 (0.34 – 1.66)
3 years		0.59 (0.29 – 1.21)	0.59 (0.29 – 1.22)
≥ 4 years		0.32 (0.16 – 0.64)	0.33 (0.17 – 0.65)
Skin Color			
White		1	1
Black		0.67 (0.40 – 1.13)	0.68 (0.40 – 1.15)
Mother's schooling			
≥ 8 years		1	1
< 8 years		1.95 (1.19 – 3.21)	1.91 (1.16 – 3.15)
Household Income			
Less than 1 BMW		1	1
Between 1 BMW and 2 BMW		0.63 (0.33 – 1.18)	0.65 (0.34 – 1.22)
Between 2 BMW and 2 BMW		0.67 (0.35 – 1.26)	0.72 (0.38 – 1.36)
More than 3 BMW		0.49 (0.24 – 0.99)	0.52 (0.26 – 1.06)
Mothers' participation in school			
Yes		1	1
No		1.76 (1.15 – 2.71)	1.80 (1.17 – 2.77)
Dental Caries			
≤ 4 decayed teeth		1	1
> 4 decayed teeth		0.50 (0.28 – 0.89)	0.51 (0.29 – 0.91)
Contextual Level: Neighbourhood			
Workers' association			
Present			1
Absent			1.65 (1.04 – 2.60)
Presence of Dentists			
Present			1
Absent			0.74 (0.38 – 1.41)
Random Effects			
Deviance (-2loglikelihood)	658.4654	558.55884	553.80134

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

2 ARTIGO II

Artigo intitulado “Trends and factors influencing use of oral health services among brazilian preschool children” Redigido conforme as normas da revista *Community Dentistry and Oral Epidemiology* (ANEXO C).

Trends and associated factors in use of dental services by Brazilian preschool children.

Running Head: Trends in use of dental care in preschool children

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Abstract Page**Trends and associated factors in use of dental services by Brazilian preschool children.**

Agostini BA, Emmanuelli B, Piovesan C, Ardenghi TM

Abstract

Objectives: The aim of this study is to verify the trend in the use of dental health services, type of service, and reason for seeking dental health care among preschool children, considering the influence of time-related variations of Age-Period-Cohort effect. *Methods:* Three cross-sectional studies with representative samples of preschool children from Santa Maria, a southern city in Brazil, were conducted in 2008, 2010, and 2013 at National Children's Vaccination Day. Data were obtained by means of clinical examinations and structured interviews. Three outcomes were considered in the study: prevalence of dental care utilization, type of service used and the reasons for seek the dentist. Data analyses include a chi-square test for trends to compare the prevalence of each outcome along the years. A Hierarchical Age-Period-Cohort (HAPC) analysis was performed by multilevel Poisson regression model with random-effects to assess the influence of social and clinical variables in each outcome. *Results:* A total of 1,765 preschool children participated in the surveys. There is no significant change in the use of dental service over the 5 years. The prevalence of preschool children who had never used the dental services varied according to the age, whereas older children visited the dentist with higher frequency than the youngest one. Period and cohort effects affect the the changes on the prevalence of children who had used the public health services and had gone to the dentist for other reason than preventive. After the adjustment for the HAPC effect, children from low socioeconomic background, those with their mothers have lower level of education and younger children were less likely to have visited the dentist. The severity of dental caries was associated with the reasons for the use of dental service, being those with hogher means of dmft presenting a higher prevalence of had use the service for other reasons than preventive. *Conclusions:* Socioeconomic inequalities still persist in the use of dental care services, indicating the need for policies to promote public health and facilitie the use of dental care by young children.

Introduction

The occurrence and severity of dental caries and other oral disease are decreasing in Brazil (1-4). However, dental caries remains as a significant oral health problem especially in young children, indicating the need of public health strategies that facilitate dental care access for this population(5). It has been recommended that children should have their first dental visit with 6 months or not later than the first year of life (6-8). This is a preventive strategy for occurrence of disease episodes, and is a cost effective policy(9-10) .However, the last nationwide health survey demonstrate that 81.8% of children aged 5 years old had never had used any dental service(11).

Cross-sectional studies verified the influence of some factors in dental health service use among preschool children. Mothers' schooling, child age, race, previous caries experience and parent's perception of theirs' child health are individual factors influencing use of dental health care(12-16). Notwithstanding, there is a need of monitoring the changes in the prevalence and severity of oral health outcomes over time when planning a public health strategy (17). To the best of our knowledge data, there is no study on the trends of dental care use in preeschoolers using time series data from populational surveys.

When using time-series one must consider three types of time-related variations: age, period and cohort effects (APC). Understanding the influence of each effect is crucial to assess individual and social related predictors for inequalities in oral health outcomes along the time(18). Age effects represent the developmental changes that occur during the life course (chronological age); period effect is related to cultural and economic changes that are unique to a specific and determinate time (year of examination); and cohort effects represent the effects of formative experiences and early life and life course exposures, they are related to social and generation changes (year of birth)(18-19). In this context, time-series may be a usefull data to provide information for planning oral health strategies.

There are few trend studies about use of dental health services considering the effects of time-related variations (APC)(20-22).This would be importance for a public health perspective especially for planning public health strategies aimed ate reducing inequalities in the dental care utilization.

The aim of this study is to verify the trend in the use of dental health services, type of service, and reason for seeking dental health care among preschool children. Furthermore, this study assessed the factors associated with the three outcomes, considering the influence of time-related variations taking into account the Age-Period-Cohort effect.

Methods

Ethics Approval

This study was approved by the ethics in Research Committee, of the Federal University of Santa Maria and by the Municipal Government of Santa Maria-RS. A written informed consent was obtained from all children's parents and it was signed prior to their entry in the study.

Study Design and Data Collection

Three cross-sectional studies involving preschool children with 0 to 5-year-old from Santa Maria, RS were conducted in 2008, 2010, and 2013. Santa Maria is a medium-size city located in the south of Brazil. The studies used the same protocol and participants were randomly selected from children attending the National Children's Vaccination Day. Detailed information regarding the methodology of the surveys has been previously described(12,14).

The latest data collection, performed in 2013, considered the following parameters to the sample size calculation: 95% of confidence interval level, 5% of standard error, power of 80%, and a previous prevalence of 76.32%(14) who never ever visited the dentist, adding 10% for possible refusals and considering the multi-stage sampling an adjustment of 1.4 (design effect) was adopted. So, the final sample required was 389 participants. The other 2 data collection, considered the same parameters except for the expected prevalence.

The vaccination program had an uptake rate above 97%, and it is a good way to collect a representative sample of preschool children. For the 2008 survey 8 health centers equally distributed in whole city were chosen as data collection points. However, 2010 and 2013 surveys, 7 more health centers were added, totalizing fifteen health centers. All sampling points had dental chairs, and were the largest centers in the city, around 90% of all children who received vaccine visited those health centers in each year.

Study Variables

Variables were obtained by means of clinical examinations and structured interviews. Fifteen calibrated examiners performed clinical examinations and thirty trained assistants administered a questionnaire for the socioeconomic and sociodemographic variables.

Clinical examinations were conducted in a private room on a dental chair. Visual exams were made using plane dental mirrors and World Health Organization (WHO) periodontal probes (CPI, "Ball point"), considering standardized criteria for decayed missed and filled (dmf) index (23). Parents' and guardians were asked about several socioeconomic and

sociodemographic characteristics of their child or family structure through a structured questionnaire. The feasibility of the questionnaire was assessed beforehand in 10% of the sample. Questions about child's age, gender, race, and use of dental service were answered. The assessed variables assessed were mother's schooling (using 8 years as cut point, which represents complete primary education), and household income.

The outcomes were measured by the following questions contained in the questionnaire: "Has your child ever visited the dentist?" (Yes or No); for those who had already visited the dentist, the type of service and the reason to seek dental care were also assessed by the following questions: "What was the type of service that your child used in the last visit?" (Private or Public); "What was the reason for the last dental seek?" (Dichotomized in: Preventive or other than preventive).

Statistical Analysis

STATA 12.0 software (Stata Corporation, College Station, TX, USA) was used for data analysis. The analysis considered the Age-Period-Cohort effect. Age (chronological age) was considered in 5 groups: 0 to 23, 24 to 35, 36 to 47, and more than 48 months. The study was performed in 3 Periods (year of the examination - chronological time) 2008, 2010 and 2013; and children were divided in 8 cohorts (year of birth), from 2004 to 2011. A chi-square for trends test was used to compare the prevalence of each outcome considering the APC effects.

Furthermore, traditional approaches using APC analysis suffer some problems when the three effects arise simultaneously on the explanatory model, due to the linear dependency between effects (period-age=cohort)(24-25). The Hierarchical Age Period Cohort (HAPC) model has been proposed to solve this problem when using cross-sectional series (26). The HAPC treats periods and cohort at the contextual level and age as an individual characteristic (26-28). For cross-sectional data that there is a difference in the number of participants in each year or cohort, a random-effects specification has been proposed (29-30).

We performed an HAPC analysis using multilevel Poisson regression model with random-effects to assess the influence of social and clinical variables in each outcome. Analysis for each outcome was run separately. Variables that presented p value ≤ 0.20 in the unadjusted analyses entered into the adjusted models and were retained and considered statistically significant into the final models only if they had p value ≤ 0.05 .

Results

A total of 1,765 preschool children participated in the surveys. The surveys enrolled 580 participants in 2008, 639 in 2010, and 546 in 2013. The majority were boys (51.73%) and white children (78.89%). A total of 1,310 were caries-free, representing 74.22% of the sample. All other clinical and socioeconomic variables are summarized in Table 1. Prevalence of children who had never visited the dental service, those who used public services and seeking for dental care by other reason than preventive in each year are summarized in Tables 2,3, and 4, respectively.

There was no significant change in the use of dental service along the years. The prevalence of preschool children who had never used the dental services was 75.82% in 2008, 77.44% in 2010 and 74.95% in 2013. An age effect showed that the older children were more likely to have visited the dentist than the youngest one ($p < 0.001$) (Figure 1).

Figure 1 expresses the trends in the use of dental services, type of service and the reasons for the use of dental care considering the ACP effect. Period and cohort effects influenced the prevalence of children who had used the public health services and who had gone to the dentist for other reason than preventive. The prevalence of preschool children who had used the public dental services decreased from 66.4% in 2008 to 41.6% in 2013. However, there was an increase on the proportion of children who had used the services by other reason than preventive (33.6% in 2008 to 46.1% in 2013).

Table 5 shows the unadjusted association between each outcome with socioeconomic and clinical variables. This is an association between the use of dental service and child's age, mother's schooling, household income and dental caries. Different associations could be seen for the use of public health service. This outcome was associated with parent's schooling, household income and severity of dental caries. The severity of dental caries was also associated with the prevalence of children who had gone to the dentist by other reason than preventive (PR=1.12, IC95%=1.06-1.17).

Table 6 summarises the final models for the outcomes considered in the study. After the adjustment, age, mother's schooling, household income, and dental caries remained associated with the use of dental service. Older children (PR=0.80, IC95%=0.68-0.94), those with higher means of dmft (PR= 0.96, IC95%= 0.93-0.99), and those from high household income were less likely to had never visited the dentist. Moreover, children whose mothers had lower level of education were 14% more likely to have never gone to the dentist when compared with their counterpart (PR= 1.14, IC95%= 1.01-1.30). Children from low household income were also more likely to have used the public health service than the

private one. There is also a significant association between the severity of dental caries and the prevalence of children who had visited the dentist for others reasons than preventive.

Discussion

This study assessed the trends in the use of dental health services, type of service used and the reason for the use of dental service over 5 years using a representative sample of preschool children. There were no significant changes in the use of dental service over the period of data analysis. Nevertheless, the results demonstrated the influence of period and cohort effects on the type of service as well on reason for visiting the dentist.

The age effect influenced the prevalence of children who had never visited the dentist. An inverse relation could be seen as a gradient; there is an increase in the prevalence of had use the dental service with an increase in the children age. This result is in accordance with other studies (12,14,31-33) and may be due a cumulative effect of oral problems during the lifetime. Notwithstanding, it has also been linked with a possible insufficient knowledge about the importance of early preventive dental care on the establishment of health habits (9,34).

In contrast, there is no influence of period effect on the use of dental service. There was no significant change on the use of dental service over the 5 years of study. The results demonstrated a need for a reorientation of public health strategies to improve the access of dental health care for this population.

The current public dental policy in Brazil started in 2004 and has a set of actions for improving population oral health, from prevention to complex rehabilitation (35-36). The program works based on Oral Health Teams (OHT) in the Family Health Strategy (FHS), a system of community and familiar actions based on population demands. Moreover, the Dental Specialty Centers (CEO) was created for complex procedures including prosthetic treatment. The number of OHT reached 30,000 in 2013(37), which is three times more from the beginning of the program and almost 2 times higher from the first year of data collection in 2008(36). Although the steadfast increasing government support in the public oral health policies, this stability could be due to the fact that there is not a specific policy for young ages. Notwithstanding, population health policies goals needs long time to be achieved, and long-term studies should be developed.

There is a period effect on the use of public health services and on the reasons for gone to the dentist. The prevalence of children who had used the public services decreases from almost 70% in 2008 to 41% in 2013. A possible explanation relays on the income changes

that occur in this population over the years. For instance, in our dataset, the median value of income in 2013 yields twice the median value of income in 2008. Previous study had already demonstrated the association between higher income and the use of private service in contrast to the public ones (12,38).

This study also demonstrated the impact of socioeconomic and clinical covariates as a determinant of inequalities on the use of dental care. After the adjustment, the use of dental care was associated with age, mother's schooling, household income and, dental caries. The oldest children were 24% less likely to have never gone to the dentist than the youngest one. It is in accordance with previous studies(12,14). Children whose mother had less than 8 years of study were 14% more likely to have never visited the dentist when compared with their counterparts. It is in accordance with a previous systematic review on the children adherence in regular dental attendance. The authors concluded that parent's education and socioeconomic status were strong determinants for children regular dental visits (39). The level of education may affect person's cognitive function, making them more capable to understand education messages and use appropriate health services(40).

The utilization of private oral health service was higher for those with higher household income. The association could be due to the low resoluteness of the Brazilian public health system to the entire population needs(41). Moreover, the number of health plans and insurance increased significantly and the growth of dental insurance was even higher in the last decade (42).

The study also demonstrated the influence of clinical dental conditions on the use and reasons for sought the service. Children at a high means of dmft were more likely to have gone to the dentist for others reasons than preventive. Severity of dental caries increases the probability of pain event occurrence (43-44). Therefore, it could be reflected the need of visiting the dentist for treatment reasons, since pain is one of the main reasons to seek dental health services(45).

The study has some limitations that need to taken into account. Data analysis includes three points on time and 5 years time-length. Therefore, changes in the prevalence of use of dental services may not be occurred in this short period of evaluation. Further assessments with a longer study period may allow more reliable detection of population changes, mainly when dealing with public health policies. Notwithstanding, public health policies addressing for the entire population as the Brazilian Oral Health strategies generally need more time to show efficiency. The cross-sectional design prevents a hypothesis of causality and longitudinal studies should be conducted in order to assess the pathways for the associations

posed in the study. However, we used a time-series data, which has some advantages when compared to a classical longitudinal design. Such design allows to assess simultaneously age-period-cohort on representative sample, and have a lower chance of selection bias which may occurs on locating respondents(18,26).

This study found that socioeconomic disadvantages and adverse clinical conditions as severity of dental caries were important predictors for the inequalities in the pattern of use of dental services, indicating the need for policies to promote public health and facilities the use of dental care by young children. Notwithstanding, the results also demonstrated the influence of HAPC effects in the pattern of use of dental services, which may be taken into account when planning time-series studies.

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Table 1 – Descriptive characteristics of the sample according to the survey year. Santa Maria, Brazil.

Year	2008		2010		2013		Total	
Variable	n	(%)	n	(%)	n	(%)	n	(%)
<i>Gender</i>								
Male	309	53.28	321	50.23	283	51.83	913	51.73
Female	271	46.72	318	49.77	263	48.17	852	48.27
<i>Age (months)</i>								
0 – 23	132	22.80	129	20.19	118	21.65	379	21.50
24 – 35	127	20.19	124	19.41	106	19.45	357	20.25
36 – 47	146	21.65	161	25.20	146	26.79	453	25.69
≥48	174	30.05	225	35.21	175	32.11	574	32.56
<i>Race</i>								
White	448	77.24	501	78.40	441	81.22	1,390	78.89
Non-White	132	22.76	138	21.60	102	18.78	372	21.11
<i>Dental caries</i>								
dmf-t < 1	435	75.00	418	65.41	457	83.70	1,310	74.22
dmf-t ≥ 1	145	25.00	221	34.59	88	16.30	455	25.78
<i>Mother's schooling</i>								
≥ 8 years	394	69.49	440	69.51	423	78.77	1,257	72.37
< 8 years	173	30.51	193	30.49	114	21.23	480	27.63
<i>Use of service</i>								
Never visited	439	75.82	491	77.44	404	74.95	1,334	76.14
Already visited	140	24.18	143	22.56	135	25.05	418	23.86
<i>Type of service</i>								
Private	46	33.58	53	36.05	80	58.39	179	42.52
Public	91	66.42	94	63.95	57	41.61	242	57.48
<i>Reason</i>								
Prevention	89	66.42	104	70.75	70	53.85	263	63.99
Other	45	33.58	43	29.25	60	46.15	148	36.01
	Mean(sd)		Mean(sd)		Mean(sd)		Mean(sd)	
dmf-t	0.84(2.06)		1.24(2.32)		0.53(1.64)		0.89(2.06)	
Income*	1,009(878)		1,203(1,077)		2,329(2,194)		1,489(1,579)	

*Considering Brazilian current money (Reais – R\$)

Table 2– Prevalence of people who never ever use dental services in each survey year.

Year	2008		2010		2013		Total	
Variable	n	(%)	n	(%)	n	(%)	n*	(%)
<i>Gender</i>								
Male	239	77.35	245	76.56	217	78.34	701	77.37
Female	200	74.07	246	78.34	187	71.37	633	74.14
<i>Age (months)</i>								
0 – 23	115	87.79	111	86.72	94	80.34	320	85.11
24 – 35	111	87.40	104	84.55	87	82.86	302	85.07
36 – 47	104	71.23	126	79.25	109	75.69	339	75.50
≥48	108	62.07	150	66.96	113	65.70	371	65.09
<i>Race</i>								
White	337	75.39	389	77.96	314	72.02	1.040	75.25
Non-White	102	77.27	102	75.56	88	87.13	292	79.35
<i>dmf-t</i>								
< 1	351	80.88	328	79.23	348	76.99	1.027	79.00
≥ 1	88	60.69	163	74.09	56	64.37	307	67.92
<i>Mother's schooling</i>								
≥ 8 years	289	73.35	320	73.23	302	72.25	911	72.94
< 8 years	138	79.77	166	86.91	96	84.21	400	83.68
	Mean(sd)		Mean(sd)		Mean(sd)		Mean(sd)	
dmf-t	0.61(1.80)		1.14(2.21)		0.41(1.39)		0.75(1.88)	
Income*	990(839)		1,143(1,053)		2,088(1,930)		1,381(1,412)	

*Considering Brazilian current money (Reais – R\$)

Table 3– Prevalence of children who have used the public dental care services in each year.

Year	2008		2010		2013		Total	
Variable	n	(%)	n	(%)	n	(%)	n*	(%)
<i>Gender</i>								
Male	43	63.24	49	61.25	31	50	123	58.57
Female	48	69.57	45	67.26	26	34.67	119	56.40
<i>Age (months)</i>								
0 – 23	8	53.33	9	52.94	13	59.09	30	55.56
24 – 35	9	60	8	47.06	11	50	28	51.85
36 – 47	26	61.90	22	62.86	9	25.71	57	50.89
≥48	48	73.85	55	70.51	24	41.38	127	63.18
<i>Race</i>								
White	63	59.43	70	63.06	48	40	181	53.71
Non-White	28	90.32	24	66.67	9	52.94	61	72.62
<i>dmf-t</i>								
< 1	47	59.49	46	53.49	43	39.81	136	49.82
≥ 1	44	75.86	48	78.69	14	48.28	106	71.62
<i>Mother's schooling</i>								
≥ 8 years	62	59.62	72	60.50	46	39.32	180	52.94
< 8 years	29	87.88	22	81.48	11	57.89	62	78.48
	Mean(sd)		Mean(sd)		Mean(sd)		Mean(sd)	
dmf-t	1.87(2.78)		2.15(2.96)		0.92(2.20)		1.76(2.76)	
Income*	691(373)		1,103(849)		1,876(2,117)		1,125(1,249)	

*Considering Brazilian current money (Reais – R\$)

Table 4– Prevalence of children who have used dental care services by ‘other reason than preventive’ in each year.

Year	2008		2010		2013		Total	
Variable	n	(%)	n	(%)	n	(%)	n*	(%)
<i>Gender</i>								
Male	21	31.82	25	31.25	24	42.86	70	34.65
Female	24	35.29	18	26.87	36	48.65	78	37.32
<i>Age (months)</i>								
0 – 23	3	20	3	17.65	11	52.38	17	32.08
24 – 35	3	20	4	23.53	10	50	17	32.69
36 – 47	13	30.95	9	25.71	14	38.89	36	31.86
≥48	26	41.94	27	34.62	25	47.17	78	40.41
<i>Race</i>								
White	29	27.88	29	26.13	55	47.41	113	34.14
Non-White	16	53.33	14	38.89	5	35.71	35	43.75
<i>dmf-t</i>								
< 1	18	23.38	16	18.60	39	38.61	73	27.65
≥ 1	27	47.37	27	44.26	21	72.41	75	51.02
<i>Mother’s schooling</i>								
≥ 8 years	31	30.39	32	26.89	50	45.05	113	34.04
< 8 years	14	43.75	11	40.74	10	55.56	35	45.45
	Mean(sd)		Mean(sd)		Mean(sd)		Mean(sd)	
dmf-t	2.95(3.47)		3.09(3.27)		1.21(2.59)		2.29(3.18)	
Income*	781(508)		1,021(707)		2,692(2,993)		1,619(2,140)	

*Considering Brazilian current money (Reais – R\$)

Table 5. Unadjusted multilevel Poisson regression analysis of never ever used dental care, use of public services and by other reason than preventive and associated factors.

	Never visit dentist	Use of Public service	Use by other reason than preventive
	PR(CI 95%)	PR(CI 95%)	PR(CI 95%)
<i>Gender</i>			
Male	1	1	1
Female	0.97 (0.87 – 1.08)	0.98 (0.76 – 1.26)	1.06 (0.76 – 1.47)
<i>Age</i>			
0-23 months	1	1	1
24-35 months	0.99 (0.85 – 1.17)	0.93 (0.55 – 1.57)	1.02 (0.52 – 2.00)
36-47 months years	0.89 (0.76 – 1.03)	0.89 (0.57 – 1.39)	1.01 (0.56 – 1.79)
≥ 48 months	0.76 (0.66 – 0.88)*	1.10 (0.74 – 1.64)	1.30 (0.76 – 2.20)
<i>Skin Color</i>			
White	1	1	1
Non-White	1.05 (0.93 – 1.20)	1.30 (0.97 – 1.75)	1.34 (0.91 – 1.98)
<i>Mother's schooling</i>			
≥ 8 years	1	1	1
< 8 years	1.14 (1.02 – 1.29)**	1.45 (1.08 – 1.93)**	1.36 (0.93 – 2.00)
<i>Father's schooling</i>			
≥ 8 years	1	1	1
< 8 years	1.11(0.99 – 1.26)	1.44 (1.07 – 1.94)**	1.35 (0.92 – 1.98)
	IRR (CI 95%)	IRR (CI 95%)	IRR (CI 95%)
<i>Household Income</i>	0.99 (0.99 – 0.99)**	0.99 (0.99 – 0.99)*	0.99 (0.99 – 1.00)
<i>dmft</i>	0.97 (0.93 – 0.99)**	1.04 (1.01 – 1.10)**	1.12 (1.06 – 1.17)*

*p value <0.001. **p value <0.05. Period Effect was considered as second level variable.

Table 6. Adjusted multilevel Poisson regression analysis of never ever used dental care, use of public services and by other reason than preventive and associated factors.

	Never visit dentist	Use of Public service	Use by other reason than preventive
	PR(CI 95%)	PR(CI 95%)	PR(CI 95%)
Age			
0-23 months	1	1	1
24-35 months	1.02 (0.87 – 1.20)	0.91 (0.54 – 1.56)	0.97 (0.49 – 1.93)
36-47 months years	0.92 (0.78 – 1.07)	0.91 (0.58 – 1.43)	0.93 (0.50 – 1.75)
≥ 48 months	0.80 (0.68 – 0.94)*	1.03 (0.68 – 1.56)	1.06 (0.60 – 1.86)
Mother's schooling			
≥ 8 years	1	1	1
< 8 years	1.14 (1.01 – 1.30)**	1.04 (0.76 – 1.43)	1.15 (0.77 – 1.74)
	IRR (CI 95%)	IRR (CI 95%)	IRR (CI 95%)
Household Income	0.99 (0.99 – 0.99)**	0.99 (0.99 – 0.99)*	0.99 (0.99 – 1.00)
dmft	0.96 (0.93 – 0.99)**	1.02 (0.97 – 1.07)	1.11 (1.05 – 1.17)*

*p value < 0.001. **p value <0.05. Adjusted by period and cohort effects, considered in the second level, and gender and race in the first (individual) level.

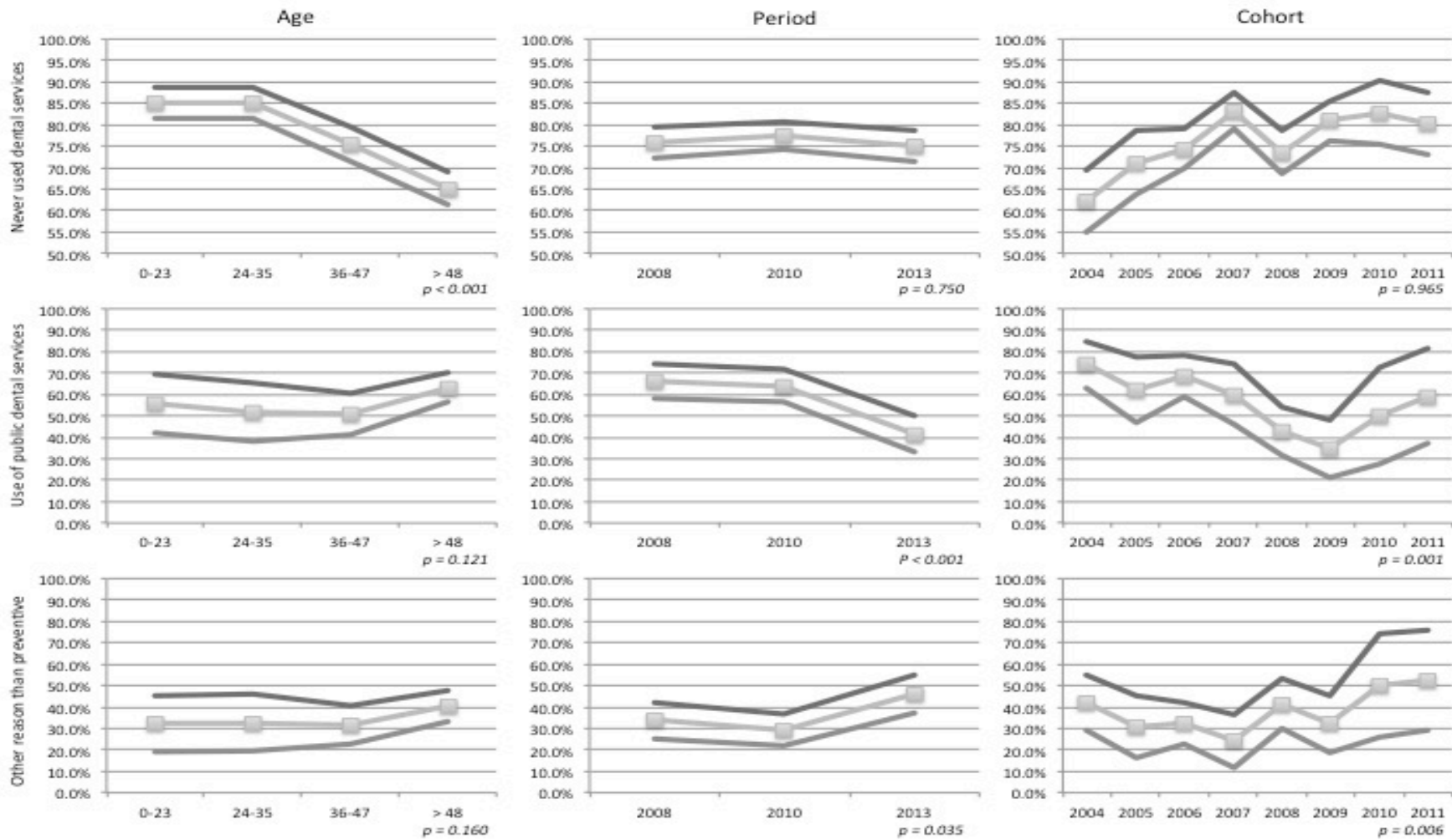


FIGURE 1- Prevalence (middle line with markers) and CI 95% (superior and inferior lines) of participants who never ever use any dental service; used public dental services; and used by other reason than preventive; by Age, Period, and Cohort.

3 DISCUSSÃO

Este estudo avaliou o efeito de fatores individuais e contextuais no uso de serviços odontológicos por pré-escolares brasileiros. Além disso, foi verificada a tendência do uso de serviços odontológico por pré-escolares entre 2008 e 2013, assim como a influência de efeitos temporais neste desfecho.

A idade foi um forte determinante do comportamento populacional frente ao uso de serviços odontológicos por pré-escolares. Um gradiente pode ser visto, sendo que crianças mais velhas tem uma maior prevalência de terem visitado o dentista, como encontrado em estudos prévios (KRAMER et al., 2008; ARDENGHI et al., 2012; MACHRY et al., 2013; RODRIGUES et al., 2014). Apenas 14 crianças das avaliadas em 2013, tinham visitado o dentista antes do primeiro ano de idade, e a maioria após os 4 anos. Isso é preocupante, uma vez que os *guidelines* dos principais órgãos de saúde infantil e saúde bucal infantil preconizam que a primeira consulta aconteça antes de 1 ano de idade (AAPD, 2004, 2007; ADA, 2008). Complementar a isso, estudos apontam que consultas precoces podem prevenir a ocorrência futura de doenças orais e são mais custo-efetivas (SAVAGE et al., 2004; LEE et al., 2006; DARMAWIKARTA et al., 2014).

Além disso, apesar do grande aumento de recursos, humanos e materiais, destinados a saúde bucal no país, após a implantação do programa Brasil Sorridente em 2004, a prevalência de uso de serviços odontológicos por pré-escolares não teve alteração no período do estudo. O programa tem como visão a reorganização da atenção básica em saúde e a ampliação e qualificação da atenção especializada (JUNQUEIRA, PANNUTI & RODE, 2008; PUCCA JÚNIOR et al., 2009), no entanto não há atendimento especializado para área infantil. A implementação efetiva de um modelo de atenção preventiva, precoce e específico, pode ser uma alternativa para a melhoria da saúde bucal da população pré-escolar e conseqüentemente, das demais faixas etárias.

No nosso estudo, fatores socioeconômicos individuais, como renda familiar e educação materna, estiveram relacionados com o uso de serviços odontológicos e uso de serviços de cuidados bucais públicos. Estudos prévios também demonstraram tal associação (NORO et al., 2008; KRAMER et al., 2008; MACHRY et al., 2013; DARMAWIKARTA et al., 2014; BADRI et al., 2014). Crianças, as quais,

suas mães não haviam completado a educação básica, eram mais propensas a nunca terem visitado o dentista ainda. Um baixo nível educacional pode também gerar maiores taxas de desemprego, e conseqüentemente, impacto na renda. O estado financeiro assim como o baixo nível de informação são importantes barreiras para o uso de serviços de saúde oral (KELLY et al., 2005). Tendo isso em consideração, programas de educação oral destinados às mães, podem levar ao aumento no uso de serviços odontológicos por pré-escolares (PLUTZER & KEIRSE, 2012). De certa forma, há a necessidade de aumentar o conhecimento dos indivíduos para que os mesmos sejam aptos a tomarem decisões mais saudáveis (HEDMAN, RINGBERG & GABRE, 2009).

A renda influenciou também a escolha do tipo de serviço utilizado. Crianças pertencentes a famílias com menor renda, quando usaram serviços odontológicos, tiveram uma predileção para os serviços públicos. Esses resultados concordam com os achados de estudos prévios (CHAVES et al., 2012; SOARES, 2015). Entre as questões individuais clínicas, a severidade de cárie mensurada pelo incremento no número de dentes no índice “ceo-d”, esteve relacionada a procura por serviços por razões não preventivas. A severidade de cárie representa uma maior probabilidade de ocorrência de episódios de dor (SLADE, 2001; BARROS, 2005) e como relatado em outros estudos, dor é uma das principais razões para procura de serviços. (MOURA-LEITE, 2008).

Além de fatores individuais, variáveis contextuais influenciaram o uso de serviços odontológicos por pré-escolares. O número de associações de moradores nos bairros influenciou o uso de serviços odontológicos. Crianças que moravam em bairros com maior número de centro ou associações de trabalhadores eram mais propensas a ir ao dentista. Essa variável está relacionadas ao suporte social do ambiente em questão, as relações entre os moradores, assim como visitas domiciliares e encontros da comunidade, podem ser “*proxy*” para capital social (COSTA & MATTHEW, 2003; MERCHANT et al., 2003). Supomos que, o contato pessoal pode reduzir o isolamento social e isso pode implicar na interação entre os indivíduos, sugerindo a transmissão de boas idéias e escolhas saudáveis (AIDA et al., 2011).

Em conclusão, foi observada uma influência de fatores individuais e contextuais no uso de serviços odontológicos por pré-escolares. Estes fatores, por sua vez, devem ser levados em consideração em futuros estudos e, acima de tudo,

no planejamento de políticas públicas de saúde. Além disso, os efeitos temporais de idade, período e coorte (APC effect) influenciam os desfechos relacionados ao uso de serviços odontológicos de diferentes formas. Para entendermos o real comportamento da população, estes efeitos temporais devem ser considerados tanto no desenvolvimento de novos estudos e no planejamento das políticas públicas.

4 CONSIDERAÇÕES FINAIS

Há uma evidente influência de fatores individuais e contextuais atuando sobre o uso de serviços odontológicos de pré-escolares brasileiros. Estes são fatores determinantes, sobretudo devem ser levados em consideração no planejamento e reestruturação dos serviços públicos brasileiros de saúde. Ademais, estes fatores também devem ser considerados ao se avaliar o uso de serviços em saúde, principalmente em saúde oral, e demais desfechos em saúde.

É pertinente salientar também que o uso de serviços odontológicos quando mensurado ao longo do tempo, sofre influência de efeitos temporais, e os efeitos da idade, período de coleta dos dados e coorte (gerações diferentes em função do ano de nascimento)(*age-period-cohort effect*). O APC sendo avaliado a partir de cada um de seus componentes isolados é capaz de explicar mais adequadamente as mudanças em cada desfecho em questão. Uma melhor determinação da influência de cada efeito temporal facilita a compreensão do comportamento populacional frente a cada desfecho em saúde. Após a compreensão dos comportamentos populacionais pode-se melhor planejar as estratégias em saúde, para que elas sejam mais efetivas na solução de problemas e na manutenção da condição saudável da população.

Os resultados dos nossos estudos apontam para a necessidade de políticas públicas mais abrangentes e que atendam populações específicas. Essas políticas devem considerar a existência de diferenças nas condições coletivas e individuais e que essas, por sua vez, podem ser moduladas por efeitos temporais. Por fim, relembra-se que esses determinantes são imprescindíveis no surgimento de iniquidades em saúde, e a redução dessas inequidades deve ser focada pela abolição de privilégios, a fim de promovermos saúde de uma forma mais justa e igualitária.

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ANEXOS E APÊNDICES

ANEXO A – Cartas de aprovação

 <p>MINISTÉRIO DA SAÚDE Conselho Nacional de Saúde Comissão Nacional de Ética em Pesquisa (CONEP)</p>	 <p>UNIVERSIDADE FEDERAL DE SANTA MARIA Pró-Reitoria de Pós-Graduação e Pesquisa Comitê de Ética em Pesquisa - CEP- UFSM REGISTRO CONEP: 243</p>
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CARTA DE APROVAÇÃO

O Comitê de Ética em Pesquisa – UFSM, reconhecido pela Comissão Nacional de Ética em Pesquisa – (CONEP/MS) analisou o protocolo de pesquisa:

Título: Impacto dos fatores psicossociais, sócio-econômicos e étnicos na utilização e acesso aos serviços odontológicos.

Número do processo: 23081.007516/2008-93

CAAE (Certificado de Apresentação para Apreciação Ética): 0090.0.243.000-08

Pesquisador Responsável: Thiago Machado Ardenghi

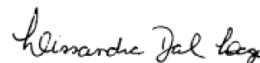
Este projeto foi APROVADO em seus aspectos éticos e metodológicos de acordo com as Diretrizes estabelecidas na Resolução 196/96 e complementares do Conselho Nacional de Saúde. Toda e qualquer alteração do Projeto, assim como os eventos adversos graves, deverão ser comunicados imediatamente a este Comitê. O pesquisador deve apresentar ao CEP:

Novembro/2008 Relatório final

Os membros do CEP-UFSM não participaram do processo de avaliação dos projetos onde constam como pesquisadores.

DATA DA REUNIÃO DE APROVAÇÃO: 24/06/2008

Santa Maria, 24 de Junho de 2008.



Lissandra Dal Lago
Coordenadora do Comitê de Ética em Pesquisa – UFSM
Registro CONEP N. 243.



UNIVERSIDADE DE SÃO PAULO
FACULDADE DE ODONTOLOGIA
Comitê de Ética em Pesquisa

DECLARAÇÃO

Informamos a Vossa Senhoria, que diante do Parecer do Comitê de Ética em Pesquisa da Universidade Federal de Santa Maria – Processo Nº 0270.0.243.000-09, estamos cientes da aprovação do projeto de pesquisa intitulado "**Associação da presença e atividade de lesões de cárie em dentes decíduos com indicadores de risco biológicos e socioeconômicos**" de responsabilidade do(a) Pesquisador(a) Chaiana Piovesan sob orientação dos(a) Professor(a) Doutor(a) Fausto Medeiros Mendes e Prof. Dr. Thiago Machado Ardenghi, não havendo nenhuma oposição por parte deste CEP, com relação a sua realização.

São Paulo, 09 de março de 2010.


Profa. Dra. **Marcia Turolla Wanderley**
Coordenadora do CEP-FOUSP

CENTRO UNIVERSITÁRIO
FRANCISCANO DE SANTA
MARIA



PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: ASSOCIAÇÃO DOS FATORES SOCIOECONOMICOS COM AS CONDIÇÕES DE SAÚDE BUCAL DE PRÉ-ESCOLARES DE SANTA MARIA-RS

Pesquisador: Chaiana Piovesan

Área Temática:

Versão: 2

CAAE: 18512213.5.0000.5306

Instituição Proponente: Centro Universitário Franciscano - UNIFRA

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 330.277

Data da Relatoria: 09/07/2013

Apresentação do Projeto:

Desigualdades socioeconômicas têm sido descritas como importantes determinantes de várias doenças, da cárie dentária em particular, cuja incidência é influenciada tanto por determinantes de ordem individual como por fatores relacionados ao contexto em que vivem os indivíduos (Antunes, Narvai et al., 2004; Piovesan, Mendes et al., 2010). Este estudo fará parte de uma série de estudos transversais que vêm sendo realizados com amostras representativas de pré-escolares de Santa Maria-RS desde 2008. Dados prévios já foram coletados em 2008 e 2010, através de estudos devidamente aprovados pelo Comitê de ética na Universidade Federal de Santa Maria (CAAE 2008-0090.0.243.000-08; CAAE 2009-0270.0.243.000-09). O presente estudo, observacional do tipo transversal, ocorrerá durante a Campanha Nacional de Vacinação que acontecerá no mês de agosto de 2013, no município de Santa Maria. Serão avaliadas 648 crianças de 0 a 5 anos de idade que participarem da Campanha e cujos responsáveis consentirem a sua participação na pesquisa. O número de sujeitos envolvidos foi obtido a partir de cálculo amostral detalhado no Formulário da Plataforma Brasil e no projeto anexado na íntegra. Os participantes serão selecionados aleatoriamente e os exames serão realizados em 15 unidades básicas de saúde, equipadas com consultórios odontológicos. Cada Unidade Básica de saúde terá uma equipe de avaliação, composta por um examinador, um

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Continuação do Parecer: 330.277

anotador e um auxiliar que orientará o fluxo de crianças. Os dados serão coletados antes da criança ser vacinada, através de exames clínicos e questionários estruturados, sendo um deles validado (OHRQoL - (Tesch, Oliveira et al., 2008; Scarpelli, Oliveira et al., 2011). O exame clínico será realizado individualmente, para evitar constrangimentos. Dois questionários estruturados serão respondidos pelos responsáveis para verificar as características socioeconômicas e psicossociais da criança. Os dados serão analisados estatisticamente através da verificação de associação entre as variáveis independentes (socioeconômicas e psicossociais) e os diferentes desfechos de saúde bucal. Os resultados obtidos em 2013 serão comparados com os dados já coletados em 2008 e 2010. O término do trabalho, com publicação dos resultados está previsto para outubro de 2014, conforme novo cronograma anexado.

Objetivo da Pesquisa:

Objetivo Primário: O objetivo deste estudo é avaliar a associação entre fatores psicossociais e sócioeconômicos com as condições de saúde bucal em crianças entre 0 e 5 anos de idade do Município de Santa Maria- RS.

Objetivos Secundários: -Obter dados de prevalência de cárie dental, trauma e má-oclusão em crianças de 5 anos de Santa Maria-RS; - Verificar a tendência de distribuição das doenças bucais em crianças com idade inferior a 5 anos entre os anos de 2008 e 2013; - Avaliar as características de utilização e acesso de serviços odontológicos; - Avaliar os determinantes da utilização de serviços odontológicos por crianças da referida população; - Verificar a interação entre indicadores normativos e sociodentais na utilização de serviços odontológicos.

Avaliação dos Riscos e Benefícios:

Riscos: O possível risco / desconforto previsto na realização deste levantamento seria o cansaço da criança ou desconforto em ficar na posição do exame, sendo que, se houver qualquer desconforto durante o exame, a criança poderá desistir de participar sem que haja qualquer problema para ela.

Benefícios: Como benefício, as crianças que apresentarem problemas de ordem bucal, bem como desconforto ou limitação proveniente desses problemas, serão esclarecidas e orientadas a procurar um atendimento odontológico.

Comentários e Considerações sobre a Pesquisa:

O projeto analisado apresenta elementos necessários para o desenvolvimento de uma investigação científica. Através de seus resultados poderá identificar reais determinantes das iniquidades existentes na utilização dos serviços e, dessa forma, possibilitar a verificação da tendência de

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Continuação do Parecer: 330.277

distribuição das doenças na população estudada. Essas informações poderão favorecer a organização de políticas públicas de promoção de saúde de acordo com a necessidade percebida, trazendo um retorno direto para essa mesma população.

Considerações sobre os Termos de apresentação obrigatória:

O projeto apresenta todos os Termos e documentos preconizados pela Resolução CNS n.466/12, que revisa e revoga a Resolução n.196/96 CNS/MS.

Recomendações:

Não há recomendações.

Conclusões ou Pendências e Lista de Inadequações:

Diante o exposto, esse Comitê de Ética em Pesquisa aprova o presente protocolo.

Situação do Parecer:

Aprovado

Necessita Avaliação da CONEP:

Não

Considerações Finais a critério do CEP:

Toda e qualquer alteração do Projeto, assim como os eventos adversos graves, deverão ser comunicados imediatamente a este Comitê. O pesquisador deve apresentar relatório final da pesquisa, ao CEP/UNIFRA, via Plataforma Brasil, no mês de Novembro /2014, conforme determinação do CONEP.

SANTA MARIA, 09 de Julho de 2013

**Assinador por:
Maria do Carmo dos Santos Araujo
(Coordenador)**

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Anexo B – Normas para publicação no periódico *Journal of Public Health Dentistry*

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The *Journal of Public Health Dentistry* (JPHD) is devoted to the advancement of public health dentistry through the publication of related research, practice, and policy developments. We publish, after peer review and/or editorial consideration, original research articles, brief reports, systematic reviews, articles addressing new research methods, community action reports, special issues, guest editorials and commentaries, letters to the editor, and book reviews.

Regular-length scientific articles should be between 2,500 and 3,500 words in length, with no more than six tables or figures and fewer than 30 references (estimated to be a total of 21 or fewer double-space pages).

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Community Action Reports, highlighting practice-based programs or policy initiatives, commentaries, and guest editorials of widespread interest to the dental public health community are 1,000–1,500 words.

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Use double-spacing throughout, including title pages, abstract, text, acknowledgments, references. Begin each of the following sections on separate pages: title page, abstract and key words, text, acknowledgments, references, and individual tables and figures. Number pages consecutively in the upper right-hand corner of each page, beginning with the title page. Our reference book is Merriam-Webster Collegiate Dictionary, 11th edition (Springfield, MA: Merriam-Webster, 2003).

Format and Style of Scientific Articles

Title Page. To facilitate the masked review process, include a title page giving only the title of the manuscript and not identifying authorship. Authors' names should not appear on any manuscript page.

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Discussion. Emphasize the new and important aspects of the study and conclusions that follow from them, particularly as these relate to public health. Do not repeat in detail data given in the Results section. Include in the Discussion the implications of the findings and their limitations, and relate the observations to other relevant studies. Avoid unqualified statements and conclusions not well supported by your data. State new hypotheses when warranted, but clearly label them as such. Include recommendations when appropriate.

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Identify references in text, tables, and legends by Arabic numerals in parentheses; number consecutively in the order in which they are first mentioned in the text. Avoid using abstracts as references. Abstracts not published in the periodical literature (e.g., printed only in an annual meeting program) may be cited only as written communications in parentheses in the text. "Unpublished observations" and "personal communications" may not be used as references, although references to written, not oral, communications may be inserted (in parentheses) in the text. For papers accepted but not yet published; designate the journal and add "in press." Information from manuscripts submitted but not yet accepted should be cited in the text as "unpublished observations" (in

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Manuscripts are acknowledged upon receipt, reviewed by the editorial staff, and if they meet minimal publication criteria, are sent to at least two outside referees for a blind review.

Accepted manuscripts are examined and editorial revisions likely will be made to add clarity and to conform to the JPHD style. Authors will be sent proofs prior to printing. Upon acceptance, papers become the permanent property of the JPHD and may not be reproduced by any means, in whole or in part, without the written consent of the editor.

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The editor selects the reviewers for each submission and encourages recommendations for reviewers from submitting authors. Thus, during the submission process, authors may nominate 2 to 4 external referees to review their manuscript (please provide at least their name and email address). The best reviewers are authors of publications on which your research builds and which you cite. Peer reviewers must have a publishing track in the area the manuscript deals with.

When suggesting peer reviewers, conflicts of interests should be avoided, that is, suggested referees should not:

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- be employees of non-academic organizations with which one of the authors has collaborated within the past five years; or
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We ask applicants not to contact suggested referees in advance. The editor reserves the right to send the manuscript to other referees.

Reporting Guidelines for Specific Study Designs

Authors are encouraged to consult best practice guidelines relevant for their research design. Research reports frequently omit important information.

Randomized Controlled Clinical Trials (RCTs) are highly encouraged and should be reported in accordance with the CONSORT statement (<http://www.consort-statement.org/>).

A diagram illustrating the flow of participants through the trial is required (<http://www.consort-statement.org/index.aspx?o=1077>). Please complete and include the CONSORT checklist with the submission.

In accordance with recommendations from the ICMJE (Uniform Requirements) it is strongly recommended that RCTs be registered in a WHO accredited trial registry (this is mandatory for industry sponsored trials). Please mention the International Standard Randomized Controlled Trial Number (ISRCTN) (or a comparable trial identifier) at the end of the abstract (in brackets), as well as when you first mention the acronym of a RCT in the manuscript.

Reporting guidelines have also been developed for a number of other study designs and as JPHD encourages reviewers to use these guidelines during the peer review process, authors are well advised to use these checklists as well during research planning and manuscript preparation.

Examples include:

for observational epidemiology studies the STROBE guidelines (<http://www.strobe-statement.org/>) and for meta-analysis and systematic reviews the QUORUM statement, (Lancet. 1999 Nov 27;354(9193):1896-900).

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Anexo C – Normas para publicação no periódico *Community Dentistry and Oral Epidemiology*



Author Guidelines

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

Relevant Documents: [Colour Work Agreement Form](#)

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

1. GENERAL

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

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

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

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2. GUIDELINES FOR RESEARCH REPORTING

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

It is a requirement that all authors have been accredited as appropriate upon submission of the manuscript. Contributors who do not qualify as authors should be mentioned under Acknowledgments.

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2.2. Ethical Approvals

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

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Manuscripts must be accompanied by a statement that the experiments were undertaken with the understanding and written consent of each participant and according to the above mentioned principles.

All studies should include an explicit statement in the Methods section identifying the review and ethics committee approval for each study, if applicable. Editors reserve the right to reject papers if there is doubt as to whether appropriate procedures have been used.

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3.1. Getting Started

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

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

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

4. MANUSCRIPT FORMAT AND STRUCTURE

4.1. Word Limit and Page Charges

Articles should be limited to 3,700 words (including references) and 6 Tables or Figures; alternatively, 4,000 words and 5 Tables or Figures may be used. This equates to seven published pages, **and authors are strongly encouraged to stay within those limits.** The Methods and Results sections are usually where the word count can “blow out”, and authors are encouraged to consider submitting heavily detailed material for inclusion in a separate online Appendix to their article (at no cost). **Articles exceeding seven published pages are subject to a charge of USD 300 per additional page. One published page amounts approximately to 5,500 characters (including spaces) of text but does not include Figures and Tables.**

4.2. Format

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

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

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

4.3. Structure

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

Title Page: should include a title of no more than 50 words, a running head of no more than 50 characters, and the names and institutional affiliations of all authors of the manuscript should be included.

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

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

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

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

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

4.4. References

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

The list of references begins on a fresh page in the manuscript, using the Vancouver format.

References should be numbered consecutively in the order in which they are first mentioned in the text. Identified references in the text should be sequentially numbered by superscript Arabic numerals in the text; for example¹². For correct style, authors are referred to: International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals: writing and editing for biomedical publication. <http://www.icmje.org> October 2004. For abbreviations of journal names, consult <http://www.ncbi.nlm.nih.gov/nlmcatalog/journals>.

Avoid reference to 'unpublished observations', or to manuscripts not yet accepted for publication.

References to abstracts should be avoided if possible; such references are appropriate only if they are recent enough that time has not permitted full publication. References to written personal communications (not oral) may be inserted in parentheses in the text.

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

4.5. Tables, Figures and Figure Legends

Tables are part of the text and should be included, one per page, after the References. All graphs, drawings, and photographs are considered figures and should be sequentially numbered with Arabic numerals. Each figure must be on a separate page and each must have a caption. All captions, with necessary references, should be typed together on a separate page and numbered clearly (Fig.1, Fig. 2, etc.).

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5. AFTER ACCEPTANCE

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

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Acrobat Reader will be required in order to read this file. This software can be downloaded (free of charge) from the following Web site: www.adobe.com/products/acrobat/readstep2.html. This will enable the file to be opened, read on screen, and printed out in order for any corrections to be added. Further instructions will be sent with the proof. Hard copy proofs will be posted if no e-mail address is available; in your absence, please arrange for a colleague to access your e-mail to retrieve the proofs. Proofs must be returned within three days of receipt.

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Apêndice I – Termo de Consentimento Livre e Esclarecido

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Universidade Federal de Santa Maria

Centro de Ciências Da Saúde

Curso de Odontologia

Departamento de Estomatologia

Pesquisador responsável: Thiago Machado Ardenghi

Endereço: Cel. Niederauer 917, ap:208, Santa Maria-RS **Contato:** 55-99989694

Este termo tem como objetivo informar, esclarecer e pedir a sua autorização para a participação de seu/sua filho (a) na pesquisa intitulada: “ **TENDÊNCIA NA UTILIZAÇÃO DOS SERVIÇOS ODONTOLÓGICOS EM PRÉ-ESCOLARES BRASILEIROS: ANÁLISE MULTINÍVEL** “a ser desenvolvida pela Prof. Dr. Chaiana Piovesan. O objetivo desta pesquisa é avaliar a tendência no acesso aos serviços odontológicos por pré-escolares no período de 2008 até 2013 e verificar a associação dos fatores individuais e contextuais com a utilização dos serviços por estas crianças. Sabendo isto, ficará mais fácil de verificar as necessidade de cuidados com a saúde bucal de seu/sua filho(a).

A pesquisa será desenvolvida na Unidade Básica de Saúde, antes de seu filho ser vacinado. Um dentista irá olhar a boca de seu/sua filho (a) com um espelho pequeno, para verificar se ele (a) tem cárie e se ele bateu algum dente. O Sr./Sra também responderá um questionário para vermos como são suas condições de moradia, trabalho e o que o(a) sr (a) acha do atendimento odontológico que seu filho (a) teve da última vez e os motivos que dificultam a procura por consultas ao dentista. Seu/sua filho (a) não terá nenhum gasto financeiro ou danos participando desta pesquisa. Como esta pesquisa se trata apenas de um exame odontológico, o risco previsto pela participação de seu/sua filho (a) é que ele (a) pode ficar cansado quando estiver sendo examinado, sendo que como benefício, o sr (a) será **informado a procurar** uma assistência odontológica caso seja observado algum problema durante o exame do seu (sua) filho (a).

Todos os dados de identificação de seu/sua filho (a) serão mantidos em sigilo. O seu/sua filho (a) poderá se recusar participar da pesquisa, bem como interromper o exame a qualquer momento sem que aja qualquer problema para quando ele for procurar atendimento odontológico. Para esclarecer qualquer dúvida, o (a) senhor (a) poderá falar com o pesquisador pelo telefone ou endereço de contato que estão escritos no início deste documento.

Eu _____, acredito ter sido suficientemente informado a respeito das informações que li ou que foram lidas para mim, descrevendo o estudo” **TENDÊNCIA NA UTILIZAÇÃO DOS SERVIÇOS ODONTOLÓGICOS EM PRÉ-ESCOLARES BRASILEIROS: ANÁLISE MULTINÍVEL.** Eu discuti com os responsáveis da pesquisa sobre a minha decisão em participar nesse estudo. Ficaram claros para mim quais são os propósitos do estudo, os procedimentos a serem realizados, seus desconfortos e riscos, as garantias de confidencialidade e de esclarecimentos permanentes. Ficou claro também que minha participação é isenta de despesas e que tenho garantia do acesso a Tratamento hospitalar quando necessário. Concordo voluntariamente em participar deste estudo e poderei retirar o meu consentimento a qualquer momento, antes ou durante o mesmo, sem penalidades ou prejuízo ou perda de qualquer benefício que eu possa ter adquirido, ou no meu atendimento neste Serviço.

Santa Maria.....de..... de

Eu _____, R.G. _____, declaro que fui devidamente esclarecido (a), e estou de acordo com os termos acima expostos, autorizando a participação de meu/minha filho (a) _____ nesta pesquisa. _____ -

Assinatura do responsável

Thiago Machado Ardenghi

Apêndice II – Questionário Socioeconômico

QUESTIONÁRIO SOCIOECONÔMICO PARA OS RESPONSÁVEIS

Nome : _____

Data de Nascimento: ___/___/___ Sexo: F () M ()

1. Você considera seu filho da raça: () branca () negra () mulato () outro (oriental, índio)

2. Seu filho mora com: pai e mãe (); só com a mãe (); só com o pai (); outros ()

3. Quantos cômodos tem a casa (exceto banheiro)? _____

4. Renda familiar: _____ reais **Quantos irmãos tem?** _____

5. O pai trabalha? Sim () Não ()

6. A mãe trabalha? Sim () Não ()

7. A mãe estudou até: não estudou (); até 1 grau (); até 2 grau (); terminou faculdade ()

8. O pai estudou até: não estudou (); até 1 grau (); até 2 grau (); terminou faculdade ()

9. A criança já foi no dentista alguma vez? () S () N

10. Se sim, qual foi a idade da primeira consulta? _____

11. A criança foi no dentista nos últimos 6 meses? S () N ()

12. Quando foi a última visita: () até 3 meses () 3 a 6 meses () 6 meses a 1 ano () mais que 1 ano;

13. Motivo da última consulta: () dor de dente; () dor na boca () batidas e quedas () exame e rotina () outros: _____

14. Tipo de serviço que você levou seu filho na última consulta: () dentista particular

() dentista público (posto de saúde, faculdade, escola)

15. O que impede ou dificulta você levar o seu filho no dentista:

() não há serviço de saúde bucal perto da minha casa e não tenho condições de levá-lo a outro dentista frequentemente ;

() existe um serviço perto da minha casa mas não estou satisfeita com o serviço de saúde que há perto da minha casa;

() existe um serviço perto da minha casa mas não tenho tempo de levar meu filho frequentemente; () outro motivo. Qual? _____

16. Você diria que a saúde dos dentes, lábios, maxilares e boca do seu filho é: () Excelente () Muito boa () Boa () Regular () Ruim

17. Comparado com as outras crianças que seu filho convive, você diria que a saúde dos dentes, lábios, maxilares e boca do seu filho é:

() melhor que a deles () pior que a deles () igual a deles

18. Comparando com as outras pessoas que você convive, você se considera:

() mais rico

() mais pobre

() igual a maioria das pessoas que convivo

19. Comparando com as outras pessoas que você convive, você acha que o seu trabalho é:

() mais estressante

() menos estressante

() igual a da maioria da pessoas que convivo

20. Com que frequência você costuma participar de alguma destas atividades:

	frequentemente	Raramente	Nunca
reuniões da escola			
reuniões de bairro, vila ou condomínio			
associação de moradores			
ir a igreja			