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Bruna Brondani

**INFLUÊNCIA DA QUALIDADE DE VIDA RELACIONADA À SAÚDE BUCAL
NO CONSUMO DE SUBSTÂNCIAS LÍCITAS EM ADOLESCENTES: UM
ESTUDO DE COORTE**

Santa Maria, RS
2019

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COORTE**

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), para a obtenção do grau de **Mestre em Ciências Odontológicas**.

Orientador: Prof. Dr. Thiago Machado Ardenghi

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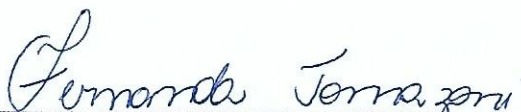
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Aprovado em 16 de julho de 2019:



Thiago Machado Ardenghi, Dr. (UFSM)
(Presidente da Banca/Orientador)



Fernanda Tomazoni, Dra. (UFSM)



Marília Leão Goettems, Dra. (UFPel)

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Dedico este trabalho aos meus pais, Ivan Luiz Brondani e Rosângela Schünke Brondani, e ao meu irmão, Guilherme Schünke Brondani, fontes diárias de incentivo e inspiração.

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“A tarefa não é tanto ver aquilo que ninguém viu, mas pensar o que ninguém ainda pensou sobre aquilo que todo mundo vê.”

(Arthur Schopenhauer)

RESUMO

INFLUÊNCIA DA QUALIDADE DE VIDA RELACIONADA À SAÚDE BUCAL NO CONSUMO DE SUBSTÂNCIAS LÍCITAS EM ADOLESCENTES: UM ESTUDO DE COORTE

AUTORA: Bruna Brondani

ORIENTADOR: Thiago Machado Ardenghi

O consumo de álcool e cigarro é considerado um dos maiores problemas de saúde pública na atualidade. Diversos fatores de risco para o consumo destas substâncias já foram identificados. Entretanto, a proporção de consumidores permanece alta no Brasil e no mundo, principalmente entre adolescentes. É comprovado que preditores psicossociais exercem influência no consumo de substâncias nocivas à saúde, uma vez que eles são capazes de influenciar a percepção do indivíduo frente à sua posição na sociedade. Desta forma, a adoção de comportamentos de risco frente a situações de iniquidades em saúde é facilitada. Logo, torna-se importante avaliar a relação entre preditores psicossociais voltados para o impacto das condições bucais, como a Qualidade de Vida Relacionada à Saúde Bucal (QVRSB), e hábitos deletérios para a saúde, como o consumo de álcool e cigarro. O objetivo deste estudo foi avaliar a influência da QVRSB no consumo de substâncias nocivas em adolescentes. Essa pesquisa pertence a uma coorte prospectiva que iniciou em 2012 com uma amostra aleatória de 1134 escolares com 12 anos de idade, na cidade de Santa Maria, RS, Brasil, os quais foram acompanhados por 6 anos. Os dados utilizados no presente estudo foram coletados nas duas reavaliações da coorte, que ocorreram em 2014 (T2) e 2018 (T3). A QVRSB foi mensurada através da versão brasileira reduzida do *Child Perceptions Questionnaire* (CPQ11-14) no T2. Variáveis demográficas, socioeconômicas e medidas de saúde bucal também foram coletadas neste período. O consumo de álcool e cigarro foi avaliado através de um questionário autoaplicável no T3. Os dados foram analisados utilizando modelos multiníveis de regressão de Poisson para investigar a influência das variáveis predictoras no consumo de substâncias nocivas entre os adolescentes. Esta abordagem fornece a razão de taxa de incidência (RTI) e seus respectivos intervalos de confiança (IC). A partir dos 770 adolescentes acompanhados no T2, 561 e 562 foram reavaliados para o consumo de álcool e cigarro, respectivamente. Adolescentes com maior escore total no CPQ11-14 apresentaram um maior risco de consumir, regularmente, álcool (RTI 1,01; 95% IC 1,01-1,02) e cigarro (RTI 1,04; 95% IC 1,03-1,05). Em relação às variáveis demográficas e socioeconômicas, adolescentes do sexo masculino, não-brancos, pertencentes a famílias de baixa renda e cujas mães possuíam uma escolaridade inferior a 8 anos demonstraram um maior consumo de álcool e cigarro. Além disso, participantes que não visitaram o dentista nos últimos 6 meses e apresentavam piores condições clínicas, como cárie dentária, má oclusão e sangramento gengival percebido, também demonstraram um risco aumentado para o consumo dessas substâncias nocivas. Portanto, adolescentes com pior QVRSB apresentaram um maior consumo de álcool e cigarro. Este conhecimento se torna útil para o planejamento de políticas de saúde pública que visem melhorar a QVRSB dos adolescentes e, consequentemente, diminuir o consumo de substâncias nocivas na sociedade.

Palavras-chave: Adolescente. Bebidas Alcoólicas. Estudos Longitudinais. Fumar Cigarros. Qualidade de Vida. Saúde Bucal.

ABSTRACT

INFLUENCE OF ORAL HEALTH RELATED QUALITY OF LIFE IN THE CONSUMPTION OF LICIT SUBSTANCES IN ADOLESCENTS: A COHORT STUDY

AUTHOR: Bruna Brondani

ADVISOR: Thiago Machado Ardenghi

The consumption of alcohol and cigarette is considered one of the biggest public health problems nowadays. Several risk factors for the consumption of these substances have been identified. However, the proportion of consumers remains high in Brazil and worldwide, especially among adolescents. It has been verified that psychosocial predictors influence the consumption of health harmful substances, since they may influence the individual's perception of their position into the society. In this way, the adoption of risk behaviors in situations of health inequities is facilitated. Therefore, it is important to evaluate the relationship between psychosocial predictors focused on the impact of oral conditions, such as Oral Health Related Quality of Life (OHRQoL), and deleterious health habits, such as alcohol and cigarette consumption. The aim of this study was to evaluate the influence of OHRQoL on the consumption of harmful substances in adolescents. This study belongs to a prospective cohort that began in 2012 with a random sample of 1134 12-year-old schoolchildren in the city of Santa Maria, RS, Brazil, who were followed up for 6 years. Data used in the present study were collected in the two cohort reassessments, which occurred in 2014 (T2) and 2018 (T3). OHRQoL was measured using the Brazilian short version of the Child Perceptions Questionnaire (CPQ 11-14) at T2. Demographic, socioeconomic and oral health measures were also collected during this period. The consumption of alcohol and cigarette was evaluated at T3 through a self-administered questionnaire. Data were analyzed using multilevel Poisson regression models to investigate the influence of predictor variables on the consumption of harmful substances among adolescents. This approach provides the incidence rate ratio (IRR) and their respective confidence intervals (CI). From the 770 adolescents followed up at T2, 561 and 562 were reevaluated for alcohol and cigarette consumption, respectively. Adolescents with higher CPQ11-14 overall score had a higher risk of regularly consuming alcohol (IRR 1.01, 95% CI 1.01-1.02) and cigarette (IRR 1.04, 95% CI 1.03-1.05). Regarding demographic and socioeconomic variables, non-white adolescents, boys, belongings to low-income families whose mothers had less than 8 years of education showed a higher consumption of alcohol and cigarettes. In addition, participants who did not visit the dentist in the last 6 months and had worse clinical conditions, such as dental caries, malocclusion and perceived gingival bleeding, also had an increased risk for the consumption of these harmful substances. Therefore, adolescents with worse OHRQoL presented a higher consumption of alcohol and cigarette. This knowledge is useful for the planning of public health policies aimed at improving the quality of life of adolescents and, consequently, reducing the consumption of harmful substances in society.

Keywords: Adolescent. Alcoholic Beverages. Cigarette Smoking. Longitudinal Studies. Oral Health. Quality of Life.

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1 INTRODUÇÃO

O entendimento clínico em relação ao impacto da doença e ao efeito do tratamento nas atividades diárias dos pacientes tem sido amplamente explorado por pesquisadores de diferentes áreas da saúde (NELSON et al., 1983; NELSON et al., 2015). Métodos de avaliação considerados tradicionais não compreendem as percepções individuais dos pacientes, pois suas diretrizes consistem em mensurar o status de saúde com base em critérios clínicos, exclusivamente (SLADE et al., 1998). Desta forma, aspectos funcionais e psicossociais não são levados em consideração, restringindo a avaliação completa do paciente e comprometendo a decisão do profissional quanto à melhor conduta clínica a ser eleita (SANTANA; FEENY, 2013).

Diversos instrumentos têm sido desenvolvidos com o intuito de aferir desfechos em saúde relatados pelos pacientes, os quais levam em consideração o status de sintomas, função física, saúde mental, função social e o bem-estar do indivíduo (NELSON et al., 2015). Além disso, evidências determinam que a utilização sistemática de desfechos auto relatados contribui para uma melhor comunicação profissional-paciente e proporciona uma estimativa mais próxima das necessidades reais de uma determinada população (VALDERAS et al., 2008; CHEN; OU; HOLLIS, 2013). Portanto, para alcançar os objetivos primordiais da assistência à saúde e reduzir a sintomatologia, minimizar a incapacidade e promover o bem-estar geral, deve-se levar em consideração aspectos subjetivos do paciente, tais como a auto percepção de saúde e a qualidade de vida (SISCHO; BRODER, 2011; BLACK, 2013).

Desde a sua introdução na literatura, o termo Qualidade de Vida (QV) tem recebido grande atenção no meio científico, podendo ser descrito como um constructo multidimensional que resulta da combinação de condições de vida e satisfação individual, com ênfase nos valores, aspirações, crenças e expectativas pessoais (FELCE; PERRY, 1995; POST, 2014). Ademais, a QV é reconhecida como um parâmetro válido e complementar na avaliação do paciente em quase todas as áreas de saúde física e mental, incluindo a saúde oral, sendo amplamente utilizada em pesquisas de serviços de saúde para examinar tendências e necessidades de base populacional (SISCHO; BRODER, 2011; GLICK et al., 2016).

A Qualidade de Vida Relacionada à Saúde Bucal (QVRSB) é parte integral da saúde e bem-estar geral das pessoas, a qual representa a perspectiva subjetiva do indivíduo em relação ao impacto dos distúrbios orais no seu funcionamento normal, refletindo o conforto pessoal ao comer, dormir e se envolver em interações sociais, além de retratar a autoestima e a satisfação com a saúde bucal (GROUP, 1995; WHO, 2003; BAKER, 2007; SISCHO; BRODER, 2011;

GLICK et al., 2016). Ainda, a avaliação da QVRSB em crianças e adolescentes têm recebido grande atenção na literatura, desde que fora comprovado que desordens orais podem produzir diversos efeitos físicos, sociais e psicológicos nesta faixa etária, os quais podem perpetuar ao longo do tempo e se estabelecer na vida adulta (MCGRATH; BRODER; WILSON-GENDERSON, 2004; HOLST; SCHULLER, 2012).

Estudos prévios sugerem que diversos preditores, sejam eles clínicos, comportamentais ou socioeconômicos, possuem a capacidade de impactar, de forma significativa, a QVRSB. Foi constatado, por exemplo, que fatores clínicos como dor dentária (ORTIZ et al., 2014), cárie não tratada (AIMÉE et al., 2016), injúria traumática (NEVES et al., 2017) e má oclusão (DA ROSA et al., 2016) afetam negativamente a QVRSB de crianças e adolescentes. Além disso, indivíduos pertencentes a grupos étnico/raciais minoritários e provenientes de famílias com menor status socioeconômico apresentam uma QVRSB inferior quando comparados a indivíduos brancos portadores de um status socioeconômico mais elevado (GUEDES et al., 2014; EMMANUELLI et al., 2015). Comportamentos de risco, como consumo de álcool e cigarro, também são considerados preditores contribuintes com a diminuição da QVRSB, já que estas substâncias possuem um efeito deletério sobre a saúde bucal percebida dos indivíduos (MAIDA et al., 2013; MARQUES et al., 2015).

Entretanto, a maioria das pesquisas envolvendo QVRSB, independente da faixa etária abordada, consideram-na como variável de desfecho, sendo comumente associada com determinadas condições clínicas, socioeconômicas, demográficas e procedimentos terapêuticos. Poucos estudos consideram a QVRSB como variável preditora, principalmente na mensuração de desfechos não clínicos (HASSEL et al., 2011; GOETTEMS et al., 2012; PIOVESAN et al., 2012; MACHRY et al., 2013; KLOTZ et al., 2018). Resultados prévios na literatura têm demonstrado a relação de preditores psicossociais, como a QVRSB, na utilização de serviços odontológicos em crianças (GOETTEMS et al., 2012; MACHRY et al., 2013) e na performance e absenteísmo escolar (PIOVESAN et al., 2012). Hassel e colaboradores (2011) e Klotz e colaboradores (2018) demonstraram que uma QVRSB comprometida está significativamente associada ao bem-estar subjetivo de adultos e idosos, e isto pode, por sua vez, ter um efeito prejudicial nos hábitos comportamentais destes indivíduos (HASSEL et al., 2011; KLOTZ et al., 2018). Todavia, nenhum estudo avaliou a conexão entre QVRSB e hábitos comportamentais capazes de promover risco à saúde, como o consumo de álcool e cigarro. Esta relação é particularmente importante, principalmente em adolescentes, pois o consumo destas substâncias nocivas tem atingido proporções alarmantes neste grupo etário, podendo gerar uma

série de consequências à saúde, oral e geral, na vida adulta (PITKÄNEN; LYYRA; PULKKINEN, 2005; FILHO; DE CAMPOS; LOPES, 2012).

Álcool e cigarro são as substâncias nocivas mais consumidas pelos adolescentes ao redor do mundo e constituem um dos maiores problemas de saúde pública, considerado evitável, tanto em países de baixa como de alta renda (PELTZER, 2009; GÖBEL et al., 2016; NOCIAR; SIEROSLAWSKI; CSEMY, 2016). A alta prevalência do consumo destas substâncias é considerada responsável por uma taxa significativa de morbidade e mortalidade no mundo, atingindo adolescentes pertencentes a várias localidades do Brasil (EZZATI et al., 2002; FILHO; DE CAMPOS; LOPES, 2012). Filho e colaboradores (2012) conduziram uma revisão sistemática objetivando mensurar a prevalência do uso de álcool e cigarro entre adolescentes brasileiros. Foi constatado que o consumo de álcool variou de 23% a 67,7% e a prevalência média foi de 34,9%. Quanto ao consumo de cigarro, houve uma variação de 2,4% a 22%, e a prevalência média foi de 9,3% (FILHO; DE CAMPOS; LOPES, 2012).

Estudos epidemiológicos de cunho longitudinal demonstraram que a iniciação do consumo destas substâncias normalmente ocorre na adolescência, fase em que o jovem procura adotar comportamentos associados à vida adulta, e atinge o seu pico no início da vida adulta (ANTHONY; ECHEGARAY-WAGNER, 2000). Entretanto, o período de iniciação do consumo de álcool e cigarro varia de acordo com a localização geográfica, diferenças culturais, contexto social e a disponibilidade destas substâncias em cada região (DEGENHARDT et al., 2016). Além disso, pesquisas recentes relatam uma ordem temporal típica na iniciação do uso destas substâncias, a qual começa pelo consumo de álcool e cigarro, progredindo para a utilização de maconha e, posteriormente, outras drogas ilícitas (HALL; LYNSKEY, 2005; HALL, 2006; HALL; DEGENHARDT, 2009).

Estudos prévios também têm investigado questões sociais e comportamentais como determinantes para o uso de álcool e cigarro. A literatura indica que fatores socioculturais, ambientais e psicológicos estão associados ao consumo destas substâncias na adolescência. Desvantagem social (COLLINS, 2016), uso de substâncias entre familiares e amigos (LYNSKEY; FERGUSON; HORWOOD, 1994; LEONARDI-BEE; JERE; BRITTON, 2011), performance escolar e abandono escolar precoce (TOWNSEND; FLISHER; KING, 2007; KELLY et al., 2015), conflitos familiares (STONE et al., 2012; NELSON, 2015), abuso físico ou sexual (SIMANTOV; SCHOEN; KLEIN, 2000), gênero (STONE et al., 2012), ausência de religiosidade (GUIMARÃES et al., 2018) e sintomas depressivos (SIMANTOV; SCHOEN; KLEIN, 2000) contribuem para o consumo de substâncias nocivas entre os adolescentes. Além disso, diversos fatores de risco podem ocorrer concomitantemente durante a adolescência,

contribuindo, em maior grau, para o desenvolvimento de comportamentos de risco à saúde (DEGENHARDT et al., 2016).

A grande proporção de usuários tem despertado o interesse de diversos pesquisadores e especialistas, além de promover uma crescente preocupação em pais, amigos, comunidades e formuladores de políticas de saúde (DEGENHARDT et al., 2016; EL KAZDOUH et al., 2018). Essa preocupação é sustentada pelo fato de que a adolescência é um período de transição cognitiva, biológica, fisiológica e psicológica, a qual ocorre na faixa etária dos 10 aos 19 anos de idade (WHO, 1986; CROCKETT; PETERSON, 1993). Sendo assim, as mudanças substanciais inerentes a este período propiciam a criação de um comportamento vulnerável e suscetível, tendo a capacidade de proporcionar a adoção de hábitos deletérios para a saúde, tais como o consumo e, até mesmo, a dependência de substâncias prejudiciais (CHAMBERS; TAYLOR; POTENZA, 2003; GRAY; SQUEGLIA, 2018). Nesse contexto, o uso de substâncias nocivas na adolescência tem se tornado um grande problema no âmbito social e na área da saúde, promovendo tanto um prejuízo social e financeiro para o país (WHO, 2018; NELSON et al., 2013), como também um impacto negativo na saúde geral e oral dos usuários (NELSON et al., 2013; MANICONE et al., 2017).

A partir do consumo de álcool e cigarro, é possível observar na sociedade situações que evidenciem o aumento do crime (COURTNEY; POLICH, 2009), violência doméstica (DUKE et al., 2011), acidentes de trânsito (ANDREASSON; ALLEBECK; ROMELSJÖ, 1988), risco de suicídio (GALAIF et al., 2007; CLARKE et al., 2010), agressão sexual (ABBEY et al., 2014) e perda de produtividade (HUANG et al., 2011). Além disso, indivíduos que utilizam estas substâncias com frequência apresentam um maior risco de desenvolver doenças como HIV (BROZ et al., 2014), hepatite B e C (MACDONALD; CROFTS; KALDOR, 1996), tuberculose (NELSON et al., 2013; IMTIAZ et al., 2017), cirrose (SANDAHL et al., 2011; NELSON et al., 2013), além de problemas cardiovasculares, neurocognitivos e oncogênicos (LLERENA et al., 2015). Em relação à saúde oral, é possível observar um maior risco de comprometimento da saúde bucal, devido ao acesso limitado a atendimento odontológico (ROBINSON; ACQUAH; GIBSON, 2005), hábitos inadequados de higiene bucal (MANICONE et al., 2017) e alimentação imprópria (ROBINSON; ACQUAH; GIBSON, 2005), os quais são capazes de ocasionar condições como dor dentária (BENEDETTI et al., 2012), bruxismo (ARAUJO et al., 2004), doença periodontal (BERGSTRÖM et al., 2004; KIM et al., 2014), perda de dentes (AGBOR; AZODO; TEFOUET, 2013), leucoplasia (AGBOR; AZODO; TEFOUET, 2013) e câncer bucal (MADANI et al., 2014).

No entanto, ainda com a existência de um vasto conhecimento acerca de fatores de risco capazes de promover o consumo de álcool e cigarro, a prevalência do consumo destas substâncias permanece alta no Brasil e no mundo (MALTA et al., 2014; PEIPER et al., 2016). Apesar da literatura comprovar a associação de preditores psicossociais, como auto percepção de saúde bucal e QVRSB, no comprometimento de determinadas funções individuais, tais como performance escolar (PIOVESAN et al., 2012; MAHARANI et al., 2017) e utilização de serviços odontológicos (GOETTEMS et al., 2012; MACHRY et al., 2013), não existe nenhum estudo avaliando o efeito de um desfecho subjetivo relacionado às condições clínicas odontológicas no consumo de substâncias nocivas.

Abordagens psicossociais discutem a maneira como indivíduos se sentem perante iniquidades sociais, assim como a repercussão dessas sensações na saúde (ØVERSVEEN et al., 2017). Estudos prévios têm demonstrado que sentimentos de subordinação ou inferioridade incentivam o desenvolvimento de respostas estressantes, as quais podem promover consequências à saúde física e mental (BARTLEY, 2016). Fatores psicossociais também podem influenciar a percepção do indivíduo frente à sua posição na sociedade, promovendo marginalização social e, conseqüentemente, comportamentos antissociais (CRINSON; YUILL, 2008). Além disso, sabe-se, através da teoria psicossocial, que indivíduos portadores de injúrias bucais podem apresentar dores e sofrimentos físicos e/ou psicológicos, os quais contribuem com um maior grau de estresse e ansiedade, além de minimizar a autoestima e a QVRSB das pessoas. Estes podem interferir diretamente em determinados comportamentos de saúde, como por exemplo, hábitos dietéticos, autocuidado em saúde e consumo de álcool e cigarro (FRANÇA, 2017).

Nesse contexto, torna-se pertinente realizar uma investigação longitudinal para mensurar o efeito cumulativo de exposições ao longo do tempo e estabelecer uma relação causal apropriada (HORTA; WEHRMEISTER, 2017). Dessa forma, enfatiza-se a necessidade de investigar se o impacto das condições orais na qualidade de vida dos indivíduos é suficiente para estimular comportamentos de risco e desenvolver hábitos deletérios, tais como o consumo de álcool e cigarro na adolescência, visto que esta é uma fase de transição, na qual os adolescentes podem adquirir comportamentos de risco à saúde capazes de persistir ao longo da vida. Essa informação é útil para fornecer evidências adicionais para o planejamento de estratégias capazes de reduzir o consumo de determinadas substâncias, assim como prevenir e controlar a ocorrência de doenças e condições de saúde ocasionadas a partir do consumo de álcool e cigarro em adolescentes.

2 ARTIGO – ORAL HEALTH-RELATED QUALITY OF LIFE AS A PREDICTOR OF ALCOHOL AND CIGARETTE CONSUMPTION IN ADOLESCENTS: A COHORT STUDY.

Este artigo será submetido ao periódico *Community Dentistry and Oral Epidemiology*, ISSN: 1600-0528, Fator de impacto = 2.278; Qualis A1. As normas para publicação estão descritas no Anexo D.

Title page**Oral health-related quality of life as a predictor of alcohol and cigarette consumption in adolescents: a cohort study.****Running head:** Quality of life on adolescent's consumption of licit substances.**Authors:**

Bruna Brondani¹, Camila Silveira Sfreddo², Jessica Klöckner Knorst¹, Yassmín Hèllwaht Ramadan¹, Fernanda Ruffo Ortiz³, Thiago Machado Ardenghi¹.

Author affiliations:

¹Postgraduate Program in Dental Sciences, Federal University of Santa Maria, Santa Maria, Brazil; ²School of Dentistry, Franciscan University, Santa Maria, RS, Brazil; ³Department of Pediatric Dentistry and Orthodontics, School of Dentistry, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil.

Corresponding Author:

Thiago Machado Ardenghi – Faculdade de Odontologia da Universidade Federal de Santa Maria, Avenida Roraima, 1000, Prédio 26F, 97110-970, Cidade Universitária, Santa Maria, RS, Brazil. Phone - Fax: +55.55.3220.9266. Email: thiardenghi@hotmail.com

Contributors' Statement: Ms Brondani conceptualized and designed the study, collected data, performed the statistical analyzes, drafted the initial manuscript, and revised the manuscript. Dr Sfreddo designed the study, performed the statistical analyzes and revised the manuscript. Ms Knorst designed the study, performed the statistical analyzes and revised the manuscript. Ms Ramadan designed the study, collected data and revised the manuscript. Ms Ortiz designed the study, designed the instruments for collecting data, collected data and revised the manuscript. Dr. Ardenghi designed the study, coordinated and supervised the data collection and critically reviewed the manuscript. All authors have approved the final manuscript as presented and agree to be accountable for all aspects of the paper.

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Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the Human Research Ethics Committee of the Federal University of Santa Maria and the University of São Paulo (CAEE: 0127.0.243.000-11, 2012, 30613714.0.0000.5421, 2014 and 66553117.4.0000.5346, 2018), Brazil, and with the 1964 Helsinki declaration and its later amendments, or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Abstract

Objectives: To evaluate the influence of Oral Health Related Quality of Life (OHRQoL) in the consumption of alcoholic beverage and cigarette in adolescents.

Methods: This prospective cohort began in 2012 (T1) with an initial random sample of 1134 12-year-old adolescents followed for 6 years, in Brazil. The present study comprised data from the two cohort reassessment, occurring in 2014 (T2) and 2018 (T3). OHRQoL was measured from the Brazilian short version of the Child Perceptions Questionnaire (CPQ 11-14) at T2. Socioeconomic, demographic and oral health measures were also collected during this period. Licit substances were evaluated at T3 through questions presents in the questionnaire of the National Survey of Scholar Health (PeNSE). A multilevel Poisson regression model was used to evaluate the influence of predictor variables on substance use in adolescents. From this approach, incidence rate ratio (IRR) and 95% confidence intervals (95% CI) were calculated.

Results: From 770 adolescents at T2, 575 and 576 adolescents were reassessed at T3 for alcohol and cigarette consumption, respectively. Adolescents with higher overall CPQ11-14 scores had a higher risk of regularly consumption of alcoholic beverage (IRR: 1.01; 95% CI: 1.01-1.02) and cigarette (IRR: 1.04; 95% CI: 1.03-1.05). Non-white adolescents, boys, with low socioeconomic status and poor clinical conditions were also associated with increased regular consumption of licit substances.

Conclusions: Adolescents with worse OHRQoL presented a higher consumption of alcohol and cigarette. This knowledge is useful for planning public health strategies to improve the adolescent's OHRQoL, and consequently reduce the consumption of harmful substances as well as their consequences in society.

Keywords: Adolescent. Alcoholic Beverages. Cigarette Smoking. Longitudinal Studies. Oral Health. Quality of Life.

Introduction

Licit drugs are the most harmful substances consumed around the world, constituting one of the greatest public health problems considered preventable in both low and high-income countries.¹ This consumption begins in adolescence, a phase of transition that facilitates the creation of a vulnerable and susceptible behavior, having the capacity to provide the adoption of harmful habits for health.² In Brazil, the prevalence of alcohol and cigarette use among adolescents reaches average values of 34.9% and 9.3%, respectively.³ Consequently, the use of these substances stimulates the occurrence of situations that promote social and financial damage to society, as well as a negative impact on users' general and oral health.⁴

Several determinants for the use of alcohol and cigarette were pointed out in the literature. Sociocultural, environmental, and psychological factors were associated with the consumption of these substances in adolescence.⁵ Psychosocial factors are also considered additional determinants of harmful substance use and have received more attention recently, especially due to their relation to health risk behaviors.⁶ Psychosocial theory discusses the way individuals feel about social inequities, as well as the repercussion of these sensations on health.⁷ In this sense, oral disorders can cause physical and/or psychological distress, which can minimize the Oral Health Related Quality of Life (OHRQoL) of individuals.⁸ This condition promotes stress and anxiety and directly interfere in certain unhealthy behaviors, such as the use of alcohol and cigarette.⁹

OHRQoL is an integral part of general health and well-being, which is considered a psychosocial factor that represents the subjective perspective of individuals regarding the impact of oral disorders on their normal functioning.¹⁰ Previous studies have demonstrated the effect of certain clinical and socioeconomic conditions, as well as therapeutic procedures, on OHRQoL.¹¹⁻¹³ However, there are few studies evaluating OHRQoL as a predictive variable, mainly in the measurement of non-clinical outcomes.¹⁴⁻¹⁸ Studies have demonstrated that a compromised OHRQoL is associated with the subjective well-being of adults and older people, and this may promote a detrimental effect on the behavioral habits of these individuals, supporting the hypothesis of association between OHRQoL and risk behaviors in different age groups.^{17,18}

To the best of our knowledge, no previous study has evaluated the effect of a subjective outcome related to dental clinical conditions on the consumption of harmful substances. This relationship is particularly important, especially in adolescents, because the consumption of these substances has reached alarming proportions in this age group, and it can generate a series

of consequences in adult life, such as chemical dependence and problems related to health.^{2,3,19} Therefore, this study aimed to evaluate the influence of OHRQoL on the consumption of alcohol and cigarette among adolescents, through a prospective cohort. We hypothesized that adolescents who presented worse OHRQoL are more likely to consume harmful substances.

Methods

Ethical Issues

The study protocol was approved by the Committee of Ethics in Research of the Federal University of Santa Maria (CAEE: 66553117.4.0000.5346). Written informed consent was obtained from all adolescents and their respective parents or legal guardians.

Study setting and sample

This prospective cohort study with 6 years of follow-up began in 2012 (T1) and involved an initial sample of 1,134 12-year-old schoolchildren enrolled in public schools in Santa Maria, a city in southern Brazil. In this period, Santa Maria had about 261,031 inhabitants, and approximately, 85% of the 12-year-old schoolchildren were enrolled in public schools.²⁰ The sample was obtained through a two-stage sampling procedure. The first stage consisted of 20 public schools in the city; and the second stage was composed 1134 adolescents randomly selected. Further details regarding the methodological aspects of the baseline are published elsewhere.²¹ Participants were reassessed in two subsequent moments, in 2014 (T2) and 2018 (T3), totaling three stages of evaluation.

This research used data collected in T2 and T3 follow-up assessments. The sample size of this study was calculated considering a prevalence of impact on OHRQoL of 46% in the non-exposed group (substance non-users) and 74% in the exposed group (substance users); confidence level of 95% (CI 95%); exposed/unexposed ratio 2:1; design effect of 1.6, and statistical power of 90%.²² Adding 30% to eventual losses, the minimum sample required was 325 adolescents. As this study is part of a cohort that evaluates other conditions, a larger than required sample was included.

Follow-up assessment

All adolescents evaluated in 2012 were considered eligible and invited to participate in the second and third phases of follow-up. Data collection included 770 individuals reassessed between September 2014 and May 2015; and 768 individuals reassessed between October 2017 and October 2018. Socioeconomic, demographic and subjective variables were measured through face-to-face interviews with structured questionnaires. Clinical examinations were conducted by pre-trained and calibrated examiners.

As search strategies, three methods were employed. First, telephone calls were made with the purpose of resuming contact with the participants and inviting them to attend the pediatric dentistry clinic of the Federal University of Santa Maria. A second alternative consisted in obtaining lists of students enrolled in public schools in the city of Santa Maria. In this way, whenever possible, reassessments occurred in a school environment. Finally, the researchers carried out home visits to locate individuals not found in the other two alternatives.

Oral Health Related Quality of Life

At T2, the adolescents answered to the Brazilian short version of the Child Perceptions Questionnaire for 11- to 14-year-old children (CPQ11–14) through face-to-face interviews with previously trained interviewers.²³ In order to avoid the influence of the examiners on the participants' answers, the interview was conducted before the clinical examination and by a different person. This short form contains 16 questions about the frequency of events in four domains: oral symptoms, functional limitation, emotional well-being and social well-being. Each question measures the frequency of events related to teeth, lips and jaws in the last 3 months and has five possible answers on a Likert scale of 0 to 4: "never" = 0; "Once or twice" = 1; "Sometimes" = 2; "Often" = 3; "Every day/almost every day" = 4. The final score was calculated by the sum of all scores for each domain, and can range from 0 to 64. Higher scores represent a worse OHRQoL.

Covariates

All covariates were measured at T2. A structured questionnaire, applied to parents or guardians of the participants, provided information about sex, age, race, maternal education level, household income, household crowding and adolescent's oral health measures. Race was classified based on the precepts established by Brazilian Institute of Geography and Statistics (IBGE) and dichotomized as "White" and "Non-White".²⁰ Maternal educational level was

classified according to the number of years of formal education completed, and was dichotomized as ≥ 8 years of schooling or < 8 years of schooling (incomplete primary education in Brazil). Household income was recorded in *Reais* (R\$ - official Brazilian currency) of all individuals living in the house in the last month and transformed in terciles: Q1 (Lowest): $< R\$880,00$, Q2 (Medium): $R\$880,00$ to $< R\$2075,00$ and Q3 (Highest): $R\$2075,00+$. Approximately, R\$4.04 is equivalent to U\$1.00. Household crowding was calculated from the division of the number of people over the number of rooms in the house (except bathroom) and dichotomized in "1 room or more/person" and "Less than 1 room/person". Oral health measures included dental attendance in the previous 6 months ("Yes" or "No") and reason for dental attendance ("Check-up/routine" and "Toothache"). Adolescents reported self-perception of gingival bleeding ("Yes" or "No").

The clinical examinations were conducted by 4 trained and calibrated examiners, according to international criteria standardized by the World Health Organization (WHO).²⁴ Clinical variables were collected under natural light and using a plane dental mirror and, WHO periodontal probe (CPI; "ball point"). Untreated dental caries (corresponding to a non-zero D component in the Decayed, Missing and Filled teeth index - DMFT) was measured according with WHO criteria.²⁴ Malocclusion was quantified through the Dental Aesthetic Index (DAI), and considered present when the final DAI score was higher than 25 points.²⁴ Dental trauma was recorded through the O'Brien index, and classified as "present" and "absent" in upper incisors.²⁵ Kappa statistics (inter and intra-examiner) for all oral health measures were higher than 0.7.

Alcohol and cigarette (outcomes)

The consumption of alcoholic beverage and cigarette by adolescents were collected at T3, through questions present in the National School Health Survey (PeNSE) questionnaire.²⁶ The PeNSE is a sample survey widely applied in the country, and carried out by the IBGE. This questionnaire was delivered to the adolescent to be answered in a self-applied way, in order to promote greater privacy to the participant. After completion, the interviewer checked if all questions had been completed properly.

The regular consumption of alcoholic beverage and cigarette were measured by the mean of days of consumption through the following questions: A) Regular cigarette consume - "In the last month, how many days did you smoke cigarettes?"; B) Regular alcoholic beverage consume - "In the last month, how many days did you drink at least one dose of alcohol?". The

last 30 days of these substances use among adolescents is a standard measure to indicate current consumption.²⁷ These questions were applied to a different sample to test internal consistency and the Cronbach's α was 0.84.

Data analyses

Data analysis was performed with STATA 14 (StataCorp. 2014. Stata Statistical Software: Release 14.1. College Station, TX: StataCorp LP). The outcomes were regular consumption of alcoholic beverage and cigarette. All descriptive analyses took into account the sampling weight, using the prefix command "svy" in Stata for complex data samples. Statistics indicating demographic, socioeconomic and clinical characteristics of the sample were provided, as well as the variation in alcohol and cigarette consumption according to the predictive variables.

Unadjusted and adjusted multilevel Poisson regression models were used to estimate the association between outcomes and explanatory variables. In the multilevel assessment, adolescent (first level) were nested in their schools (second level). Multilevel models allows estimating the incidence rate ratio (IRR) and its respective 95% CI. In this approach, variables with a p-value <0.25 in the unadjusted model were introduced into the adjusted model through a stepwise forward procedure. In the final model, all variables with a p-value <0.05 were considered statistically associated with alcohol and cigarette consume. The multilevel model used the scheme of fixed effect with random intercept.

Results

From 1,134 adolescents assessed at baseline, 770 (67.9% retention rate) and 768 (67.7% retention rate) participants were re-evaluated at T2 and T3, respectively. However, only those participants who were evaluated in both T2 and T3 were considered in this study. Therefore, the final sample is composed of 575 adolescents for the alcohol beverage outcome and 576 adolescents for the cigarette-smoking outcome. The mean age of adolescents was 14.3 years (Standard Deviation (SD): 0.7) at T2 and 17.5 years (SD: 0.6) at T3. Furthermore, 60% and 16.2% of adolescents were regular consumers of alcoholic beverages and cigarettes, respectively. Reasons for dropouts are presented in Figure 1. There were no statistical differences between participants and non-participants in T2 and T3 ($p < 0.05$) (Supplementary Table 1).

Table 1 shows the sample characteristics at T2 and the distribution of regular alcohol and cigarette consumption according to the predictor variables measured in this period. The adolescents were predominantly girls, white and with mothers presenting 8 years or more of formal education. The majority of the participants lived in households with income less than R\$880.00. The prevalence of untreated dental caries was, approximately, 40% for both outcomes. The mean overall CPQ11-14 score was 9.28 (SD 0.3) for alcohol consumption and 9.24 (SD 0.3) for cigarette consumption. Regarding the mean of days of alcohol and cigarette consumption, it was observed that adolescents with a higher mean of regular licit drugs consumption were boys, non-white and belonging to the lowest tercile of household income. Consumption was also higher in adolescents with worse OHRQoL, untreated dental caries and malocclusion.

Table 2 shows the multilevel Poisson unadjusted and adjusted analysis for the predictors variables of regular consumption of alcohol. Unadjusted analysis showed a significant association between alcohol consumption and all the predictors evaluated, except reasons for dental attendance and presence of untreated dental caries. After adjustment, higher overall CPQ11-14 scores were statistically associated with consumption of alcohol (IRR 1.01; 95% CI 1.01-1.02). Regular consumption was also significantly higher among boys, non-white, with mothers presenting less than 8 years of formal education, and belonging to families with lower income (lowest tercile). Adolescents who have not visited the dentist in the last 6 months and had malocclusion also presented a higher consumption of alcohol beverage. In addition, adolescents living in households with less than 1 room/person and those who did not perceive gingival bleeding were protected against alcohol consumption.

Table 3 shows the multilevel Poisson unadjusted and adjusted analysis for the predictors variables of regular cigarette smoking. Unadjusted analyses showed a significant association between regular consumption of cigarettes and sex, socioeconomic variables (maternal education, household income and household crowding) and oral health measures (dental attendance, OHRQoL, untreated dental caries and malocclusion). After adjustment, adolescents who had a worse OHRQoL showed a higher risk of smoking cigarettes regularly (IRR 1.04; 95% CI 1.03-1.05). Consumption was also higher in boys and those with poorer socioeconomic status. The presence of untreated dental caries and not going to the dentist in the last 6 months were considered predictors for cigarette consumption.

Discussion

This longitudinal study assessed the influence of OHRQoL on regular consumption of alcoholic beverage and cigarette smoking among Brazilian adolescents. Our findings confirmed the hypothesis that individuals with a worse OHRQoL have a higher regular consumption of harmful substances. Results also suggest that demographic, socioeconomic, and oral health measures are significantly related to regular consumption of licit substances. To the best of our knowledge, there are few studies evaluating the influence of OHRQoL on behavioral outcomes, and there are no studies evaluating its relation with the consumption of licit drugs, especially in a sample of adolescents.¹⁴⁻¹⁸

Psychosocial theory scientifically supports the relationship found between OHRQoL and the consumption of harmful substances. Previous studies have shown that feelings of subordination or inferiority encourage the development of stressful responses, which can promote physical and mental health consequences.²⁸ Psychosocial factors, such as OHRQoL, also influences the individual's perception of their position in society, promoting social marginalization and, consequently, antisocial behavior.²⁹ Some studies have reported the relationship between psychosocial factors and alcohol and cigarette consumption among adolescents and young adults.^{6,30} It has been argued that individuals with worse psychosocial factors are more likely to use harmful substances.^{6,30} Notwithstanding, results have shown that frustrations caused in early developmental periods are capable of promoting chemical dependence.³¹

The regular consumption of both substances was significantly higher among boys. This association was also observed previously.³² However, there is no consensus regarding this finding, since others studies did not show differences between the sexes or even reported a higher consumption in woman.^{33,34} One possible explanation for this contradiction is the current female conduct in searching greater equality between the sex, adopting similar behavioral habits, such as the consumption of harmful substances.³⁵ Another possibility concerns the theory of social contagion via imitation, which argues that individuals with similar characteristics and tastes tend to behave in a similar way.³⁶ This theory also supports the fact that non-white adolescents showed significantly higher cigarette smoking when compared to their counterparts.

Our findings demonstrated that regular consumption of alcohol beverage and cigarette was significantly higher among adolescents with mothers presenting less than 8 years of formal education and belonging to families with lower income. It has been reported that adolescents with a lower socioeconomic status had a higher risk of substance use.³⁷ Besides that, the risk of adoption and persistence in smoking is higher in socially marginalized groups, especially in

individuals with low socioeconomic status.³⁸ In addition, socioeconomic barriers limit access to knowledge and facilitate the adoption of deleterious health habits, which corroborates our findings.³⁹ However, such findings have not been consistent across studies. These inconsistencies are probably due to the differences in the methodology employed, cultural factors, geographic characteristics and socioeconomic indicators, which limits the comparison of findings.⁴⁰

Clinical oral measures were also associated with outcomes. Adolescents with a higher consumption of alcoholic beverages presented malocclusion and higher perception of gingival bleeding. On the other hand, those with higher risk of smoking had dental caries. Several authors have reported the association of these clinical variables with a worse OHRQoL in adolescents.^{8,41,42} It is justified by the physical and psychological impact of these conditions on this age group. The presence of pain/discomfort and food impaction, as well as an aesthetic compromise due to bleeding gums and dental malocclusion, lead individuals to experience a worse perception of oral health and, self-esteem. Thus, feelings of inferiority are favorable to the adoption of deleterious habits for health.¹⁴ Furthermore, individuals with worse oral health conditions are more likely to have a poorer overall health status, as well as harmful health behaviors, which may facilitate alcohol and cigarette consumption.⁴³

Although we have investigated two outcomes considered as legal substances in society, the motivation for their consumption is not the same, which can be visualized in the different prevalences of both substances. The likely explanation for high alcohol consumption is that drinking is considered a ritual of sociability, representing the introduction of the adolescent into a friendship group.⁴⁴ In addition, drinking is also associated with a moment of relaxation and pleasure.⁴⁴ On the other hand, one of the main reasons for adolescents starting smoking is the curiosity surrounding cigarette.⁴⁵ From this curiosity, adolescents may develop a chemical addiction and create physical dependence, which makes it difficult to quit.³⁸ However, there are common determinants of consumption, such as the demographic, socioeconomic, and clinical variables verified in this study. Questions related to substance use among family and friends, school performance, family conflicts and physical and/or sexual abuse were also influential in alcohol and cigarette consumption.^{5,32,46} This mutual consumption is justified by the fact that smoking is strongly associated with alcohol consumption, since the individual develops a greater desire to smoke cigarettes while drinking.²

The main limitation of this study is that alcohol and cigarette consumption were measured through adolescent's self-report. This observation tends to underestimate the levels of consumption, since adolescents may feel embarrassed or worried about reporting the truth.²

However, adolescents were told that responses would be treated confidentially, just as they answered these questions individually. Another question concerns the possible memory bias caused by retrospective questioning of outcomes. Meanwhile, the prevalence of consumption was in agreement with other studies carried out in Brazil, which provides validity of our measurements.³ At baseline, we only included students enrolled in public schools. Nevertheless, 85% of 12-year-old adolescents were enrolled in public schools in the city at baseline, which justifies the representativeness of the sample.²⁰

Despite these limitations, this study corresponds to a prospective cohort with a large retention rate after 4 years of follow-up (T2 to T3). The importance of time is emphasized by the possibility of understanding the later effects of an exposure occurring at a certain stage of life. This longitudinal assessment provided important information about the influence of OHRQoL on adolescent behavior in a period of transition between adolescence and adulthood. This transition period contributes to the vulnerability of adolescents to adopt general and oral health risk behaviors, which may persist through adult life. This knowledge has implications for oral health professionals, indicating the fundamental role of OHRQoL on risk behaviors in adolescents. Moreover, this information is also useful to provide additional evidence for the planning of public health strategies to improve adolescent's OHRQoL, as well as to reduce the consumption and consequences of these substances.

In conclusion, our findings indicated that OHRQoL influences the regular consumption of alcoholic beverages and cigarettes among adolescents. Adolescents with worse OHRQoL presented a higher consumption of both substances. Moreover, demographic, socioeconomic and clinical conditions were also important predictors of their consumption.

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Figure 1. Flowchart of participants in the 3 different phases of cohort follow-up.

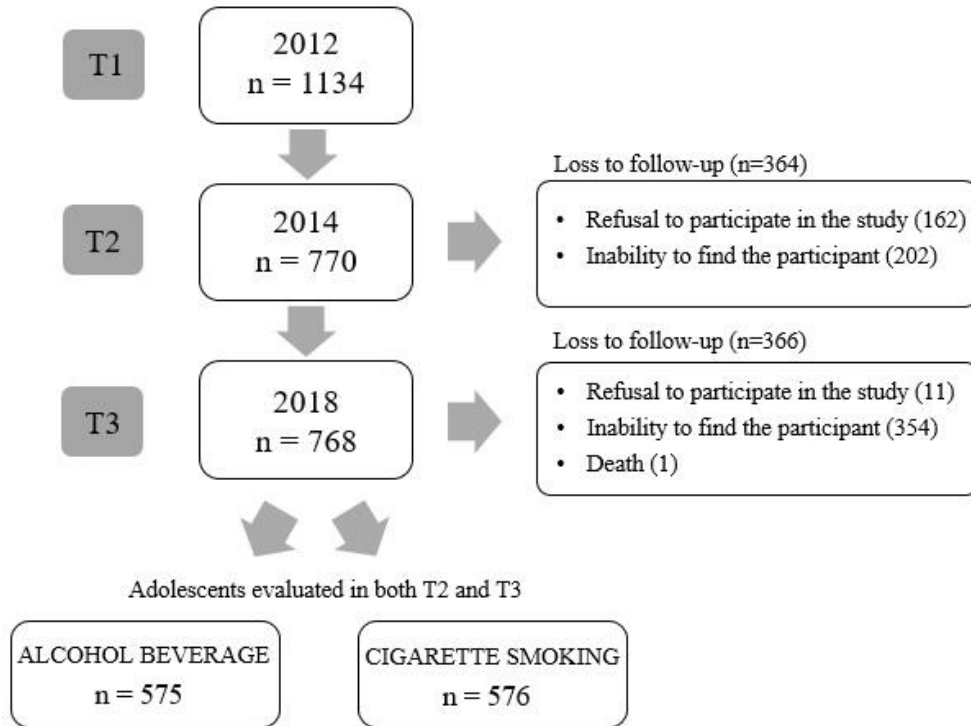


Table 1. Sample characteristics and distribution of regular alcohol and cigarette consumption according to demographic, socioeconomic and oral health variables at T2.

| Variables (T2) ^a | Alcohol use (T3) ^b (n= 575) | | Cigarette use (T3) ^b (n= 576) | |
|--------------------------------------|---|------------------------------|---|------------------------------|
| | n (%) | Mean (SE) ^c | n (%) | Mean (SE) ^c |
| <i>Demographic variables</i> | | | | |
| Sex | | | | |
| Girls | 316 (53.4) | 2.5 (0.3) | 318 (53.5) | 1.5 (0.4) |
| Boys | 259 (46.6) | 2.8 (0.1) | 258 (46.5) | 2.0 (0.4) |
| Race | | | | |
| White | 446 (79.9) | 2.5 (0.1) | 448 (80) | 1.7 (0.3) |
| Non-white | 121 (20.1) | 3.2 (0.8) | 120 (20) | 2.0 (0.6) |
| <i>Socioeconomic variables</i> | | | | |
| Maternal education | | | | |
| < 8 years of formal education | 145 (32.2) | 3.4 (0.3) | 143 (32) | 2.1 (0.6) |
| ≥ 8 years of formal education | 314 (67.8) | 2.6 (0.2) | 315 (68) | 1.4 (0.3) |
| Household income in R\$ ^d | | | | |
| Highest (3 st tercil) | 144 (36.5) | 2.3 (0.3) | 145 (36.7) | 0.7 (0.3) |
| Medium (2 st tercil) | 119 (27.2) | 2.9 (0.5) | 118 (27.1) | 1.9 (0.5) |
| Lowest (1 st tercil) | 149 (36.3) | 3.4 (0.4) | 148 (36.2) | 2.6 (0.7) |
| Household crowding in people/room | | | | |
| 1 room or more/person | 185 (38.6) | 3.3 (0.3) | 185 (38.5) | 1.6 (0.4) |
| Less than 1 room/person | 277 (61.4) | 2.6 (0.3) | 276 (61.5) | 1.6 (0.4) |
| <i>Oral health measures</i> | | | | |
| Dental attendance (last 6 months) | | | | |
| Yes | 252 (54) | 2.7 (0.3) | 252 (54) | 1.3 (0.4) |
| No | 219 (46) | 3.0 (0.3) | 218 (46) | 2.0 (0.5) |
| Reason for dental attendance | | | | |
| Check-up/routine | 333 (74.8) | 2.8 (0.2) | 334 (74.9) | 1.2 (0.3) |
| Toothache | 108 (25.2) | 2.9 (0.4) | 107 (25.1) | 2.2 (0.6) |
| Self-perception of gingival bleeding | | | | |
| Yes | 353 (61.3) | 2.8 (0.3) | 351 (61) | 1.8 (0.3) |
| No | 207 (38.7) | 2.2 (0.3) | 210 (39) | 1.8 (0.3) |
| Untreated dental caries | | | | |
| Without | 333 (60.8) | 2.5 (0.2) | 335 (60.9) | 1.4 (0.2) |
| With | 226 (39.2) | 2.7 (0.3) | 225 (39.1) | 2.2 (0.5) |
| Malocclusion | | | | |
| Without | 288 (51.2) | 2.5 (0.2) | 288 (51.2) | 1.7 (0.4) |
| With | 271 (48.8) | 2.7 (0.3) | 272 (48.8) | 1.8 (0.6) |
| Dental trauma | | | | |
| Without | 485 (86.9) | 2.6 (0.1) | 486 (87) | 1.8 (0.3) |
| With | 74 (13.1) | 2.4 (0.7) | 74 (13) | 1.2 (0.6) |
| | Coefficient^e | Mean (SE)^c | Coefficient^e | Mean (SE)^c |
| OHRQoL (CPQ overall score) | 0.1* | 9.28 (0.3) | 0.05 | 9.24 (0.3) |

^aT2, 2-year follow-up.^bT3, 6-year follow-up.^cSE, standard error.^dR\$, Real (R\$4.04 is equivalent to US\$1.00 approximately).^eSpearman correlation.

*p< 0.05

Table 2. Unadjusted and adjusted association between individual variables at T2 and regular alcohol consumption at T3, determined using multilevel Poisson regression.

| Variables | Alcohol use | | | |
|--------------------------------------|--|---------|--|---------|
| | IRR ^a Unadjusted (95% CI) ^b | P-value | IRR ^a Adjusted (95% CI) ^b | P-value |
| <i>Demographic variables</i> | | | | |
| Sex | | P=0.019 | | P<0.01 |
| Girls | 1 | | 1 | |
| Boys | 1.13 (1.02-1.25) | | 1.21 (1.06-1.37) | |
| Race | | P<0.001 | | P<0.001 |
| White | 1 | | 1 | |
| Non-white | 1.32 (1.17-1.49) | | 1.38 (1.20-1.60) | |
| <i>Socioeconomic variables</i> | | | | |
| Maternal education | | P<0.01 | | P=0.030 |
| ≥ 8 years of formal education | 1 | | 1 | |
| <8 years of formal education | 1.17 (1.04-1.32) | | 1.16 (1.01-1.34) | |
| Household income in R\$ ^c | | P<0.001 | | P<0.001 |
| Highest (3 st tercil) | 1 | | 1 | |
| Medium (2 st tercil) | 1.38 (1.17-1.62) | | 1.37 (1.15-1.62) | |
| Lowest (1 st tercil) | 1.72 (1.48-2.01) | | 1.63 (1.37-1.92) | |
| Household crowding in people/room | | P<0.001 | | P=0.034 |
| 1 room or more/person | 1 | | 1 | |
| Less than 1 room/person | 0.81 (0.73-0.91) | | 0.87 (0.76-0.98) | |
| <i>Oral health measures</i> | | | | |
| Dental attendance (last 6 months) | | P<0.001 | | P<0.001 |
| Yes | 1 | | 1 | |
| No | 1.24 (1.12-1.39) | | 1.27 (1.12-1.44) | |
| Reason for dental attendance | | P=0.262 | | - |
| Toothache | 1 | | - | |
| Check-up/routine | 0.92 (0.81-1.05) | | - | |
| Self-perception of gingival bleeding | | P<0.001 | | P<0.01 |
| Yes | 1 | | 1 | |
| No | 0.80 (0.72-0.90) | | 0.80 (0.70-0.91) | |
| OHRQoL (CPQ overall score) | 1.01 (1.01-1.02) | P<0.001 | 1.01 (1.01-1.02) | P=0.025 |
| Untreated dental caries | | P=0.953 | | - |
| Without | 1 | | - | |
| With | 1.01 (0.90-1.11) | | - | |
| Malocclusion | | P<0.001 | | P=0.035 |
| Without | 1 | | 1 | |
| With | 1.24 (1.12-1.38) | | 1.14 (1.01-1.29) | |
| Dental trauma | | P=0.02 | | P=0.052 |
| Without | 1 | | 1 | |
| With | 1.18 (1.02-1.36) | | 1.18 (0.99-1.40) | |

^a IRR, incidence rate ratio.^b CI, confidence interval.^c R\$, Real (R\$4.04 is equivalent to US\$1.00 approximately).

Table 3. Unadjusted and adjusted association between individual variables at T2 and regular cigarette consumption at T3, determined using multilevel Poisson regression.

| Variables | Cigarette use | | | |
|--------------------------------------|--|---------|--|---------|
| | IRR ^a Unadjusted (95% CI) ^b | P-value | IRR ^a Adjusted (95% CI) ^b | P-value |
| <i>Demographic variables</i> | | | | |
| Sex | | P<0.001 | | P=0.035 |
| Girls | 1 | | 1 | |
| Boys | 1.56 (1.38-1.76) | | 1.18 (1.01-1.38) | |
| Race | | P=0.327 | | - |
| White | 1 | | - | |
| Non-white | 0.92 (0.80-1.07) | | - | |
| <i>Socioeconomic variables</i> | | | | |
| Maternal education | | P<0.001 | | P<0.001 |
| ≥ 8 years of formal education | 1 | | 1 | |
| <8 years of formal education | 1.61 (1.39-1.88) | | 1.51 (1.27-1.78) | |
| Household income in R\$ ^c | | P<0.001 | | P<0.001 |
| Highest (3 st tercil) | 1 | | 1 | |
| Medium (2 st tercil) | 2.05 (1.67-2.52) | | 2.05 (1.65-2.54) | |
| Lowest (1 st tercil) | 2.94 (2.40-3.60) | | 2.44 (1.95-3.05) | |
| Household crowding in people/room | | P=0.039 | | P<0.001 |
| 1 room or more/person | 1 | | 1 | |
| Less than 1 room/person | 1.16 (1.01-1.34) | | 1.49 (1.27-1.76) | |
| <i>Oral health measures</i> | | | | |
| Dental attendance (last 6 months) | | P<0.001 | | P<0.001 |
| Yes | 1 | | 1 | |
| No | 1.88 (1.64-2.17) | | 1.74 (1.48-2.04) | |
| Reason for dental attendance | | P=0.765 | | - |
| Toothache | 1 | | - | |
| Check-up/routine | 1.02 (0.86-1.21) | | - | |
| Self-perception of gingival bleeding | | P=0.223 | | P=0.139 |
| Yes | 1 | | 1 | |
| No | 1.07 (0.95-1.21) | | 1.13(0.96-1.32) | |
| OHRQoL (CPQ overall score) | 1.01 (1.01-1.02) | P<0.001 | 1.04 (1.03-1.05) | P<0.001 |
| Untreated dental caries | | P<0.001 | | P<0.001 |
| Without | 1 | | 1 | |
| With | 1.37 (1.21-1.54) | | 1.31 (1.13-1.52) | |
| Malocclusion | | P<0.01 | | P=0.682 |
| Without | 1 | | 1 | |
| With | 1.19 (1.05-1.34) | | 1.03 (0.88-1.20) | |
| Dental trauma | | P=0.183 | | P=0.586 |
| Without | 1 | | 1 | |
| With | 1.11 (0.94-1.31) | | 0.94 (0.76-1.15) | |

^a IRR, incidence rate ratio.^b CI, confidence interval.^c R\$, Real (R\$4.04 is equivalent to US\$1.00 approximately).

Supplementary Table 1. Comparison of baseline characteristics between adolescents followed up and dropouts at T2 and T3.

| Variables | Follow-up (T2) ^a (n= 770) | Dropout (T2) ^a (n= 364) | <i>P value</i> ^b | Follow-up (T3) ^c (n= 768) | Dropout (T3) ^c (n= 366) | <i>P value</i> ^b |
|---|---|---------------------------------------|-----------------------------|---|---------------------------------------|-----------------------------|
| <i>Demographic variables</i> | | | | | | |
| Sex [n (%)] | | | 0.50 | | | 0.07 |
| Girls | 409 (51.7) | 201 (55.2) | | 427 (53.6) | 183 (50.0) | |
| Boys | 361 (48.3) | 163 (44.8) | | 341 (46.4) | 183 (50.0) | |
| Race [n (%)] | | | 0.30 | | | 0.36 |
| White | 596 (78.7) | 267 (75.6) | | 589 (79.1) | 274 (75.9) | |
| Non-white | 164 (21.3) | 86 (24.4) | | 163 (20.9) | 87 (24.1) | |
| <i>Socioeconomic variables</i> | | | | | | |
| Maternal education [n (%)] | | | 0.16 | | | 0.88 |
| < 8 years of formal education | 197 (31.9) | 111 (32.3) | | 169 (25.2) | 123 (34.9) | |
| ≥ 8 years of formal education | 423 (68.1) | 233 (67.7) | | 494 (74.8) | 229 (65.1) | |
| Household income in R\$ ^d | | | 0.24 | | | 0.06 |
| Highest (3 st tercil) | 186 (34.5) | 101 (31.1) | | 171 (29.0) | 87 (26.3) | |
| Medium (2 st tercil) | 163 (28.1) | 117 (36.0) | | 231 (39.2) | 117 (35.3) | |
| Lowest (1 st tercil) | 209 (37.4) | 107 (32.9) | | 203 (31.8) | 127 (38.4) | |
| Household crowding in people/room | | | 0.84 | | | 0.03 |
| 1 room or more/person | 252 (39.1) | 174 (50.4) | | 287 (34.8) | 158 (45.3) | |
| Less than 1 room/person | 368 (60.9) | 171 (49.6) | | 476 (65.2) | 191 (54.7) | |
| <i>Oral health measures</i> | | | | | | |
| Dental attendance (last 6 months) [n (%)] | | | 0.09 | | | 0.01 |
| Yes | 324 (50.5) | 176 (51.0) | | 551 (71.4) | 149 (42.1) | |
| No | 310 (49.5) | 169 (49.0) | | 216 (28.6) | 205 (57.9) | |
| Reason for dental attendance [n (%)] | | | 0.29 | | | 0.65 |
| Check-up/routine | 440 (75.5) | 258 (75.9) | | 615 (83.3) | 248 (72.9) | |
| Toothache | 140 (24.5) | 82 (24.1) | | 119 (16.7) | 92 (27.1) | |
| OHRQoL (CPQ overall score) [mean (SE)] ^e | 9.32 (0.32) | 10.15 (0.23) | 0.51 | 11.43 (0.34) | 10.73 (0.23) | 0.10 |
| Untreated dental caries [n (%)] | | | 0.06 | | | 0.95 |
| Without | 432 (59.8) | 243 (66.8) | | 645 (85.9) | 258 (70.5) | |
| With | 311 (40.2) | 121 (33.2) | | 106 (14.1) | 108 (29.5) | |
| Malocclusion [n (%)] | | | 0.68 | | | 0.08 |
| Without | 375 (49.5) | 206 (56.6) | | - | 197 (53.8) | |
| With | 368 (50.5) | 158 (43.4) | | - | 169 (46.2) | |
| Dental trauma [n (%)] | | | 0.36 | | | 0.84 |
| Without | 647 (87.7) | 266 (73.1) | | 574 (77.0) | 275 (75.1) | |

| | | | | |
|------|-----------|-----------|------------|-----------|
| With | 96 (12.3) | 98 (26.9) | 176 (23.0) | 91 (24.9) |
|------|-----------|-----------|------------|-----------|

^a T2, 2-year follow-up.

^b Difference between adolescents followed up and dropouts. Chi-square test for categorical variables and Mann–Whitney test for continuous variables.

^c T3, 6-year follow-up.

^d R\$, Real (R\$4.04 is equivalent to US\$1.00 approximately).

^e SE, standard error.

3 CONSIDERAÇÕES FINAIS

Este estudo avaliou a influência da Qualidade de Vida Relacionada à Saúde Bucal (QVRSB) no consumo de álcool e cigarro em adolescentes. Para isso, foi realizado um estudo longitudinal com escolares de 14 anos de idade, os quais foram acompanhados ao longo de 4 anos, na cidade de Santa Maria, Rio Grande do Sul. A importância da inserção do tempo em estudos que avaliam determinantes de risco é salientada pela possibilidade de compreender os efeitos tardios de uma exposição que ocorrera em um período específico da vida, como a adolescência. Este período, considerado de transição, propicia uma maior vulnerabilidade do indivíduo, assim como facilita a adoção de comportamentos de risco para a saúde, os quais podem perpetuar ao longo da vida adulta.

Os resultados demonstraram que a QVRSB influenciou o consumo de álcool e cigarro na amostra avaliada. Adolescentes que possuíam uma pior QVRSB apresentaram um maior risco de consumir substâncias nocivas. Além disso, adolescentes do sexo masculino, não brancos e com piores condições socioeconômicas e clínicas também estiveram associados a um maior consumo de álcool e cigarro, quando comparados com os seus opostos.

O consumo de álcool e cigarro, desfechos deste estudo, foi mensurado através do auto relato dos adolescentes avaliados. A mensuração destas variáveis tende a subestimar os reais níveis de consumo, uma vez que os adolescentes possam se sentir constrangidos em relatar a verdade. Entretanto, foi disponibilizado aos participantes uma maior privacidade ao responder essas perguntas e a garantia que as suas respostas seriam confidenciais. Além disso, as prevalências do consumo de álcool e cigarro encontradas neste estudo estão de acordo com outras pesquisas conduzidas no país. Apesar disso, este estudo também possui pontos fortes, como por exemplo, a taxa de retenção na coorte após 4 anos de avaliação, salientando a validade externa dos achados.

Portanto, os resultados encontrados confirmaram a hipótese de que a QVRSB influencia o consumo de bebida alcoólica e cigarro na adolescência. Esta informação comprova a importância da QVRSB no desenvolvimento de comportamentos de risco na adolescência, sendo útil para o planejamento de políticas de saúde pública que visem melhorá-la neste público alvo, assim como reduzir o consumo e as consequências das substâncias nocivas ao longo da vida.

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ANEXO A - CARTA DE APROVAÇÃO DO COMITÊ DE ÉTICA EM PESQUISA NO ANO DE 2011

| | |
|--|---|
|  <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>  |
|--|---|

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 das condições de saúde bucal na qualidade de vida de escolares de 12 anos

Número do processo: 23081.007764/2011-30

CAAE (Certificado de Apresentação para Apreciação Ética): 0127. 0.243.000-11

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:

Agosto / 2012- Relatório final

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

DATA DA REUNIÃO DE APROVAÇÃO: 14/06/2011

Santa Maria, 15 de junho de 2011



Félix A. Antunes Soares
Coordenador do Comitê de Ética em Pesquisa-UFSM
Registro CONEP N. 243.

ANEXO B – CARTA DE APROVAÇÃO DO COMITÊ DE ÉTICA EM PESQUISA NO ANO DE 2014

FACULDADE DE SAÚDE
PÚBLICA DA UNIVERSIDADE
DE SÃO PAULO



PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: SAÚDE BUCAL E GRAU DE FELICIDADE EM ADOLESCENTES DE UMA CIDADE NO SUL DO BRASIL - ANÁLISE LONGITUDINAL

Pesquisador: Simone Tuchtenhagen

Área Temática:

Versão: 1

CAAE: 30613714.0.0000.5421

Instituição Proponente: Faculdade de Saúde Pública da Universidade de São Paulo - FSP/USP

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 674.175

Data da Relatoria: 27/06/2014

Apresentação do Projeto:

Inalterado

Objetivo da Pesquisa:

Inalterado

Avaliação dos Riscos e Benefícios:

Inalterados

Comentários e Considerações sobre a Pesquisa:

Atendida pendência relativa ao TCLE

Considerações sobre os Termos de apresentação obrigatória:

Sem pendências na versão atual

Recomendações:

Nenhuma pendência

Conclusões ou Pendências e Lista de Inadequações:

recomenda-se aprovação desta versão

Situação do Parecer:

Aprovado

Endereço: Av. Doutor Arnaldo, 715

Bairro: Cerqueira Cesar

CEP: 01.246-904

UF: SP

Município: SAO PAULO

Telefone: (11)3061-7779

Fax: (11)3061-7779

E-mail: coep@fsp.usp.br

FACULDADE DE SAÚDE
PÚBLICA DA UNIVERSIDADE
DE SÃO PAULO



Continuação do Parecer: 674.175

Necessita Apreciação da CONEP:

Não

Considerações Finais a critério do CEP:

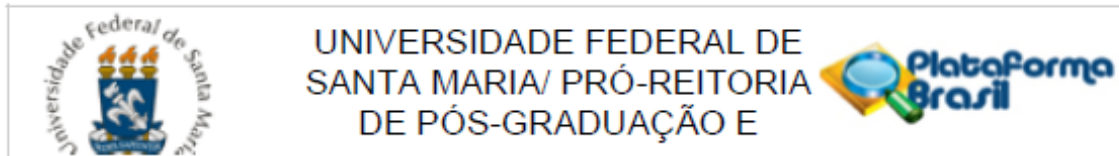
Acatado parecer do Relator

SAO PAULO, 04 de Junho de 2014

Assinado por:
Sandra Roberta Gouvea Ferreira Vivolo
(Coordenador)

Endereço: Av. Doutor Arnaldo, 715
Bairro: Cerqueira Cesar CEP: 01.246-904
UF: SP Município: SAO PAULO
Telefone: (11)3061-7779 Fax: (11)3061-7779 E-mail: coep@fsp.usp.br

ANEXO C – CARTA DE APROVAÇÃO DO COMITÊ DE ÉTICA EM PESQUISA NO ANO DE 2017



PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: INFLUÊNCIA DAS CONDIÇÕES BUCAIS E MENSURAÇÕES SUBJETIVAS EM ADOLESCENTES DA CIDADE DE SANTA MARIA: UM ESTUDO DE COORTE

Pesquisador: Thiago Machado Ardenghi

Área Temática:

Versão: 4

CAAE: 66553117.4.0000.5346

Instituição Proponente: Departamento de Estomatologia

Patrocinador Principal: Financiamento Próprio

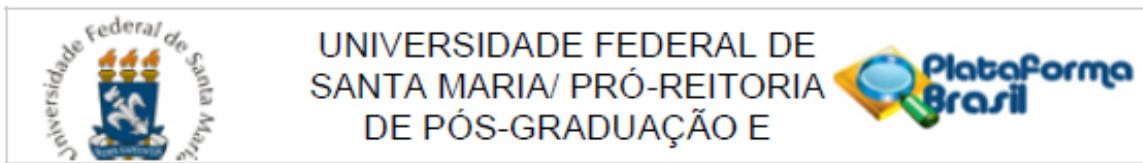
DADOS DO PARECER

Número do Parecer: 2.126.956

Apresentação do Projeto:

Trata-se de projeto de tese de doutorado que esta assim apresentada pelos pesquisadores: "A inserção no mercado de trabalho se da, de maneira geral, aos 18 anos de idade, podendo ser influenciada pela qualificação, experiência profissional e condições econômicas familiares dos jovens. Qualidade de vida relacionada a saúde bucal (QVRSB) e uma mensuração subjetiva, reportada pelo paciente, frente a seus domínios sociais, emocionais, físicos e funcionais. Portanto, o objetivo deste estudo será verificar a influência das condições bucais e qualidade de vida relacionada a saúde bucal, na inserção de jovens adultos no mercado de trabalho. Um estudo longitudinal dos jovens adultos será realizado na cidade de Santa Maria, RS, Brasil. O processo amostral no início do estudo se deu por conglomerado em duplo estágio, onde num primeiro momento escolas foram sorteadas e na sequência, os adolescentes foram convidados a participar do estudo. Um acompanhamento de seis anos de 1.134 adolescentes estará previsto para o ano de 2018. Variáveis sociodemográficas, econômicas, bucais, clínicas, subjetivas e de empregabilidade serão avaliadas através de questionários estruturados e exames bucais, por dentistas treinados e calibrados. Inserção no mercado de trabalho será perguntado se o jovem trabalha e a quanto tempo esta empregado. QVRSB será coletada através do questionário Child Perception Questionnaire 11-14, e condições bucais como cárie dentária, traumatismo, má oclusão e

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Bairro: Camobi **CEP:** 97.105-970
UF: RS **Município:** SANTA MARIA
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Continuação do Parecer: 2.126.956

sangramento gengival serão coletados através de exames bucais. Análises descritivas, modelo de regressão não-ajustado e ajustado, e modelos de equações estruturais serão realizados a fim de verificar quais as associações entre as condições bucais. QVRSB e empregabilidade, também serão avaliados por quais caminhos, se de maneira direta ou indiretamente as variáveis estão associadas ao desfecho."

Projeto apresenta cronograma compatível.

Objetivo da Pesquisa:

Objetivo primário: verificar a influência das condições bucais e qualidade de vida relacionada a saúde bucal, na inserção de jovens adultos no mercado de trabalho.

Objetivos secundários:

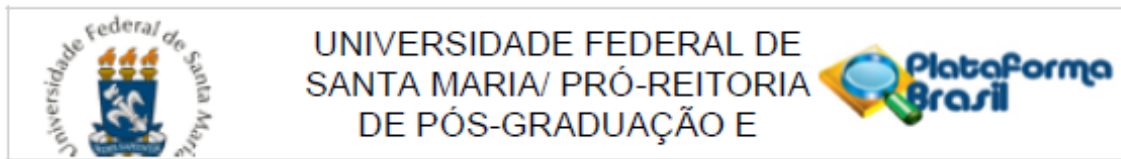
- Verificar a prevalência e incidência das variáveis clínicas, como cárie dentária, sangramento gengival, traumatismo dentário e má oclusão na transição da adolescência para a idade adulta.
- Verificar a influência das condições bucais na qualidade de vida relacionada a saúde bucal nos adolescentes, ao longo do tempo.
- Verificar a influência da qualidade de vida relacionada a saúde bucal na posição socioeconômica - inserção no mercado de trabalho.
- Verificar a abstenção escolar, formação educacional e inserção no mercado de trabalho dos jovens adultos.

Avaliação dos Riscos e Benefícios:

Riscos: como esta pesquisa se trata apenas de um exame odontológico, o risco previsto pela participação é mínimo, entretanto, o adolescente poderá ficar cansado ao responder o questionário e durante os exames clínicos. O participante será orientado que a qualquer momento poderá se recusar a dar continuidade com sua participação.

Benefícios: o adolescente ou os responsáveis não receberão nenhum benefício direto com a pesquisa. Como benefício indireto, o adolescente será informado e orientado a procurar assistência odontológica caso seja observado algum problema durante o seu exame. Cabe salientar, que o participante será orientado a procurar um atendimento, não sendo de responsabilidade desta pesquisa dar garantia de que este atendimento seja realizado. Não haverá

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Continuação do Parecer: 2.126.956

qualquer custo para fazer parte deste estudo. O adolescente ou o responsável não receberão qualquer remuneração por essa participação.

Riscos e benefícios estão descritos de maneira adequada e compatível em todos os documentos apresentados.

Comentários e Considerações sobre a Pesquisa:

.

Considerações sobre os Termos de apresentação obrigatória:

Todos os termos estão apresentados de maneira adequada.

Recomendações:

Veja no site do CEP - <http://w3.ufsm.br/nucleodecomites/index.php/cep> - na aba "orientacoes gerais", modelos e orientacoes para apresentacao dos documentos. ACOMPANHE AS ORIENTACOES DISPONIVEIS, EVITE PENDENCIAS E AGILIZE A TRAMITACAO DO SEU PROJETO.

Conclusões ou Pendências e Lista de Inadequações:

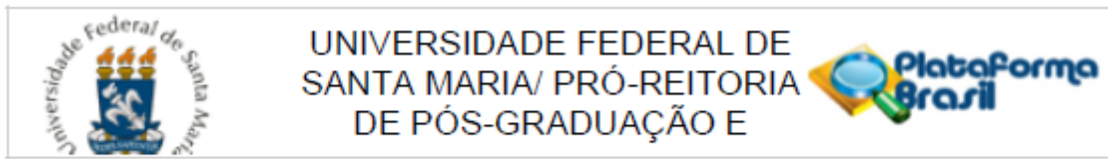
.

Considerações Finais a critério do CEP:

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

| Tipo Documento | Arquivo | Postagem | Autor | Situação |
|---|--|------------------------|-------------------------|----------|
| Informações Básicas do Projeto | PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_862467.pdf | 19/06/2017 12:44:45 | | Aceito |
| TCLE / Termos de Assentimento / Justificativa de Ausência | Termo_de_Assentimento.docx | 19/06/2017 12:38:28 | Thiago Machado Ardenghi | Aceito |
| TCLE / Termos de Assentimento / Justificativa de Ausência | TCLE.docx | 19/06/2017 12:38:15 | Thiago Machado Ardenghi | Aceito |

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| Folha de Rosto | scan0002.pdf | 03/04/2017 08:26:50 | Thiago Machado Ardenghi | Aceito |
| Outros | autorizacao_institucional.pdf | 14/02/2017 13:37:32 | Thiago Machado Ardenghi | Aceito |
| Outros | termo_de_confidencialidade.pdf | 14/02/2017 13:35:00 | Thiago Machado Ardenghi | Aceito |
| Outros | Registro_Sie.jpg | 07/02/2017 11:15:09 | Thiago Machado Ardenghi | Aceito |
| Projeto Detalhado / Brochura Investigador | Projeto.docx | 06/02/2017 14:54:41 | Thiago Machado Ardenghi | Aceito |

Situação do Parecer:

Aprovado

Necessita Apreciação da CONEP:

Não

SANTA MARIA, 20 de Junho de 2017

Assinado por:
CLAUDEMIR DE QUADROS
(Coordenador)

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UF: RS Município: SANTA MARIA
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ANEXO D – NORMAS PARA PUBLICAÇÃO NO PERIÓDICO *COMMUNITY DENTISTRY AND ORAL EPIDEMIOLOGY*

1. GENERAL

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

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

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

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

2. GUIDELINES FOR RESEARCH REPORTING

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

2.1. Authorship and Acknowledgements

Authorship: Authors submitting a manuscript do so on the understanding that the manuscript has been read and approved by all authors, and that all authors agree to the submission of the manuscript to the Journal.

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

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

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

2.2. Ethical Approvals

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

Research participants: research involving human participants will be published only if such research has been conducted in full accordance with ethical principles, including the World Medical Association **Declaration of Helsinki** (version 2008) and the additional requirements (if any) of the country where the research has been carried out. Manuscripts must be accompanied by a statement that the research was 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. Take care to use the term “participant” instead of “subject” when reporting on your study.

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

Animal Studies: When experimental animals are used, the methods section must clearly indicate that adequate measures were taken to minimize pain or discomfort. Experiments should be carried out in accordance with the Guidelines laid down by the National Institute of Health (NIH) in the USA in respect of the care and use of animals for experimental procedures or with the European Communities Council Directive of 24 November 1986 (86/609/EEC) and in accordance with local laws and regulations.

2.3. Clinical Trials

Clinical trials should be reported using the CONSORT guidelines available at <http://www.consort-statement.org>. A **CONSORT checklist** should also be included in the submission material.

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

2.4. Observational and Other Studies

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

Studies with a health economics focus should be consistent with the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) statement and the CHEERS checklist; see the article at the following link: <https://www.bmj.com/content/346/bmj.f1049>

2.5. Appeal of Decision

The decision on a manuscript is final and cannot be appealed.

2.6. Permissions

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

Photographs of People

Community Dentistry and Oral Epidemiology follows current HIPAA guidelines for the protection of patient/participant privacy. If an individual pictured in a digital image or photograph can be identified, his or her permission is required to publish the image. The corresponding author may submit a letter signed by the patient authorizing the *Community Dentistry and Oral Epidemiology* to publish the image/photo. Alternatively, a form provided by *Community Dentistry and Oral Epidemiology* (available by clicking the "Instructions and Forms" link in Manuscript central) may be downloaded for your use. You can also download the form **here**. This approval must be received by the Editorial Office prior to final acceptance of the manuscript for publication. Otherwise, the image/photo must be altered such that the individual cannot be identified (black bars over eyes, etc.).

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

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3. SUBMISSION OF MANUSCRIPTS

Manuscripts should be submitted electronically via the online submission site <http://mc.manuscriptcentral.com/cdoe>. The use of an online submission and peer review site enables immediate distribution of manuscripts and consequentially speeds up the review process. It also allows authors to track the status of their own manuscripts. *Community Dentistry and Oral Epidemiology* requires the submitting/corresponding author (only) to provide an ORCID iD when submitting their manuscript. If the author does not have an ORCID iD, an easy-to-use application to obtain one is available through the journal's ScholarOne system. Complete instructions for submitting a manuscript are available online and below. Further assistance can be obtained from the Managing Editor, Michelle Martire: cdoejournal@wiley.com

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Editor

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Faculty of Dentistry

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Dunedin, New Zealand

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The Managing Editor is Michelle Martire: cdoejournal@wiley.com

3.1. Getting Started

- Launch your web browser (supported browsers include Internet Explorer 6 or higher, Netscape 7.0, 7.1, or 7.2, Safari 1.2.4, or Firefox 1.0.4 or higher) and go to the journal's online Submission

Site: <http://mc.manuscriptcentral.com/cdoe>

- Login or click the 'Create Account' option if you are a first-time user.

- If you are creating a new account:

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

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

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

- If you have an account but have forgotten your log-in details, go to Password Help on the journals online submission system <http://mc.manuscriptcentral.com/cdoe> and enter your e-mail address. The system will send you an automatic user ID and a new temporary password.

- Login and select 'Corresponding Author Center.'

3.2. Submitting Your Manuscript

- After you have logged in, click the 'Submit a Manuscript' link in the menu bar.
- Enter data and answer questions as appropriate. You may copy and paste directly from your manuscript and you may upload your pre-prepared covering letter.
- Click the 'Next' button on each screen to save your work and advance to the next screen.
- You are required to upload your files.
 - Click on the 'Browse' button and locate the file on your computer.
 - Select the designation of each file in the drop down next to the Browse button.
 - When you have selected all files you wish to upload, click the 'Upload Files' button.
- Review your submission (in HTML and PDF format) before sending to the Journal. Click the 'Submit' button when you are finished reviewing.

By submitting a manuscript to or reviewing for this publication, your name, email address, and affiliation, and other contact details the publication might require, will be used for the regular operations of the publication, including, when necessary, sharing with the publisher (Wiley) and partners for production and publication. The publication and the publisher recognize the importance of protecting the personal information collected from users in the operation of these services, and have practices in place to ensure that steps are taken to maintain the security, integrity, and privacy of the personal data collected and processed. You can learn more at <https://authorservices.wiley.com/statements/data-protection-policy.html>.

3.3. Manuscript Files Accepted

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

3.4. Suggest Two Reviewers

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

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

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

3.6. E-mail Confirmation of Submission

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

3.7. Review Procedures

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

3.8. Manuscript Status

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

3.9. Submission of Revised Manuscripts

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

3.10. Conflict of Interest

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

3.11. Editorial Board Submissions

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

4. MANUSCRIPT FORMAT AND STRUCTURE

4.1. Word Limit and Page Charges

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

4.2. Format

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

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

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

4.3. Structure

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

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

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

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

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

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

Discussion: this may usually start with a brief summary of the major findings, but repetition of parts of the Abstract or of the Results sections should be avoided. The section should end with a brief conclusion and a comment on the potential clinical program or policy relevance of the findings. Statements and interpretation of the data should be appropriately supported by original references. In the Discussion and conclusion, use the term 'findings' rather than 'results'. See Docherty and Smith, *BMJ* 1999; 318: 1224-5 for how to structure a Discussion section. That structure is encouraged.

4.4. References

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

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

Journal article:

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

Book:

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

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

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

4.5. Tables, Figures and Figure Legends

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

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

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

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Figure Legends: All captions, with necessary references, should be typed together on a separate page and numbered clearly (Fig.1, Fig. 2, etc.).

Special issues: Larger papers, monographs, and conference proceedings may be published as special issues of the journal. The full cost of these extra issues must be paid by the authors. Further information can be obtained from the editor or publisher.

5. AFTER ACCEPTANCE

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

5.1. Proof Corrections

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