

UNIVERSIDADE FEDERAL DE SANTA MARIA
CENTRO DE CIÊNCIAS DA SAÚDE
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIAS ODONTOLÓGICAS

Nicássia Cioquetta Lock

**SENSO DE COERÊNCIA E DESFECHOS EM SAÚDE BUCAL EM
JOVENS DO EXÉRCITO BRASILEIRO**

Santa Maria, RS
2022

Nicássia Cioquetta Lock

**SENDO DE COERÊNCIA E DESFECHOS EM SAÚDE BUCAL EM JOVENS DO
EXÉRCITO BRASILEIRO**

Tese apresentada ao Curso de Doutorado do Programa de Pós-graduação em Ciências Odontológicas, da Universidade Federal de Santa Maria (UFSM, RS), como requisito parcial para obtenção do grau de Doutor em Ciências Odontológicas.

Orientadora: Prof^a. Dr^a. Luana Severo Alves

Santa Maria, RS
2022

Lock, Nicássia Cioquetta
SENDO DE COERÊNCIA E DESFECHOS EM SAÚDE BUCAL EM
JOVENS DO EXÉRCITO BRASILEIRO / Nicássia Cioquetta Lock.-
2022.
105 p.; 30 cm

Orientadora: Luana Severo Alves
Tese (doutorado) - Universidade Federal de Santa
Maria, Centro de Ciências da Saúde, Programa de Pós
Graduação em Ciências Odontológicas, RS, 2022

1. Senso de coerência 2. Saúde bucal 3. Qualidade de
vida 4. Adolescente I. Severo Alves, Luana II. Título.

sistema de geração automática de ficha catalográfica da uvm. dados fornecidos pelo autor(a). sob supervisão da direção da divisão de processos técnicos da biblioteca central. bibliotecária responsável paula schoenfeldt vatta cma 10/1728.

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Santa Maria, RS
2022

AGRADECIMENTOS

Agradeço primeiramente a Deus, por estar sempre me guiando e iluminando meu caminho.

A minha família e ao meu noivo por sempre me incentivarem nos estudos e na busca da realização e crescimento profissional.

A minha orientadora professora Luana Severo Alves pelos ensinamentos, dedicação, disponibilidade, empenho e por toda compreensão durante este trajeto; por estar sempre presente quando precisei e pelo exemplo de profissional.

A todos os professores que tive durante o curso, pelos ensinamentos e conhecimento compartilhado.

À professora Beatriz Unfer, que me apresentou para pesquisa, pelos ensinamentos, conselhos e por todo o incentivo desde o início da graduação.

À amiga e colega Pati por toda a ajuda durante o trabalho, sempre disposta quando precisei, pelo carinho e pela amizade.

À amiga e colega de Gabi pela amizade, carinho e companheirismo durante todo o doutorado, minha dupla muito obrigada por tudo!

À querida colega Maria Laura por toda a ajuda durante o trabalho, agradeço muito toda sua disponibilidade em nos ajudar.

Às Organizações militares, 1º Regimento de Cavalaria Mecanizado e 9º Batalhão Logístico, por todo o suporte para a concretização da realização da nossa pesquisa.

Aos soldados do 1º RC Mec e 9º B Log por toda a ajuda durante a realização da pesquisa.

Aos pacientes pela confiança e por terem possibilitado a realização desta pesquisa.

À UFSM e ao PPGCO por todo o suporte e conhecimentos adquiridos ao longo do curso.

À CAPES, pela concessão da bolsa de estudos no início do curso.

RESUMO

SENSO DE COERÊNCIA E DESFECHOS EM SAÚDE BUCAL EM JOVENS DO EXÉRCITO BRASILEIRO

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A presente tese é composta por três artigos científicos cujos objetivos foram: (1) analisar a associação entre senso de coerência (SoC) e uso do fio dental (Artigo I); (2) estudar a associação entre SoC e atividade de cárie (Artigo II); e (3) avaliar a associação entre SoC e qualidade de vida relacionada à saúde bucal (QVRSB) (Artigo III) em jovens de 18-19 anos que ingressaram no Exército Brasileiro como alistados para o serviço militar obrigatório em duas bases militares localizadas no sul do Brasil. Foram avaliados 520 adolescentes entre os anos de 2019-2021. A coleta de dados incluiu a aplicação de questionários e exame clínico oral. Um questionário estruturado reuniu dados sobre informações sociodemográficas (escolaridade do adolescente e renda familiar) e hábitos relacionados à saúde bucal (uso de fio dental e se o participante havia visitado o dentista para fins preventivos no ano anterior). QVRSB foi coletada por meio do questionário Oral Health Impact Profile-14. O SoC do adolescente foi avaliado usando a versão brasileira validada da escala SOC-13. Os desfechos primários dos Artigos I, II e III foram, respectivamente, uso do fio dental, atividade de cárie e QVRSB. Em todos os artigos, o SoC foi considerado a variável preditora principal, categorizado em baixo, moderado ou alto, com base em tertis. Análises preliminares foram realizadas para comparar os desfechos de acordo com as variáveis preditoras usando o teste de Wald. A associação entre as variáveis preditoras e os desfechos foi avaliada usando modelos de regressão Poisson (não ajustados e ajustados) e foram estimadas as razões de prevalência (RP) e razões de taxas (RT), bem como seus respectivos intervalos de confiança (IC) de 95%. No Artigo I, a prevalência de uso de fio dental foi significativamente maior em adolescentes com SoC alto (41,2%) do que naqueles com SoC baixo (29,2%). Adolescentes com alto SoC foram 45% mais propensos a usar fio dental do que aqueles com baixo SoC (RP ajustada = 1,43; IC 95% = 1,06-1,93). No Artigo II, a prevalência de atividade de cárie foi de 73,2% e, em média, os adolescentes apresentaram 2,45 lesões de cárie ativa. Alto SoC foi associado com menor extensão da atividade cárie (RT ajustada = 0,85; IC 95% = 0,74-0,98), não havendo associação com a prevalência de atividade de cárie. No Artigo III, observou-se que adolescentes com SoC moderado e alto apresentaram, respectivamente, escores médios de OHIP-14 27% (RT ajustada = 0,73; IC 95% = 0,64-0,84) e 49% (RT ajustada = 0,51; IC 95% = 0,43-0,59) menores do que aqueles com SoC baixo. SoC e renda familiar permaneceram significativamente associados à QVRSB mesmo após a inclusão de variáveis comportamentais e clínicas. Esta tese concluiu que existe uma associação significativa entre SoC e uso do fio dental (Artigo I), número de lesões ativas de cárie (II) e QVRSB (III) entre recrutas de 18 a 19 anos do sul do Brasil.

Palavras-chave: Senso de coerência. Saúde bucal. Qualidade de vida. Cárie dentária. Fio dental. Adolescente.

ABSTRACT

SENSE OF COHERENCE AND ORAL HEALTH OUTCOMES IN YOUNG INDIVIDUALS OF THE BRAZILIAN ARMY

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This thesis is composed of three scientific articles whose objectives were: (1) to analyze the association between sense of coherence (SoC) and flossing (Article I); (2) to study the association between SoC and caries activity (Article II); and (3) to evaluate the association between SoC and oral health-related quality of life (OHRQoL) (Article III) in young people aged 18-19 years who joined the Brazilian Army as enlisted for mandatory military service in two military bases located in southern Brazil. 520 adolescents were evaluated between the years 2019-2021. Data collection included the application of questionnaires and clinical oral examination. A structured questionnaire gathered data on sociodemographic information (adolescent's education and family income) and oral health-related habits (use of dental floss and whether the participant had visited the dentist for preventive purposes in the previous year). OHRQoL was collected using the Oral Health Impact Profile-14 questionnaire. Adolescent's SoC was assessed using the validated Brazilian version of the SOC-13 scale. The primary outcomes of Articles I, II and III were, respectively, flossing, caries activity, and OHQoL. In all articles, SoC was considered the main predictor variable, categorized as low, moderate, or high, based on tertiles. Preliminary analyzes were performed to compare outcomes according to predictor variables using the Wald test. The association between predictor variables and outcomes was assessed using Poisson regression models (unadjusted and adjusted), and prevalence ratios (PR) and rate ratios (RR) were estimated, as well as their 95% respective confidence intervals (CI). In Article I, the prevalence of flossing was significantly higher in adolescents with high SoC (41.2%) than in those with low SoC (29.2%). Adolescents with high SoC were 45% more likely to floss than those with low SoC (adjusted PR = 1.43; 95% CI = 1.06-1.93). In Article II, the prevalence of caries activity was 73.2% and, on average, adolescents had 2.45 active caries lesions. High SoC was associated with a lower extent of caries activity (adjusted RR = 0.85; 95% CI = 0.74-0.98), with no association with the prevalence of caries activity. In Article III, it was observed that adolescents with moderate and high SoC had, respectively, mean OHIP-14 scores 27% (adjusted RR = 0.73; 95% CI = 0.64-0.84) and 49% (adjusted RR = 0.51; 95% CI = 0.43-0.59) lower than those with low SoC. SoC and family income remained significantly associated with OHRQoL even after the inclusion of behavioral and clinical variables. This thesis concluded that there is a significant association between SoC and flossing (Article I), number of active caries lesions (II), and OHRQoL (III) among 18- to 19-year-old recruits from southern Brazil.

Keywords: Sense of coherence. Oral health. Quality of life. Dental caries. Dental flossing. Adolescent.

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1 INTRODUÇÃO

A cárie dentária é um dos principais problemas de saúde pública em todo o mundo e é a doença não transmissível mais disseminada. O estudo “Global Burden of Disease Study 2019” estimou que as doenças orais afetam cerca de 3,5 bilhões de pessoas no mundo, sendo a cárie dentária em dentes permanentes a condição mais prevalente avaliada (OMS, 2022). Embora as doenças bucais como a cárie dentária e a gengivite sejam doenças preveníveis ou passíveis de controle, verifica-se que o objetivo de uma melhor saúde bucal, em nível populacional, não é alcançado. Isto poderia ser explicado pelo fato dessas doenças serem associadas a condições sociais, econômicas, políticas e educacionais e não apenas o resultado de interações biológicas na placa bacteriana dentária (MACIEL, 1994).

No levantamento epidemiológico nacional de saúde bucal “SB Brasil 2010”, constatou-se que a proporção de indivíduos livres de cárie (CPO-D=0) diminuiu em função da idade: aos 12 anos, 43,5% das crianças brasileiras estavam livres de cárie, já na faixa etária de 15-19 este percentual reduziu para 23,9%. Os índices de cárie entre adolescentes foram duas vezes mais elevados do que na infância, sendo considerável o aumento da cárie dentária num período crítico de transição para a fase adulta. O índice CPO-D de 2,1 aos 12 anos aumentou para 4,3 na faixa etária de 15-19 anos (BRASIL, 2012).

A adolescência é a fase da vida entre a infância e a idade adulta, compreendendo o período dos 10 aos 19 anos, e atualmente representa mais de 16% da população mundial (WHO, 2022). A fase da adolescência pode ser dividida em *early adolescence* (10–14 anos) e *late adolescence* (15–19 anos) e há, ainda, o período situado entre 15 e 24 anos denominado como juventude (SAWYER et al., 2012). Este é um período caracterizado por mudanças fisiológicas e cognitivas que levam a modificações de comportamentos em ambiente familiar e social, na educação e nos comportamentos de saúde (VINER et al., 2012).

Na adolescência, o indivíduo apresenta comportamentos ora exacerbando suas atitudes positivas, ora mostrando-se negligente com seus cuidados à saúde. Sendo assim, a adolescência é tida como um período de risco aumentado à cárie dentária, devido ao precário controle de placa e à redução dos cuidados com a escovação dentária (TOMITA et al., 2001), ao mesmo tempo que assume maior autonomia no que concerne à dieta e escolhas alimentares. Hábitos de vida pouco saudáveis podem ser instalados nesse momento da vida, constituindo-se em fatores de risco para doenças, principalmente na vida adulta (CLARO et al., 2006). Medidas adequadas de higiene podem entrar em conflito com o estilo de vida, pois nesta fase os adolescentes não mais recebem auxílio dos pais para sua higiene bucal

(BARROS et al., 2015). Os jovens adquirem certa autonomia na tomada de decisões e começam a ganhar independência dos pais, e, dessa forma, seus comportamentos podem impactar sua saúde à medida que exploram novos estilos de vida (HARRIS, 2010). Por outro lado, é na adolescência que se pode desenvolver uma atitude preventiva de maneira consciente e intencional, uma vez que neste período o indivíduo passa a associar a saúde com aspectos de aparência, força e poder (BARROS et al., 2015).

1.1 SAÚDE BUCAL DE RECRUTAS DO EXÉRCITO BRASILEIRO

Estudos anteriores avaliando a prevalência de cárie dentária em jovens de 18 anos cumprindo o serviço militar obrigatório no Exército Brasileiro encontraram índices elevados (AMARAL et al., 2005; BASTOS; NOMURA; PERES, 2005; PERES et al., 2005; CLAUDINO; TRAEBERT, 2013). O estudo de Amaral et al. (2005) mostrou uma prevalência de cárie dentária de 82,6% entre recrutas de Maringá, PR, e um índice CPO-D médio de 4,6. Os piores resultados foram observados nos grupos de menor poder aquisitivo, indicando a necessidade de implementação de políticas sociais voltadas a essas populações visando a diminuição das diferenças existentes na saúde. Peres et al. (2005) encontraram uma prevalência de 88,6% e um índice CPO-D médio de 5,7 entre recrutas de Blumenau, SC. De modo semelhante, Bastos, Nomura e Peres (2005), avaliando 396 recrutas de Florianópolis, SC, observaram uma prevalência de cárie de 65,9% e um CPO-D médio de 3,3. De certa forma, a comparação destes estudos (especialmente dos dois últimos, conduzidos no mesmo ano e no mesmo estado brasileiro) suporta o achado de base nacional revelado pelo Projeto “SB Brasil 2010” de que as estimativas de doença tendem a ser maiores em cidades do interior do que em capitais.

Ao avaliar militares da Malásia, Wahid et al. (2014) encontraram uma prevalência de cárie de 76,9% no início de seu estudo e observaram que a experiência de cárie dentária foi pior após 5 anos no serviço militar em comparação com o momento do recrutamento, sendo que houve mais extrações dentárias do que restaurações. No estudo de Naysmith et al. (2021) avaliando militares de 17 a 59 anos na Nova Zelândia, a prevalência de cárie foi de quase 70%, sendo maior nas faixas etárias mais jovens e de nível socioeconômico médio ou baixo.

Dessa forma, acredita-se que a população que cumpre o serviço militar obrigatório brasileiro seja constituída majoritariamente por jovens de menor poder aquisitivo, e, por este motivo, pode-se supor que esta população específica apresente uma saúde bucal mais pobre em comparação à população geral de mesma faixa etária.

1.2 SENSO DE COERÊNCIA

O senso de coerência advém da teoria salutogênica criada pelo sociólogo Aaron Antonovsky em 1979 e estuda o motivo que leva algumas pessoas a permanecerem saudáveis frente a situações estressantes, incluindo a capacidade do indivíduo enfrentar positivamente fatores estressores para a promoção da saúde (ANTONOVSKY, 1979). Em 1979, Antonovsky criou o termo salutogênese (saluto = saúde, gênese = origem) ao observar, a partir de relatos de sobreviventes dos campos de concentração da Segunda Guerra Mundial, que algumas das mulheres israelenses mantiveram bom estado de saúde apesar do contexto adverso. Dessa forma, Antonovsky concluiu que algumas dessas sobreviventes conseguiam enfrentar as dificuldades e retomavam satisfatoriamente o controle de suas vidas, pois tinham atitudes positivas perante os fatores de estresse (ANTONOVSKY, 1979).

A teoria salutogênica compartilha o conceito ampliado de saúde e rejeita a dicotomia saúde-doença, considerando que o ser humano não se classifica em ser plenamente saudável ou doente. De acordo com Antonovsky (1979), mesmo quando o indivíduo encontra-se saudável, poderá apresentar algum grau de componente patológico. Portanto, compreende o quanto ele está próximo ou distante destes extremos, criando um processo que a saúde e a doença são multidimensionais e ocorrem em um *continuum* entre dois polos (ANTONOVSKY, 1979).

A salutogênese fundamenta-se no conceito dos Recursos Generalizados de Resistência (RGRs) para explicar o processo de enfrentamento dos agentes estressores. Os RGRs envolvem os componentes físico, bioquímico, material, cognitivo, emocional, valores e atitudes, relação interpessoal, e sociocultural, definidos como características vinculadas ao indivíduo, grupo, cultura e sociedade que podem facilitar o combate ou enfrentamento das variáveis estressoras e evitar que a tensão se transforme em estresse (ANTONOVSKY, 1979). A questão principal não é a disponibilidade dos recursos, mas sim a capacidade do indivíduo usar esses recursos a seu favor no enfrentamento de situações da vida. Essa dinâmica individual de usar os recursos a seu favor e transformar as experiências em eventos relevantes e coerentes levam à formação do “senso de coerência” (SILVA, 2009).

Deste modo, o SoC (do inglês, “Sense of Coherence”) é definido como “uma orientação global que expressa até que ponto se tem um sentimento de confiança penetrante, duradouro, embora dinâmico, de que 1) os estímulos que derivam de seus próprios ambientes externos no curso da vida são estruturados, previsíveis e explicáveis; 2)

os recursos estão disponíveis para se atender às demandas impostas por esses estímulos; e 3) essas demandas são desafios, dignos de investimento e engajamento” (ANTONOVSKY, 1987). O SoC é composto por três componentes: compreensibilidade, capacidade de gerenciamento e significância. A compreensibilidade é o componente cognitivo, definido como a maneira como o indivíduo julga os eventos, ou seja, alta compreensibilidade se traduz em estímulos relativamente ordenados, consistentes e estruturados. A capacidade de gerenciamento é o componente comportamental e se refere à autopercepção da disponibilidade dos recursos para enfrentar os estímulos e superar as adversidades. A significância é o componente motivacional, em que o indivíduo percebe um fator emocional para lidar com os eventos (ANTONOVSKY, 1987). Dessa forma, indivíduos que possuem um elevado SoC possuem maior capacidade de definir os eventos da vida como menos estressantes (compreensibilidade), percebem que os recursos estão prontamente disponíveis para lidar com o estresse (capacidade de gerenciamento), e lidam com os eventos da vida e as doenças como desafios que são dignos de esforço (significância) (ANTONOVSKY, 1987).

A análise do SoC é realizada através de uma escala criada por Antonovsky e publicada pela primeira vez em 1983 (ANTONOVSKY, 1987). O instrumento em sua forma completa é composto por 29 itens, sendo 11 itens relativos à compreensibilidade, 8 à capacidade de gerenciamento e 10 à significância. Sua versão reduzida composta por 13 itens (SoC-13) tem sido a mais utilizada nos estudos sobre o tema e está apresentada no Quadro 1. Ela compreende 5 itens sobre compreensibilidade, 4 itens sobre capacidade de gerenciamento e 4 itens sobre significância. Quatro das 13 questões foram negativamente formuladas e inversamente pontuadas (questões 1, 2, 3 e 10) (ANTONOVSKY, 1987). A escala SoC-13 foi validada e traduzida para ser usada no Brasil (BONANATO et al., 2009). Apresenta opções de respostas em uma escala do tipo Likert de 5 pontos, codificadas de 1 a 5, em que a soma pode variar de 13 a 65, de modo que uma pontuação mais alta expressa um SoC mais elevado.

Alguns estudos mostraram que o SoC é estável a partir do início da adolescência e ele pode contribuir para moderar as experiências de estresse (ERIKSSON; LINDSTRÖM, 2006; SAGY; BRAUN-LEWENSOHN, 2009). Dessa forma, o estudo do SoC do adolescente se torna relevante por ser um recurso individual de enfrentamento de eventos estressantes da vida diária e para o desenvolvimento de estratégias positivas frente às adversidades que experimentam durante essa fase (COUTINHO; HEIMER, 2014).

Quadro 1. Apresentação da escala SoC-13.

| | Item | Pergunta | Opções de resposta | | | | |
|------------------------------------|------|---|--------------------------------------|-------------------------------|----------------------------------|------------------------|-------------------------------|
| COMPREENSIBILIDADE | 02 | Até hoje sua vida tem sido | Sem nenhum objetivo | Com poucos objetivos | Com alguns objetivos | Com muitos objetivos | Repleta de objetivos |
| | 06 | Você acha que as coisas que você faz na sua vida têm pouco sentido? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
| | 08 | Você tem sentimentos que gostaria de não ter? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
| | 09 | Você tem dúvida se pode controlar seus sentimentos? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
| | 11 | Em algumas situações, as pessoas sentem-se fracassadas. Você já se sentiu fracassado? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
| CAPACIDADE DE GERENCIAMENTO | 03 | Você tem interesse pelo que se passa ao seu redor? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
| | 05 | Você tem ideias e sentimentos confusos? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
| | 10 | Já lhe aconteceu de ficar surpreendido com o comportamento de pessoas que você achava que conhecia bem? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
| | 13 | Às vezes acontecem coisas na vida da gente que depois achamos que não demos a devida importância. Quando alguma coisa acontece na sua vida, você acaba achando que deu a importância: | Totalmente errada | Errada | Nem correta e nem errada | Correta | Totalmente correta |
| SIGNIFICÂNCIA | 01 | Aquilo que você faz diariamente é: | Um enorme sofrimento e aborrecimento | Um sofrimento e aborrecimento | Nem aborrecimento nem satisfação | Um prazer e satisfação | Um enorme prazer e satisfação |
| | 04 | Você acha que você é tratado com injustiça? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
| | 07 | Já lhe aconteceu ter ficado desapontado com pessoas em quem confiava? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
| | 12 | Você sente que está numa situação pouco comum, e sem saber o que fazer? | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |

Fonte: Elaborado pela autora com base na Escala Soc-13, adaptada para versão brasileira por Bonanato et al. (2009).

1.3 SENSO DE COERÊNCIA E DESFECHOS EM SAÚDE BUCAL

Diversos estudos têm sido publicados avaliando a associação entre SoC e diferentes desfechos em saúde bucal, os quais podem ser didaticamente classificados em: (1) estudos avaliando a associação entre SoC e hábitos relacionados à saúde bucal; (2) estudos avaliando a associação entre SoC e parâmetros clínicos; e (3) estudos avaliando a associação entre SoC e qualidade de vida relacionada à saúde bucal.

1.3.1 Senso de coerência e hábitos relacionados à saúde bucal

A placa bacteriana dentária (ou biofilme dentário) é considerada o fator etiológico primário do desenvolvimento da cárie dentária e das doenças periodontais (MARSH et al., 2007). Deste modo, a desorganização mecânica diária do biofilme continua sendo uma das melhores opções para manutenção da saúde bucal (WORTHINGTON et al., 2019). Além da escovação dentária, diferentes dispositivos são recomendados para limpeza das áreas interproximais, dentre eles o fio dental. Embora não haja evidência sólida sobre sua efetividade para o controle da cárie dentária (HUJOEL et al., 2006), o uso adicional do fio dental em comparação com a escovação dentária isoladamente pode reduzir a gengivite ou a placa bacteriana, ou ambos, de acordo com uma recente revisão sistemática da literatura sobre o tema (WORTHINGTON et al., 2019). Deste modo, seu uso deve ser encorajado, pois hábitos saudáveis na infância e na adolescência continuam sendo propagados na fase adulta (OLIVEIRA et al., 2017). Neste sentido, o Ministério da Saúde (BRASIL, 2012) recomenda o uso do fio dental como método de higiene complementar à escovação diária para manter a saúde bucal, além da American Dental Association (ADA) recomendar o uso do fio dental ao menos uma vez ao dia para limpeza interproximal (ADA, 2022).

Conforme demonstrado em três revisões sistemáticas da literatura, um elevado SoC tem sido relacionado com comportamentos preventivos e promotores de saúde, tais como maior frequência de escovação dentária, maior probabilidade de visitar o dentista para prevenção/controle e menor frequência de consumo de doces entre refeições (ELYASI et al., 2015; POURSALEHI; NAJIMI; TAHANI, 2021; SILVA-DOMINGUES et al., 2022). No entanto, a literatura é escassa em relação a estudos que avaliem a relação entre SoC e uso de fio dental. O estudo de Lindmark, Hakeberg e Hugoson (2011), realizado na Suécia e incluindo uma amostra de 910 indivíduos com idade entre 20 a 80 anos, foi o único estudo que investigou o SoC como um possível preditor do uso do fio dental. Os autores encontraram

uma diferença significativa entre as médias da escala SoC dos indivíduos que realizavam ou não a limpeza interdental regular, porém esta variável não foi incluída nos modelos ajustados. Além disso, o uso do fio dental foi combinado com outro método de limpeza interproximal (palito). Os demais estudos disponíveis incluindo essas duas variáveis (SoC e fio dental) realizaram análises com outros propósitos. Alguns utilizaram o SoC como desfecho do estudo (PEKER; BERMEK; UYSAL, 2012; REDDY et al., 2016) enquanto outros incluíram ambas as variáveis como preditores de desfechos como doença periodontal, dor dental e cárie dentária (da SILVA; da SILVA; VETTORE, 2014; da SILVA; VETTORE, 2016; CYRINO et al., 2016).

1.3.2 Senso de coerência e parâmetros clínicos

A maioria dos estudos avaliando a associação entre SoC e desfechos clínicos avaliaram parâmetros periodontais e cárie dentária. A revisão sistemática de Olivo et al. (2021) avaliando a relação entre SoC e desfechos periodontais demonstrou que indivíduos com alto SoC foram mais propensos a apresentar melhores resultados periodontais. A meta-análise mostrou que indivíduos com SoC mais baixo tiveram cerca de 3 vezes mais chance de apresentar sangramento à sondagem.

No que concerne à cárie dentária, a literatura apresenta resultados mais conflitantes. Poursalehi, Najimi e Tahani (2021) avaliaram o efeito do SoC sobre o estado de saúde bucal de pessoas em diferentes faixas etárias em uma revisão sistemática da literatura. Um total de 15 estudos foram incluídos na análise qualitativa, no entanto apenas quatro foram incluídos na meta-análise para o desfecho cárie dentária, sendo todos realizados com adultos escandinavos (finlandeses e suecos). A meta-análise demonstrou existir associação entre SoC e cárie dentária, sendo um alto SoC reconhecido como um fator protetor (Odds Ratio = 0.78, IC 95% = 0.9–0.67, P = 0.001). Em relação à faixa etária de adolescentes, dois estudos foram incluídos na análise qualitativa (FREIRE; SHEIHAM; HARDY, 2001; LAGE et al., 2017). Freire, Sheiham e Hardy (2001) realizaram um estudo em uma população adolescente brasileira de 15 anos enquanto Lage et al. (2017) realizaram um estudo com um grupo de adolescentes brasileiros com média de idade de $13,8 \pm 0,7$ anos. De uma maneira geral, esta revisão encontrou uma relação significativa entre SoC e cárie dentária em adolescentes, mas esta associação foi pobre após o ajuste para os fatores subjacentes. Os autores concluíram que o número de artigos disponíveis incluindo crianças e adolescentes não foi suficiente e mais estudos são necessários sobre este tópico nestas faixas etárias. Outra revisão sistemática

disponível na literatura foi conduzida por Torres et al. (2020) e avaliou a relação entre SoC e cárie dentária em diferentes faixas etárias. Os autores concluíram que níveis mais altos de SoC parecem estar associados a níveis mais baixos de cárie. Além dos dois estudos citados anteriormente (FREIRE; SHEIHAM; HARDY, 2001; LAGE et al. 2017), esta revisão incluiu outros dois estudos em adolescentes. Um estudo não encontrou associação entre SoC e índice CPO-D em adolescentes de 16-17 anos da Índia (SHILPA et al., 2016) e outro estudo observou que adolescentes brasileiros de 11-15 anos com SoC mais alto tiveram níveis mais baixos de cárie dentária (LYRA et al., 2015). Mais recentemente, outros estudos também têm abordado este tema. Tomazoni et al. (2019a) avaliaram escolares brasileiros de 8-14 anos e encontraram associação entre maior SoC e menor experiência de cárie dentária em crianças brasileiras socialmente vulneráveis. Mrudhula et al. (2020) realizou estudo na Índia com escolares de 11-16 anos e encontrou uma relação inversa significativa entre maior SoC e menor experiência de cárie. Da mesma forma, o estudo de Baxevanos et al. (2020) realizado com adolescentes gregos de 13 a 16 anos mostrou que o SoC foi o melhor preditor de cárie dentária e comportamentos relacionados à saúde bucal, dentre todos os parâmetros avaliados. Em contrapartida, o estudo de Tondolo Junior et al. (2021) realizado com adolescentes brasileiros com média de idade de 17,5 anos mostrou que uma relação direta entre SoC e cárie dentária não pôde ser observada. O Quadro 2 sumariza os estudos avaliando a associação entre SoC e cárie dentária em adolescentes. É possível observar que esses estudos não incluíram indivíduos na faixa etária de 18 e 19 anos.

| Autor | Local | Desenho | Amostra | Idade | Resultados |
|------------------------------|--------------|----------------|----------------|--------------|---|
| Freire et al. (2001) | Brasil | Transversal | 664 | 15 anos | SoC perdeu significância com cárie após o ajuste para outros fatores. |
| Lyra et al. (2015) | Brasil | Transversal | 100 | 11-15 anos | Quanto maior o SoC, menor o CPOD. |
| Shilpa et al. (2016) | Índia | Transversal | 361 | 16-17 anos | Não houve diferença estatisticamente significativa entre SoC e experiência de cárie. |
| Lage et al. (2017) | Brasil | Transversal | 1195 | 13-15 anos | Associação significativa entre maior SoC e menor experiência de cárie. |
| Tomazoni et al. (2019a) | Brasil | Ensaio clínico | 356 | 8-14 anos | Associação significativa entre maior SoC e menor experiência de cárie dentária em crianças socialmente vulneráveis. |
| Mrudhula et al. (2020) | Índia | Transversal | 595 | 11-16 anos | Associação significativa entre maior SoC e menor experiência de cárie. |
| Baxevanos et al (2020) | Grécia | Transversal | 531 | 13-16 anos | SoC mostrou-se o mais forte preditor de comportamento de saúde e estado de cárie dentária. |
| Tondolo Junior et al. (2021) | Brasil | Transversal | 768 | 17,5 anos | SoC e cárie dentária não se relacionam diretamente entre si. |

Fonte: Elaborado pela própria autora.

Apesar da variedade de dados disponíveis na literatura avaliando a associação entre SoC e cárie dentária em crianças e adolescentes, todos estes estudos utilizaram o índice de dentes cariados, perdidos ou restaurados (ceo-d/CPO-D) para definição do desfecho. Em virtude de seu caráter cumulativo, este índice corresponde à experiência acumulada de doença cárie ao longo da vida do indivíduo, não retrocedendo mesmo que as condições de saúde bucal venham a melhorar. Não há estudos na literatura avaliando a possível associação entre SoC e atividade de cárie, que reflete a estado atual do indivíduo relativo à natureza dinâmica da doença cárie.

1.3.3 Senso de coerência e qualidade de vida relacionada à saúde bucal

Além de influenciar hábitos relacionados à saúde bucal e parâmetros clínicos, o SoC parece exercer também uma influência na qualidade de vida relacionada à saúde bucal (QVRSB), definida como “um construto multidimensional que reflete (entre outras coisas) o conforto das pessoas ao comer, dormir e interagir socialmente; sua autoestima; e sua satisfação com relação à saúde bucal” (DHHS, 2000).

O novo conceito de saúde bucal pode ser atribuído à sua natureza multifacetada e inclui a capacidade de falar, sorrir, cheirar, saborear, tocar, mastigar, engolir e transmitir uma variedade de emoções, através de expressões faciais, com confiança e sem dor ou desconforto e sem doença do complexo craniofacial. Inclui três componentes, os quais interagem entre si: doença e estado de condição, função fisiológica e função psicossocial (GLICK et al., 2016). A QVRSB é uma parte integrante da saúde geral e bem-estar e é reconhecida pela Organização Mundial da Saúde como um importante segmento do Programa Global de Saúde Bucal (SISCHO; BRODER, 2011).

Inúmeros estudos avaliaram a associação entre SoC e QVRSB, o que foi sumarizado na revisão sistemática de Gomes et al. (2018). Os autores concluíram que um SoC mais alto foi preditor de menos sintomas e impactos funcionais, bem como melhores percepções de saúde e qualidade de vida entre os adolescentes. Dos 13 artigos incluídos, no entanto, apenas cinco avaliaram essa relação entre adolescentes, sendo três estudos observacionais (BAKER; MAT; ROBINSON, 2010; GURURATANA; BAKER; ROBINSON, 2014; PAKPOUR et al., 2018) e dois ensaios clínicos (NAMMONTRI; ROBINSON; BAKER, 2013; TOMAZONI et al., 2019b).

Baker, Mat e Robinson (2010) avaliaram a relação entre SoC e saúde bucal em adolescentes de 12 e 13 anos durante um período de 6 meses na Malásia. Foi avaliada a

relação entre fatores psicossociais, estado de saúde bucal, percepções de saúde e QVRSB. Os autores concluíram que o SoC na linha de base foi o preditor mais consistente de QVRSB no seguimento, sendo que um maior SoC foi relacionado a menos sintomas, menor impacto na vida cotidiana e melhores percepções de saúde geral. O estudo de Gururatana, Baker e Robinson (2014) investigou os preditores clínicos e psicossociais da QVRSB em adolescentes tailandeses com idade entre 10-14 anos na linha de base por 3, 6 e 9 meses de acompanhamento. Os resultados mostraram que um maior SoC, crenças de enfrentamento odontológico e status socioeconômico previram melhor QVRSB em todos os três momentos. Pakpour et al. (2018) avaliaram os efeitos diretos e indiretos das condições clínicas, ansiedade odontológica, SoC e variáveis socioeconômicas sobre a QVRSB em adolescentes iranianos com média de idade de 15 anos. Os autores encontraram que educação paterna, renda familiar, medo odontológico, condição periodontal, cárie dentária e SoC foram preditores significantes da QVRSB após 18 meses.

Nammontri, Robinson e Baker (2013) tiveram como objetivo testar o efeito de uma intervenção para melhorar o SoC na QVRSB em adolescentes tailandeses de 10 a 12 anos. Foi encontrado que a intervenção realizada durante 2 meses em sala de aula por professores treinados aumentou o SoC e melhorou a QVRSB, juntamente com crenças de saúde bucal e saúde gengival. O estudo intervencional de Tomazoni et al. (2019b) objetivou testar a eficácia de uma intervenção escolar para melhorar o SoC e a QVRSB de adolescentes brasileiros de 8-14 anos socialmente vulneráveis. O estudo mostrou que os indivíduos do grupo intervenção relataram menos impactos de sua saúde bucal em suas vidas diárias, concluindo que o SoC foi um preditor relevante para sintomas orais e estado funcional nesta população.

Posteriormente à revisão sistemática de Gomes et al. (2018), outros três estudos em adolescentes foram publicados sobre o tema. O estudo de Soares et al. (2020) incluiu uma amostra de 133 crianças de 0 a 6 anos e 167 crianças/adolescentes de 7 a 15 anos, totalizando 300 indivíduos. Os autores observaram que o SoC não influenciou a QVRSB na faixa etária de 0 a 6 anos; no entanto, na faixa etária de 7 a 15 anos foi observado que quanto maior o SoC, menor o impacto na qualidade de vida familiar. O estudo de Tondolo Junior et al. (2021) avaliou indivíduos com média de idade de 17,5 anos do sul do Brasil e mostrou que SoC e cárie dentária tiveram um efeito direto na QVRSB. Por fim, o estudo de coorte de Knorst et al. (2022) avaliando o efeito moderador do SoC na relação entre capital social e QVRSB em adolescentes entre 11-15 anos de idade demonstrou que indivíduos com alto SoC foram mais propensos a relatar melhor QVRSB. Dessa forma, foi observado que um alto SoC poderia atenuar o impacto negativo de um baixo capital social em pior QVRSB.

O Quadro 3 descreve os estudos avaliando SoC e QVRSB em adolescentes. É possível observar que esses estudos não incluíram indivíduos na faixa etária de 18 e 19 anos.

Quadro 3: Estudos sobre SoC e QVRSB em adolescentes.

| Autor | Local | Desenho | Amostra | Idade | Resultados |
|------------------------------|--------------|--------------------------|----------------|-----------------|---|
| Baker et al. (2010) | Malásia | Longitudinal de 6 meses | 439 | 12-13 anos | SoC mais alto foi preditor de menos sintomas e impactos funcionais assim como melhores percepções de saúde e qualidade de vida. |
| Nammontri et al. (2013) | Inglaterra | Ensaio clínico | 261 | 10-12 anos | A intervenção aumentou o SoC e melhorou QVRSB. |
| Gururatana et al. (2014) | Tailândia | Longitudinal | 510 | 10-14 anos | Crianças com maior SoC tiveram melhor QVRSB do que aqueles com menor SoC. |
| Pakpour et al. (2017) | Irã | Longitudinal de 18 meses | 1052 | Média 15 anos | Nível mais alto de SoC previu uma melhor QVRSB após 8 meses. |
| Tomazoni et al. (2019b) | Brasil | Ensaio Clínico | 356 | 8-14 anos | A intervenção foi efetiva em melhorar o SoC e a QVRSB em crianças brasileiras socialmente vulneráveis. |
| Soares et al. (2019) | Brasil | Transversal | 300 | 0-15 anos | 0 a 6 anos: Sem associação. 7-15 anos: Quanto maior o SoC, menor o impacto na qualidade de vida da família. |
| Tondolo Junior et al. (2021) | Brasil | Transversal | 768 | Média 17,5 anos | Indivíduos com altas pontuações de SoC tiveram um impacto positivo na QVRSB. |
| Knorst et al. (2022) | Brasil | Longitudinal de 10 anos | 429 | 11- 15 anos | Níveis moderados e altos de SoC demonstraram um efeito moderador na relação entre capital social e QVRSB. |

Fonte: Elaborado pela própria autora.

Apesar de já existirem na literatura estudos avaliando as associações entre SoC e desfechos em saúde bucal em diferentes populações e faixas etárias, não há estudos que descrevam estes fatores entre jovens servindo ao serviço militar obrigatório. Conforme já demonstrado na literatura, variáveis sócio-demográficas como sexo, idade e nível socioeconômico têm um efeito na auto-percepção e QVRSB (KNORST et al. 2021; ALVAREZ-AZAUSTRE; GRECO; LLENA, 2021). Deste modo, a investigação das referidas associações em uma população homogênea com relação a estes aspectos parece ser uma vantagem, uma vez que elimina a possível influência destes fatores nos achados do estudo. Além disso, o estudo de um recurso psicológico como o SoC em um momento potencialmente estressante para estes jovens parece ser uma outra vantagem. Para isso, três estudos científicos foram desenvolvidos, os quais são referidos na presente tese pelos seus números romanos.

2 OBJETIVOS

2.1 OBJETIVO GERAL

Estudar a associação entre SoC e desfechos em saúde bucal entre recrutas cumprindo o serviço militar obrigatório no Exército Brasileiro em duas cidades do sul do Brasil.

2.2 OBJETIVOS ESPECÍFICOS

- Avaliar a associação entre SoC e o uso do fio dental (Artigo I);
- Avaliar a associação entre SoC e atividade de cárie dentária (Artigo II);
- Avaliar a associação entre SoC e QVRSB (Artigo III).

3 ARTIGO I – IS THE SENSE OF COHERENCE ASSOCIATED WITH FLOSSING AMONG SOUTHERN BRAZILIAN MALE ADOLESCENTS?

Este artigo será submetido como um “*brief report*” ao periódico *Clinical Oral Investigations*, ISSN: 1436-3771, Fator de impacto: 3.606, Qualis CAPES A1. As normas para publicação estão descritas no ANEXO D.

Is the sense of coherence associated with flossing among southern Brazilian male adolescents?

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Abstract

Objective: To assess the association between sense of coherence (SoC) and flossing among southern Brazilian male adolescents aged 18-19 years.

Methods: A cross-sectional study was conducted and included 18-19-year-old adolescents who joined the Brazilian Army as enlisted for mandatory military service in two military bases located in southern Brazil (n=507). Data collection included a structured questionnaire to gather data on socio-demographic information and oral health-related habits, such as education level, family income, dental flossing, and visit to a dentist for preventive purposes in the previous year. The outcome of this study was dental flossing, which was defined as a binary variable ('no' or 'yes'). The main predictor variable was SoC, categorized as low, moderate, or high. The association between SoC and flossing was investigated using Poisson regression models. Unadjusted and adjusted prevalence ratios (PR) and their respective 95% confidence intervals (CI) were estimated.

Results: The prevalence of dental flossing was significantly higher in adolescents with high SoC (41.2%) than in those with low SoC (29.2%). Adolescents with high SoC were 43% more likely to floss than those with low SoC (adjusted PR=1.43; 95% CI=1.06-1.93). Individuals with higher family income and those who visited a dentist for prevention were also more likely to floss.

Conclusions: This study showed a significant association between SoC and dental flossing among 18-19-year-old male adolescents from Southern Brazil.

Clinical relevance: This finding highlights the importance of strengthening the SoC to promote better oral hygiene practices among adolescents, thus contributing to controlling oral diseases.

Keywords

Sense of coherence, flossing, adolescent, cross-sectional study.

Introduction

Sense of coherence (SoC) is a psychological resource related to a person's ability to cope with environmental stress and life tensions [1]. It comes from the salutogenic theory and is defined as a global orientation of the person through which life is understood as more or less comprehensible, meaningful, and manageable. A person with higher SoC is able to find suitable solutions when facing challenges in his/her life [2].

SoC has been reported to be associated with oral health-related habits and behaviors, such as tooth brushing frequency, dental attendance pattern, and dietary habits. Three systematic reviews on this topic showed that individuals with higher SoC were more likely to (1) report higher frequency of tooth brushing and (2) visit a dentist preventively, and less likely to eat sugary food/drinks between meals [3-5]. To the best of our knowledge, only one previous study investigated SoC as a potential predictor of flossing [6]. Although the authors have found a higher SoC among individuals who used to perform interproximal cleaning regularly, this variable was not included in the risk models. In addition, this study combined two different methods of interproximal cleaning, dental floss and toothpicks.

The benefits of flossing for the control of interproximal caries have been questioned since the early 2000's [7] and we still lack evidence on this topic; however, flossing in addition to tooth brushing may reduce gingivitis or plaque, or both, more than tooth brushing alone [8]. In this sense, the Brazilian Ministry of Health recommends the use of dental floss as a complement to daily brushing to maintain oral health [9] and the American Dental Association (ADA) recommends flossing at least once a day for proximal cleaning [10]. Considering these aspects, the aim of the present study was to assess the association between SoC and flossing among southern Brazilian male adolescents aged 18-19 years. We hypothesized that a higher SoC afford a greater likelihood of flossing.

Methods

This cross-sectional study was conducted in two Brazilian Army military bases located in southern Brazil and included all adolescents aged 18-19 years who were enlisted for mandatory military service. The study protocol was approved by the Research Ethics Committee of the Federal University of Santa Maria (CAAE 20079519.1.0000.5346) and all participants provided written informed consent.

Data collection was carried out in the city of Itaqui, RS (estimated population around 37,000) in 2019-2020, and in the city of Santiago, RS (estimated population around 50,000) in 2021, and included questionnaires and clinical examination. A structured questionnaire gathered data on socio-demographic information and oral health-related habits, such as education level, family income, dental flossing, and whether the participant had visited a dentist for preventive purposes in the previous year. To assess the study outcome, the question applied was “Do you use dental floss?” and the answer alternatives were “no” or “yes”, with no mention to flossing frequency.

SoC was assessed using the validated Brazilian short version of the SoC scale (SOC-13) [11], which is composed of 13 items divided in three components: comprehensibility, manageability, and meaningfulness. Response options are presented on a five-point Likert scale, in which the sum of points can range from 13 to 65. The higher the SoC score, the higher the person’s ability to cope with stressful situations.

Data analysis

The primary outcome of this study was dental flossing, which was defined as a binary variable (‘no’ or ‘yes’). The main predictor variable was SoC, categorized as low, moderate, or high, based on tertiles, as previously described in the literature [13]. Other predictor variables were education level (categorized as <8 years, 8-10 years, or ≥ 11 years), family income (≤ 3 Brazilian minimum wages [BMW, being 1 BMW corresponding to approximately 200 US dollars during the period of data collection] or ≥ 4 BMW) and dental visit in the last year for preventive purposes (dichotomized as ‘no’ or ‘yes’).

The Wald test was preliminarily used to compare the prevalence of flossing between categories of explanatory variables. The association between SoC and flossing was investigated using Poisson regression models. Unadjusted and adjusted prevalence ratios (PR) and their respective 95% confidence intervals (CI) were estimated. Variables with $p < 0.20$ in the unadjusted analysis were included in the adjusted model. Data analysis was performed using STATA software (Stata 14.2, Stata Corporation, College Station, USA) and the level of significance was set at 5%.

Results

All invited individuals agreed to participate. A total of 520 adolescents were examined; however, this study includes data on 507 individuals because 13 had missing

information on the SoC scale. The prevalence of flossing was 34.4%, corresponding to 173 individuals. Sample distribution and the prevalence of flossing according to explanatory variables are presented in Table 1. The prevalence of dental flossing was significantly higher in adolescents with high SoC (41.2%) than in those with low SoC (29.2%). No significant differences were observed regarding the education level; however, the proportion of adolescents who used to floss was higher among those with family income ≥ 4 BMW and those who visited the dentist in the last year preventively.

Table 2 shows the association between explanatory variables and flossing. All variables were significantly associated with dental flossing in the unadjusted and adjusted models, with the exception of education level. Adolescents with high SoC were 43% more likely to floss than those with low SoC (PR=1.43; 95% CI=1.06-1.93). Individuals with higher family income and those who visited a dentist for prevention were also more likely to floss.

The calculation of the study power was performed for the prevalence of flossing between non-exposed (low SoC) and exposed (high SoC) individuals using 95% CI and a value of 63% was observed.

Discussion

This study investigated the association between SoC and flossing among southern Brazilian male adolescents aged 18-19 years. Findings from the present study demonstrated that adolescents with high SoC were more likely to floss than those with low SoC, even after the adjustment for important cofactors. To the best of our knowledge, this is the first study addressing this issue.

Flossing has been recommended as an adjunct to tooth brushing to maintain oral health; however, patients' compliance with flossing is not as great as with tooth brushing. Factors such as the longer time spent on oral hygiene procedures, the need for greater manual dexterity, and the additional cost related to the need to buy an extra product for oral hygiene may explain, at least in part, this fact. Previous studies have investigated the factors associated with the habit of flossing, such as socioeconomic and environmental factors [14-16]. Moares et al. [14] found that children from families with higher income and maternal schooling presented a higher prevalence of dental floss use. Soofi et al. [15] found that flossing was significantly associated with high socioeconomic status. They showed that socioeconomic status and education level made the most positive contributions to socioeconomic inequality

in flossing behavior. The study by Mata et al. [16] evaluated the socioeconomic inequalities in oral health-related behaviors, such as frequency of tooth brushing, flossing, and dental appointments, in 18-year-old Portuguese adolescents. The authors showed that socioeconomic inequalities in health-related behaviors were associated with employment status and educational level, adolescent educational level, sex, and residential area. These findings were corroborated by the present study, since a higher family income was significantly associated with flossing.

The literature is scarce regarding studies addressing the association between SoC and the habit of flossing. After extensively revising the existing literature, we could find 6 studies including SoC and flossing. In the studies by Peker et al. [17] carried out in Turkey and Reddy et al. [18] in India, SoC was modelled as the outcome, not the predictor. In two other studies, SoC and flossing were included as predictors of periodontal outcomes [19-21]. The only study investigating SoC as a possible predictor of flossing was conducted by Lindmark et al. [6] and included 910 Swedish individuals aged 20-80 years. The authors presented only a preliminary analysis between SoC and flossing by comparing the mean (\pm standard deviation) SoC scores between individuals who performed interproximal cleaning regularly (71.3 ± 10.6) and those who did not (69.1 ± 11.9), and a significant difference was found ($p = 0.03$). Despite this finding, the variable was not included in the adjusted models. Furthermore, as stated previously, this study combined flossing with other method of interproximal cleaning (toothpick). The present study showed that adolescents with high SoC were 43% more likely to floss than those with low SoC. Considering that flossing presumes sufficient motivation of the individual, a high SoC may make the flossing effort seem worthwhile. This finding is coherent with the significant association between SoC and the habit of brushing teeth ≥ 3 times/day observed in this sample of adolescents (data not shown).

Limitations of our study include its cross-sectional research design, which prevents us from defining causal inferences, and its convenience sample that cannot be considered representative of the whole population of 18-19-year-old adolescents from Southern Brazil. All recruits joining the military service were included in the study by convenience and no sample size calculation was performed a priori. Although the statistical power did not reach the usually adopted threshold of 80%, the sample of 507 adolescents was considered of sufficient size to detect a significant association between SoC and flossing. Some strengths of the present study also have to be pointed out. The sample was composed of a homogeneous population in terms of sex, age, and socioeconomic conditions, which seems to be an advantage, since it eliminates the possible influence of these factors on the study findings.

Finally, the study involved individuals who are daily involved with physically and psychologically stressful situations in the context of mandatory military service, thus making this a potentially interesting scenario for studying psychological factors, such as SoC.

In conclusion, this cross-sectional study showed a significant association between SoC and dental flossing among 18-19-year-old male adolescents from southern Brazil. This finding highlights the importance of strengthening the SoC to promote better oral hygiene practices among adolescents, thus contributing to controlling oral diseases.

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Table

Table 1. Sample distribution and the prevalence of flossing according to explanatory variables.

| | n (%) | Flossing % (95% CI) |
|---|------------------|--------------------------------|
| Education level | | |
| <8 years | 75 (14.8) | 30.1 (19.5-40.8) ^a |
| 8-10 years | 182 (35.9) | 30.8 (24.0-37.5) ^a |
| ≥11 years | 250 (49.3) | 38.3 (32.2-44.4) ^a |
| Family income | | |
| ≤3 BMW | 380 (74.9) | 30.0 (25.4-34.7) ^a |
| ≥4 BMW | 127 (25.1) | 47.2 (38.5-56.0) ^b |
| Sense of coherence | | |
| Low | 161 (31.8) | 29.2 (22.1-36.2) ^a |
| Moderate | 178 (35.1) | 32.8 (25.8-39.7) ^{ab} |
| High | 168 (33.1) | 41.2 (33.7-48.8) ^b |
| Dental visit in the last year for prevention | | |
| No | 412 (81.4) | 31.5 (27.0-36.1) ^a |
| Yes | 94 (18.6) | 47.3 (37.1-57.5) ^b |
| TOTAL | 507 (100) | 34.4 (30.2-38.6) |

BMW = Brazilian minimum wage; CI = confidence interval.

Different letters indicate statistically significant difference between categories (p<0.05, Wald test).

Table 2. Association between explanatory variables and flossing (Unadjusted and adjusted Poisson regression models).

| | Unadjusted | | | Adjusted | | |
|--|------------|-----------|--------|----------|-----------|-------|
| | PR | 95% CI | P | PR | 95% CI | P |
| Education level | | | | | | |
| <8 years | 1.00 | | | | | |
| 8-10 years | 1.02 | 0.68-1.54 | 0.92 | | | |
| ≥11 years | 1.27 | 0.87-1.87 | 0.22 | | | |
| Family income | | | | | | |
| ≤3 BMW | 1.00 | | | 1.00 | | |
| ≥4 BMW | 1.57 | 1.24-2.00 | <0.001 | 1.52 | 1.19-1.92 | 0.001 |
| Sense of coherence | | | | | | |
| Low | 1.00 | | | 1.00 | | |
| Moderate | 1.12 | 0.81-1.55 | 0.48 | 1.15 | 0.84-1.58 | 0.39 |
| High | 1.41 | 1.04-1.91 | 0.02 | 1.43 | 1.06-1.93 | 0.02 |
| Dental visit in the last year for prevention | | | | | | |
| No | 1.00 | | | 1.00 | | |
| Yes | 1.50 | 1.16-1.94 | 0.002 | 1.50 | 1.16-1.94 | 0.002 |

BMW = Brazilian minimum wage; PR = prevalence ratio; CI = confidence interval.

**4 ARTIGO II - ASSOCIATION BETWEEN SENSE OF COHERENCE AND CARIES
ACTIVITY AMONG MALE ADOLESCENTS FROM SOUTHERN BRAZIL**

Este artigo será submetido ao periódico *Caries Research*, ISSN: 0008-6568, Fator de impacto: 3.918, Qualis CAPES A1. As normas para publicação estão descritas no ANEXO E.

Association between sense of coherence and caries activity among male adolescents from southern Brazil

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Number of tables: 2

Number of figures: 0

Word count: 2,342

Keywords: sense of coherence, dental caries, adolescent, oral health, cross-sectional study.

Abstract

The aim of this study was to analyze the association between sense of coherence (SoC) and caries activity among 18-19-year-old male adolescents from southern Brazil. This cross-sectional study included 507 individuals who joined the Brazilian Army as enlisted for mandatory military service in two Brazilian Army military bases located in southern Brazil. Data collection included the application of a socioeconomic questionnaire (level of education and family income), the Brazilian short version of the SoC scale (SOC-13), and clinical oral examination. A single calibrated examiner recorded the presence of non-cavitated/cavitated, inactive/active caries lesions. The main predictor variable was SoC, categorized as low, moderate, or high. The primary outcomes of this study were the prevalence and extent of caries activity. The association between SoC and caries activity was investigated using Poisson regression models. Unadjusted and adjusted prevalence ratios (PR) and rate ratios (RR) and their respective 95% confidence intervals (CI) were estimated. The prevalence of active caries in the sample was 73.2% and, on average, adolescents had 2.45 active lesions. A high SoC was significantly associated with a lower extent of active caries lesions (adjusted RR = 0.85; 95% CI = 0.74-0.98), but no association was detected regarding prevalence. A high SoC was found to be a protective factor against caries activity among male adolescents from southern Brazil.

Introduction

Dental caries is a major public health problem worldwide and is the most widespread non-communicable disease. The “Global Burden of Disease Study 2019” showed that dental caries in permanent teeth was the most prevalent condition evaluated [WHO, 2022]. In the last national epidemiological survey on oral health conducted in Brazil in 2010, caries rates among adolescents were twice as high as in childhood, with a considerable increase in dental caries in a critical period of transition to adulthood. A DMFT index of 2.1 at 12 years increased to 4.3 in the 15-19 age group [Brasil, 2012].

In addition to well-defined risk factors, such as unhealthy behaviors and deprived socioeconomic conditions, previous studies have investigated the possible association between psychological factors and dental caries, including the assessment of the sense of coherence (SoC), the central construct of the salutogenic theory [Antonovsky, 1996]. SoC is an individual resource that allows individual to face and react positively to stressful situations and stay healthy [Antonovsky, 1979]. The higher the SoC, the greater the ability to define life events as less stressful (comprehensibility), to use the available resources more effectively to deal with the stressors (manageability), and to perceive life as meaningful to cope with the environment (meaningfulness) [Eriksson and Lindstrom, 2006].

Previous studies evaluating the association between SoC and dental caries experience in adolescents have yielded conflicting results. While some studies found an association between SoC and caries experience [Lyra et al., 2015; Lage et al., 2017; Tomazoni et al., 2019; Mrudhula et al., 2020; Baxevanos et al., 2021], others failed to find such association [Freire et al., 2001; Shilpa et al., 2016; Tondolo Junior et al., 2021]. A recent systematic review evaluating the effect of SoC on oral health status included only two studies conducted with adolescents [Poursalehi et al., 2021]. No major conclusion could be drawn for this age group due to the limited number of studies and the loss of significance after the adjustment for underlying factors. Despite these previous studies, all of them used the DMFT index to define the study outcome, which represents the cumulative caries experience of a given individual throughout his/her lifetime. To the best of our knowledge, no previous study has evaluated the association between SoC and individual’s caries activity, which refers to the current caries status of a person based on lesion features [Maltz et al., 2020]. This outcome may be specially important among adolescents, an age group in which individuals are no longer subjected to their parents’ care, start having more autonomy, make their own choices, that is, caries activity reflects his/her own care in relation to oral health (unlike DMFT, which reflects the

care that they received from their parents). Therefore, the aim of this study was to assess the association between SoC and caries activity among 18-19-year-old male adolescents from southern Brazil. We hypothesized that adolescents with a higher SoC are less likely to present active caries lesions.

Methods

Study design and sample

This cross-sectional study was carried out with adolescents aged 18-19 years who joined the Brazilian Army as enlisted for mandatory military service in two Brazilian Army military bases located in southern Brazil. All conscripts attending the mandatory military service in the city of Itaqui, RS, with a population around 37,000, during the years 2019 and 2020 and in the city of Santiago, with a population around 50,000, RS, during the year 2021 were invited to participate. Mandatory military service in Brazil targets young Brazilian males born between January 1st and December 31st in the year they complete 18 years of age.

Considering a caries prevalence of 56.6% among non-exposed individuals (low SoC) and an adjusted prevalence ratio of 0.46 for exposed individuals (high Soc) [Lage et al., 2017], α of 5%, and β of 20%, a sample size of 234 was defined as necessary for this study.

Data collection

Data collection included the application of questionnaires and clinical oral examination. A structured questionnaire gathered data on socio-demographic information, including level of education and family income.

SoC was assessed using the validated Brazilian short version of the SoC scale (SOC-13) [Bonanato et al., 2009]. This instrument consists of 13 items and assesses the following components: comprehensibility, manageability, and meaningfulness. Response options are presented on a five-point Likert scale, in which the sum of points can range from 13 to 65. Higher scores represent a higher SoC.

Clinical examination was performed in a dental unit, with a sterile clinical mirror, millimeter periodontal probe, and a WHO probe. All surfaces from incisors to third permanent molars were examined. After professional tooth cleaning with a toothbrush, moisture isolation with cotton rolls and air drying, a single calibrated examiner recorded the presence of non-cavitated and cavitated, inactive and active caries lesions, according to the following criteria: 1) active non-cavitated (ANC) lesion, opaque enamel with a dull-whitish surface; 2) inactive

non-cavitated (INC) lesion, shiny appearance of the surface area with white or different degrees of brownish discoloration; 3) active cavitated (AC) lesion, localized surface destruction with active characteristics (dull-whitish enamel and soft dentin); and 4) inactive cavitated (IC) lesion, localized surface destruction with arrested characteristics (shiny enamel and hard dentin) [Maltz et al., 2003]. Missing and filled surfaces were also recorded.

Training and calibration

Training and calibration for dental caries examination were performed before the beginning of the study under the supervision of a cariologist with experience in the assessment of non-cavitated caries lesions including lesion activity assessment (PKM). During the survey, examiner's calibration was monitored by means of repeated examinations conducted on 5% of the sample. The intra-examiner unweighted Cohen's kappa value observed for dental caries was 0.96.

Data analysis

The primary outcomes of this study were prevalence and extent of caries activity. Prevalence was defined as the percentage of individuals with at least active caries lesion, either non-cavitated or cavitated (binary outcome). Extent was defined as the number of active lesions (discrete outcome). Third molars were not considered in the analysis.

The main predictor variable was SoC, categorized as low, moderate, or high, based on SoC score tertiles [Bernabé et al., 2010]. Other variables included as adjusting variables were education level (categorized as <8 years, 8-10 years, or ≥ 11 years) and family income (≤ 3 Brazilian minimum wages [BMW, being 1 BMW corresponding to approximately 200 US dollars during the period of data collection] or ≥ 4 BMW).

The Wald test was preliminarily used to compare the prevalence and extent of caries activity between categories of explanatory variables. The association between SoC and caries activity was investigated using Poisson regression models. Unadjusted and adjusted prevalence ratios (PR) and rate ratios (RR) and their respective 95% confidence intervals (CI) were estimated. SoC was included and maintained in the adjusted models irrespective of its p-value. Adjusting variables with $p < 0.20$ in the unadjusted analysis were included in the adjusted model. Data analysis was performed using STATA software (Stata 14.2, Stata Corporation, College Station, USA) and the level of significance was set at 5%.

Results

All invited individuals agreed to participate. A total of 520 individuals were clinically examined; however, 3 had not answered the SoC scale and another 10 had missing information in one out of the 13 questions. Therefore, the present study reports data on 507 adolescents. According to the WHO standards (cavity level), this sample had a mean (\pm standard deviation) DMFT index of 2.3 (\pm 2.4), ranging from 0 to 14 (median 2, interquartile range 0, 4).

As shown in Table 1, the prevalence of active caries in the sample was 73.2% and, on average, adolescents had 2.45 lesions. As the education level improved, the prevalence and extent of active caries significantly decreased. Adolescents with family income \leq 3 BMW had a significantly higher mean number of active lesions than their counterparts with higher family income. No significant differences were observed for SoC in both outcomes.

Table 2 shows the association between explanatory variables and prevalence/extent of caries activity. After adjusting the estimates for educational level and family income, a high SoC was significantly associated with a lower extent of active lesions than those with a low SoC (RR = 0.85; 95% CI = 0.74-0.98). No association was detected between SoC and the prevalence of caries activity.

Discussion

This cross-sectional study assessed the association between SoC and caries activity among 18-19-year-old southern Brazilian adolescents. The main finding was that adolescents with high SoC had 15% fewer active caries lesions than those with low SoC, indicating a possible protective effect of a psychological resource such as SoC in controlling this highly behavior-dependent disease. To the best of our knowledge, this is the first study assessing the relationship between SoC and caries activity.

Dental caries is a reversible disease that can be arrested at any time, as long as the cariogenic biofilm can be properly removed in a regular basis and/or the supply of sugar and fluoride are compatible with health. For this reason, early diagnosis including classification of lesion features in terms of severity and activity is important to define a proper treatment plan and thus prevent its evolution to more advanced stages [Braga et al., 2010]. The diagnosis of caries activity allows assessing the current status of caries disease based on the dynamics of the demineralization-remineralization process, since the transition of this de-re process is accompanied by characteristic changes in the surface of the lesion [Nyvad et al., 1999]. As

recently demonstrated by Maltz et al. [2000], a patient's caries activity profile (caries-active or caries-inactive) can be determined based on lesion features. The authors showed that adolescents classified as caries-active at baseline were more likely to develop caries in sound surfaces over a follow-up period of 2.5 years than those classified as caries-inactive or caries-free. Although the value of caries activity assessment has been recognized, the World Health Organization [WHO, 1997] recommends the DMFT index to assess caries experience in epidemiological surveys of oral health, which assesses caries severity as the number of decayed, missing, or filled teeth, with no mention to caries activity.

In the present study, we found that a high SoC was associated with a lower extent of caries activity, i. e. these adolescents had fewer active caries lesions. This is a conceivable finding since the literature has shown that a high SoC is associated with healthy behaviours [Pousalehi et al., 2021; Silva-Domingues et al., 2022], such as higher frequency of tooth brushing [Ayo-Yusuf et al., 2009; Dorri et al., 2010; Peker et al., 2012], higher probability of visiting the dentist preventively [Freire et al., 2001], and lower frequency of sugar intake [Peker et al., 2012]. All these factors together result in fewer active caries lesions. According to the literature [Antonovsky, 1996; Bernabé et al., 2009; Lindmark et al., 2011], a high SoC can lead to better health conditions because the individual has the comprehensibility (ability to understand life events as structured and clear); manageability (how to use available resources), and significance (the motivating factor) regarding their oral health [Antonovsky, 1987]. Thus, a strong SoC promotes better health behaviors, attitudes towards oral health, and a good knowledge of oral health [Lindmark et al., 2011], which ultimately results in better oral health conditions. This study corroborates this notion as SoC acted as a protective factor against caries activity.

Unlike the outcome "extent of caries activity", no association between SoC and the outcome "prevalence of caries activity" could be observed in this study. Dental caries is considered a complex and multifactorial disease, involving contextual and individual factors, such as socioeconomic, demographic, behavioral, and biological factors [Martignon et al., 2021]. Therefore, it becomes more difficult to establish an association between SoC and a binary outcome such as prevalence, which notably reduces the statistical power of the analysis. On the other hand, the use of a discrete outcome such as extent (number of lesions) increases the study power, thus revealing an association between SoC and caries activity.

Some limitations of this study need be addressed. First, its cross-sectional design prevents us from defining causal inferences, and further cohort study may address this topic. Further, its convenience sample was composed of recruits of the Brazilian Army, which

cannot be considered representative of the whole population of adolescents aged 18 to 19 years from southern Brazil. One could also argue that our estimates were not adjusted for variables such as the frequency of tooth brushing or sugar intake. However, we understand that these variables are related to the causal chain of caries activity and adjusting for them would mean adjusting for the study outcome itself. A similar approach was adopted by Maltz et al. [2020]. Some strengths of our study should also be highlighted. The sample consisted of a homogeneous population in terms of sex, age, and socioeconomic conditions, which seems to be an advantage, as it eliminates the possible influence of these factors on the study findings. In addition, the daily situations in which these adolescents live are physically and psychologically stressful, characteristic of mandatory military service, thus making it favorable for the study of a psychological resource such as SoC.

In conclusion, this cross-sectional study found an association between SoC and the extent of caries activity in adolescents aged 18-19 years in southern Brazil. A high SoC was found to be a protective factor against caries activity in this population.

Statements

Statement of ethics

The study protocol was approved by the Research Ethics Committee of the Federal University of Santa Maria (CAAE 20079519.1.0000.5346). All participants provided written informed consent and received dental treatment when necessary.

Conflict of interest statement

The authors have no conflicts of interest to declare.

Funding sources

This study was partially supported by the National Coordination of Post-graduate Education (CAPES), Ministry of Education, Brazil (funding code 001), and by the Federal University of Santa Maria.

Author contributions

L.S.A. and N.C.L. conceived the idea; N.C.L. collected the data; L.S.A. analyzed the data; L.S.A., N.C.L., P.K.M., and M.L.C.A.G. led the writing.

Data availability statement

All data generated or analyzed during this study are included in this article. Further enquiries can be directed to the corresponding author.

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Table 1. Sample distribution, prevalence and extent of caries activity according to explanatory variables.

| | n (%) | Prevalence % (95% CI) | Extent Mean (95% CI) |
|---------------------------|------------------|--------------------------------|--------------------------------|
| Education level | | | |
| <8 years | 75 (14.8) | 84.0 (75.6-92.4) ^a | 3.25 (2.56-3.95) ^a |
| 8-10 years | 182 (35.9) | 75.3 (69.0-81.6) ^{ab} | 2.55 (2.17-2.94) ^{ab} |
| ≥11 years | 250 (49.3) | 68.4 (62.6-74.2) ^b | 2.13 (1.83-2.43) ^b |
| Family income | | | |
| ≤3 BMW | 380 (74.9) | 71.3 (66.7-75.9) ^a | 2.57 (2.29-2.84) ^a |
| ≥4 BMW | 127 (25.1) | 78.7 (71.6-85.9) ^a | 2.10 (1.69-2.51) ^b |
| Sense of coherence | | | |
| Low | 161 (31.8) | 73.3 (66.4-80.2) ^a | 2.60 (2.19-3.01) ^a |
| Moderate | 178 (35.1) | 75.3 (68.9-81.6) ^a | 2.56 (2.16-2.96) ^a |
| High | 168 (33.1) | 70.8 (63.9-77.8) ^a | 2.18 (1.81-2.56) ^a |
| TOTAL | 507 (100) | 73.2 (69.3-77.0) | 2.45 (2.22-2.68) |

BMW = Brazilian minimum wage; CI = confidence interval.

Different letters indicate statistically significant difference between categories ($p < 0.05$, Wald test).

Table 2. Association between explanatory variables and prevalence/extent of caries activity among adolescents.

| | Prevalence | | Extent | |
|---------------------------|--------------------------|------------------------|--------------------------|------------------------|
| | Unadjusted PR (95%CI) | Adjusted PR (95%CI) | Unadjusted RR (95%CI) | Adjusted RR (95%CI) |
| Education level | | | | |
| <8 years | 1.00 | 1.00 | 1.00 | 1.00 |
| 8-10 years | 0.90 (0.79-1.02) | 0.89 (0.78-1.01) | 0.78 (0.67-0.92)* | 0.79 (0.68-0.92)* |
| ≥11 years | 0.81 (0.71-0.93)* | 0.79 (0.69-0.91)* | 0.65 (0.56-0.76)* | 0.67 (0.58-0.79)* |
| Family income | | | | |
| ≤3 BMW | 1.00 | 1.00 | 1.00 | 1.00 |
| ≥4 BMW | 1.10 (0.99-1.23) | 1.15 (1.02-1.28)* | 0.82 (0.72-0.94)* | 0.87 (0.76-0.99)* |
| Sense of coherence | | | | |
| Low | 1.00 | 1.00 | 1.00 | 1.00 |
| Moderate | 1.03 (0.91-1.16) | 1.02 (0.90-1.16) | 0.98 (0.86-1.12) | 0.98 (0.86-1.12) |
| High | 0.97 (0.84-1.11) | 0.97 (0.85-1.10) | 0.84 (0.73-0.97)* | 0.85 (0.74-0.98)* |

BMW = Brazilian minimum wage; PR = prevalence ratio; RR = rate ratio; CI = confidence interval.

* p≤0.05.

5 ARTIGO III – SENSE OF COHERENCE AND ORAL HEALTH-RELATED QUALITY OF LIFE AMONG SOUTHERN BRAZILIAN MALE ADOLESCENTS

Este artigo será submetido ao periódico *Brazilian Dental Journal*, ISSN: 1806-4760, Fator de impacto: 1.686, Qualis CAPES A2. As normas para publicação estão descritas no ANEXO F.

Title: Sense of coherence and oral health-related quality of life among Southern Brazilian male adolescents

Short title: Sense of coherence and OHRQoL

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SUMMARY

This study evaluated the association between sense of coherence (SoC) and oral health-related quality of life (OHRQoL) among conscripts of the Brazilian Army in two cities from southern Brazil. A cross-sectional study included all 18-19-year-old adolescents who joined the Brazilian Army as enlisted for mandatory military service in the cities of Itaquí-RS and Santiago-RS (n=505). Data collection was conducted from 2019 to 2021 and included the application of questionnaires and clinical oral examination to record gingivitis, malocclusion, and dental caries. A structured questionnaire gathered data on socio-demographic information, including level of education and family income. OHRQoL was collected through the Oral Health Impact Profile (OHIP) in its short version composed of 14 questions. Adolescent's SoC was assessed using the validated Brazilian version of the SOC-13 scale. The primary outcome of this study was OHRQoL, modeled as a count variable (OHIP-14 scores). The main predictor variable was SoC, categorized as low, moderate, or high. The association between predictor variables and OHRQoL was assessed using Poisson regression models using a hierarchical approach. Four models were described. Unadjusted and adjusted rate ratios (RR) and their 95% confidence intervals (CI) were estimated. Adolescents with moderate and high SoC had, respectively, 27% (RR=0.73, 95%CI=0.64-0.84) and 51% (RR=0.49, 95%CI=0.41-0.58) lower mean OHIP-14 scores than those with low SoC, after the inclusion of behavioral and clinical variables. This study showed a significant association between SoC and OHRQoL among 18-19 year-old Southern Brazilian adolescents.

KEYWORDS

Sense of coherence, oral health, cross-sectional study, adolescent, quality of life.

INTRODUCTION

Oral health-related quality of life (OHRQoL) is an important element to assess the impact of oral diseases and disorders on psychological, social, and functional well-being of individuals (1). In addition to clinical conditions, such as untreated caries, gingivitis, traumatic dental injuries, and malocclusion, individual sociodemographic characteristics have been shown to influence OHRQoL, such as age, sex, and socioeconomic factors (2, 3).

More recently, another relevant individual factor in the study of oral conditions and OHRQoL is the sense of coherence (SoC), which studies the reason that leads some people to remain healthy when facing stressful situations (4). SoC is the main constituent of the salutogenic theory, which assesses the individual's ability to use existing resources as a way of adapting to an adversity situation (4). Individuals with higher SoC can better cope with existing stressors in their social lives. In addition to influencing habits related to oral health (5) and clinical parameters (6), the SoC also seems to exert an influence on OHRQoL. The systematic review conducted by Gomes et al. (7) included 13 studies and found that a low SoC was associated with a higher impact on OHRQoL. However, despite these findings, only five studies have evaluated this relationship in adolescents, being all of them conducted during the period known as 'early adolescence' (from 10 to 14 years old). Similarly, further studies carried out in adolescents also included adolescents up to 15 years old (8). The only study including individuals in the 'late adolescence' (from 15 to 19 years old) is the recent cohort study conducted by Tondolo Junior et al. (9), which showed that SoC had a direct effect on OHRQoL of adolescents with a mean age of 17.5 years.

Despite previous studies evaluating the association between SoC and OHRQoL in different populations and age groups, there is no study investigating this relationship among 18-19-year-old adolescents serving the mandatory military service. The investigation of this association in a homogeneous population in terms of sex, age, and socioeconomic status and during a potentially stressful period of their lives seems to be an advantage. Therefore, the aim of this study was to assess the association between SoC and OHRQoL among conscripts of the Brazilian Army in two cities from southern Brazil. The study hypothesis was that a higher SoC is associated with a better OHRQoL.

METHODS

Study design and sample

This observational cross-sectional study was carried out with adolescents aged 18-19 years who joined the Brazilian Army as enlisted for mandatory military service in two Brazilian Army military bases located in southern Brazil. All conscripts attending the mandatory military service in the city of Itaqui, RS, during the years 2019 and 2020 and in the city of Santiago, RS, during the year 2021 were invited to participate. The estimated population in these cities is around 37,000 and 50,000, respectively. Mandatory military service in Brazil targets young Brazilian males born between January 1st and December 31st in the year they complete 18 years of age.

Data collection

Data collection included the application of questionnaires and clinical oral examination. A structured questionnaire gathered data on socio-demographic information, including level of education and family income.

The Oral Health Impact Profile in its short form (OHIP-14) was applied to assess the impact of oral conditions on OHRQoL (10). It is composed of 14 questions divided into seven domains: functional limitation, physical pain, psychological discomfort, physical disability, social disability and disability. Each question has the following answer alternatives, graded on a five-point Likert scale: 0, never; 1, almost never; 2, occasionally; 3, reasonably frequent; 4, very often. The total OHIP-14 score is calculated by the additive method, and it can range from 0 to 56. The higher the score, the poorer the OHRQoL.

SoC was assessed using the validated Brazilian short version of the SoC scale (SOC-13) (11). This instrument is composed of 13 items and assesses the following components: comprehensibility, manageability, and meaningfulness. Response options are presented on a five-point Likert scale, in which the sum of points can range from 13 to 65. Higher scores represent a higher SoC. For this purpose, individuals were divided according to SoC score tertiles as low, moderate, or high (12).

Clinical examination was performed in a dental unit, with a sterile clinical mirror, millimeter periodontal probe, and a WHO probe. All surfaces from incisors to third permanent molars were examined. First, the gingival bleeding index was recorded

(13) in four sites per tooth (buccal, lingual, mesial, and distal) as absent or present. Then, the percentage of sites with gingival bleeding was computed and each individual was classified as presenting no (<10% of bleeding sites), localized ($\geq 10\%$ to $\leq 30\%$ of bleeding sites), or generalized ($>30\%$ of bleeding sites) gingivitis (14). After professional tooth cleaning with a toothbrush and drying, a single calibrated examiner (NCL) recorded the presence of non-cavitated and cavitated, inactive and active caries lesions (15). Missing and filled surfaces were also recorded to determine the decayed, missing, or filled teeth (DMF-T) index of the sample. Untreated caries was considered present when the adolescent had at least one carious cavity or residual root. The evaluation of malocclusion was performed according to the Dental Aesthetic Index (DAI) (16) and the cutoff proposed by the WHO was adopted (absent when $DAI \leq 25$ or present when $DAI \geq 26$).

Training and calibration

Training and calibration for dental caries examination were performed before the beginning of the study under the supervision of a reference examiner (PKM). During the survey, calibration was monitored by means of repeated examinations conducted on 5% of the sample. The intra-examiner unweighted Cohen's kappa value observed for dental caries was 0.96. The intraclass correlation coefficient for DAI was 0.94. For the collection of gingival bleeding, the examiner was trained by a periodontist but no calibration was performed due to the temporary nature of this condition.

Ethical aspects

The study protocol was approved by the Research Ethics Committee of the Federal University of Santa Maria (CAAE 20079519.1.0000.5346). All participants were informed about the research purposes and provided written informed consent. Participants with treatment needs received dental treatment.

Data analysis

The primary outcome of this study was OHRQoL, modeled as a count variable (OHIP-14 scores). The main predictor variable was SoC, categorized as low, moderate, or high, as previously described. Other predictor variables were level of education (categorized as <8 years, 8-11 years, or ≥ 11 years), family income (≤ 3 Brazilian

minimum wages [BMW, being 1 BMW corresponding to approximately 200 US dollars during the period of data collection] or ≥ 4 BMW), untreated caries (absent or present), gingivitis (no, localized, or generalized), and malocclusion (absent or present). Preliminary analysis comparing the mean OHIP-14 scores among categories of predictors was carried out using the Wald test. Unadjusted and adjusted rate ratios (RR) and their respective 95% confidence intervals (CI) were estimated in Poisson regression analysis. Adjusted analysis followed a hierarchical approach. Four models were described: Model 1 included only the socioeconomic indicators, Model 2 was composed of Model 1 plus the psychological variable, Model 3 was composed of Model 2 plus the behavioral variable, and Model 4 was composed of Model 3 plus clinical variables. All variables with $p < 0.20$ in the unadjusted analysis were included in the adjusted analysis. In all models, the deviance ($-2\log$ likelihood) was measured to assess the quality of fit. Data analysis was performed using STATA software (Stata 14.2, Stata Corporation, College Station, USA) and the level of significance was set at 5%.

RESULTS

All invited individuals agreed to participate. A total of 520 participants were clinically examined and completed the questionnaires; however, 13 had missing information in the SoC scale and another 2 in the OHIP-14 questionnaire, resulting in a final sample of 505 individuals. This population had a mean (\pm standard deviation [sd]) DMF-T index of 2.3 (\pm 2.5), ranging from 0 to 14 (median 2, interquartile range [IQR] 0, 4).

Table 1 shows the sample distribution and OHRQoL by explanatory variables and the unadjusted analysis. It was observed a significant gradient of OHIP-14 scores across SoC categories; the higher the SoC, the lower the OHIP-14 scores, thus indicating better OHRQoL. In the unadjusted analysis, adolescents with moderate and high SoC had 28% and 53% lower OHIP-14 scores than those with low SoC, respectively. All other variables were significantly associated with OHIP-14 scores, except gingivitis and malocclusion.

The adjusted association between exploratory variables and OHRQoL is described in Table 2. In Model 1, it was observed that adolescents whose family earns ≥ 4 BMW had significantly better OHRQoL than their counterparts with lower family

income. In Model 2, SoC was significantly associated with the study outcome. Adolescents with moderate and high SoC had, respectively, 28% and 53% lower mean OHIP-14 scores than those with low SoC. The inclusion of behavioral (Model 3) and clinical (Model 4) variables exerted no major effect on the association between SoC and OHRQoL. In Model 4, it was observed that adolescents with moderate and high SoC had, respectively, 27% (RR=0.73, 95%CI=0.64-0.84) and 51% (RR=0.49, 95%CI=0.41-0.58) lower mean OHIP-14 scores than those with low SoC. Lower family income and the presence of untreated caries were also associated with a poorer OHRQoL.

The calculation of the study power reached a value of 100% for the comparison of the mean (sd) OHIP-14 scores between non-exposed (low SoC) and exposed (high SoC) individuals using 95% CI.

DISCUSSION

This cross-sectional study assessed the association between SoC and OHRQoL among 18-19-year-old male adolescents who joined the Brazilian Army as enlisted for mandatory military service in two cities from Southern Brazil. Our main finding was that SoC was significantly associated with adolescents' OHRQoL; the higher the SoC, the better the OHRQoL. To the best of our knowledge, this is the first study to evaluate this association among recruits of mandatory military service.

The systematic review by Gomes et al. (7) included 13 studies and concluded that stronger SoC was a predictor of fewer symptoms and functional impacts as well as better perceptions of health and quality of life. After this systematic review, 3 other studies including adolescents were published on this topic. The study by Soares et al. (8) showed that SoC did not influence OHRQoL in children; however, they found that the higher the SoC, the lower the impact on the family's quality of life at the age group from 7 to 15 years. The study by Tondolo Junior et al. (9) evaluated subjects with a mean age of 17.5 years and showed that SoC and dental caries had a direct effect on OHRQoL. The cohort study by Knorst et al. (17) evaluating adolescents between 11-15 years of age showed that individuals with high SoC were more likely to report better OHRQoL. It is possible to observe that these studies did not focused specifically on individuals aged 18-19 years.

According to Baker et al. (18), stronger SoC predicted fewer symptoms, better functioning, greater health perceptions, and a better oral health status in adolescence. These considerations were found in our study, in which a high SoC afforded a significant protection (around 50%) against a poorer OHRQoL in all models. The inclusion of behavioral and clinical variables in Models 3 and 4, respectively, had no major effect on the association between them. This finding indicates that we kept identifying the beneficial effect of a high SoC in terms of self-perception and OHRQoL, even after removing the effect of other variables that could possibly explain the found association. The SoC depends on the individual's abilities to plan, solve problems, and adapt to conflicting contexts (4). Thus, in the context of mandatory military service, individuals are daily involved with physically and psychologically stressful situations and thus those with high SoC may be more likely to have better adaptive strategies and positive coping methods against them. Some studies have shown that the SoC is stable from early adolescence onwards and it can contribute to moderating stress experiences (19). In addition, stress levels increase from pre-adolescence to adolescence (20). In this way, the study of the adolescent's SoC becomes relevant as it is an individual resource for coping with stressful events of daily life and for the development of positive strategies in the face of the adversities they experience during this phase (21).

The other variable that remained significantly associated with OHRQoL in both Models 3 and 4 was family income. Adolescents from less affluent families reported poorer OHRQoL, which is in agreement with the systematic review by Knorst et al. (3). Adolescents with poorer socioeconomic conditions are more likely to have lower educational level, which, in turn, lead to limited access to health care and preventive interventions that can ultimately lead to a poor quality of life (22). In addition, adolescents from disadvantaged social status, despite their poor oral health, may not attend dental services regularly (23). Among the other variables included in the adjusted models due to their possible associations with the study outcome, untreated dental caries was found to be negatively associated with adolescents' OHRQoL, which is in agreement with the previous literature on this topic (24).

This study has some limitations that need to be addressed. The cross-sectional research design does not allow examining the temporal relationship between variables, thus impairing us from studying causal relationships. We included a convenience sample of individuals and, therefore, it is not representative of the whole population at

this age group. The fact that these adolescents had underwent medical and oral clinical examinations before being accepted for the military service may lead us to infer that the individuals most severely affected by oral diseases and dental caries were not included in the study. Among the strengths of our study, it is important to highlight that it involved a homogeneous population in terms of sex, age, and socio-demographic indicators, which seems to be an advantage, since it eliminates the possible influence of these factors on the study findings. In this sense, it has been shown that SoC affects the mental health of girls and boys differently during adolescence (21). Finally, the study of SoC and OHRQoL among individuals who are being subjected to a daily environment of stress may also be seen as a strength of this study.

In conclusion, this cross-sectional study found a significant association between SoC and OHRQoL among 18-19-year-old recruits of the Brazilian Army from Southern Brazil. This result denotes the importance of promoting intervention strategies to increase the SoC and therefore improve OHRQoL of adolescents who are involved in mandatory military service considering the daily adversities they face in this setting.

RESUMO

Este estudo avaliou a associação entre senso de coerência (SoC) e qualidade de vida relacionada à saúde bucal (QVRSB) em recrutas do Exército Brasileiro em duas cidades do sul do Brasil. Um estudo transversal incluiu todos os adolescentes de 18 a 19 anos que ingressaram no Exército Brasileiro como alistados no serviço militar obrigatório nas cidades de Itaqui-RS e Santiago-RS (n=505). A coleta de dados foi realizada de 2019 a 2021 e incluiu a aplicação de questionários e exame clínico bucal para registro de gengivite, má oclusão e cárie dentária. Um questionário estruturado coletou dados sobre informações sociodemográficas, incluindo escolaridade e renda familiar. A QVRSB foi coletada por meio do Oral Health Impact Profile (OHIP) em sua versão curta composta por 14 questões. O SoC do adolescente foi avaliado por meio da versão brasileira validada da escala SOC-13. O desfecho primário deste estudo foi QVRSB, modelado como uma variável de contagem (pontuações OHIP-14). A principal variável preditora foi SoC, categorizada como baixa, moderada ou alta. A associação entre variáveis preditoras e QVRSB foi avaliada por meio de modelos de regressão de Poisson usando uma abordagem hierárquica. Quatro modelos foram descritos. Razões de taxas não ajustadas e ajustadas (RR) e seus intervalos de confiança de 95% (IC) foram estimados. Adolescentes com SoC moderado e alto tiveram, respectivamente, 27% (RR=0,73, 95% CI=0,64-0,84) e 51% (RR=0,49, 95% CI=0,41-0,58) escores médios do OHIP-14 menores do que aqueles com baixo SoC, após a inclusão de variáveis comportamentais e clínicas. Este estudo mostrou uma associação significativa entre SoC e QVRSB entre adolescentes de 18 a 19 anos do Sul do Brasil.

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TABLES

Table 1. Sample distribution and OHRQoL (overall OHIP-14 score) by explanatory variables and unadjusted analysis (Poisson regression).

| | n (%) | Mean (SE) | RR (95%CI) | p-value |
|---------------------------------|--------------------|-------------------------|-------------------|----------------|
| <i>Socioeconomic indicators</i> | | | | |
| Education level | | | | |
| < 8 years | 75 (14.8) | 10.9 (0.9) ^a | 1.00 | |
| 8-10 years | 181 (35.8) | 9.2 (0.5) ^{ab} | 0.84 (0.70-1.02) | 0.08 |
| ≥ 11 years | 249 (49.3) | 8.6 (0.4) ^b | 0.78 (0.65-0.95) | 0.01 |
| Family income | | | | |
| ≤ 3 BMW | 378 (74.8) | 9.8 (0.4) ^a | 1.00 | |
| ≥ 4 BMW | 127 (25.2) | 7.3 (0.6) ^b | 0.75 (0.63-0.89) | 0.001 |
| <i>Psychological variable</i> | | | | |
| Sense of coherence | | | | |
| Low | 161 (31.9) | 12.6 (0.6) ^a | 1.00 | |
| Moderate | 176 (34.8) | 9.0 (0.5) ^b | 0.72 (0.62-0.83) | <0.001 |
| High | 168 (33.3) | 5.9 (0.4) ^c | 0.47 (0.39-0.55) | <0.001 |
| <i>Behavioral variable</i> | | | | |
| Tooth brushing frequency | | | | |
| ≤ Once/day | 32 (6.4) | 11.2 (1.5) ^a | 1.00 | |
| Twice/day | 190 (37.7) | 10.7 (0.5) ^a | 0.96 (0.72-1.27) | 0.75 |
| ≥ Three times/day | 282 (55.9) | 7.8 (0.4) ^b | 0.70 (0.53-0.93) | 0.01 |
| <i>Clinical variables</i> | | | | |
| Gingivitis | | | | |
| Absent | 160 (31.7) | 8.7 (0.5) ^a | 1.00 | |
| Localized | 215 (42.6) | 8.9 (0.5) ^a | 1.03 (0.87-1.21) | 0.74 |
| Generalized | 130 (25.7) | 10.0 (0.7) ^a | 1.15 (0.97-1.38) | 0.11 |
| Untreated caries | | | | |
| Absent | 365 (72.3) | 8.4 (0.3) ^a | 1.00 | |
| Present | 140 (27.7) | 11.1 (0.7) ^b | 1.31 (1.13-1.52) | <0.001 |
| Malocclusion | | | | |
| Absent | 256 (50.7) | 8.7 (0.4) ^a | 1.00 | |
| Present | 249 (49.3) | 9.6 (0.5) ^b | 1.10 (0.96-1.26) | 0.17 |
| TOTAL | 505 (100.0) | 9.1 (0.3) | | |

BMW = Brazilian minimum wage; SE = standard error; RR = rate ratio; CI = confidence interval.
 Different letters indicate statistically significant difference between categories ($p < 0.05$, Wald test).

Table 2. Adjusted association between exploratory variables and OHRQoL (overall OHIP-14 score). Poisson regression analysis.

| | Model 1^a | Model 2^b | Model 3^c | Model 4^d |
|---|----------------------------|----------------------------|----------------------------|----------------------------|
| <i>Socioeconomic indicators</i> | | | | |
| Education level | | | | |
| < 8 years | 1.00 | 1.00 | 1.00 | 1.00 |
| 8-10 years | 0.85 (0.70-1.03) | 0.87 (0.73-1.04) | 0.87 (0.73-1.03) | 0.90 (0.76-1.07) |
| ≥ 11 years | 0.82 (0.68-1.00) | 0.83 (0.70-0.99)* | 0.86 (0.72-1.01) | 0.90 (0.76-1.07) |
| Family income | | | | |
| ≤ 3 BMW | 1.00 | 1.00 | 1.00 | 1.00 |
| ≥ 4 BMW | 0.76 (0.64-0.91)* | 0.78 (0.66-0.92)* | 0.79 (0.68-0.94)* | 0.80 (0.68-0.94)* |
| <i>Psychological variable</i> | | | | |
| Sense of coherence | | | | |
| Low | | 1.00 | 1.00 | 1.00 |
| Moderate | | 0.72 (0.62-0.83)* | 0.72 (0.63-0.83)* | 0.73 (0.64-0.84)* |
| High | | 0.47 (0.40-0.56)* | 0.48 (0.41-0.57)* | 0.49 (0.41-0.58)* |
| <i>Behavioral variable</i> | | | | |
| Tooth brushing frequency | | | | |
| ≤ Once/day | | | 1.00 | 1.00 |
| Twice/day | | | 1.03 (0.81-1.31) | 1.06 (0.83-1.34) |
| ≥ Three times/day | | | 0.82 (0.64-1.05) | 0.86 (0.67-1.10) |
| <i>Clinical variables</i> | | | | |
| Gingivitis | | | | |
| Absent | | | | 1.00 |
| Localized | | | | 0.97 (0.84-1.13) |
| Generalized | | | | 1.02 (0.87-1.19) |
| Untreated caries | | | | |
| Absent | | | | 1.00 |
| Present | | | | 1.17 (1.01-1.34)* |
| Malocclusion | | | | |
| Absent | | | | 1.00 |
| Present | | | | 1.06 (0.93-1.19) |
| <i>Deviance</i> (- 2 log likelihood) | 4718.26 | 4332.49 | 4267.42 | 4232.22 |

^aModel 1 included only the socioeconomic indicators; ^bModel 2 was composed of Model 1 plus the psychological variable; ^cModel 3 was composed of Model 2 plus the behavioral variables; ^dModel 4 was composed of Model 3 plus clinical variables.

RR = rate ratio; CI = confidence interval; *p-value < 0.05.

6 CONSIDERAÇÕES FINAIS

Com base nos achados da presente tese, pode-se concluir que este estudo transversal encontrou uma associação significativa entre SoC e o uso do fio dental, SoC e atividade de cárie e SoC e QVRSB entre recrutas de 18 a 19 anos alistados para o serviço militar obrigatório em duas cidades do sul do Brasil. Um alto SoC mostrou associação com hábitos mais saudáveis, menor número de lesões cáries ativas e melhor percepção de QVRSB.

Esses achados indicam a importância das estratégias de intervenção para aumentar o SoC para promover melhores práticas de higiene bucal e para melhorar a QVRSB dos adolescentes que estão envolvidos no serviço militar considerando as adversidades que enfrentam nesse cenário.

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APÊNDICE A - QUESTIONÁRIO SOCIOECONÔMICO E COMPORTAMENTAL

Nome: _____ Data nascimento: ____/____/____
 Celular _____ Redes sociais: _____

1. Qual destes itens você possui em sua casa? Qual a quantidade de cada um deles?

| | | |
|---------------------------|-----------------------------|-----------------------------------|
| 2. Televisão em cores () | 5. Automóvel () | 8. Máquina de lavar roupa () |
| 3. Rádio () | 6. Empregada/mensalista () | 9. Videocassete/DVD () |
| 4. Banheiro () | 7. Aspirador () | 10. Geladeira () 11. Freezer () |

OBS.: Geladeira duplex/biplex: corresponde à geladeira e freezer

12. Qual o grau de instrução do seu pai?

- (1) Não estudou (2) 1º grau incompleto (3) 1º grau completo (4) 2º grau incompleto
 (5) 2º grau completo (6) 3º grau incompleto (7) 3º grau completo (8) pós-graduação

13. Qual o grau de instrução da sua mãe?

- (1) Não estudou (2) 1º grau incompleto (3) 1º grau completo (4) 2º grau incompleto
 (5) 2º grau completo (6) 3º grau incompleto (7) 3º grau completo (8) pós-graduação

14. Qual o seu grau de instrução?

- (1) Não estudou (2) 1º grau incompleto (3) 1º grau completo (4) 2º grau incompleto
 (5) 2º grau completo (6) 3º grau incompleto (7) 3º grau completo (8) pós-graduação

15. Qual sua renda familiar mensal (soma da renda de todos os membros da família)?

- (1) menos de um salário mínimo (2) de 1-3 salários mínimos (3) de 4-6 salários mínimos
 (4) de 7-10 salários mínimos (5) de 11-20 salários mínimos (6) 21 ou mais salários mínimos

16. Quantas pessoas vivem na sua residência? _____

17. Você usa escova dental?

- (1) Sim (2) Não

18. Se sim, quantas vezes você usa escova dental?

- (1) Nem todos os dias (3) 2 vezes por dia
 (2) 1 vez por dia (4) 3 vezes ou mais por dia

19. Você usa pasta de dente?

- (1) Sim (2) Não

20. Você usa fio dental?

- (1) Sim (2) Não

21. Se sim, quantas vezes você usa fio dental?

- (1) De vez em quando (3) 1 vez a cada 2 dias
 (2) 1 vez/semana (4) 1 vez/dia ou mais

22. Você usa algum outro método de higiene bucal além da escova e do fio? (1) sim (2) não

23. Caso afirmativo, qual método seria?

- (1) palito. **Quantas vezes você usa este método?** (1) uma vez/dia (2) duas vezes/dia (3) três vezes/dia (4) às vezes (5) Quando fica algum alimento preso nos dentes

(2) enxaguatório bucal (nome _____ marca _____). **Quantas vezes você usa este método?** (1) uma vez/dia (2) duas vezes/dia (3) três vezes/dia (4) às vezes (5) Quando fica algum alimento preso nos dentes

(3) outro _____. **Quantas vezes você usa este método?** (1) uma vez/dia (2) duas vezes/dia (3) três vezes/dia (4) às vezes (5) Quando fica algum alimento preso nos dentes

24. Você foi submetido a alguma aplicação tópica de flúor no dentista no último ano?

- (1) sim (2) não **Quantas vezes foi aplicado flúor nos seus dentes no último ano?** _____

APÊNDICE B - FICHA CLÍNICA

NOME: _____ Data de nasc: ___/___/___ Data do exame:
___/___/___

| IPV | | | | | | ISG | | | | | CÁRIE | | | | | |
|-----|---|---------|---|---|---|-----|---|---------|---|---|-------|---|---------|---|---|---|
| | V | P/ L | O | D | M | | V | P/ L | D | M | | V | P/ L | O | D | M |
| 18 | | | | | | 18 | | | | | 18 | | | | | |
| 17 | | | | | | 17 | | | | | 17 | | | | | |
| 16 | | | | | | 16 | | | | | 16 | | | | | |
| 15 | | | | | | 15 | | | | | 15 | | | | | |
| 14 | | | | | | 14 | | | | | 14 | | | | | |
| 13 | | | | | | 13 | | | | | 13 | | | | | |
| 12 | | | | | | 12 | | | | | 12 | | | | | |
| 11 | | | | | | 11 | | | | | 11 | | | | | |
| 21 | | | | | | 21 | | | | | 21 | | | | | |
| 22 | | | | | | 22 | | | | | 22 | | | | | |
| 23 | | | | | | 23 | | | | | 23 | | | | | |
| 24 | | | | | | 24 | | | | | 24 | | | | | |
| 25 | | | | | | 25 | | | | | 25 | | | | | |
| 26 | | | | | | 26 | | | | | 26 | | | | | |
| 27 | | | | | | 27 | | | | | 27 | | | | | |
| 28 | | | | | | 28 | | | | | 28 | | | | | |
| 38 | | | | | | 38 | | | | | 38 | | | | | |
| 37 | | | | | | 37 | | | | | 37 | | | | | |
| 36 | | | | | | 36 | | | | | 36 | | | | | |
| 35 | | | | | | 35 | | | | | 35 | | | | | |
| 34 | | | | | | 34 | | | | | 34 | | | | | |
| 33 | | | | | | 33 | | | | | 33 | | | | | |
| 32 | | | | | | 32 | | | | | 32 | | | | | |
| 31 | | | | | | 31 | | | | | 31 | | | | | |
| 41 | | | | | | 41 | | | | | 41 | | | | | |
| 42 | | | | | | 42 | | | | | 42 | | | | | |
| 43 | | | | | | 43 | | | | | 43 | | | | | |
| 44 | | | | | | 44 | | | | | 44 | | | | | |
| 45 | | | | | | 45 | | | | | 45 | | | | | |
| 46 | | | | | | 46 | | | | | 46 | | | | | |
| 47 | | | | | | 47 | | | | | 47 | | | | | |
| 48 | | | | | | 48 | | | | | 48 | | | | | |

Aparelho Ortodôntico

| | | | |
|----------|-----|----------|-----|
| SUPERIOR | FIO | INFERIOR | FIO |
|----------|-----|----------|-----|

Erupção do Terceiro Molar

| | | | |
|----|----|----|----|
| 18 | 28 | 38 | 48 |
|----|----|----|----|

| | | | |
|--------------------------|----------------------------|---------------------|----------------------------|
| Dentes ausentes: | Desalinhamento max: mm | Overjet maxilar: mm | Relação molar: (0) (1) (2) |
| Apinhamento: (0) (1) (2) | Desalinhamento mand: mm | Overjet mand: mm | |
| Espaçamento: (0) (1) (2) | Diastema inter-incisal: mm | Mordida aberta: mm | |

APÊNDICE C - TERMO DE CONFIDENCIALIDADE

Título do projeto: Saúde Bucal em jovens do Exército Brasileiro no sul do Brasil

Pesquisadores responsáveis: Nicássia Cioquetta Lock e Luana Severo Alves

Instituição/Depto: Universidade Federal de Santa Maria/Depto Odontologia Restauradora

Telefone para contato: (55) 3220 9281

Local da coleta de dados: 1º Regimento de Cavalaria Mecanizado – Itaqui-RS

O responsável pelo presente projeto se compromete a preservar a confidencialidade dos dados dos participantes envolvidos no trabalho, que serão coletados por meio de questionários, exames clínicos e exames radiográficos, no 1º Regimento de Cavalaria Mecanizado – Itaqui-RS, no ano de 2020.

Informa, ainda, que estas informações serão utilizadas, única e exclusivamente, no decorrer da execução do presente projeto e que as mesmas somente serão divulgadas de forma anônima.

Os questionários, fichas clínicas e radiografias serão deslocados de Itaqui para Santa Maria pela pesquisadora Nicássia Cioquetta Lock e serão mantidas no seguinte local: UFSM, Avenida Roraima, 1000, prédio 26F, sala 2185, 97105-970 - Santa Maria - RS, por um período de cinco anos, sob a responsabilidade da pesquisadora Luana Severo Alves. Após este período os dados serão destruídos.

Santa Maria, 28 de agosto de 2019.

LUANA SEVERO ALVES

APÊNDICE D - TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO**UNIVERSIDADE FEDERAL DE SANTA MARIA
CENTRO DE CIÊNCIAS DA SAÚDE
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIAS ODONTOLÓGICAS****TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO**

Título do estudo: Saúde Bucal em jovens do Exército Brasileiro no sul do Brasil
Pesquisadores responsáveis: Nicássia Cioquetta Lock e Luana Severo Alves
Instituição/Depto: Universidade Federal de Santa Maria / Depto Odontologia Restauradora
Telefones para contato: (55) 3220 9281
Endereço: Av. Roraima, 1000, prédio 26F, sala 2185, 97105-970. Santa Maria-RS.
Local da coleta de dados: 1º Regimento de Cavalaria Mecanizado – Itaqui-RS.

Eu, Luana Severo Alves, responsável pela pesquisa “Saúde Bucal em jovens do Exército Brasileiro no sul do Brasil” o convido a participar como voluntário deste estudo. Você precisa decidir se autoriza sua participação ou não. Por favor, não se apresse em tomar a decisão. Leia cuidadosamente o que se segue e pergunte ao responsável pelo estudo qualquer dúvida que você tiver. Após ser esclarecido sobre as informações a seguir, no caso de autorizar sua participação no estudo, assine ao final deste documento, que está em duas vias. Uma delas é sua e a outra é do pesquisador responsável. Em caso de recusa, você não será penalizado de forma alguma.

Esta pesquisa pretende avaliar as condições de saúde bucal dos recrutas do 1º Regimento de Cavalaria Mecanizado, em Itaqui-RS. Acreditamos que ela seja importante porque conhecendo os problemas de saúde bucal que afetam estas pessoas será possível estabelecer um protocolo efetivo de prevenção e tratamento das doenças bucais nesta instituição, podendo auxiliá-lo a melhorar ou a manter a sua saúde bucal.

Sua participação nesta pesquisa consistirá no preenchimento de questionários, respondendo perguntas que abordam dados sócio-econômicos, hábitos alimentares e de higiene bucal, qualidade de vida, grau de felicidade e senso de coerência. Na sequência, você será examinado por uma dentista quanto à presença de placa bacteriana, gengivite e cárie dentária. Por fim, serão realizadas quatro radiografias, pois muitas lesões de cárie não podem ser vistas no exame clínico, sendo detectadas apenas com radiografias.

É possível que aconteça algum desconforto durante o preenchimento do questionário (cansaço visual) ou durante a realização dos exames clínicos (cansaço devido à abertura de boca) ou radiográficos (náuseas). Para evitar estes desconfortos, você poderá descansar durante o preenchimento do questionário e também interromper os exames sempre que desejar. Os riscos previsíveis são aqueles inerentes a uma consulta odontológica de rotina. Todas as medidas de biossegurança serão tomadas, bem como a utilização de óculos de proteção do paciente, devido ao uso de instrumentos perfuro-cortantes (sonda).

Como benefícios, você receberá uma limpeza de seus dentes, uma escova dental, e um exame clínico completo de seus dentes e gengiva. Você será informado a respeito do resultado destes exames e será agendado para tratamento, de acordo com sua necessidade.

Durante todo o período da pesquisa você terá a possibilidade de tirar qualquer dúvida ou pedir qualquer outro esclarecimento. Para isso, entre em contato com algum dos pesquisadores ou com o Comitê de Ética em Pesquisa da UFSM. Em caso de algum problema relacionado com a pesquisa, você terá direito à assistência gratuita que será prestada.

Você tem garantida a possibilidade de não aceitar participar ou de retirar sua permissão a qualquer momento, sem nenhum tipo de prejuízo pela sua decisão.

As informações desta pesquisa serão confidenciais e poderão ser divulgadas, apenas, em eventos ou publicações, sem a identificação dos voluntários, a não ser entre os responsáveis pelo estudo, sendo assegurado o sigilo sobre sua participação.

Os gastos necessários para a sua participação na pesquisa serão assumidos pelos pesquisadores. Fica, também, garantida indenização em casos de danos comprovadamente decorrentes da participação na pesquisa.

Autorização

Eu, _____,
após a leitura ou a escuta da leitura deste documento e ter tido a oportunidade de conversar com o pesquisador responsável, para esclarecer todas as minhas dúvidas, estou suficientemente informado, ficando claro para que minha participação é voluntária e que posso retirar este consentimento a qualquer momento sem penalidades ou perda de qualquer benefício. Estou ciente também dos objetivos da pesquisa, dos procedimentos aos quais serei submetido, dos possíveis danos ou riscos deles provenientes e da garantia de confidencialidade. Diante do exposto e de espontânea vontade, expressei minha concordância em participar deste estudo e assino este termo em duas vias, uma das quais foi-me entregue.

Assinatura do voluntário

Assinatura do responsável pela obtenção do TCLE

_____ -RS, ____/____/____

ANEXO A - QUESTIONÁRIO OHIP-14

Nome: _____ Data: _____

NOS ÚLTIMOS 6 MESES POR CAUSA DE PROBLEMAS COM SEUS DENTES OU SUA BOCA:

1. Você teve problemas para falar alguma palavra?
 Nunca
 Raramente
 Às vezes
 Repetidamente
 Sempre

2. Você sentiu que o sabor dos alimentos têm piorado?
 Nunca
 Raramente
 Às vezes
 Repetidamente
 Sempre

3. Você sentiu dores na sua boca ou nos seus dentes?
 Nunca
 Raramente
 Às vezes
 Repetidamente
 Sempre

4. Você se sentiu incomodado ao comer algum alimento?
 Nunca
 Raramente
 Às vezes
 Repetidamente
 Sempre

5. Você ficou preocupado?
 Nunca
 Raramente
 Às vezes
 Repetidamente
 Sempre

6. Você se sentiu estressado?
 Nunca
 Raramente
 Às vezes
 Repetidamente
 Sempre

7. Sua alimentação ficou prejudicada?
 Nunca
 Raramente
 Às vezes
 Repetidamente

Sempre

8. Você teve que parar suas refeições?

Nunca

Raramente

Às vezes

Repetidamente

Sempre

9. Você encontrou dificuldade para relaxar?

Nunca

Raramente

Às vezes

Repetidamente

Sempre

10. Você se sentiu envergonhado?

Nunca

Raramente

Às vezes

Repetidamente

Sempre

11. Você ficou irritado com outras pessoas?

Nunca

Raramente

Às vezes

Repetidamente

Sempre

12. Você teve dificuldade para realizar suas atividades diárias?

Nunca

Raramente

Às vezes

Repetidamente

Sempre

13. Você sentiu que a vida, em geral, ficou pior?

Nunca

Raramente

Às vezes

Repetidamente

Sempre

14. Você ficou totalmente incapaz de fazer suas atividades diárias?

Nunca

Raramente

Às vezes

Repetidamente

Sempre

ANEXO B - ESCALA SOC- 13

Nome: _____ Data: _____

INSTRUÇÕES

Aqui estão 13 perguntas sobre vários aspectos da sua vida. Cada pergunta tem cinco respostas possíveis. Escolha a opção que melhor expresse a sua maneira de pensar e sentir em relação ao que está sendo falado.

Dê apenas uma única resposta em cada pergunta, por favor. Não existem respostas certas ou erradas para nenhuma delas.

| | | Um enorme sofrimento e aborrecimento | Um sofrimento e aborrecimento | Nem aborrecimento nem satisfação | Um prazer e satisfação | Um enorme prazer e satisfação |
|----|------------------------------------|--------------------------------------|-------------------------------|----------------------------------|------------------------|-------------------------------|
| 01 | Aquilo que você faz diariamente é: | | | | | |

| | | Sem nenhum objetivo | Com poucos objetivos | Com alguns objetivos | Com muitos objetivos | Repleta de objetivos |
|----|----------------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| 02 | Até hoje sua vida tem sido | | | | | |

| | | Nunca | Poucas vezes | Algumas vezes | Muitas vezes | Sempre |
|----|---|-------|--------------|---------------|--------------|--------|
| 03 | Você tem interesse pelo que se passa ao seu redor? | | | | | |
| 04 | Você acha que você é tratado com injustiça? | | | | | |
| 05 | Você tem ideias e sentimentos confusos? | | | | | |
| 06 | Você acha que as coisas que você faz na sua vida têm pouco sentido? | | | | | |
| 07 | Já lhe aconteceu ter ficado desapontado com pessoas em quem confiava? | | | | | |
| 08 | Você tem sentimentos que gostaria de não ter? | | | | | |
| 09 | Você tem dúvida se pode controlar seus sentimentos? | | | | | |
| 10 | Já lhe aconteceu de ficar surpreendido com o comportamento de pessoas que você achava que conhecia bem? | | | | | |
| 11 | Em algumas situações, as pessoas sentem-se fracassadas. Você já se sentiu fracassado? | | | | | |
| 12 | Você sente que está numa situação pouco comum, e sem saber o que fazer? | | | | | |

| | | Totalmente errada | Errada | Nem correta e nem errada | Correta | Totalmente correta |
|----|---|-------------------|--------|--------------------------|---------|--------------------|
| 13 | Às vezes acontecem coisas na vida da gente que depois achamos que não demos a devida importância. Quando alguma coisa acontece na sua vida, você acaba achando que deu a importância: | | | | | |

OBRIGADA POR SUA COLABORAÇÃO. ELA FOI MUITO IMPORTANTE!

ANEXO C – CARTA DE APROVAÇÃO DO COMITÊ DE ÉTICA EM PESQUISA DA UNIVERSIDADE FEDERAL DE SANTA MARIA

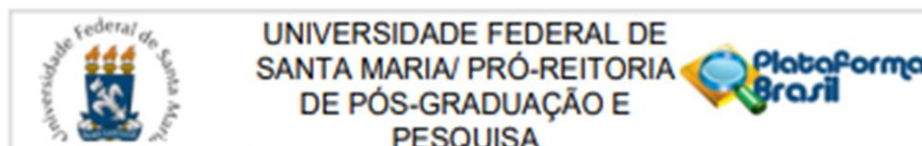
Considerações Finais a critério do CEP:

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

| Tipo Documento | Arquivo | Postagem | Autor | Situação |
|---|---|------------------------|-----------------------|----------|
| Informações Básicas do Projeto | PB_INFORMAÇÕES_BÁSICAS_DÓ_P ROJETO_1425072.pdf | 02/09/2019 15:51:05 | | Aceito |
| Outros | projeto_64635.pdf | 02/09/2019 15:46:11 | LUANA SEVERO ALVES | Aceito |
| Projeto Detalhado / Brochura Investigador | Projeto_EB_final.docx | 02/09/2019 15:43:48 | LUANA SEVERO ALVES | Aceito |
| TCLE / Termos de Assentimento / Justificativa de Ausência | TCLE.docx | 02/09/2019 15:40:14 | LUANA SEVERO ALVES | Aceito |

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 UF: RS Município: SANTA MARIA
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Página 02 de 06



Continuação do Parecer: 3.566.361

| | | | | |
|--|-------------------------------|------------------------|-----------------------|--------|
| Declaração de Pesquisadores | Termo_confidencialidade.jpg | 02/09/2019 15:39:52 | LUANA SEVERO ALVES | Aceito |
| Declaração de Instituição e Infraestrutura | Autorizacao_institucional.jpg | 02/09/2019 15:39:03 | LUANA SEVERO ALVES | Aceito |
| Folha de Rosto | folhaDeRosto_assinada.pdf | 02/09/2019 15:36:37 | LUANA SEVERO ALVES | Aceito |

Situação do Parecer:

Aprovado

Necessita Apreciação da CONEP:

Não

SANTA MARIA, 10 de Setembro de 2019

Assinado por:
CLAUDEMIR DE QUADROS
 (Coordenador(a))

ANEXO D – NORMAS PARA PUBLICAÇÃO NO PERIÓDICO *CLINICAL ORAL INVESTIGATIONS*

Instructions for Authors

Types of papers

Papers may be submitted for the following sections:

Research Article

Reviews

Brief Report – with up to 2000 words and up to two figures and/or tables

Correspondence (Discussion paper)

Debate (Letter to the Editor)

It is the general policy of this journal not to accept case reports and pilot studies.

Editorial Procedure

Clinical Oral Investigations operates a single-blind peer-review system, where the reviewers are aware of the names and affiliations of the authors, but the reviewer reports provided to authors are anonymous.

Submitted manuscripts will generally be reviewed by two or more experts who will be asked to evaluate whether the manuscript is scientifically sound and coherent, whether it duplicates already published work, and whether or not the manuscript is sufficiently clear for publication. The Editors will reach a decision based on these reports and, where necessary, they will consult with members of the Editorial Board.

Summary of the editorial process

The author submits a manuscript and the Editorial Office performs an initial quality check on the manuscript to ensure that the paper is formatted correctly

The manuscript receives a tracking number and Manuscripts are assigned to an Editor-in-Chief or a Section Editor for an initial editorial assessment. If the decision is not to send the manuscript for review, the Editor contacts the author with the decision.

If the Editor decides the paper is within the Journal's remit, peer reviewers are selected and assigned. This can take some time dependent on the responsiveness and availability of the reviewers selected.

Reviewers are given 14 days from acceptance to submit their reports. Once the required

reports are submitted, the Associate Editor will give a recommendation or the Editor-in-Chief makes a final decision based on the comments received. The final decision is the sole responsibility of the Editors-in-Chief.

Manuscript Submission

Submission of a manuscript implies: that the work described has not been published before; that it is not under consideration for publication anywhere else; that its publication has been approved by all co-authors, if any, as well as by the responsible authorities – tacitly or explicitly – at the institute where the work has been carried out. The publisher will not be held legally responsible should there be any claims for compensation.

Permissions

Authors wishing to include figures, tables, or text passages that have already been published elsewhere are required to obtain permission from the copyright owner(s) for both the print and online format and to include evidence that such permission has been granted when submitting their papers. Any material received without such evidence will be assumed to originate from the authors.

Online Submission

Please follow the hyperlink “Submit manuscript” and upload all of your manuscript files following the instructions given on the screen.

Source Files

Please ensure you provide all relevant editable source files at every submission and revision. Failing to submit a complete set of editable source files will result in your article not being considered for review. For your manuscript text please always submit in common word processing formats such as .docx or LaTeX.

Title Page

The title page should include:

The name(s) of the author(s)

A concise and informative title

The affiliation(s) and address(es) of the author(s)

The e-mail address, telephone and fax numbers of the corresponding author

Abstract

Please provide a structured abstract of 150 to 250 words which should be divided into the following sections:

Objectives (stating the main purposes and research question)

Materials and Methods

Results

Conclusions

Clinical Relevance

These headings must appear in the abstract.

Keywords

Please provide 4 to 6 keywords which can be used for indexing purposes.

Text Formatting

Manuscripts should be submitted in Word.

Use a normal, plain font (e.g., 10-point Times Roman) for text.

Use italics for emphasis.

Use the automatic page numbering function to number the pages.

Do not use field functions.

Use tab stops or other commands for indents, not the space bar.

Use the table function, not spreadsheets, to make tables.

Use the equation editor or MathType for equations.

Save your file in docx format (Word 2007 or higher) or doc format (older Word versions).

Manuscripts with mathematical content can also be submitted in LaTeX. We recommend using Springer Nature's LaTeX template.

Headings: Please use no more than three levels of displayed headings.

Abbreviations: Abbreviations should be defined at first mention and used consistently thereafter.

Footnotes

Footnotes can be used to give additional information, which may include the citation of a reference included in the reference list. They should not consist solely of a reference citation,

and they should never include the bibliographic details of a reference. They should also not contain any figures or tables.

Footnotes to the text are numbered consecutively; those to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data).

Footnotes to the title or the authors of the article are not given reference symbols.

Always use footnotes instead of endnotes.

Acknowledgments

Acknowledgments of people, grants, funds, etc. should be placed in a separate section on the title page. The names of funding organizations should be written in full.

References

Citation

Reference citations in the text should be identified by numbers in square brackets. Some examples:

1. Negotiation research spans many disciplines [3].
2. This result was later contradicted by Becker and Seligman [5].
3. This effect has been widely studied [1-3, 7].

Reference list

The list of references should only include works that are cited in the text and that have been published or accepted for publication. Personal communications and unpublished works should only be mentioned in the text.

The entries in the list should be numbered consecutively.

If available, please always include DOIs as full DOI links in your reference list (e.g. “<https://doi.org/abc>”).

Journal article

Gamelin FX, Baquet G, Berthoin S, Thevenet D, Nourry C, Nottin S, Bosquet L (2009) Effect of high intensity intermittent training on heart rate variability in prepubescent children. *Eur J Appl Physiol* 105:731-738. <https://doi.org/10.1007/s00421-008-0955-8>

Ideally, the names of all authors should be provided, but the usage of “et al” in long author lists will also be accepted:

Smith J, Jones M Jr, Houghton L et al (1999) Future of health insurance. *N Engl J Med*

965:325–329

Article by DOI

Slifka MK, Whitton JL (2000) Clinical implications of dysregulated cytokine production. *J Mol Med*. <https://doi.org/10.1007/s001090000086>

Book

South J, Blass B (2001) *The future of modern genomics*. Blackwell, London

Book chapter

Brown B, Aaron M (2001) The politics of nature. In: Smith J (ed) *The rise of modern genomics*, 3rd edn. Wiley, New York, pp 230-257

Online document

Cartwright J (2007) Big stars have weather too. IOP Publishing PhysicsWeb. <http://physicsweb.org/articles/news/11/6/16/1>. Accessed 26 June 2007

Dissertation

Trent JW (1975) *Experimental acute renal failure*. Dissertation, University of California

Always use the standard abbreviation of a journal's name according to the ISSN List of Title Word Abbreviations, see **ISSN.org LTWA**

If you are unsure, please use the full journal title.

Authors preparing their manuscript in LaTeX can use the bibliography style file `sn-basic.bst` which is included in the Springer Nature Article Template.

Tables

All tables are to be numbered using Arabic numerals.

Tables should always be cited in text in consecutive numerical order.

For each table, please supply a table caption (title) explaining the components of the table.

Identify any previously published material by giving the original source in the form of a reference at the end of the table caption.

Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

Artwork and Illustrations Guidelines

Electronic Figure Submission

Supply all figures electronically.

Indicate what graphics program was used to create the artwork.

For vector graphics, the preferred format is EPS; for halftones, please use TIFF format.

Msoffice files are also acceptable.

Vector graphics containing fonts must have the fonts embedded in the files.

Name your figure files with "Fig" and the figure number, e.g., Fig1.eps.

Line Art

Definition: Black and white graphic with no shading.

Do not use faint lines and/or lettering and check that all lines and lettering within the figures are legible at final size.

All lines should be at least 0.1 mm (0.3 pt) wide.

Scanned line drawings and line drawings in bitmap format should have a minimum resolution of 1200 dpi.

Vector graphics containing fonts must have the fonts embedded in the files.

Halftone Art

Definition: Photographs, drawings, or paintings with fine shading, etc.

If any magnification is used in the photographs, indicate this by using scale bars within the figures themselves.

Halftones should have a minimum resolution of 300 dpi.

Combination Art

Definition: a combination of halftone and line art, e.g., halftones containing line drawing, extensive lettering, color diagrams, etc.

Combination artwork should have a minimum resolution of 600 dpi.

Color Art

Color art is free of charge for online publication.

If black and white will be shown in the print version, make sure that the main information will still be visible. Many colors are not distinguishable from one another when converted to black and white. A simple way to check this is to make a xerographic copy to see if the necessary distinctions between the different colors are still apparent.

If the figures will be printed in black and white, do not refer to color in the captions.

Color illustrations should be submitted as RGB (8 bits per channel).

Figure Lettering

To add lettering, it is best to use Helvetica or Arial (sans serif fonts).

Keep lettering consistently sized throughout your final-sized artwork, usually about 2–3 mm (8–12 pt).

Variance of type size within an illustration should be minimal, e.g., do not use 8-pt type on an axis and 20-pt type for the axis label.

Avoid effects such as shading, outline letters, etc.

Do not include titles or captions within your illustrations.

Figure Numbering

All figures are to be numbered using Arabic numerals.

Figures should always be cited in text in consecutive numerical order.

Figure parts should be denoted by lowercase letters (a, b, c, etc.).

If an appendix appears in your article and it contains one or more figures, continue the consecutive numbering of the main text. Do not number the appendix figures, "A1, A2, A3, etc." Figures in online appendices [Supplementary Information (SI)] should, however, be numbered separately.

Figure Captions

Each figure should have a concise caption describing accurately what the figure depicts. Include the captions in the text file of the manuscript, not in the figure file.

Figure captions begin with the term **Fig.** in bold type, followed by the figure number, also in bold type.

No punctuation is to be included after the number, nor is any punctuation to be placed at the end of the caption.

Identify all elements found in the figure in the figure caption; and use boxes, circles, etc., as coordinate points in graphs.

Identify previously published material by giving the original source in the form of a reference citation at the end of the figure caption.

Figure Placement and Size

Figures should be submitted within the body of the text. Only if the file size of the manuscript

causes problems in uploading it, the large figures should be submitted separately from the text.

When preparing your figures, size figures to fit in the column width.

For large-sized journals the figures should be 84 mm (for double-column text areas), or 174 mm (for single-column text areas) wide and not higher than 234 mm.

For small-sized journals, the figures should be 119 mm wide and not higher than 195 mm.

Permissions

If you include figures that have already been published elsewhere, you must obtain permission from the copyright owner(s) for both the print and online format. Please be aware that some publishers do not grant electronic rights for free and that Springer will not be able to refund any costs that may have occurred to receive these permissions. In such cases, material from other sources should be used.

Accessibility

In order to give people of all abilities and disabilities access to the content of your figures, please make sure that

All figures have descriptive captions (blind users could then use a text-to-speech software or a text-to-Braille hardware)

Patterns are used instead of or in addition to colors for conveying information (colorblind users would then be able to distinguish the visual elements)

Any figure lettering has a contrast ratio of at least 4.5:1

Supplementary Information (SI)

Springer accepts electronic multimedia files (animations, movies, audio, etc.) and other supplementary files to be published online along with an article or a book chapter. This feature can add dimension to the author's article, as certain information cannot be printed or is more convenient in electronic form.

Before submitting research datasets as Supplementary Information, authors should read the journal's Research data policy. We encourage research data to be archived in data repositories wherever possible.

Submission

Supply all supplementary material in standard file formats.

Please include in each file the following information: article title, journal name, author names; affiliation and e-mail address of the corresponding author.

To accommodate user downloads, please keep in mind that larger-sized files may require very long download times and that some users may experience other problems during downloading.

High resolution (streamable quality) videos can be submitted up to a maximum of 25GB; low resolution videos should not be larger than 5GB.

Audio, Video, and Animations

Aspect ratio: 16:9 or 4:3

Maximum file size: 25 GB for high resolution files; 5 GB for low resolution files

Minimum video duration: 1 sec

Supported file formats: avi, wmv, mp4, mov, m2p, mp2, mpg, mpeg, flv, mxf, mts, m4v, 3gp

Text and Presentations

Submit your material in PDF format; .doc or .ppt files are not suitable for long-term viability.

A collection of figures may also be combined in a PDF file.

Spreadsheets

Spreadsheets should be submitted as .csv or .xlsx files (MS Excel).

Specialized Formats

Specialized format such as .pdb (chemical), .wrl (VRML), .nb (Mathematica notebook), and .tex can also be supplied.

Collecting Multiple Files

It is possible to collect multiple files in a .zip or .gz file.

Numbering

If supplying any supplementary material, the text must make specific mention of the material as a citation, similar to that of figures and tables.

Refer to the supplementary files as “Online Resource”, e.g., "... as shown in the animation (Online Resource 3)", "... additional data are given in Online Resource 4”.

Name the files consecutively, e.g. “ESM_3.mpg”, “ESM_4.pdf”.

Captions

For each supplementary material, please supply a concise caption describing the content of the file.

Processing of supplementary files

Supplementary Information (SI) will be published as received from the author without any conversion, editing, or reformatting.

Accessibility

In order to give people of all abilities and disabilities access to the content of your supplementary files, please make sure that

The manuscript contains a descriptive caption for each supplementary material

Video files do not contain anything that flashes more than three times per second (so that users prone to seizures caused by such effects are not put at risk)

Clinical Trial Registration

Clinical trials must be registered prior to submission of manuscripts. The registration site must be publicly available in English.

Recommended sites are: <https://www.isrctn.com> ; <https://www.clinicaltrialsregister.eu>; <https://clinicaltrials.gov> or similar.

The registration number is required for the submission and must appear on the title page.

ANEXO E – NORMAS PARA PUBLICAÇÃO NO PERIÓDICO *CARIES RESEARCH****Research Article******Manuscript Title***

First Name(s) Surname^a, First Name(s) Surname^a, First Name(s) Surname^b, First Name(s) Surname^c, First Name(s) Surname^a

^a Department, Institute/University/Hospital, City, (State,) Country

^b Department, Institute/University/Hospital, City, (State,) Country

^c Department, Institute/University/Hospital, City, (State,) Country

Short Title: to be used as running head

Corresponding Author:

Full name

Department

Institute/University/Hospital

Street Name & Number

City, State, Postal code, Country

Tel:

E-mail:

Number of Tables: Please indicate the number of tables submitted.

Number of Figures: Please indicate the number of figures submitted.

Word count: Please indicate the word count including Abstract and body text. This is not to include the title page, reference list or figure legends. Keywords: Please provide 3–5 keywords highlighting the most important points of your paper

Abstract

A short Abstract should summarize the main points and reflect the content of the article. It should be written in a clear and concise way and be unstructured, set in 1 paragraph. Abbreviations used in the main text may be introduced and used. Use neither bibliographic references nor references to figures or tables in the Abstract.

Please refer to the Author Guidelines for more information about the maximum accepted word count of the Abstract in your chosen journal. Where no specific word count is provided, an abstract of between 200-400 words is permitted.

Introduction

The Introduction should provide a summary of the background to the relevant field of research and the specific problems addressed and should state the hypotheses being explored as well as the main goal(s) of the study. Conclusions or findings should not appear in the Introduction.

Materials and Methods

The Materials and Methods section should clearly list all inclusion and exclusion criteria, methods of research, and variables evaluated and should state how outcomes were assessed. All terms should be adequately defined and statistical information should be sufficiently detailed so that a study can be repeated. If your manuscript is a clinical trial, please provide the clinical trial number.

Results

The Results section should describe the most important findings of the study, analysis, or experiment. The most important results should be indicated, and relevant trends and patterns should be described.

Discussion/Conclusion

The Discussion/Conclusion should provide an evaluation of the results. There should be a clear discussion of the implications, significance, and novelty of the results presented and whether the data support or contradict previous studies.

Statements

All papers must contain the following statements after the main body of the text and before the reference list:

Acknowledgement (optional)

In the Acknowledgement section, authors must include individuals and organizations that have made substantive contributions to the research or the manuscript. An exception is where funding was provided, which should be included in Funding Sources. Please refer to the Guidelines issued by the ICMJE to determine non-author contributors that should be included in the Acknowledgement section.

Statement of Ethics

Published research must comply with the guidelines for human studies and should include evidence that the research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. In the manuscript, authors should state that subjects have given their written informed consent and that the study protocol was approved by the institute's committee on human research. If ethics approval was not required, or if the study has been granted an exemption from requiring ethics approval, this should be detailed in the manuscript. Studies involving animals must have been approved by the authors' Institutional Animal Care and Use Committee (IACUC) or equivalent ethics committee and must follow internationally recognized guidelines such as the ARRIVE guidelines. Please address the following aspects in your Statement of Ethics.

Study approval statement: Provide name and affiliation of the committee who approved the study and the decision reference number. An example statement can be found here: "*This study protocol was reviewed and approved by [committee name and affiliation], approval number [XXX].*" If ethics approval was not required, or if the study has been granted an exemption from requiring ethics approval, this should also be stated, including the name of the ethics committee who made that decision.

Consent to participate statement: For studies using human participants, state whether written informed consent was obtained from participants (or their parent/legal guardian/next of kin) to participate in the study. If written informed consent was not required, or if the study has been granted an exemption from requiring written informed consent, this should also be stated, including the name of the ethics committee who made that decision.

Conflict of Interest Statement

Authors are required to disclose any possible conflicts of interest. All forms of support and financial involvement (e.g. employment, consultancies, honoraria, stock ownership and options, expert testimony, grants or patents received or pending, royalties) which took place

in the previous three years should be listed, regardless of their potential relevance to the paper. Also the nonfinancial relationships (personal, political, or professional) that may potentially influence the writing of the manuscript should be declared. If there is no conflict of interest, please state: “The authors have no conflicts of interest to declare.”

Funding Sources

Authors must give full details about the funding of any research relevant to their study, including sponsor names and explanations of the roles of these sources in the preparation of data or the manuscript.

Author Contributions

In the Author Contributions section, a short statement detailing the contributions of each person named as an author should be included. Contributors to the paper who do not fulfil the ICMJE Criteria for Authorship should be credited in the Acknowledgement section.

If an author is removed from or added to the listed authors after submission, an explanation and a signed statement of agreement confirming the requested change are required from all the initially listed authors and from the author to be removed or added.

Data Availability Statement

Authors are required to provide a Data Availability Statement in their article that details whether data are available and where they can be found. The journal’s data sharing policy strongly encourages authors to make all datasets on which the conclusions of the paper rely available to editors, reviewers and readers without unnecessary restriction wherever possible. In cases where research data are not publicly available on legal or ethical grounds, this should be clearly stated in the Data Availability Statement along with any conditions for accessing the data. Examples of Data Availability Statements and additional information on the data sharing policy can be found on the journal homepage under “Guidelines”.

References [Alphabetical]

In-text citations should always be ordered chronologically, e.g., [Rendulic et al., 2004; Jurkevitch, 2006; Cohen and Gardner, 2016].

References should be listed using the Vancouver style. The reference list should include only those publications which are cited in the text, in alphabetical order. Material submitted for publication but not yet accepted should be referred to as “unpublished data” and should not be included in the reference list. The authors’ surnames should be followed by their initials with no punctuation other than a comma to separate individual authors. A maximum of 6 authors should be listed (followed by “et al.” if there are more than 6 authors). More information on good referencing practice, as well as further examples, can be found in [The National Library of Medicine Style Guide for Authors](#).

Examples

Papers published in journals:

Sawant KV, Xu R, Cox R, Hawkins H, Sbrana E, Kolli D, et al. Chemokine CXCL1-mediated neutrophil trafficking in the lung: role of CXCR2 activation. *J Innate Immun*. 2015 Jul;6(7):647–58.

(Journal names should be abbreviated according to the Index Medicus.)

Papers published only with DOI number:

Chen C, Hu Z. ApoE polymorphisms and the risk of different subtypes of stroke in the Chinese population: a comprehensive meta-analysis. *Cerebrovasc Dis*. DOI: 10.1159/000442678.

Monographs:

Matthews DE, Farewell VT. *Using and understanding medical statistics*. 5th ed, revised. Basel: Karger; 2015.

Edited Books:

Cohen SR, Gardner TW. Diabetic retinopathy and diabetic macular edema. In: Nguyen QD, Rodrigues EB, Farah ME, Mieler WF, Do DV, editors. *Retinal pharmacotherapeutics*. Dev Ophthalmol. Basel: Karger; 2016. Vol. 55; p. 137–46.

Websites:

Karger Publishers [Internet]. Basel: *Transforming Vesalius: The 16th-Century Scientific Revolution Brought to Life for the 21st Century* [cited 2013 Feb 4]. Available from: <http://www.vesaliusfabrica.com/en/new-fabrica.html>.

Figure Legends

Fig. 1. Legend text.

Fig. 2. Legend text.

Figures should be mentioned in the manuscript text as follows:

Without round brackets:

“...shown in Figure 1...” or “...shown in Figures 1 and 4...” or “...shown in Figures 2–6...”
always with capital letters and written out.

With round brackets:

“(shown in Fig. 1)” or “(shown in Fig. 1, 4)” or “(shown in Fig. 2–6)”, always abbreviated as
“Fig.” followed by the number or numbers after a full stop and a space.

In the Legend:

“Fig. 1.” or “Fig. 1. a”, always abbreviated as “Fig.” followed by the number after a full stop
and a space

Please note that the actual figures and all tables should be uploaded as separate items in their
original file format.

ANEXO F – NORMAS PARA PUBLICAÇÃO NO PERIÓDICO *BRAZILIAN DENTAL JOURNAL*

THE FOLLOWING GUIDELINES MUST BE FOLLOWED CAREFULLY.

General

The authors must submit the manuscript in Word and in PDF, comprising the title page, text, tables, figure captions and figures (photographs, micrographs, radiographs, schematic drawings, graphs, computer-generated images, etc).

The manuscript must be typed in Times New Roman 12 font, with 1.5 spacing, 2.5-cm margins at each side. DO NOT USE bold letters, watermarks or other resources to make the text visually attractive.

Pages should be numbered consecutively, starting with the summary.

Full-length manuscripts are assembled in the following sections:

1. Title Page
2. Summary and Key Words
3. Introduction; Material and Methods; Results; Discussion
4. Summary in Portuguese (an item necessary for Latin American Indexing Services that will be provided for non-Brazilian authors by the Journal)
5. Acknowledgements (if any)
6. References
7. Tables
8. Figure captions
9. Figures

All titles of sections (Introduction, Material and Methods, etc) must be capitalized in regular font type (not bold).

Results and Discussion MUST NOT be joined in a single section.

Short Communications and Case Reports should be divided into appropriate sections.

Products, equipments and materials: the trade name must be followed by the manufacturer's name, city, state and country, within parentheses upon first mention. For further mentions, only the manufacturer's name is required.

All abbreviations must be explained at first mention.

Title page

The first page must contain the title of the manuscript, a short title (maximum of 40 characters, to be used as a running head), author(s) name(s) (no more than 6) and their Department(s), School(s) and/or University (s). **DO NOT INCLUDE** the author's titles (DDS, MSc, PhD, etc.) or position (Professor, Graduate student, etc.).

Provide the name and complete address of the corresponding author (inform email, telephone and fax numbers).

The title page must be uploaded at the website as a separate file (not included in the body of the manuscript).

Manuscript

The first page of the manuscript must contain: title of the manuscript, short title with no more than 40 characters, and **NO** authors' names or identification.

Summary

The second page should contain a summary of no more than 250 words, stating the aims, methods, results, and any conclusions drawn from the study. Do not use topics and paragraphs and do not cite references in the Summary.

A list of key words (no more than 5) should be included below the summary in lowercase letters, separated by commas.

Introduction

Summarize the purpose of the study, giving only pertinent references. Do not review existing literature extensively. State clearly the working hypothesis.

Material and Methods

Material and methods should be presented in sufficient detail to allow confirmation of the observations. Indicate the statistical methods used, if applicable.

Results

Present the results in a logical sequence in the text, tables and figures, emphasizing the important information.

Do not repeat in the text data contained in the tables and illustrations. The important observations should be emphasized. Do not repeat the same data in tables and figures.

Describe the statistical data in this section.

Discussion

Summarize the findings without repeating in detail the data given in the Results section.

Relate your observations to other relevant studies and point out the implications of the findings and their limitations. Cite pertinent studies.

Present your conclusions at the end of the Discussion, indicating how your study is pertinent and/or its clinical implications. Presentation of the conclusions in topics should be avoided.

Summary in Portuguese (for Brazilian authors only)

The Summary in Portuguese should be IDENTICAL to the English version (Summary). DO NOT INCLUDE title and key words in Portuguese.

Acknowledgements

Financial support by government agencies should be acknowledged. If appropriate, technical assistance or assistance from colleagues may be acknowledged.

References

References must follow the Journal's style. Authors should refer to a current issue of the Brazilian Dental Journal (BDJ) for guidance on reference citation and presentation of the reference list.

References must be numbered consecutively in the text in order of citation, within parentheses, without space between numbers: (1), (3,5,8), (10-15). DO NOT USE superscript numbers.

For papers with two authors, cite both authors in the text, as follows: Ex: "According to Santos and Silva (1)...". If there are more than 3 authors, cite only the first author and add "et al.". Ex: "Pécora et al. (2) reported that..."

All authors of each paper should be included in the Reference List unless there are 7 or more. In this case, the first 6 authors should be given, followed by "et al.".

The reference list must be typed at the end of the manuscript in numerical sequence. No more than 25 references may be cited.

Citation of abstracts and books, as well as articles published in non-indexed journals should be avoided, unless absolutely necessary. Do not cite references in Portuguese.

Abbreviations of journal titles should conform to those used in Dental Index. The style and punctuation of references must follow the format illustrated below:

Journal articles

1. Lea SC, Landini G, Walmsley AD. A novel method for the evaluation of powered toothbrush oscillation characteristics. *Am J Dent* 2004;17:307-309.

Book

2. Shafer WG, Hine MK, Levy BM. *A Textbook of Oral Pathology*. 4th ed. Philadelphia: WB Saunders; 1983.

Chapter in a Book

3. Walton RE, Rotstein I. Bleaching discolored teeth: internal and external. In: *Principles and Practice of Endodontics*. Walton RE (Editor). 2nd ed. Philadelphia: WB Saunders; 1996. p 385-400.

Tables

Each table with its title must be typed after the text. Tables should be numbered with Arabic numerals. DO NOT USE vertical lines, bold letters and capital letters (except the initials).

The corresponding title should appear at the top of each table.

Tables must contain all necessary information and be understandable without allusions to the text.

Figures

BDJ WILL NOT ACCEPT FIGURES EMBEDDED IN FILES ORIGINATED IN TEXT-EDITING SOFTWARE (WORD OR SIMILAR) OR FIGURES ORIGINATED IN POWER POINT.

The digital files of the images should be generated in Photoshop, Corel or any other image-editing software and saved in the CD-ROM. Image files should have TIFF extension and 300 dpi minimum resolution. Only BLACK & WHITE figures are accepted. Save the figures in the CD-ROM.

Lettering and identifying marks must be clear and sharp, and the critical areas of x-rays and photomicrographs must be demarcated and/or isolated.

Separate parts of composite figures must be labeled with capital letters (A, B, C, etc). Single figures and composite figures must have minimum width of 8 cm and 16 cm, respectively.

Figure captions should be numbered with Arabic numerals and typed on a separate page, after the lists of references or after the tables (if any)

Policies on Conflict of Interest, Human and Animal rights, and Informed Consent

CONFLICT OF INTEREST

The Brazilian Dental Journal reassures the principles incorporated in the Helsinki Declaration and insists that all research involving human beings, in the event of publication in this journal, be conducted in conformity with such principles and others specified in the respective ethics committees of authors' institution. In the case of experiments with animals, the same ethical principles must also be followed. When surgical procedures in animals were used, the authors should present, in the Methodology section, evidence that the dose of a proper substance was adequate to produce anesthesia during the entire surgical procedure. All experiments conducted in human or animals must accompany a description, in the Methodology section, that the study was approved by the respective Ethics Committee of authors' affiliation and provide the number of the protocol approval.

The papers presenting experimental studies in human volunteers or in animals must contain the Ethical Committee approval of the reports as mandatory supplementary file. The Ethics Committee certificate written in different languages from English, Spanish and Portuguese must be full translated into English.

All authors and co-authors are required to disclose any potential conflict of interest when submitting their article (e.g. employment, consulting fees, research contracts, stock ownership, patent licenses, advisory affiliations, etc.). If the article is subsequently accepted for publication, this information should be included in the end section.

HUMAN AND ANIMAL RIGHTS

All research must have been carried out within an appropriate ethical framework. If there is suspicion that work has not taken place within an appropriate ethical framework, Editors will follow may reject the manuscript, and/or contact the author(s)' ethics committee. On rare occasions, if the Editor has serious concerns about the ethics of a study, the manuscript may be rejected on ethical grounds, even if approval from an ethics committee has been obtained.

Articles conducting any animal or clinical studies should contain a statement in accordance with the animal and human ethics committee.

Research should be carried out in a manner that animals do not get affected unnecessarily.

Registration is required for all clinical trials.

INFORMED CONSENT

In the Brazilian Dental Journal, patients have a right to privacy that should not be violated without informed consent. Identifying information, including names, initials, or hospital numbers, should not be published in written descriptions, photographs, or pedigrees unless the information is essential for scientific purposes and the patient (or parent or guardian) gives written informed consent for publication.

Informed consent for this purpose requires that an identifiable patient be shown the manuscript to be published. Authors should disclose to these patients whether any potential identifiable material might be available via the Internet as well as in print after publication. Patient consent should be written and archived either with the journal, the authors, or both, as dictated by local regulations or laws. Nonessential identifying details should be omitted. Informed consent should be obtained if there is any doubt that anonymity can be maintained. When informed consent has been obtained, it should be indicated in the published article.

Submission of manuscripts

CHECKLIST FOR AUTHORS PRIOR TO SUBMISSION

1. Submission letter;

2. Title page.

3. Manuscript file (text, tables, figure captions).

4. In the manuscript, observe:

- identification of authors only on the title page.
- text typed in Times New Roman 12 font, with 1.5 spacing, 2.5-cm margins at each side.
- tables, figure captions and figures at the end of the manuscript.

5. Digital files of figures, black & white, saved in TIFF format with minimum resolution of 300 dpi.

There are no fees for submission and evaluation of articles.

The Technical Review Fee is R\$ 550,00 Reais Brasileiros (for Brazilian authors) or U\$300 American dollars (for foreign authors) and will be charged to the corresponding author, even if only minor corrections to the manuscript are needed.