

**UNIVERSIDADE FEDERAL DE UBERLÂNDIA  
FACULDADE DE MEDICINA  
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIAS DA SAÚDE**

**CARACTERÍSTICAS INDIVIDUAIS E CONTEXTUAIS ASSOCIADAS AO USO DE  
ÁLCOOL ENTRE ESCOLARES BRASILEIROS: UM ESTUDO DE BASE ESCOLAR**

**PATRYCIA SARAH MARTINS ARRUDA**

**UBERLÂNDIA/MG  
2020**

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ÁLCOOL ENTRE ESCOLARES BRASILEIROS: UM ESTUDO DE BASE ESCOLAR**

Dissertação apresentada ao Programa de Pós-Graduação em Ciências da Saúde da Faculdade de Medicina da Universidade Federal de Uberlândia, como requisito parcial para obtenção de título de Mestre em Ciências da Saúde

Orientadora: Profa. Dra. Catarina Machado Azeredo

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pela Universidade Federal de Uberlândia, a Banca Examinadora, designada pelo Colegiado do Programa de Pós-graduação em Ciências da Saúde, assim composta: Professores Doutores: Carla Cristina Enes (PUC-Campinas), Marcelle Aparecida de Barros Junqueira (UFU) e Catarina Machado Azeredo (UFU) orientadora da candidata.

Iniciando os trabalhos o presidente da mesa, Dra. Catarina Machado Azeredo, apresentou a Comissão Examinadora e a candidata, agradeceu a presença do público, e concedeu a Discente a palavra para a exposição do seu trabalho. A duração da apresentação do Discente e o tempo de arguição e resposta foram conforme as normas do Programa.

A seguir o senhor(a) presidente concedeu a palavra, pela ordem sucessivamente, aos(às) examinadores(as), que passaram a arguir o(a) candidato(a). Ultimada a arguição, que se desenvolveu dentro dos termos regimentais, a Banca, em sessão secreta, atribuiu o resultado final, considerando o(a) candidato(a):

Aprovada.

Esta defesa faz parte dos requisitos necessários à obtenção do título de Mestre.

O competente diploma será expedido após cumprimento dos demais requisitos, conforme as normas do Programa, a legislação pertinente e a regulamentação interna da UFU.

Nada mais havendo a tratar foram encerrados os trabalhos. Foi lavrada a presente ata que após lida e achada conforme foi assinada pela Banca Examinadora.

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Aos bons espíritos que sempre me mostram luz  
quando caminho em meio à escuridão.

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Primeiramente agradeço a Deus pelas bênçãos e oportunidades nesta encarnação.

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## **APRESENTAÇÃO**

A presente dissertação está apresentada em formato alternativo, de artigo científico, aprovada pelo Programa de Pós-Graduação em Ciências da Saúde da Universidade Federal de Uberlândia, sendo estruturada com introdução, referencial teórico e artigo completo submetido à revista Journal of Adolescence. O artigo apresentado foi elaborado em parceria com outros colaboradores.



## RESUMO

**Introdução:** O álcool é a substância psicoativa com maior prevalência de consumo entre adolescentes. O uso de bebidas alcoólicas é determinado por características individuais, comportamentais e pelo contexto social em que o adolescente está inserido. Embora a escola ofereça recursos para intervir na saúde e na adoção de medidas preventivas no consumo de álcool pelos adolescentes, estudos capazes de analisar a associação entre o uso do álcool e as características da escola são escassos no Brasil. **Objetivos:** Analisar a associação entre características individuais e contextuais com a experimentação do álcool, uso nos últimos trinta dias e embriaguez por adolescentes. **Métodos:** Estudo transversal utilizando dados da Pesquisa Nacional de Saúde do Escolar (PeNSE) de 2015 com adolescentes de escolas públicas e privadas da 9ª série do ensino fundamental das 26 capitais brasileiras e Distrito Federal. Modelos de regressão logística multinível, estratificados por tipo de administração escolar (pública/privada), foram realizados para obtenção de *Odds Ratio* (OR) com Intervalos de Confiança de 95%, para os desfechos: experimentação do álcool (sim/não); uso de álcool nos últimos trinta dias (sim/não); episódio de embriaguez (sim/não); e exposições: ter amigos que consumiam álcool e/ou drogas e/ou cigarro, pais fumantes, adoção de políticas preventivas na escola e conhecimento do uso de cigarro nas dependências da escola. **Resultados:** No geral, alunos de escolas públicas relataram maior prevalência de experimentação de álcool (51,9%) uso nos últimos trinta dias (20,2%) além do episódio de embriaguez (22,1%) quando comparados aos alunos de escolas privadas. Meninas tiveram maior probabilidade de experimentação de álcool (OR=1,09; IC95%=1,05;1,12) e de uso nos últimos trinta dias (OR=1,09; IC95%=1,05;1,13), e menores chances de embriaguez (OR=0,90; IC95%=0,87;0,93). Houve associação positiva entre o consumo de álcool nos três desfechos e o uso de substâncias pelos pais e pares e também com o consumo prévio de outras substâncias pelos próprios adolescentes. A existência de política de proibição de consumo de álcool na escola teve associação positiva com a experimentação do álcool (OR= 1,11; IC95%=1,04;1,18). Alunos de escolas que tinham conhecimento do fumo dos professores em suas dependências estavam mais propensos ao uso do álcool nos três desfechos, e quando a escola sabia do fumo dos alunos na instituição estavam mais propensos ao consumo de álcool nos últimos trinta dias. Ações em conjunto com a Unidade Básica de Saúde da Família (UBSF) e com o Programa Saúde na Escola (PSE) não mantiveram associação com os desfechos após os ajustes. **Conclusão:** A exposição às substâncias lícitas e ilícitas pelos amigos, no ambiente familiar e escolar são fatores que favorecem à experimentação do álcool, uso nos últimos trinta dias e episódio de embriaguez dos adolescentes. Além disso, políticas proibitivas na escola se associaram a maior experimentação de álcool. Dessa forma, considerando-se a escola como espaço favorável ao desenvolvimento de atividades de prevenção, políticas públicas específicas sobre este tema devem ser desenvolvidas nesse ambiente para minimizar o uso dessa substância por adolescentes.

**Palavras-chave:** Adolescente, Bebidas Alcoólicas, Educação em saúde, Instituições de ensino, Comportamento do adolescente.

## ABSTRACT

**Introduction:** Alcohol is the psychoactive substance with the highest prevalence of consumption among adolescents. The use of alcoholic drinks is determined by individual and behavioral characteristics and the adolescent's social context. Although the school offers resources to promote health and to adopt measures to prevent adolescent's alcohol consumption, studies evaluating the association between alcohol use and school characteristics are scarce in Brazil. **Objectives:** To analyse the association between individual and contextual characteristics with alcohol experimentation, use in the past thirty days, and drunkenness among adolescents. **Methods:** Cross-sectional study using data from the 2015 National School Health Survey (PeNSE) with adolescents from public and private schools attending 9th grade of elementary school in 26 Brazilian capitals and the Federal District. Multilevel logistic regression models, stratified by type of school administration (public/private), were performed to obtain odds ratio (OR) with 95% confidence intervals (95%CI), for the outcomes: alcohol experimentation (yes/no); alcohol use in the last thirty days (yes/no); drunkenness episode (yes/no); and exposures: having friends who drank alcohol and/or used drugs and/or cigarettes, smoking parents, adoption of preventive policies at school, and knowledge of cigarette use on school premises. **Results:** In general, public school students reported higher prevalence of alcohol experimentation (51.9%), use in the last thirty days (20.2%) and drunkenness (22.1%) than private school students. Girls were more likely to experiment alcohol (OR = 1.09; 95% CI = 1.05; 1.12) and use in the last thirty days (OR = 1.09; 95% CI = 1.05; 1.13) and less prone to drunkenness (OR = 0.90; 95%CI = 0.87; 0.93). There was a positive association of alcohol consumption in the three outcomes with use of substances by parents and peers and also with previous consumption of other substances by the adolescents themselves. Having a policy of banning alcohol consumption at school was positively associated with alcohol experimentation (OR = 1.11; 95% CI = 1.04; 1.18). In public schools, the principal being aware that teachers and students smoke at school was associated with greater and lesser use of alcohol by adolescents, respectively. Joint actions with the Basic Family Health Unit and the School Health Program were not associated with the outcomes after adjustments. **Conclusion:** Exposure to legal and illegal substances by friends and in the family and school environment are factors that favor alcohol experimentation, use in the last thirty days and drunkenness episode among adolescents. Moreover, policy of banning alcohol consumption at school was related to increase in alcohol experimentation. Thus, considering the school as a favorable space for the development of prevention activities, public policies specific for alcohol prevention must be developed in this environment to minimize adolescent alcohol use.

**Keywords:** Adolescent, alcoholic drinks, health education, educational institutions, adolescent behavior

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## **LISTA DE ABREVIACOES**

**AB** – Ateno Bsica

**CNS** - Conselho Nacional de Sade

**CONEP** - Comisso Nacional de tica em Pesquisa

**ESF** – Estratgia de Sade da Famlia

**GSHS** - Global School-based Student Health Survey

**IBGE** - Instituto Brasileiro de Geografia e Estatstica

**IC** – Intervalo de Confiana

**OMS**- Organizao Mundial da Sade

**OR** - Odds Ratio

**PeNSE** – Pesquisa Nacional de Sade do Escolar

**PNAD**- Pesquisa Nacional de Amostra de Domiclios

**PSE** - Sade na Escola

**RO**- Rondnia

**UBSF** – Unidade Bsica de Sade da Famlia

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## 1 INTRODUÇÃO

O álcool é a substância psicoativa com maior prevalência de consumo entre adolescentes no mundo (MARQUES, 2001; CARLINI et al., 2010). Mundialmente, 43% dos adolescentes com mais de 15 anos declararam ter consumido bebidas alcoólicas no último ano (WHO, 2018). No Brasil, em 2012, 66,6% dos escolares do 6º ao 9º ano já haviam experimentado álcool e 21,8% já haviam ficado embriagados (MALTA et al., 2014).

O consumo de álcool é determinado tanto por características individuais e comportamentais do adolescente quanto pelo contexto social em que ele está inserido, incluindo o ambiente familiar, amigos e a escola (BOBO; HUSTEN, 2000; ANDRADE, 2020). A convivência com pares, pais ou familiares mais velhos que fazem o uso de álcool se associa à maior chance de adolescentes também fazerem o uso e manterem esse comportamento ao longo da vida (HALPERN-FELSHE et al., 2004; KIM; FLEMING; CATALANO, 2009; MALTA et al., 2011; CARDOSO, 2014; PEDERSEN; BAKKEN; ELICKER et al., 2015; VON SOEST, 2017). Em Porto Velho (RO) a experimentação de álcool em casa foi relatada por 39,2% dos estudantes sendo a maioria com idade entre 12 e 13 anos, além de também referirem o hábito de beber principalmente com amigos e familiares (ELICKER et al., 2015).

Além das características individuais e relacionais, fatores contextuais, incluindo o ambiente escolar, se associam ao consumo de álcool por adolescentes (CARLSON; ALMQUIST, 2016; PEDERSEN; BAKKEN; VON SOEST, 2017; TAKAKURA, 2019). A escola é espaço importante para o desenvolvimento de políticas que visam diminuir o consumo do álcool e das demais substâncias como, drogas ilícitas e cigarro (BRASIL, 2009; HENRY et al., 2009; KENNEETH et al., 2016). Políticas em instituições de ensino bem estabelecidas apresentam resultados positivos nos comportamentos dos estudantes, como a

redução do consumo de álcool, melhora do desempenho acadêmico e diminuição de atitudes problemáticas (ARRIA et al., 2018; CARIA et al., 2011; OH et al., 2020).

Após a adoção de políticas de prevenção na escola, estudo realizado nos Estados Unidos apontou redução de 22% no consumo de álcool nos últimos trinta dias e de 25% das consequências relacionadas ao uso de álcool entre adolescentes (KOMRO et al., 2017) e um estudo europeu mostrou redução de 22% nos problemas comportamentais relacionados ao uso do álcool (CARIA et al., 2011). Já estudo realizado no Sul do Brasil, não observou associação entre a ausência de ações preventivas específicas para uso de álcool e promoção de hábitos saudáveis e o consumo de álcool entre escolares (PAZ et al., 2018). Onrust et al., (2016) ressaltam em sua meta-análise que não existe consistência nos resultados sobre a efetividade de programas escolares de prevenção no uso de substâncias.

Embora a escola ofereça recursos para intervir na saúde e na adoção de medidas preventivas no consumo de substâncias pelos adolescentes (MALTA et al., 2012; KRISTJANSSON et al., 2013; KENENETH et al., 2016), estudos que fizeram a análise detalhada sobre o tema são escassos no Brasil (ELICKER et al., 2015; PAZ et al., 2018). Além disso, a experimentação da bebida alcoólica, seu uso regular e o consumo excessivo levando à embriaguez podem ter determinantes distintos (PETIT, et al., 2013). Portanto, investigações entre os determinantes de diferentes indicadores do uso do álcool são de extrema importância na formulação de políticas e ações específicas.

## 2 REFERENCIAL TEORICO

### 2.1 Consumo de álcool na adolescência

A adolescência é uma fase de transição, caracterizada por diversas alterações psíquicas, emocionais e biológicas, sendo os contextos socioeconômico e cultural grandes influenciadores deste período (OMS, 2009). Durante essa fase é possível identificar a busca pela construção da autonomia e independência, fato este evidenciado pelo experimento do novo e pela construção de elementos de identidade pessoal e coletiva (GAETE, 2015).

A adolescência é considerada o período de maior vulnerabilidade para experimentação e uso abusivo de substâncias psicoativas, como álcool, tabaco e drogas ilícitas (ELICKER et al., 2015; WHO, 2016). Nas últimas décadas, o consumo de psicoativos vem se tornando hábito comum entre adolescentes, principalmente o consumo de álcool (CARLINI et al., 2010; KRAUS, 2016). Os psicoativos têm a capacidade de alterar os pensamentos, níveis de consciência e o comportamento, sendo seu uso associado a diversos danos sociais e fisiológicos, provocando aumento no envolvimento em episódios de violência, gravidez não planejada, além de transtornos psicossociais (FELSON, 2008; CDC, 2017; ANDRADE, 2020).

Segundo a Organização Mundial da Saúde (OMS), em 2016 a prevalência do consumo frequente de álcool entre adolescentes com idade entre 15 e 19 anos era de 26,5% no mundo, com prevalências de 43,8% na Europa, 38,2% nas Américas, 21,4% na África e 21,1% na Ásia. No Brasil, entre escolares com idade  $\geq$  14 anos, a primeira dose de bebida alcoólica ocorreu predominantemente aos 12 ou 13 anos, sendo a prevalência do consumo do álcool entre as meninas de 42% e entre meninos de 36,6% (MALTA et al., 2014).

Atitudes adotadas na adolescência tendem a se perpetuar na vida adulta, com impacto correspondente na qualidade de vida destes indivíduos e por isso quanto mais precoce o contato com o álcool, mais chances de acarretar algum dano no futuro (PECHANSKY; SZOBOT; SCIVOLETTO, 2004; ANDRADE, 2020). Estudos apontam que a experimentação do álcool antes dos 15 anos aumenta em quatro vezes o risco de desenvolver dependência alcoólica (NIAAA, 2017).

O consumo excessivo de bebidas alcoólicas esteve associado a diversos fatores de risco (FELSON, 2008; CDC, 2017), na atualidade têm se levado em consideração tanto a frequência quanto a quantidade de bebida que é ingerida (ABREU, et al., 2018). A ingestão de mais que cinco doses de bebidas alcoólicas para o sexo masculino e mais que quatro doses para o sexo feminino é definida pelo termo “binge drink” sendo este um padrão adotado por



58% da população brasileira (LENAD, 2012). Já o episódio de embriaguez é caracterizado pelo uso de álcool que excede o tradicional acarretando alterações físicas e psíquicas, sem dose pré estabelecida (WHO, 2018).

O consumo de psicoativos tem efeito multiplicador, sendo o consumo de álcool frequentemente associado ao consumo de cigarro e drogas ilícitas, tornando os adolescentes mais expostos às consequências geradas pelo uso de tais substâncias (HORTA et al., 2007; GAETE; ARAYA, 2017)

Na literatura é possível observar que o consumo de álcool por adolescentes esteve associado tanto a características individuais e relacionais, quanto ao contexto em que estes estão inseridos (TAKAKURA et al., 2019; GAETE; ARAYA, 2017).

## **2.2 Características individuais e relacionais associadas ao uso de álcool por adolescentes**

Características como, sexo, cor ou raça, escolaridade materna e renda estiveram associadas ao consumo de álcool entre adolescentes (GOHARI, 2019; BRITO et al., 2015). Políticas públicas de prevenção do uso de álcool devem levar em consideração fatores individuais que contribuem para maior vulnerabilidade de alguns grupos para obtenção de melhores resultados.

Apesar de, até recentemente, o hábito de beber ter sido associado à figura masculina, atualmente não existe um padrão claro de uso de bebidas alcoólicas maior no sexo masculino, embora a motivação para o ato de beber possa ser distinta entre meninas e meninos (GOHARI, 2019; MALTA et al., 2014). A diferença do consumo de álcool por meninas e meninos pode ser influenciada pelos padrões sociais e comportamentais de determinada comunidade, onde, por exemplo, meninos são incentivados ao consumo de álcool e meninas tem tal hábito repreendido (NOLEN-HOEKSEMA, 2004).

O nível de consumo de álcool e o risco de alcoolismo podem ser influenciados pela raça/cor de cada indivíduo, sendo essa influencia explicada devido à disponibilidade das variações genéticas de enzimas do fígado que são responsáveis pelo metabolismo do álcool e que dependendo de suas características podem acarretar maior ou menor risco de alcoolismo (EDENBERG, 2007). Machado, Lima e Baptista (2017) identificaram que indivíduos de cor branca tiveram menor probabilidade de uso excessivo de álcool do que os demais, porém, vale ressaltar que no Brasil as desigualdades de raça e cor impactam diretamente na escolaridade e condição socioeconômica da população, podendo influenciar na adoção de

comportamentos de risco como o consumo de álcool (ANDRADE, DACHS, 2007; CARVALHAES; ARROYAVE, 2016; RIBEIRO, 2019).

A maior escolaridade materna, por sua vez, tem sido analisada como fator de proteção para o uso de álcool (HAIDAR; OLIVEIRA; NASCIMENTO, 2001). Segundo Mallmann et al., (2018) a maior escolaridade materna influencia tanto na compreensão de informações sobre a saúde quanto no repasse das mesmas. Além disso, num estudo realizado por Faleiro et al. (2017) quanto mais baixa a escolaridade da mãe, menores foram as prevalências de adoção de hábitos saudáveis.

Embora a revisão sistemática realizada por Gabira; Oliveira; Oliveira (2019) tenha descrito que adolescentes com maior renda estiveram mais propensos ao consumo de álcool, fato explicado pelo poder de compra que adolescentes de classes sociais mais baixas não tinham, outro estudo mostrou que adolescentes dos níveis sociais mais baixos e com menor poder aquisitivo estão mais propensos ao abandono escolar e conseqüentemente aos comportamentos de risco (SOARES et al., 2015).

A adolescência é reconhecida pela vulnerabilidade às influências dos núcleos familiares, da escola e do ciclo de amizades (BRASIL, 2009). Comportamentos adotados pelos pais e por colegas, como o consumo de álcool, aumentam as chances de adolescentes também fazerem uso de bebidas alcoólicas, assim como de progredirem neste uso (HALPERN-FELSHER; BIEHL, 2004; KIM; FLEMING; CATALANO, 2009).

A família possui papel determinante no desenvolvimento humano, sendo elemento fomentador dos constructos sociais quando levada em consideração sua responsabilidade no desenvolvimento e capacidade de influência dos indivíduos (ABREU et al., 2011). A literatura mostra que os hábitos dos pais influenciam os hábitos adotados pelos filhos e por isso, o núcleo familiar exerce grande influência na formação comportamental dos adolescentes (MINUZZI, 2019).

Os pares, assim como os pais, exercem grande influência na atitude dos adolescentes, os quais buscam constante aceitação do grupo de amigos onde estão inseridos, podendo o consumo de álcool ser adotado como forma de melhor receptividade dos colegas (BORSARI; CAREY, 2001; GAETE; ARAYA, 2017). Pesquisa realizada na Austrália mostrou que adolescentes que possuíam amigos consumidores de álcool apresentaram 2,7 vezes mais chances de ingestão de bebidas alcoólicas (JONES; MAGEE, 2014). No Brasil, adolescentes com amigos que consumiam álcool e drogas regularmente tinham 3,4 vezes mais chances de também consumir álcool (CARDOSO, MALBERGIER, 2014).

### 2.3 Os programas de proibição e prevenção do consumo de álcool nas escolas

O ambiente escolar faz parte do contexto social onde os adolescentes estão inseridos, sendo importante para o desenvolvimento de práticas saudáveis com papel fundamental na diminuição das ações prejudiciais à saúde dos adolescentes e jovens. Além disso, a escola é espaço resultante do encontro de diferentes conhecimentos científicos e culturais, responsáveis por expressar e caracterizar determinada população (BRASIL, 2009; OLIVEIRA et al., 2017).

Características da escola tendem a influenciar o hábito de ingerir bebida alcoólica dos adolescentes (FLETCHER et al., 2009). A tolerância do uso de algum tipo de substância dentro da escola aumentou a chance dos alunos também fazerem o uso da mesma substância, sugerindo que a permissividade no ambiente escolar era fator negativo para os adolescentes (POULSEN et al., 2002). Adolescentes que mantinham maior vínculo escolar tiveram menores chances do uso de álcool, assim como adolescentes com maior taxa de absenteísmo tiveram maior probabilidade de consumir bebidas alcoólicas (GAETE; ARAYA, 2017)

Mundialmente são discutidas ações de promoção de saúde nas escolas como recurso fundamental para estabelecer práticas saudáveis entre os jovens (FAZEL, 2014). CARIA et al., (2011) descreveram que alunos ingressos em escolas que adotavam programa de prevenção escolar, baseado em ações educativas e informativas, tiveram chances 22% menor de relatar problemas relacionados ao uso de álcool. Busch; Leeuw e Schrijvers (2013) realizaram um estudo na Holanda identificando que a adoção de políticas escolares voltadas à educação em saúde minimizou o consumo excessivo de álcool. Na Islândia, um estudo mostrou declínio de 60% da experimentação de tabaco, álcool e maconha através de parceria com outras entidades na comunidade, inclusive setores de saúde, fazendo com que houvesse articulação de diferentes domínios com organizações juvenis em prol do desenvolvimento de práticas saudáveis entre os jovens (SIGFUSDOTTIR et al, 2011).

No Brasil, o Programa Saúde na Escola (PSE) é uma proposta de parceria entre o Ministério da Educação e o Ministério da Saúde, com o objetivo de incluir as práticas de saúde da comunidade no contexto escolar com foco na promoção da saúde, prevenção de agravos e redução dos danos, criando vínculo que permita ações voltadas para qualidade de vida dos alunos da rede pública de ensino (BRASIL, 2009).

O PSE foi lançado em 2008 e desde então a avaliação do impacto das suas ações não foram exploradas. O PSE e a Atenção Básica (AB) são responsáveis por articular as ações de saúde entre Estratégia de Saúde da Família (ESF) e comunidade escolar (BRASIL, 2001;

BRASIL, 2009). De acordo com Sousa; Esperidão; Medina, (2017) apesar da extrema importância das ações desenvolvidas pelo PSE, o processo de implementação do programa é afetado por diversas dificuldades processuais, como a falha da comunicação entre os setores de saúde e educação e a dificuldade no acompanhamento dos adolescentes devido à grande demanda populacional dos profissionais de saúde da Atenção Básica. Além disso, embora a prevenção do uso de álcool, tabaco, crack e outras drogas seja uma das 12 ações desenvolvidas com a população escolar da rede pública pelo PSE, esta não é uma ação obrigatória em todas as escolas que aderem ao programa (BRASIL, 2009).

Segundo Vieira et al., (2014) os adolescentes representam a população com a segunda menor procura por atendimento na AB. Apesar disso adolescentes que residiam em áreas de abrangência do setor primário aderiram três vezes mais às ações educativas do que aqueles que não residiam em áreas de atuação da AB (MARTINS et al., 2019).

Vale ressaltar que de acordo com a Pesquisa Nacional por Amostra de Domicílios (PNAD), no ano de 2015 cerca de 98,6% e 85% da população entre 6 a 14 anos e 15 a 17 anos de idade, respectivamente, frequentavam a escola, explicitando a cobertura escolar ampla no país. Por isso, o ambiente escolar se transforma em espaço privilegiado, tanto para a produção de informação sobre esse grupo, como para o desenvolvimento de ações de promoção da saúde. Além disso, diante da fase de transição e mudanças na qual os adolescentes se encontram, tal faixa etária merece atenção particular devido à adoção de hábitos que poderão se perpetuar pela vida (VIEIRA et al., 2017).

Nota-se que há uma concentração de abordagens individuais, não levando em consideração a existência de relação com os fatores contextuais, como as características da escola e a adoção ou não de programas do governo que relacionam o âmbito escolar à saúde oferecida na comunidade, sendo por isso relevante a realização de estudos que abordem as questões multifatoriais do consumo de álcool na adolescência.

Por sua vez, inquéritos populacionais permitem a obtenção de grande número de indicadores para avaliação do sistema de saúde e articulação de ações intersetoriais de promoção da saúde, permitindo conhecer o perfil de saúde dos escolares brasileiros relacionando determinados hábitos ao contexto escolar o qual os adolescentes estão inseridos e permitindo a descrição de contextos de proteção e risco à saúde.

Sendo assim, identificar características individuais e contextuais associadas a diferentes indicadores de consumo de álcool entre escolares brasileiros é de extrema relevância.

### **3 OBJETIVO**

#### **3.1 Objetivo Geral**

Identificar características individuais e contextuais associadas a diferentes indicadores de consumo de álcool entre escolares brasileiros.

#### **3.2 Objetivos Específicos**

Descrever a prevalência do consumo de bebidas alcoólicas entre escolares por meio dos episódios da experimentação, uso nos últimos trinta dias e episódios de embriaguez;

Identificar características socioeconômicas dos pais e dos pares que podem estar associadas ao consumo de álcool por escolares;

Analisar a associação entre adoção de políticas de prevenção e proibição do consumo de álcool nas escolas e o consumo de bebidas alcoólicas pelos adolescentes.

#### 4 ARTIGO COMPLETO

### INDIVIDUAL AND CONTEXTUAL CHARACTERISTICS ASSOCIATED WITH ALCOHOL USE AMONG BRAZILIAN STUDENTS

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## ABSTRACT

**Objectives:** To analyse the association between individual and contextual characteristics and alcohol experimentation, use in the last thirty days and drunkenness in adolescents. **Methods:** Cross-sectional study using data from the 2015 National School Health Survey (PeNSE) with a representative sample of 9th graders from Brazilian public and private schools, including 2,979 schools and 100,914 students. Multilevel logistic regression models were performed to obtain odds ratio (OR) with 95% confidence intervals (CI) for the outcomes: alcohol experimentation; use in the last thirty days and drunkenness; and exposures: relational and school characteristics, adjusted for adolescents' sociodemographic characteristics. **Results:** Girls were more likely to experiment alcohol (OR = 1.09; 95% CI = 1.05; 1.12) and use it in the last thirty days (OR = 1.09; 95% CI = 1.00; 1, 13) and less prone to drunkenness (OR = 0.90; 95% CI = 0.87; 0.93). A higher proportion of public school students reported drinking. There was a positive association of substance use by parents, peers and the adolescents themselves with the three outcomes of alcohol consumption. Having a policy of banning alcohol consumption at school was associated with a greater chance of experimenting with alcohol in public schools (OR = 1.11; 95% CI = 1.04; 1.18). In public schools, the principal being aware that teachers and students smoke at school was associated with greater and lesser use of alcohol by adolescents, respectively. **Conclusion:** Exposure to legal and illegal substances by friends, family members and school environment favored alcohol experimentation, use in the last thirty days, and drunkenness episode among adolescents.

**Keywords:** Adolescent, alcoholic drinks, health education, educational institutions, adolescent behavior

## INTRODUCTION

Alcohol is the most prevalent psychoactive substance use among adolescents in the world (MARQUES, 2001; CARLINI et al., 2010). Worldwide, 43% of adolescents over the age of 15 reported having consumed alcoholic beverages in the last year (WHO, 2018). In Brazil, 66.6% of students from the 6th to the 9th grade had already tried alcohol and 21.8% had already been drunk in 2012 (MALTA et al., 2014).

Alcohol consumption is determined by adolescents' individual and behavioral characteristics and their social context, including the family environment, friends and the school (BOBO; HUSTEN, 2000; ANDRADE, 2020). Living with peers, parents or older family members who use alcohol is associated with a greater chance of adolescents also using and maintaining this behavior throughout life (HALPERN-FELSHE et al., 2004; KIM; FLEMING; CATALANO, 2009; MALTA et al., 2011; CARDOSO; MALBERGIER, 2014; PEDERSEN; BAKKEN; ELICKER et al., 2015; ENSTAD et al., 2017). In Porto Velho (RO-Brazil), alcohol experimentation at home was reported by 39.2% of students, most of them aged between 12 and 13 years (ELICKER et al., 2015). They also reported the habit of drinking primarily with friends and family members (ELICKER et al., 2015).

In addition to individual and relational characteristics, contextual factors, including the school environment, are associated with adolescent alcohol consumption (CARSON; ALMQUIST, 2016; PEDERSEN; BAKKEN; ENSTAD et al., 2017; TAKAKURA, 2019). The school is an important space for the development of policies aimed at reducing the consumption of alcohol and other substances such as illicit drugs and cigarettes (BRASIL, 2009; HENRY et al., 2009; ALLISON et al., 2016). Policies in well-established educational institutions have positive results in student behaviors, such as reducing alcohol consumption, improving academic performance and decreasing problematic attitudes (ARRIA et al., 2018; CARIA et al., 2011; OH et al., 2020).

After the adoption of prevention policies at school, a study conducted in the United States showed a 22% reduction in alcohol consumption in the last thirty days and a 25% reduction in alcohol-related consequences among adolescents (KOMRO et al., 2017), while an European study showed a 22% reduction in alcohol-related behavioral problems (CARIA et al., 2011). In a study carried out in southern Brazil, there was no association between the absence of specific preventive actions for alcohol use and the promotion of healthy habits and alcohol consumption among schoolchildren (PAZ et al., 2018). Onrust et



al., (2016) emphasize in their meta-analysis that there is no consistency in the results on the effectiveness of school programs for the prevention of substance use.

Although the school offers resources to intervene in health and in the adoption of preventive measures in adolescent substance consumption (MALTA et al., 2014; KRISTJANSSON et al., 2013; ALLISON et al., 2016), studies that conducted a detailed analysis on the subject are scarce in Brazil (ELICKER et al., 2015; PAZ et al., 2018). In addition, experimentation of alcoholic drinks, regular use and excessive consumption leading to drunkenness may have different determinants (PETIT, et al., 2013). Therefore, investigations on the determinants of different indicators of alcohol use are extremely important in the formulation of specific policies and actions. Thus, this study was designed to identify relational and contextual characteristics associated with experimentation, current use and episode of drunkenness due to alcohol consumption.

## **METHODS**

### **Population, sampling and data collection**

This is a cross-sectional study based on data from the 2015 National School Health Survey (PeNSE). PeNSE was carried out through a partnership between the Ministry of Health, the Ministry of Education and the Brazilian Institute of Geography and Statistics (IBGE). The sample design of PeNSE 2015 ensured representativeness for the whole country and for the five major geographic regions. We used data from sample 1 of PeNSE, with adolescents enrolled in public and private schools, who attended the 9th grade of elementary school, from the 26 capitals of the Brazilian states and the Federal District in 2015. Schools were the primary sampling units and classes the secondary sample units. The probability of selecting the school was proportional to its size, defined by the number of existing 9th grade classes. One class was selected from each school that reported having up to two 9th grade classes, and two classes from each school that reported having three or more 9th grade classes. In addition, all students in the chosen classes were invited to participate in the survey.

Two questionnaires were used. The first intended for students in a self-administered manner, using smartphones, based on the questionnaire of the Global School-based Student Health Survey (GSHS), containing the following themes: socioeconomic aspect; family context; and substance use (tobacco; alcohol and illicit drugs). The second questionnaire was administered to the principals or those responsible for the school and completed by the IBGE interviewer, containing questions about the school's structure, physical dimension, spaces,

equipment, practices and routines, policies adopted by the institution and situations around the school. More information about the Survey is available in Oliveira et al. (2017).

## **Description of the variables of interest**

### **Outcomes**

The adolescents answered about the use of alcoholic drinks in their lives (no/yes), hereinafter called alcohol experimentation; about alcohol use in the last thirty days (no/yes); and episode of drunkenness in life (no/yes).

### **Exposure variables**

The exposure variables were subdivided into relational and contextual variables. The following relational variables were assessed: having friends (none; 1 or 2; 3 or more friends); having friends who consume alcoholic drinks (no; some; most); having friends who use illicit drugs (no; some; most); having smoking parents (no; only one; both smoke).

The following contextual variables were assessed the administrative situation of school (public/private), the existence of health policies at the school, such as the presence of a committee coordinating health actions at the school (no/yes), the implementation of actions of the Health at School Program (PSE) in public schools (no/yes); the practice of joint actions with Primary Care (PC) (no/yes) at school; whether the school was aware of cigarette smoking by teachers inside the school (no/yes); awareness of student cigarette consumption inside the school (no/yes), and the existence of a no alcohol policy at school (no/yes).

### **Covariables**

The following covariables were considered: sex (female; male); age (categorized as:  $\leq$  13; 14 or 15; 16 years or over); color or race (white; black; yellow; brown; and Native Brazilian Indian; maternal education (incomplete elementary school; complete elementary school; complete high school; complete higher education). In addition to these variables, information on cigarette consumption by the adolescent at any time in life (no/yes) was included, as well as cigarette consumption in the last thirty days (no/yes), consumption of illicit drugs at least once in life (no/yes) and consumption of illicit drugs in the last thirty days (no/yes). There was no income variable in the questionnaire, so the score for goods and services was created, based on the self-reported possession of landline, cell phone, computer, internet at home, car and access to maid service. Each item was weighted by the inverse of the

frequency of possession and the score for each student was obtained by adding the weighted scores, as described by Levy et al. (2009). Finally, the score was divided into terciles.

The categories of answers “do not know” or “missing” in covariates were preserved in the analyzes to minimize sample loss. However, in multilevel models these categories have been omitted. The response rate was 98.6%, totaling 2,979 schools and 100,914 students.

### **Statistical analysis**

Initially, the variables were examined by means of descriptive analyses, being expressed in prevalence according to the type of school administration (public and private) and general prevalence for the set of schools. The association between alcohol consumption variables and individual (sociodemographic and relational) and contextual (school) characteristics was analyzed using multilevel logistic regression models to obtain the odds ratio (OR) with the respective 95% confidence intervals (CI). To analyse the association between alcohol consumption outcomes and exposures of interest, first stratified bivariate analyses were performed for public and private schools and for the total set of schools. Subsequently, all covariables were included in the adjusted model also stratified by school administration and for the total set of schools. The variable on the implementation of PSE actions was used only in the public school model, as it is a policy implemented only in those schools. Values where  $p < 0.05$  were considered statistically significant. The data were analyzed using the Stata SE 14.0 software.

### **Ethical aspects**

PeNSE data are publicly available on the IBGE website, without any identification of the participants. PeNSE 2015 was approved by the National Research Ethics Commission (CONEP), of the National Health Council (CNS), through CONEP opinion No. 1.006.467, of March 30, 20

## RESULTS

The sex distribution of the adolescents was similar, most of them were between 14 and 15 years old and self-declared brown skin color/ race. The maternal education levels most reported by students from public and private schools were incomplete elementary school and complete higher education, respectively (Table 1). Students from public schools reported greater experimentation, last-30-day consumption, and alcohol intoxication episodes than those from private schools, and most schools had policies prohibiting alcohol use. Joint actions with PC and actions coordinated by a school committee were practiced in 74.6% and 35.7% of public schools and in 34.4% and 42.2% of private schools, respectively. PSE actions were implemented in 43.1% of public schools (Table 1)

**Table 1** Prevalence of individual and contextual characteristics by type of school (public, private). National School Health Survey (PENSE, 2015)

<b>VARIABLES</b>	<b>Public School% (95% CI)</b>	<b>Private School% (95% CI)</b>	<b>Total% (95% CI)</b>
<b>INDIVIDUALS n=100.914</b>	<b>n=611</b>	<b>n=2.368</b>	
<b>Sex</b>			
Female	51.5 (50.8 – 52.2)	51.0 (49.5 – 52.4)	51.8 (51.5 – 52.1)
Male	48.4 (47.7 – 49.1)	48.9 (47.5 – 50.4)	48.1 (47.8 - 48.4)
<b>Age (years)</b>			
≤ 13	16.8 (15.6 – 18.0)	27.1 (24.8 – 29.6)	16.9 (16.7 – 17.1)
14 or 15	71.0 (69.9 – 72.2)	69.3 (66.9 – 71.7)	71.0 (70.7 – 71.3)
≥ 16	12.1 (11.4 – 12.8)	3.4 (2.8 – 4.1)	11.9 (11.8 – 12.2)
<b>Color race</b>			
White	33.1 (32.1 -34.2)	53.8 (50.9 – 56.7)	33.0 (32.8 – 33.3)
Black	14.2 (13.6 – 14.8)	7.82 (6.81 – 8.9)	12.5 (12.3 – 12.7)
Asian	3.8 (3.6 – 4.1)	5.3 (4.8 – 6.0)	4.4 (4.3 – 4.6)
Brown	45.2 (44.2 – 46.1)	29.8 (27.6 – 32.0)	45.9 (45.6 – 46.2)
Indigenous	3.3 (3.0- 3.5)	3.0 (2.5 – 3.5)	3.7 (3.6 – 3.8)
<b>Maternal education</b>			
Incomplete elementary school	27.7 (27.0 – 28.4)	6.5 (5.5 – 7.6)	23.2 (23.0 – 23.5)
Complete primary education	13.2 (12.7 – 13.7)	8.4 (7.6 – 9.2)	12.0 (11.8 – 12.2)
Complete high school education	21.5 (20.8 – 22.2)	28.5 (26.5 – 30.6)	22.9 (22.6 – 23.1)
Complete higher education	8.4 (7.9 – 8.8)	42.0 (38.8 – 45.2)	16.9 (16.7 – 17.1)
<b>Score for goods</b>			
1° Tertile	41,4 (40,1 -42,6)	7.7 (6.5 – 9.0)	39,6 (39.3 - 39.9)
2° Tertile	32.6 (31.9 – 33.3)	22.9 (21.2 – 24.7)	29.7 (29.4 – 30.0)
3° Tertile	25.9 (24.7 – 27.1)	69.2 (66.6 – 71.7)	30.5 (30.2 – 30.8)
<b>Number of friends</b>			
None	4.4 (4.2 – 4.7)	3.0 (2.4 -3.7)	4.0 (3.9 – 4.2)
1 or 2	19.1 (18.5 – 19.7)	16.9 (15.7 – 18.2)	19.1 (18.8 – 19.3)
3 or more	76.3 (75.7 – 76.9)	79.9 (78.6 – 81.2)	76.7 (76.5 – 77.0)
<b>Experienced alcohol*</b>	53.6 (52.7 – 54.5)	48.7 (46.8 – 50.6)	51.7 (51.4 – 52.0)
<b>Drank alcohol in the last 30 days *</b>	24.2 (23.5 – 24.9)	21.2 (19.5 – 22.9)	22.1 (21.9 – 22.4)
<b>Had an episode of drunkenness *</b>	22.2 (21.4 – 22.9)	16.5 (15.4 – 17.7)	20.2 (20.0 – 20.5)
<b>Experienced drugs*</b>	9.3 (8.1 – 9.8)	6.7 (6.0 - 75.7)	8.4 (8.2 – 8.6)
<b>Have used drugs in the last 30 days</b>	4.2 (3.9 – 4.6)	3.3 (2.8 – 3.9)	3.8 (3.7 – 3.9)
<b>Experienced cigarette *</b>	19.3 (18.6 -19.9)	12.5 (11.4 -13.7)	18.3 (18.0 – 18.5)
<b>Have used cigarettes in the last 30 days</b>	5.9 (5.5 – 6.3)	3.6 (3.0 – 4.3)	5.5 (5.1 – 5.4)

<b>VARIABLES</b>	<b>Public School% (95% CI)</b>	<b>Private School% (95% CI)</b>	<b>Total% (95%CI)</b>
<b>INDIVIDUALS</b>			
<b>Friends use alcohol *</b>			
No	19.0 (18.4 – 19.6)	19.6 (18.0 – 21.2)	20.1 (19.9 – 20.4)
A few	50.9 (50.3 – 51.6)	54.6 (52.7 – 56.5)	51.4 (51.1 – 51.7)
Most	20.7 (20.0 – 21.5)	18.1 (16.7 – 19.6)	19.7 (19.5 – 20.0)
Do not know	9.1 (8.7 – 9.5)	7.5 (6.7 – 8.5)	8.6 (8.4 – 8.7)
<b>Friends use drugs</b>			
No	46.0 (45.0 – 47.1)	52.3 (50.2 – 54.4)	48.9 (48.6 – 49.2)
A few	31.5 (30.7 – 32.3)	31.0 (28.7 – 33.4)	30.0 (29.7 – 30.3)
Most	6.2 (5.7 – 6.7)	3.1 (2.6 – 3.7)	5.1 (5.0 – 5.3)
Do not know	16.1 (15.5 – 16.6)	13.4 (12.4 – 14.4)	15.8 (15.6 – 16.0)
<b>Parents smoke</b>			
No	69.9 (69.2 – 70.6)	81.9 (80.7 – 83.0)	73.8 (73.5 – 74.0)
One smokes	23.0(22.4 – 23.7)	14.2 (13.3 – 15.2)	20.1(19.0 – 20.4)
Both smoke	4.6 (4.3 – 5.0)	2.4 (2.0 – 3.0)	3.7 (3.6 – 3.8)
Do not know	2.2 (2.0 – 2.4)	1.3 (1.0 – 1.6)	2.2 (2.1 – 2.3)
<b>VARIABLES</b>	<b>Private School% (95% CI)</b>	<b>Public School% (95% CI)</b>	<b>Total% (95%CI)</b>
<b>CONTEXTUAL (n=2.979)</b>			
<b>School type</b>			
Public	-	-	79.4 (79.1 – 79.6)
Private	-	-	20.5 (20.3 – 20.8)
<b>Committee that coordinates health actions at school</b>	35.7 (32.1 – 39.5)	42,2 (35.0 – 49.8)	36.1 (35.8 – 36.4)
<b>PSE actions implemented *</b>	43.1 (39.8 – 46.5)	-	-
<b>Joint actions with PC*</b>	74.6 (70.9 – 77.9)	34.4 (27.9 – 41.4)	67.1 (66.8 – 67.4)
<b>Principal's report of use of cigarettes by teachers at school*</b>	15.1 (12.5 – 18.2)	6.6 (4.1 – 10.7)	12.3 (12.1 – 12.5)
<b>Principal's report of use of cigarettes by students at school*</b>	20.5 (17.5 - 23.9)	5.3 (3.0 – 9.1)	20.8 (20.5 – 21.0)
<b>Policy banning alcohol consumption at school</b>	90.4 (88.5 – 92.1)	92.4 (87.9 – 95.3)	90.5 (90.3 – 90.7)

\*Presentation of answers “yes”

CI: Confidence Interval

In the model for the total sample, being female, having already tried cigarettes and drugs, having friends who used alcohol and drugs, having parents who smoke, and being a student in schools that had a policy of prohibiting the consumption of alcoholic beverages was associated with a greater probability of experimenting with alcohol. Students whose principals reported being aware that teachers smoked inside the school were more likely to try alcohol in the total model and in the model for public schools. In the stratified model for public schools, the implementation of PSE actions was associated with less alcohol experimentation in the crude model, although the association was not statistically significant after the adjustments (Table 2)

**Table 2.** Odds ratio estimated by multilevel analysis for the association between individual and contextual characteristics and alcohol experimentation by Brazilian students (PeNSE, 2015).

VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>INDIVIDUALS</b>						
<b>Sex</b>						
Male	1	1	1	1	1	1
Female	1.09 (1.06 – 1.12)	1.12 (1.08 – 1.16)	1.04 (0.99 – 1.11)	0.98 (0.92 – 1.05)	1.08 (1.05 – 1.11)	1.09 (1.05 – 1.12)
<b>Number of friends</b>						
None	1	1	1	1	1	1
1 or 2 friends	1.15 (1.07 – 1.24)	1.08 (0.98 – 1.18)	1.12 (0.93 – 1.34)	1.07 (0.87 – 1.33)	1.14 (1.07 – 1.23)	1.07 (0.99 – 1.17)
3 or more friends	1.00 (0.93 – 1.07)	1.02 (0.94 – 1.11)	0.99 (0.84 – 1.17)	1.02 (0.83 – 1.25)	1.00 (0.97 – 1.11)	1.02 (0.94 – 1.10)
<b>Friends use alcohol</b>						
No	1	1	1	1	1	1
A few	4.59 (4.40 – 4.79)	3.24 (3.08 – 3.39)	4.65 (4.27 – 5.07)	3.26 (2.98 – 3.58)	4.61 (4.43 – 4.79)	3.23 (3.10 – 3.37)
Most	14.94 (14.13 – 15.79)	6.61 (6.20 – 7.05)	18.66 (16.64 – 20.93)	7.72 (6.78 – 8.79)	15.61 (14.85 – 16.41)	6.79 (6.41 – 7.19)
<b>Experienced drugs</b>						
No	1	1	1	1	1	1
Yes	18.33 (16.52 – 20.33)	3.67 (3.26 – 4.12)	28.09 (21.47 – 36.74)	4.26 (3.16 – 5.75)	19.59 (17.78 – 21.58)	3.77 (3.38 – 4.20)
<b>Friends use drugs</b>						
No	1	1	1	1	1	1
A few	4.86 (4.68 – 5.04)	2.00 (1.92 – 2.09)	5.46 (5.08 – 5.88)	2.24 (2.06 – 2.43)	4.98 (4.82 – 5.15)	2.05 (1.98 – 2.13)
Most	9.26 (8.52 – 10.06)	1.52 (1.37 – 1.68)	16.71 (12.91 – 21.63)	2.18 (1.62 – 2.94)	9.95 (9.19 – 10.76)	1.58 (1.44 – 1.74)



VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>INDIVIDUALS</b>						
<b>Experienced cigarette</b>						
No	1	1	1	1	1	1
Yes	14.38 (13.57 – 15.24)	7.41 (6.96 – 7.90)	20.59 (17.42 – 24.34)	8.02 (6.70 – 9.60)	15.02 (14.22 – 15.87)	7.46 (7.03- 7.92)
<b>Parents smoke</b>						
No	1	1	1	1	1	1
Only one	1.59 (1.54 – 1.65)	1.24 (1.19 – 1.29)	1.84 (1.69 – 2.00)	1.38 (1.25 – 1.53)	1.63 (1.58 – 1.69)	1.26 (1.21 – 1.30)
Both smoke	1.96 (1.2 – 2.12)	1.29 (1.18 – 1.41)	2.31 (1.86 – 2.86)	1.39 (1.08 – 1.80)	2.01 (1.87 – 2.16)	1.30 (1.19 – 1.41)
<b>CONTEXTUAL</b>						
<b>School type</b>						
Public	-	-	-	-	1	1
Private	-	-	-	-	0.84 (0.79 – 0.88)	1.01 (0.95 – 1.07)
<b>Committee that coordinates health actions at school</b>						
No	1	1	1	1	1	1
Yes	1.01 (0.96 – 1.06)	1.00 (0.95 – 1.05)	0.96 (0.88 – 1.06)	0.97 (0.98 – 1.06)	1.00 (0.95 – 1.04)	0.99 (0.95 – 1.03)

VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>CONTEXTUAL</b>						
<b>Joint actions with PC* at school</b>						
No	1	1	1	1	1	1
Yes	0.96 (0.91 – 1.02)	1.00 (0.95 – 1.06)	1.06 (0.96 – 1.16)	1.03 (0.94 – 1.12)	1.04 (0.99 – 1.08)	1.01 (0.97 – 1.06)
<b>Implements PSE actions **</b>						
No	1	1	-	-	-	-
Yes	0,93 (0,89 – 0,98)	0,99 (0,94 – 1,04)	-	-	-	-
<b>Principal's report of use of cigarettes by teachers in the school</b>						
No	1	1	1	1	1	1
Yes	1.17 (1.09 – 1.26)	1.17 (1.10 – 1.26)	1.09 (0.92 – 1.29)	0.91 (0.75 – 1.11)	1.18 (1.10 – 1.26)	1.15 (1.08 – 1.23)
<b>Principal's report of use of cigarettes by students at school</b>						
No	1	1	1	1	1	1
Yes	1.05 (0.99 – 1.11)	0.92 (0.87 – 0.97)	1.19 (0.98 – 1.45)	1.16 (0.93 – 1.44)	1.09 (1.03- 1.15)	0.93 (0.95- 1.03)

VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>CONTEXTUAL</b>						
<b>Policy banning alcohol consumption at school</b>						
No	1	1	1	1	1	1
Yes	1.21 (1.12 – 1.30)	1.13 (1.05 – 1.21)	0.98 (0.82 – 1.17)	0.98 (0.82 – 1.18)	1.16 (1.08 – 1.24)	1.11 (1.04 – 1.18)

OR: *Odds Ratio*

CI: Confidence Interval

\*PC: Primary Care

\*\*PSE: Health at School Program

For the adjustment, the following variables were used: sex, age, maternal education, skin color, score of goods, experimentation with cigarettes and drugs, number of friends, substance use by friends, cigarette consumption by parents, awareness of teachers and students smoking on school premises, existence of committee, joint actions with UBSF, implementation of PSE actions, alcohol prohibition policy at school.

**Table 3** Odds ratio estimated by multilevel analysis for the association between individual and contextual characteristics and alcohol consumption in the last thirty days by Brazilian students (PeNSE, 2015).

VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>INDIVIDUALS</b>						
<b>Sex</b>						
Male	1	1	1	1	1	1
Female	1.11 (1.08 – 1.15)	1.10 (1.06 – 1.15)	1.11 (1.04 – 1.19)	1.04 (0.96 – 1.13)	1.11 (1.08 – 1.15)	1.09 (1.05- 1,3)
<b>Has friends</b>						
None	1	1	1	1	1	1
1 or 2 friends	1.18 (1.08 – 1.30)	1.11 (1.00 – 1.24)	1.40 (1.09- 1.79)	1.45 (1.09 – 1.95)	1.19 (1.10 – 1.30)	1.15 (1.04 – 1.27)
3 or more friends	1.05 (0.97 – 1.14)	1.07 (0.97 – 1.18)	1.37 (1.08 – 1.73)	1.53 (1.16 – 2.02)	1.08 (1.00 – 1.17)	1.12 (1.02 – 1.22)
<b>Friends use alcohol</b>						
No	1	1	1	1	1	1
A few	6.55 (6.02 – 7.12)	4.78 (4.38 – 5.22)	7.19 (5.98 – 8.63)	4.93 (4.08 – 5.97)	6.67 (6.18 – 7.20)	4.79 (4.42 – 5.18)
Most	25.57 (23.45 – 27.87)	13.15 (11.98 – 14.44)	35.37 (29.27 – 42.74)	14.95 (12.19 – 18.32)	27.22 (25.16 – 29.46)	13.43 (12.34 – 14.62)
<b>Used drugs in the past 30 days</b>						
No	1	1	1	1	1	1
Yes	16.49 (15.05 – 18.06)	3.88 (3.49 – 4.31)	30.10 (23.76 – 38.13)	6.19 (4.71 – 8.14)	18.11 (16.64 – 19.71)	4.15 (3.76 – 4.58)
<b>Friends use drugs</b>						
No	1	1	1	1	1	1
A few	4.17 (3.99 – 4.35)	1.80 (1.72 – 1.89)	5.71 (5.24 – 6.23)	2.35 (2.13 – 2.59)	4.45 (4.28 – 4.62)	1.90 (1.82 – 1.98)
Most	9.59 (8.94 – 10.28)	1.60 (1.47 – 1.74)	17.58 (14.61 – 21.14)	2.34 (1.86 – 2.94)	10.51 (9.85 – 11.21)	1.68 (1.55 – 1.83)

VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>INDIVIDUALS</b>						
<b>Used cigarette in the last 30 days</b>						
No	1	1	1	1	1	1
Yes	14.69 (13.65 – 15.81)	5.79 (5.33 – 6.30)	25.13 (20.27 – 31.15)	5.53 (4.31 – 7.09)	15.76 (14.70 – 16.89)	5.75 (5.32 – 6.23)
<b>Parents smoke</b>						
No	1	1	1	1	1	1
Only one	1.57 (1.50 – 1.63)	1.24 (1.19 – 1.30)	2.20 (1.76 – 2.73)	1.46 (1.31 – 1.63)	1.62 (1.56 – 1.68)	1.27 (1.22 – 1.33)
Both smoke	2.08 (1.93 – 2.25)	1.42 (1.30 – 1.56)	2.54 (1.92 – 3.37)	1.30 (1.00 – 1.69)	2.12 (1.97 – 2.28)	1.41 (1.30 – 1.54)
<b>CONTEXTUAL</b>						
<b>School type</b>						
Public		-	-	-	1	1
Private		-	-	-	0.82 (0.77 – 0.87)	0.91 (0.85 – 0.98)
<b>Committee that coordinates health actions at school</b>						
No	1	1	1	1	1	1
Yes	0.98 (0.93 – 1.04)	0.96 (0.90 – 1.01)	1.01 (0.89 – 1.14)	1.00 (0.89 – 1.12)	0.98 (0.93 – 1.03)	0.96 (0.92 – 1.01)
<b>Joint actions with PC* at school</b>						
No	1	1	1	1	1	1
Yes	1.00 (0.94 – 1.06)	1.6 (0.9 – 1.13)	1.7 (0.95 – 1.21)	1.06 (0.95 – 1.19)	1.07 (1.01 – 1.13)	1.06 (1.00 – 1.12)

VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>CONTEXTUAL</b>						
<b>Implements PSE actions **</b>						
No	1	1	-	-	-	-
Yes	0.93 (0.88 – 0.98)	0.99(0.93 – 1.05)	-	-	-	-
<b>Principal’s report of use of cigarettes by teachers in the school</b>						
No	1	1	1	1	1	1
Yes	1.18 (1.09 – 1.27)	1.17 (1.09 – 1.26)	1.15 (0.92 – 1.43)	0.97 (0.76 – 1.24)	1.19 (1.11 – 1.28)	1.16 (1.08 – 1.24)
<b>Principal’s report of use of cigarettes by students at school</b>						
No	1	1	1	1	1	1
Yes	1.03 (0.97 – 1.10)	0.90 (0.85 – 0.96)	1.22 (0.95 – 1.57)	1.08 (0.82 – 1.42)	1.08 (1.01 – 1.14)	0.91 (0.86 – 0.97)
<b>Policy banning alcohol consumption at school</b>						
No	1	1	1	1	1	1
Yes	1.13 (1.04 – 1.23)	1.03 (0.95 – 1.12)	1.03 (0.81 - 1.30)	0.99 (0.79 – 1.24)	1.10 (1.01 – 1.19)	1.02 (0.95 – 1.11)

OR: *Odds Ratio*

CI: *Confidence Interval*

\*PC: *Primary Care*

\*\*PSE: *Health at School Program*

For the adjustment, the following variables were used: sex, age, maternal education, skin color, score of goods, experimentation with cigarettes and drugs, number of friends, substance use by friends, cigarette consumption by parents, awareness of teachers and students smoking on school premises, existence of committee, joint actions with UBSF, implementation of PSE actions, alcohol prohibition policy at school.

Being a female, having previous cigarette and drug use, having friends who use alcohol and drugs, and having smoking parents were positively associated with alcohol use in the last thirty days (Table 3). In the total model, adolescents from schools that were aware of student cigarette use were less likely to use alcohol in the last thirty days, whereas those from schools that knew about teacher cigarette use on their premises were more likely to use alcohol, both losing association in the stratified adjusted model for private schools. Although PSE actions implemented in public schools were associated with less alcohol use in the last thirty days in the crude model, the association did not hold after adjustments (Table 3).

Being a female was negatively associated with drunken episodes, while previous cigarette and illicit drug consumption, alcohol and illicit drug consumption by peers, and having smoking parents were positively associated with drunken episodes in adolescents. As with the other outcomes, there was a positive association between schools that knew about teacher cigarette use on their premises and drunken episodes, in the total and stratified model for public schools. In the same way as for the other outcomes, the association of implementation of PSE actions with drunkenness did not hold after the adjustments (Table 4).



**Table 4** Odds ratio estimated by multilevel analysis for the association between individual and contextual characteristics and drunken episode by Brazilian students (PeNSE, 2015)

VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>INDIVIDUALS</b>						
<b>Sex</b>						
Male	1	1	1	1	1	1
Female	0.95 (0.92 – 0.98)	0.91 (0.87 – 0.95)	0.93 (0.86 – 1.00)	0.83 (0.76 – 0.91)	0.95 (0.92 – 0.98)	0.90 (0.87 – 0.93)
<b>Has friends</b>						
None	1	1	1	1	1	1
1 or 2 friends	1.16 (1.06 – 1.27)	1.14 (1.03- 1.27)	0.82 (0.65 – 1.03)	0.75 (0.57 – 0.97)	1.10 (1.01 – 1.20)	1.08 (0.98 - 1.19)
3 or more friends	0.93 (0.86 – 1.02)	0.96 (0.87 – 1.06)	0.78 (0.63 – 0.97)	0.76 (0.59 – 0.97)	0.91 (0.84 – 0.98)	0.93 (0.85 – 1.02)
<b>Friends use alcohol</b>						
No	1	1	1	1	1	1
A few	4.94 (4.57 – 5.34)	3.21 (2.96 – 3.48)	6.35 (5.22 – 7.73)	4.20 (3.42 – 5.16)	5.11 (4.75 – 5.50)	3.32 (3.07 – 3.58)
Most	18.25 (16.83 – 19.78)	7.62 (6.98 – 8.33)	32.50 (26.57 – 39.75)	12.49 (10.04 – 15.53)	20.9 (18.63 – 21.65)	8.21 (7.57 – 8.91)
<b>Used drugs in the past 30 days</b>						
No	1	1	1	1	1	1
Yes	16.45 (15.04 – 17.99)	3.68 (3.32 – 4.08)	30.04 (24.13 – 37.40)	5.43 (4.20 – 7.00)	18.14 (16.70 – 19.71)	3.93 (3.58 – 4.32)
<b>Friends use drugs</b>						
No	1	1	1	1	1	1
A few	4.90 (4.69 – 5.13)	2.39 (2.28 – 2.51)	6.34 (5.78 – 6.96)	2.61 (2.35 – 2.90)	5.16 (4.96 – 5.37)	2.44 (2.34 – 2.55)
Most	12.18 (11.36 – 13.06)	2.60 (2.39 – 2.83)	24.48 (20.32 – 29.48)	3.50 (2.79 – 4.39)	13.54 (12.6 – 14.4)	2.69 (2.49 – 2.91)

VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>INDIVIDUALS</b>						
<b>Used cigarette in the last 30 days</b>						
No	1	1	1	1	1	1
Yes	11.72 (10.94 – 12.56)	4.01 (3.70 – 4.34)	21.92 (18.05 – 26.62)	4.20 (3.34 – 5.29)	12.78 (11.98 – 13.64)	4.03 (3.74 – 4.35)
<b>Parents smoke</b>						
No	1	1	1	1	1	1
Only one	1.67 (1.60 – 1.74)	1.34 (1.28 – 1.40)	2.04 (1.85 – 2.25)	1.58 (1.41 – 1.77)	1.73 (1.67 – 1.80)	1.37 (1.31 – 1.43)
Both smoke	2.25 (2.09 – 2.44)	1.58 (1.45 – 1.73)	2.62 (2.10 – 3.27)	1.56 (1.20 – 2.04)	2.32 (2.16 – 2.50)	1.58 (1.45 – 1.72)
<b>CONTEXTUAL</b>						
<b>School type</b>						
Public	-	-	-	-	1	1
Private	-	-	-	-	0.73 (0.69 – 0.78)	0.87 (0.82 – 0.93)
<b>Committee that coordinates health actions at school</b>						
No	1	1	1	1	1	1
Yes	1.00 (0.94 – 1.05)	0.98 (0.93 – 1.04)	0.98 (0.87 – 1.10)	0.99 (0.90 – 1.10)	0.99 (0.94 – 1.04)	0.98 (0.93 – 1.02)
<b>Joint actions with PC* at school</b>						
No	1	1	1	1	1	1
Yes	0.98 (0.92 – 1.05)	1.06 (1.00 – 1.12)	1.5 (0.93 – 1.18)	1.02 (0.92 – 1.13)	1.08 (1.03 – 1.14)	1.04 (0.99 – 1.10)

VARIABLES	Public schools		Private schools		Total	
	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)	Crude model OR (95% CI)	Adjusted model OR (95% CI)
<b>CONTEXTUAL</b>						
<b>Implements PSE actions **</b>						
No	1	1	-	-	-	-
Yes	0.91 (0.86 – 0.96)	0.96 (0.91 – 1.01)	-	-	-	-
<b>Principal's report of use of cigarettes by teachers in the school</b>						
No	1	1	1	1	1	1
Yes	1.17 (1.08 – 1.27)	1.13 (1.06 – 1.22)	1.19 (0.96 -1.47)	1.04 (0.84 – 1.30)	1.20 (1.12 – 1.30)	1.13 (1.06 – 1.21)
<b>Principal's report of use of cigarettes by students at school</b>						
No	1	1	1	1	1	1
Yes	1.11 (1.04 – 1.18)	0.97 (0.91 – 1.03)	1.24 (0.97 – 1.58)	1.06 (0.83 – 1.36)	1.17 (1.10 – 1.25)	0.97 (0.92 – 1.03)
<b>Policy banning alcohol consumption at school</b>						
No	1	1	1	1	1	1
Yes	1.16 (1.06 – 1.27)	1.05 (0.97 – 1.13)	0.94 (0.74 – 1.18)	0.91 (0.73 – 1.12)	1.10 (1.02 – 1.20)	1.03 (0.95 – 1.11)

OR: Odds Ratio

CI: Confidence Interval

\*PC: Primary Care

\*\*PSE: Health at School Program

For the adjustment, the following variables were used: sex, age, maternal education, skin color, score of goods, experimentation with cigarettes and drugs, number of friends, substance use by friends, cigarette consumption by parents, awareness of teachers and students smoking on school premises, existence of committee, joint actions with UBSF, implementation of PSE actions, alcohol prohibition policy at school.

## DISCUSSION

This study, which analyzed data from more than one hundred thousand Brazilian adolescents, found that girls had a greater chance of alcohol experimentation and consumption in the last thirty days, although boys were more likely to get drunk. There was a positive association between substance use by parents, peers and the adolescent himself and all outcomes of alcohol consumption by them. Students whose schools had a policy banning alcohol were more likely to try alcoholic drinks and students whose principals reported that teachers smoked on school premises had greater alcohol use in all of their outcomes in the set of schools and in public schools.

The greater alcohol experimentation and consumption in the last thirty days by girls was observed in previous surveys (MALTA et al., 2014; GOHARI et al., 2019). In contrast, boys were more likely to get drunk, a fact that can be justified by the standards and customs present in society, where excessive alcohol consumption by females is still frowned upon (NOLEN-HOEKSEMA, 2004). Moreover, males tend to adopt more risky behaviors, considering heavy drinking as a challenging attitude and maintaining their consumption in an abusive and problematic way (NOLEN-HOEKSEMA, 2004; MAYS; THOMPSON, 2009; BRITO et al., 2015; GOHARI, 2019).

Adolescents who reported alcohol use by friends had a positive association for alcohol consumption in the three different outcomes, corroborating previous reports in the literature (MEHUS; PATRICK, 2020). This finding can be explained by the fact that peers are identified as the main alcohol suppliers for adolescents (PASCHAL et al., 2007), and because drinking is considered a behavior of peer acceptance (BORSARI; CAREY, 2001; KRISTJANSSON, 2013). In contrast, adolescents tend to approach people who have similar habits and customs, so students who have consumed alcohol would have friends who share the same lifestyle (FUJIMOTO; VALENTE, 2013).

Adolescents who had a smoking parent were more likely to use alcohol in its three outcomes, and if both parents smoked the chances were even greater. The smoking habit is commonly associated with drinking, and therefore, a family environment permissive about cigarette use may also reflect greater tolerance to alcohol (GOHARI, 2019). Parents and friends are a source of support, protection and an example to adolescents and, therefore, their attitudes can be replicated by young people (LATENDRESSE et al., 2008).

Previous consumption of cigarettes and illicit drugs by students was associated with the three outcomes of alcohol use. This fact can be explained by the multiplier effect caused

by substance use, where in most cases alcohol and cigarettes are considered as a gateway to illicit drug use (TOMCZYK; HANEWINKEL; ISENSEE, 2015; ELICKER, 2015; GOHARI, 2019). Although alcohol consumption is associated with other substance consumption, the present study did not analyze which substance was the initiation one.

The existence of an alcohol ban policy had a positive association with alcohol experimentation in public schools. It is possible that schools have created policies to ban alcohol consumption after detecting the growing use of alcohol by adolescents, and for this reason our data show worse results of experimentation in schools with such policies. In addition, this study failed to identify which policies were adopted by schools, making it impossible to differentiate between stricter and more lenient measures. Differently from our results, a study carried out in the United States and Australia found that low enforcement of alcohol ban policies at school increased the chances of both use in the last thirty days and abuse by adolescents (EVANS-WHIPPLE et al., 2013). Alcohol ban policies at school may have different effects than preventive policies. The problem, according to Beauchesne (2015) and Veríssimo (2018), is that very restrictive prohibitionist policies tend to decrease the production of knowledge about substances, such as alcohol and drugs, and the consequences of their use, directly impacting the adolescent's ability to deal with the use of these substances.

Positive effects on the creation of alcohol consumption prevention programs or policies have been shown to be effective in some studies. European studies have identified a lower propensity in the progress of frequent alcohol consumption and lower chances of alcohol-related problems, in addition to a reduction of 29% in the chances of consuming alcoholic drinks and of 43% in abusive drinking (CAIRA et al., 2011; CONROD et al., 2013). In contrast, other studies have found no association between preventive policies and alcohol consumption reduction, delayed experimentation and abuse (BODIN; STRANDBERG, 2011; MALMBEERG et al., 2015; PAZ et al., 2018). It is worth mentioning that some interventions fail because they do not take into account individual, contextual and type of consumption factors and there is no conclusive information in the literature regarding why alcohol use prevention programs are beneficial for some groups of adolescents and not for others (CONROD et al., 2013; MALMBEERG et al., 2015; ONRUST et al., 2016).

The development of joint health actions with PC was not associated with alcohol use in any of the outcomes, but there was a higher prevalence of these actions in public than in private schools. PC should be the point of reference for the entire community, including schools, in health promotion and disease prevention actions, due to the presence of

professionals qualified to deal with the topic (BRASIL, 2000). School curriculum with programs that encompass individual aspects, family and community involvement, teacher training and joint actions with specialists in prevention campaigns are more effective in reducing adolescent substance use (TOBLER et al., 2000; PEDERSEN; BAKKEN; VON SOEST, 2017).

PSE was evaluated only in the stratified models for public schools, since in Brazil this policy is exclusive to the public sector (BRASIL, 2009). Students of schools that implemented PSE actions were less likely to use alcohol in the three outcomes of unadjusted models. In this context, it is possible that alcohol use was related to individual characteristics rather than to contextual variables, explaining the loss of association after making the adjustments. In addition, only 43.1% of public schools implemented PSE actions. In contrast, a study that evaluated the implementation of PSE actions highlighted problems such as activities attributed to health services with limited school participation, and insufficient results in the adolescents' attitudes (SOUSA; ESPERIDÃO; MEDINA, 2017). It is worth mentioning that alcohol preventive actions are essential actions of the program, but their implementation is not mandatory in all schools (BRASIL, 2009).

When teachers smoked on school premises and the school community was aware of this fact, students were more likely to use alcohol in the three outcomes. As the school is the teaching place, the school's acceptance of teachers smoking at school can indicate to students that substance use is not a problem and may work as a model (BOBO; HUSTEN, 2000; WOLD et al., 2004).

In schools that were aware of adolescent cigarette use on their premises, students were less likely to consume alcohol in the last thirty days. A possible explanation for this finding is that the knowledge of the school management about cigarette consumption on its premises may be the result of the stricter monitoring of students by the school, potentially adopting measures to control substance use that led to the protection of young people and, thus, the lower possibility of students having used alcohol recently (MADDOX; PRINZ, 2003; HENRY et al., 2009).

Adolescents in public schools consumed more substances than those in private schools. The former had a lower socioeconomic level, assessed by asset score tertiles, than the latter, which could explain the difference. The low socioeconomic status was associated with a higher incidence of alcohol abuse among adolescents in a previous study (PAIVA et al., 2015). The hypothesis raised by the researchers was that low income was associated with low

parental education and, therefore, the scarcity of information from the family nucleus increased the adolescents' chances of consuming alcohol in an abusive way.

Our results do not corroborate the hypothesis that the different alcohol outcomes could have different predictors (PETIT et al., 2013). Most of the associations with alcohol use determinants in the three outcomes were the same. Thus, policies tackling these exposures could potentially have a positive impact in alcohol experimentation and use in the last thirty days and drunkenness episode among adolescents.

## **STRENGTHS AND LIMITATIONS**

This study's strengths include sample size, high response rate (98.6%), the representativeness for entire Brazilian territory, and possibility of determining if the existence of a committee that coordinates health activities at school, if carrying out joint actions with PC, and if implementing PSE actions at school were associated with adolescent alcohol consumption. It is also worth mentioning that multilevel analysis allows analyzing the effect of contextual variables taking into account the possible correlation between data from the same group. However, some limitations must be considered. First, it is a cross-sectional study, making it impossible to establish a causal relationship. In addition, the PeNSE questions did not allow to identify what the alcohol ban policy on school premises was like and which PC actions were developed at school. Furthermore, it was not possible to identify whether the PSE actions involved the theme of alcohol, limiting our ability to differentiate levels of implementation of these actions and policies. Another point is the fact that the survey was conducted only with adolescents enrolled and present on the day the questionnaire was applied, excluding absent students or dropouts. The literature shows that those most exposed to psychotropic substance use are also more prone to school absenteeism and dropout (MALTA et al., 2011).

## **CONCLUSION**

The results of this study identified contextual and individual factors associated with adolescent alcohol consumption, which can significantly contribute to the formulation of specific policies for students. Having a policy of prohibiting the use of alcohol in schools was associated with greater experimentation only in public schools. School adolescents who were aware of the use of cigarettes by teachers and students had, respectively, greater use of



alcohol in the three outcomes and less experimentation, corroborating the hypothesis that more permissive schools could be associated with alcohol consumption by adolescents, compared to more vigilant. The consumption of substances by parents and peers was associated with a greater chance of using alcohol in the three outcomes, emphasizing the influence that these relationships can have on alcohol consumption among adolescents.

Further studies should be conducted to investigate the association of contextual factors, specific PSE actions and in collaboration with PC with indicators of adolescent alcohol use.

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