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Use of psychoactive substances among Brazilian adolescents and associated factors: National School-based Health Survey, 2015

Uso de substâncias psicoativas em adolescentes brasileiros e fatores associados: Pesquisa Nacional de Saúde dos Escolares, 2015

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ABSTRACT: *Aim:* To analyze the consumption of tobacco, alcohol and illicit drugs among schoolchildren according to demographic factors, family context and mental health. *Methods:* We used data from the National School-based Health Survey 2015 and included in the sample 102,301 schoolchildren in the 9th grade. We estimated the prevalence of tobacco and alcohol use in the last 30 days and drug experimentation according to demographic, mental health and family context variables. Then, a bivariate analysis was performed using Pearson's χ^2 test and the unadjusted odds ratio (OR) was calculated. Finally, we conducted a multivariate analysis including independent variables with an unadjusted association (p < 0.20), for each outcome, estimating the adjusted OR with a 95% confidence interval. *Results:* The prevalence of tobacco consumption was 5.6%; alcohol consumption, 23.8%; and drug experimentation, 9.0%. Multivariate analysis has indicated that living with parents, having meals with parents or guardian, and family supervision were associated with lower substance consumption; whereas missing classes without parental consent has increased the chances of substance use. Increased chance of substance use was also associated with white skin color, increasing age, to work, feeling lonely and having insomnia. Not having friends was associated with drug and tobacco use, but this was protective for alcohol consumption. *Conclusions:* Family supervision was protective for psychoactive substance use among Brazilian schoolchildren, whereas work, loneliness and insomnia have increased their chances of use.

Keywords: Alcoholic beverages. Tobacco. Street drugs. Adolescent. Family relations. Schools.

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RESUMO: *Objetivo:* Analisar o uso de substâncias psicoativas (tabaco, álcool e drogas ilícitas) em escolares em relação a fatores sociodemográficos, contexto familiar e saúde mental. *Métodos:* Foram utilizados dados da amostra de 102.301 escolares do nono ano da Pesquisa Nacional de Saúde do Escolar de 2015. Realizou-se o cálculo da prevalência de uso de tabaco e de álcool nos últimos 30 dias e experimentação de drogas, segundo variáveis sociodemográficas, contexto familiar e saúde mental. Procedeu-se a análise univariada, por teste do χ² de Pearson e cálculo das *odds ratios* (OR) não ajustadas. Por fim, realizou-se análise multivariada para cada desfecho com as variáveis que apresentaram associação com os desfechos (p < 0,20), calculando-se as OR ajustadas com intervalo de confiança de 95%. *Resultados:* A prevalência de uso de tabaco foi de 5,6%; do uso de álcool, 23,8%; e da experimentação de drogas, 9,0%. A análise multivariada apontou que, no contexto familiar, morar com os pais, fazer refeição com pais ou responsável e a supervisão familiar foram associados a menor uso de substâncias; enquanto faltar às aulas sem consentimento dos pais aumentou a chance de uso. Maior chance do uso de substâncias esteve ainda associada a cor branca, aumento da idade, trabalhar, sentir-se solitário e ter insônia. Não ter amigos foi associado com uso de drogas e tabaco, porém foi protetor para o uso de álcool. *Conclusões:* A supervisão familiar foi protetora do uso de substâncias psicoativas em escolares brasileiros, enquanto trabalhar, sentir-se solitário e ter insônia aumentaram suas chances de uso.

Palavras-chave: Bebidas alcoólicas. Tabaco. Drogas ilícitas. Adolescente. Relações familiares. Escolas.

INTRODUCTION

Risk behaviors among adolescents have been identified in many studies[1-3], which has led to different international institutions, such as the World Health Organization and the Pan American Health Organization, to create a continuous monitoring system for these exposures[1-3]. In Brazil, the health monitoring system of students was established in 2009, with the first National School-based Health Survey (PeNSE), carried out by the Brazilian Institute of Geography and Statistics (IBGE) and the Ministry of Health (MS)[4,5]. Since then there have been other editions, in 2012 and in 2015[6,7], showing the importance of the continuity of this surveillance system to support public policies.

One of the behaviors monitored by PeNSE is the use of psychoactive substances, such as tobacco, alcohol, and other illicit drugs[8], considered as a serious public health problem due to damage to health and socioeconomic costs associated with these behaviors[1].

There is evidence that psychoactive substances initiation early in life contributes with higher levels of use and abuse in adulthood[1,9-11]. The early initiation is also associated with various social and behavioral problems, including physical and mental health problems, violent and aggressive behaviors and problems of adaptation in the workplace and in the familial environment[12]. Additionally, it constitutes a risk factor for accidents and violence, unprotected sex and its consequences, such as pregnancy in adolescence, HIV/AIDS, among other sexually transmitted diseases[1,8,9,13].

The use of alcohol, which is the most consumed drug in Brazil and in the world, including among adolescents[10], is socially stimulated and constantly allowed in the Brazilian society,

due to a flawed legislation in the country, allowing the advertisement of alcoholic beverages, like beer[14]. The same is not true for tobacco, whose marketing prohibition in Brazil has been contributing with the reduced prevalence of smoking among adolescents[15,16].

Other drugs, such as marijuana and crack, even if forbidden in many countries, including Brazil, end up causing curiosity among adolescents, so their experimenting is high[17]. It is known that initiation goes through factors such as trying new experiences; influence of friends; testing the limits of the law, authorities and parents; feeling abandoned, loneliness and several other motivations[12,13].

In this context, studies have shown the importance of families in the protection and reduction of risks in the use of these substances[8,9,15,18]. Supervision and dialogue, for instance, have been pointed out as protective factors for the use of these substances among adolescents[9,18-20]. Other studies also point to the association between risk behaviors (use of tobacco, alcohol and other drugs) and mental health, including feelings such as loneliness, not having friends and insomnia[13].

Although the existence of studies on this matter developed in other countries[9,13,21], Brazilian studies, especially national analyses, are still scarce[8,17,18], especially those that deal with family situations. Besides, due to the relevance of the use of substances among adolescents and the risks inherent to health implied, PeNSE 2015 maintained this topic in the questionnaire, enabling continuous monitoring and supporting drug use prevention public policies.

Therefore, this study estimated the prevalence of use of psychoactive substances (tobacco, alcoholic beverages, and illicit drugs) among students, in comparison to the three editions of PeNSE, and the factors (demographic, family status and mental health) associated with these outcomes, in 2015.

METHODS

This study analyzed data from the sample 1 of PeNSE in 2015, a cross-sectional survey carried out by IBGE, together with the MS, including students enrolled and attending public and private schools in the country. Sample 1 was designed to estimate population parameters (proportions or prevalence rates) for students in the 9th grade of elementary school, representative of Brazil, 27 Federated units, state capitals and the Federal District; and it was carried out with 102,301 students, in 3,040 schools and 4,159 classes, in 2015[7]. Therefore, in 2015, the sample was increased in relation to the 2009 edition, which only represented the capitals, and in 2012, representing the capitals, regions and Brazil.

In the first one we selected the cities or groups of cities (primary sampling unit – PSU); in the second one, the schools (secondary sampling unit – SSU); and in the third one, the classes (tertiary sampling unit – TSU), whose students composed the sample in each stratum[7].

The conceptual model that demographic factors, mental health and family situations are associated with the use of psychoactive substances was considered. Therefore,

sociodemographic variables such as sex, age, skin color and work among adolescents influence the use of psychoactive substances. Additionally, factors related with mental health, such as loneliness, insomnia, and not having friends can also impact the use. On the other hand, family situations such as living with the parents, family supervision and having meals together would be protective factors (Figure 1).

Therefore, three simultaneous outcomes were investigated:

1. current use of tobacco, assessed by the question: "In the past 30 days, on how many days did you smoke cigarettes?", categorized as: no (never smoked, no day); or yes (1 or more days in the past 30 days);
2. current use of alcohol, based on the question: "in the past 30 days, on how many days did you have at least 1 glass or dose of alcoholic beverage?", categorized as: no (none); or yes (1 or more days);
3. drug experimentation, assessed by the question: "Have you ever used any drugs, such as: marijuana, cocaine, crack, glue, *loló*, popper, ecstasy, oxy etc.?", categorized as: no or yes.
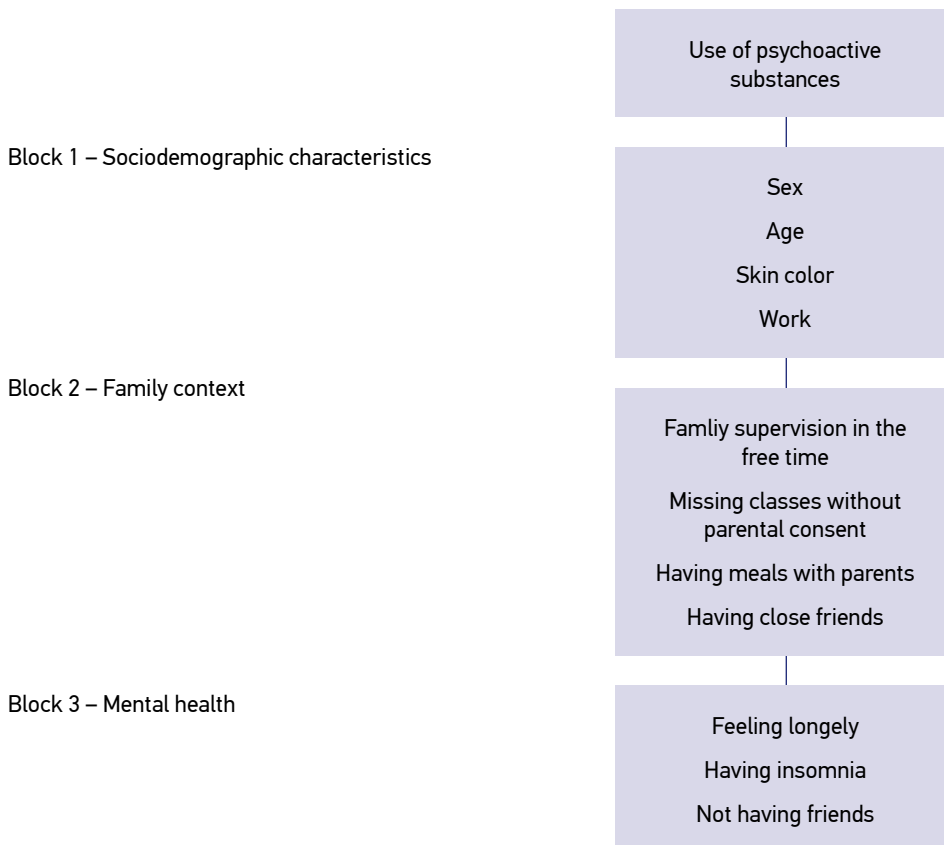

Figure 1. Conceptual model proposed the determining the use of psychoactive substances among student adolescents. National School-based Health Survey, Brazil, 2015.

The prevalence rates of the three outcomes in the editions of 2009, 2012, and 2015 were compared. In 2009, the total of capitals was used; in 2012 and 2015, the prevalence was Brazil. For each outcome, associations with the following variables were tested:

1. The following independent variables were analyzed in the module of sociodemographic characteristics: sex (categorized in: male and female); age (categorized in: ≤ 13 years, 13 years, 14 years, 15 years, and 16 years and more); and skin color (categorized in: white, black, brown, yellow and indigenous).

2. In the family context, the following variables were analyzed: living with mother and/or father, categorized as yes (students living with father and mother, living only with their mothers, or only with their fathers), or no (living without either parent); family supervision, categorized as yes (most of the time, parents or tutors really knew what the adolescents were doing) or no (never, rarely, sometimes); having meals with parents or tutors, categorized in 5 or more times a week, 3 to 4 times a week, twice a week or less, or no; and missing classes without authorization, categorized as no (never) or yes (once or twice; 3 or more times in the past 30 days).

3. In the mental health module, the following were analyzed as independent variables: feeling alone, clustered in no (never, sometimes in the past 12 months) or yes (most of the time, always in the past 12 months); insomnia, clustered in no (never, sometimes in the past 12 months) or yes (most of the time, always in the past 12 months); and friends, categorized as no (none) or yes (1, 2, 3 or more friends).

At first, we calculated the prevalence of substance use (tobacco, alcohol and other drugs), according to the sociodemographic variables and the explanatory variables of the family context and mental health. Afterwards, there was a univariate analysis, calculating the unadjusted odds ratio (OR), using the Pearson χ^2 test, with 0.05 significance level. Finally, there was a multivariate analysis for each one of the examined outcomes (tobacco, alcohol and other drugs), inserting in the model the independent variables that presented association with the outcomes in a p level < 0.20, calculating the adjusted OR, with their respective 95% confidence intervals (95%CI). All of the analyses considered the sampling structure and the weights for obtaining population estimates. The data were analyzed with the help of the statistical package SPSS, version 20 (SPSS Inc., Chicago, United States).

The students answered an individual questionnaire in a smartphone, with the supervision of trained researchers. They were informed about the study, their free participation, and that they could interrupt it in case they did not feel comfortable to answer the questions. PeNSE is in accordance with Resolution n. 196/96, restructured by Resolution n. 446/11, about the regulating Guidelines and Norms of Research with Human Beings, and was approved by the National Ethics Research Commission of the Ministry of Health (CONEP/MS), with the Certificate of Presentation for Ethical Appreciation, CONEP n. 1.006.467 (PeNSE 2015).

RESULTS

Among the 102,301 students in the 9th year of elementar school who answered the survey in 2015, 48.7% were male, 85.5% attended a public school ,17.8% were aged less than 13 years, 51% were aged 14 years, and 19.8% were aged 15 years. Mothers with no schooling or elementary school were 24.8%; 12.5% had complete elementary school or incomplete high school; 22.6%, complete high school or incomplete higher education, 22.6%; complete higher education, 13.3%; and those who could not inform, 26.9% (data not shown).

Figure 2 shows that the prevalence in use of tobacco and alcohol, besides drug experimentation in 2015 was 5.6% (95%CI 5.4 – 5.7%); 23.8% (95%CI 23.5 – 24.0%), and 9.0% (95%CI 8.8 – 9.2), respectively. By comparing the previous surveys of 2009 and 2012, it is possible to see the reduction in the prevalence of alcohol use, whereas the use of cigarettes and drug experimentation fluctuated in the period, presenting overlapping in the 95%CI.

Regarding the current use of tobacco, in 2015 there were no differences in the prevalence according to gender; and after the adjustment for all of the variables in the model,
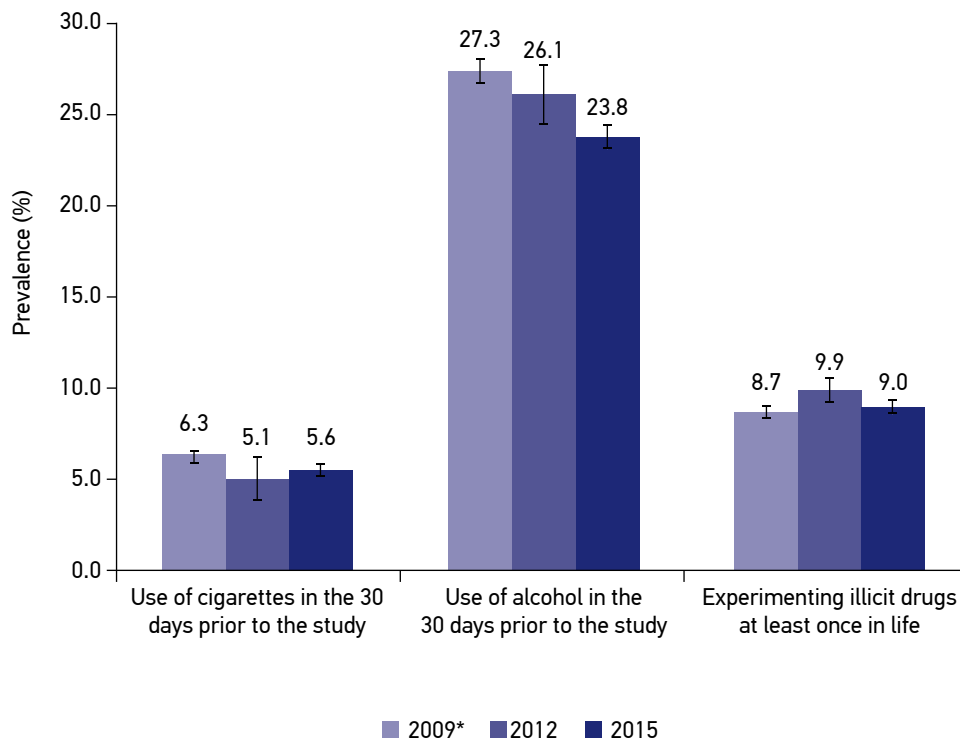
*Total of capitals of states and the Federal District.

Figure 2. Prevalence and evolution of the consumption of substances (tobacco, alcohol and other drugs) by students in the ninth grade of Elementary School per year of the study. National School-based Health Survey, Brazil, 2009, 2012, 2015.

more advanced ages remained associated to the use of tobacco: 14 years (OR = 1.5), 15 years (OR = 2.3), 16 years and more (OR = 2.9). Students who work also had higher chances of smoking (OR = 2.0). Students of the yellow skin color had lower chances of using tobacco (OR = 0.7). Family context was also protective of the use of tobacco: living with mother and/or father (OR = 0.8); having meals with the parents, and the frequency of 5 times a week was associated with lower use of tobacco (OR = 0.6); and students with family supervision, or the ones whose parents knew what they were doing in the free time (OR = 0.4). On the other hand, missing classes without the parents' authorization showed higher chances of smoking (OR = 2.5). The ones who claimed to feel lonely also had higher chances of using tobacco (OR = 1.5), as well as those who reported insomnia (OR = 1.7), and those who reported not having friends (OR = 1.2) (Table 1).

After adjustment for all of the variables, the following remained positively associated with the use of alcohol: female gender (OR = 1.3) and age, in which the youngest (< 13 years, OR = 2.0) and the oldest (14 years, OR = 2.7; 15 years, OR = 3.7; 16 years and more: OR = 4.2) had higher chances of use, in comparison to 13-year old students. White students also had higher chances of drinking, as well as those who worked (OR = 2.0). The following family contexts were protective of alcohol use: living with father and/or mother (OR = 0.9); having meals with parents 5 times a week (OR = 0.8), and family supervision (OR = 0.6). However, the use of alcohol was higher among those who had three to four meals with the parents during the week. Missing classes without the parents' authorization was also associated with higher chances of drinking (OR = 1.8). The variables associated with the use of alcohol in the mental health module were: feeling lonely (OR = 1.4) and having insomnia (OR = 1.3). Not having friends was protective for the use of alcohol (OR = 0.8) (Table 2).

Regarding drug experimentation, after adjustments, we found that age < 13 years (OR = 2.3) and the older ones (14 years, OR = 3.5; 15 years, OR = 5.8; 16 years, OR = 5.9) had higher chances of using drugs in comparison to the 13-year old group. The adolescents with white skin color also had the highest chances, all of the others were protective. Students who worked also had higher chances of experimenting drugs (OR = 1.7). Family context was also protective for drug experimenting: living with the father and/or mother (OR = 0.9); having 5 meals with the parents per week (OR = 0.7), and the parents knowing what the adolescents were doing in their free time (family supervision) (OR = 0.5). On the other hand, missing classes without the parents' authorization showed higher chances of experimenting drugs (OR = 2.2), as well as mental health indicators: feeling lonely (OR = 1.5), having insomnia (OR = 1.6), and not having friends (OR = 1.2) (Table 3).

DISCUSSION

PeNSE 2015 pointed out that alcohol is the psychoactive substance most frequently used, by approximately one quarter of the adolescents, especially girls. On the other hand, this indicator presented a mild decline since 2009. Smoking was described by about 5% of the

Table 1. Prevalence and relation between the use of tobacco and sociodemographic, of family context and mental health among students. National School-based Health Survey, Brazil, 2015.

Variables	%	(95%CI)	OR	(95%CI)	p-value	OR*	(95%VI)	p-value
Age								
< 13	1.5	(0.7 – 3.3)	0.6	(0.3 – 1.2)	0.138	0.6	(0.3 – 1.4)	0.225
13	2.7	(2.5 – 3.0)	1.0			1.0		
14	4.3	(4.0 – 4.6)	1.6	(1.5 – 1.8)	**< 0.001**	1.5	(1.3 – 1.6)	**< 0.001**
15	8.1	(7.6 – 8.7)	3.1	(2.8 – 3.5)	**< 0.001**	2.3	(2.1 – 2.6)	**< 0.001**
16 or more	11.7	(11.1 – 12.3)	4.7	(4.2 – 5.2)	**< 0.001**	2.9	(2.6 – 3.2)	**< 0.001**
Sex								
Male	5.8	(5.5 – 6.1)	1.0			1.0		
Female	5.4	(5.2 – 5.6)	0.9	(0.9 – 1.0)	**0.001**	1.0	(1.0 – 1.1)	0.364
Skin color								
White	5.2	(4.5 – 5.9)	1.0			1.0		
Black	7.0	(6.1 – 8.1)	1.4	(1.3 – 1.5)	**< 0.001**	1.1	(1.0 – 1.2)	0.163
Yellow	4.9	(4.0 – 5.8)	0.9	(0.8 – 1.1)	0.382	0.7	(0.6 – 0.9)	**< 0.001**
Brown	5.5	(4.8 – 6.3)	1.1	(1.0 – 1.1)	0.061	1.0	(0.9 – 1.0)	0.166
Indigenous	6.5	(5.7 – 7.4)	1.3	(1.1 – 1.5)	**0.001**	1.0	(0.9 – 1.2)	0.848
Currently working								
No	4.8	(4.5 – 5.0)	1.0			1.0		
Yes	11.0	(10.5 – 11.5)	2.5	(2.3 – 2.6)	**< 0.001**	2.0	(1.8 – 2.1)	**< 0.001**
Living with father and/or mother								
No	9.0	(8.3 – 9.8)	1.0			1.0		
Yes	5.4	(5.2 – 5.5)	0.6	(0.5 – 0.6)	**< 0.001**	0.8	(0.8 – 0.9)	**< 0.001**
Having meals with mother and/or tutor								
No	12.0	(11.2 – 13.0)	1.0			1.0		
Twice a week or less	7.6	(7.1 – 8.0)	0.6	(0.5 – 0.7)	**< 0.001**	0.8	(0.7 – 0.9)	**< 0.001**
3 to 4 times a week	6.5	(5.7 – 7.3)	0.5	(0.4 – 0.6)	**< 0.001**	0.9	(0.7 – 1.0)	**0.09**
5 or more times a week	4.6	(4.5 – 4.8)	0.4	(0.3 – 0.4)	**< 0.001**	0.6	(0.6 – 0.7)	**< 0.001**

Tabela 1. Continuation.

Variables	%	(95%CI)	OR	(95%CI)	p-value	OR*	(95%VI)	p-value
Family supervision								
No	10.3	(9.8 – 10.8)	1.0			1.0		
Yes	3.2	(3.0 – 3.3)	0.3	(0.3 – 0.3)	< 0.001	0.4	(0.4 – 0.4)	< 0.001
Missing classes without authorization								
No	3.7	(3.5 – 3.9)	1.0			1.0		
Yes	11.7	(11.3 – 12.1)	3.4	(3.2 – 3.6)	< 0.001	2.5	(2.4 – 2.7)	< 0.001
Feeling lonely								
No	4.8	(4.6 – 5.1)	1.0			1.0		
Yes	9.4	(8.9 – 9.8)	2.0	(1.9 – 2.2)	< 0.001	1.5	(1.4 – 1.6)	< 0.001
Insomnia								
No	4.9	(4.6 – 5.2)	1.0			1.0		
Yes	11.3	(10.7 – 11.9)	2.5	(2.3 – 2.7)	< 0.001	1.7	(1.6 – 1.8)	< 0.001
Friends								
1 more	5.4	(4.9 – 6.0)	1.0			1.0		
None	8.6	(7.8 – 9.5)	1.6	(1.5 – 1.8)	< 0.001	1.2	(1.0 – 1.3)	0.01

95%CI: 95% confidence interval; OR: *odds ratio*; *adjusted by all the significant variables in the model.

Table 2. Prevalence and relation of the use of alcohol with sociodemographic characteristics, of family context and mental health among students. National School-based Health Survey, Brazil, 2015.

Variable	%	(95%CI)	OR	(95%CI)	p-value	OR*	(95%CI)	p-value
Age								
< 13	8.5	(6.2 – 11.7)	0.5	(0.3 – 0.7)	< 0.001	2.0	(1.4 – 2.9)	< 0.001
13	16.5	(15.7 – 17.2)	1.0			1.0		
14	21.7	(20.9 – 22.4)	1.4	(1.3 – 1.5)	< 0.001	2.7	(1.9 – 3.8)	< 0.001
15	30.0	(29.0 – 31.0)	2.2	(2.1 – 2.3)	< 0.001	3.7	(2.6 – 5.3)	< 0.001
16 or more	35.0	(34.1 – 35.9)	2.7	(2.6 – 2.9)	< 0.001	4.2	(2.9 – 6.0)	< 0.001
Sex								
Male	22.4	(21.9 – 22.9)	1.0			1.0		
Female	25.1	(24.7 – 25.4)	1.2	(1.1 – 1.2)	< 0.001	1.3	(1.3 – 1.4)	< 0.001
Skin color								
White	23.9	(22.4 – 25.4)	1.0			1.0		
Black	25.5	(23.8 – 27.2)	1.1	(1.0 – 1.1)	< 0.001	0.9	(0.9 – 1.0)	0.003

Tabela 2. Continuation.

Variable	%	(95%CI)	OR	(95%CI)	p-value	OR*	(95%CI)	p-value
Yellow	23.6	(21.7 – 25.6)	1.0	(0.9 – 1.1)	0.692	0.8	(0.8 – 0.9)	< 0.001
Brown	23.1	(21.7 – 24.6)	1.0	(0.9 – 1.0)	0.012	0.9	(0.9 – 0.9)	< 0.001
Indigenous	23.6	(22.2 – 25.1)	1.0	(0.9 – 1.1)	0.728	0.8	(0.8 – 0.9)	< 0.001
Currently working								
No	21.6	(21.0 – 22.3)	1.0			1.0		
Yes	37.8	(37.0 – 38.6)	2.2	(2.1 – 2.3)	< 0.001	2.0	(1.9 – 2.1)	< 0.001
Living with mother and/or father								
No	30.4	(29.2 – 31.7)	1.0			1.0		
Yes	23.4	(23.1 – 23.6)	0.7	(0.7 – 0.7)	< 0.001	0.9	(0.8 – 0.9)	< 0.001
Having meals with mother or tutor								
No	33.9	(32.7 – 35.2)	1.0			1.0		
Twice a week or less	29.7	(29.0 – 30.5)	0.8	(0.8 – 0.9)	< 0.001	1.0	(0.9 – 1.0)	0.319
3 to 4 times a week	28.7	(27.2 – 30.2)	0.8	(0.7 – 0.9)	< 0.001	1.1	(1.0 – 1.2)	0.022
5 times a week or more	21.5	(21.2 – 21.7)	0.5	(0.5 – 0.6)	< 0.001	0.8	(0.7 – 0.8)	< 0.001
Family supervision								
No	33.0	(32.4 – 33.7)	1.0			1.0		
Yes	19.1	(18.8 – 19.4)	0.5	(0.5 – 0.5)	< 0.001	0.6	(0.5 – 0.6)	< 0.001
Missing classes without authorization								
No	20.2	(19.7 – 20.7)	1.0			1.0		
Yes	35.7	(35.1 – 36.3)	2.2	(2.1 – 2.3)	< 0.001	1.8	(1.8 – 1.9)	< 0.001
Feeling lonely								
No	22.2	(21.5 – 22.8)	1.0			1.0		
Yes	32.3	(31.5 – 33.0)	1.7	(1.6 – 1.7)	< 0.001	1.4	(1.3 – 1.4)	< 0.001
Insomnia								
No	22.4	(21.7 – 23.2)	1.0			1.0		
Yes	34.7	(33.8 – 35.6)	1.8	(1.8 – 1.9)	< 0.001	1.3	(1.3 – 1.4)	< 0.001
Friends								
1 or more	23.8	(22.5 – 25.1)	1.0			1.0		
None	24.8	(23.6 – 26.1)	1.1	(1.0 – 1.1)	0.1	0.8	(0.8 – 0.9)	< 0.001

95%CI: 95% confidence interval; OR: *odds ratio*; *adjusted by all significant variables in the model.

Table 3. Prevalence and relation of drug experimentation with sociodemographic characteristics, of Family contexto and mental health among students. National School-based Health Survey, Brazil, 2015.

Variable	%	(95%CI)	OR	(95%CI)	p-value	OR*	(95%CI)	p-value
Age								
< 13	2.9	(1.6 – 5.0)	0.6	(0.3 – 1.1)	0.1	2.3	(1.1 – 4.7)	**0.023**
13	4.7	(4.3 – 5.1)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
14	7.4	(6.9 – 7.8)	1.6	(1.5 – 1.8)	**< 0.001**	3.5	(1.7 – 7.0)	**0.001**
15	13.5	(12.8 – 14.3)	3.2	(3.0 – 3.5)	**< 0.001**	5.8	(2.9 – 11.9)	**< 0.001**
16 or more	15.7	(15.0 – 16.3)	3.8	(3.5 – 4.1)	**< 0.001**	5.9	(2.9 – 12.0)	**< 0.001**
Sex								
Male	9.5	(9.1 – 9.9)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
Female	8.5	(8.3 – 8.7)	0.9	(0.9 – 0.9)	**< 0.001**	1.0	(0.9 – 1.0)	0.094
Skin color								
White	9.1	(8.0 – 10.2)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
Black	10.3	(9.1 – 11.6)	1.2	(1.1 – 1.2)	**< 0.001**	0.9	(0.8 – 1.0)	**0.003**
Yellow	8.5	(7.3 – 9.8)	0.9	(0.8 – 1.0)	0.2	0.8	(0.7 – 0.9)	**< 0.001**
Brown	8.6	(7.6 – 9.7)	1.0	(0.9 – 1.0)	**0.0**	0.9	(0.8 – 0.9)	**< 0.001**
Indigenous	7.7	(6.9 – 8.7)	0.8	(0.7 – 1.0)	**0.0**	0.7	(0.6 – 0.7)	**< 0.001**
Currently working								
No	7.9	(7.5 – 8.3)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
Yes	15.8	(15.2 – 16.4)	2.2	(2.1 – 2.3)	**< 0.001**	1.7	(1.6 – 1.8)	**< 0.001**
Living with mother and/or father								
No	13.1	(12.3 – 14.1)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
Yes	8.7	(8.6 – 8.9)	0.6	(0.6 – 0.7)	**< 0.001**	0.9	(0.8 – 0.9)	**< 0.001**
Having meals with mother or tutor								
No	15.8	(14.8 – 16.8)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
Twice a week or less	12.6	(12.1 – 13.2)	0.8	(0.7 – 0.8)	**< 0.001**	1.0	(0.9 – 1.1)	0.699
3 to 4 times a week	10.9	(9.9 – 12.0)	0.7	(0.6 – 0.7)	**< 0.001**	1.0	(0.9 – 1.2)	0.665
5 times a week or more	7.5	(7.3 – 7.7)	0.4	(0.4 – 0.5)	**< 0.001**	0.7	(0.7 – 0.8)	**< 0.001**

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Tabela 3. Continuation.

Variable	%	(95%CI)	OR	(95%CI)	p-value	OR*	(95%CI)	p-value
Family supervision								
No	14.5	(14.0 – 15.1)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
Yes	6.1	(5.9 – 6.3)	0.4	(0.4 – 0.4)	< 0.001	0.5	(0.5 – 0.5)	< 0.001
Missing classes without authorization								
No	6.5	(6.3 – 6.8)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
Yes	16.8	(16.4 – 17.3)	2.9	(2.8 – 3.0)	< 0.001	2.2	(2.1 – 2.3)	< 0.001
Feeling lonely								
No	8.0	(7.6 – 8.4)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
Yes	14.1	(13.5 – 14.6)	1.9	(1.8 – 2.0)	< 0.001	1.5	(1.4 – 1.6)	< 0.001
Insomnia								
No	8.1	(7.7 – 8.5)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
Yes	16.1	(15.5 – 16.8)	2.2	(2.1 – 2.3)	< 0.001	1.6	(1.5 – 1.7)	< 0.001
Friends								
1 or more	8.8	(8.1 – 9.5)	1.0	(0.0 – 0.0)		1.0	(0.0 – 0.0)	
None	13.2	(12.2 – 14.2)	1.6	(1.4 – 1.7)	< 0.001	1.2	(1.1 – 1.3)	< 0.001

95%CI: 95% confidence interval; OR: *odds ratio*; *adjusted by all significant variables in the model.

students, whereas trying illicit drugs at least once was the double. There were no significant changes for the use of these two substances in the period, nor differences by gender, in 2015.

The multivariate analysis pointed out family context as a protective factor: living with the parents, family supervision and having frequent meals with the parents (five times or more). On the other hand, missing classes without consent increased the chances of substance use. The highest chances of using substances among students has been associated with work, increasing age and white skin color. Additionally, students who reported loneliness and insomnia also used more substances. Not having friends was associated with the use of tobacco and drug experimentation, whereas the use of alcohol has been associated with having more friends. Previous studies also observed high consumption of alcohol among adolescents, and even higher among girls of all ages[18,22,23], corroborating findings in this study. However, some of the national[24-26] and international students point to the higher use of alcohol, tobacco and drugs among male individuals[1,13].

Studies in Chile and Argentina also found, among female students aged between 13 and 15 years, the prevalence of slightly higher consumption of alcohol[3], unlike other countries in the continent. Even though adult men consume more alcohol than women[22,27], there has been an increasing consumption of alcohol among younger women in Brazilian capitals[28].

Such a fact suggests a faster process of reconfiguration in gender relations in these countries, which have elected women for the presidency of the Republic. This scenario points to a possible cohort effect, in which women of more recent generations have been drinking more, and, therefore, the need to monitor this behavior.

It is worth to mention that alcohol, in Brazil, is socially accepted and stimulated through beer advertisements, which encourages consumption among young people[14]. On the other hand, initiation to smoking has been decreasing; in PeNSE 2009 it was 24.2% (95%CI 23.6 – 24.8). This fact has been attributed to the regulatory measures, prohibition of advertising and increasing prices[15,16], even though in the short series analyzed this effect was not possible to observe.

Another relevant finding was the use of tobacco and drugs, which did not vary according to gender in 2015. This behavior was more frequent among boys in the previous years, 2009 and 2012[4-6,16], as well as in other countries, which, likewise, point out to the higher intake of substances among boys[1,12].

The use of substances tends to increase with age in most international[1,9,12] and national[15,16] studies, which is explained by the more frequent contact with friends, more socialization and exposure to risks, corroborating our findings. Additionally, this study showed more chances among students aged less than 13 years, and this fact should be relativized, both because the number of students aged less than 13 years in the 9th grade is smaller, and because the sample is not representative of the age.

The white skin color, which has been pointed out as a proxy for higher social and economic level[29], showed higher chances of use for all substances. Other studies indicate that the use of alcohol is more frequent among adolescents with higher social and economic level, whose greater availability of resources enables more access to the consumption of these substances[30].

This study pointed to the importance of family context in the protection against the use of psychoactive substances, corroborating the literature[12], which indicates that factors such as the connection between parents and their children, cohesion and family supervision are essential in the protection of adolescents[1,2,12,19]. The fact that parents or tutors establish bonds of affection and dialogue with the adolescents reduces risky conducts[2,31] confirms the importance of showing interest in the lives of their children, participating in the routine activities, such as meals and homework, besides supervising what they do in their free time and the friends who they relate with[1,8,20,32,33]. Additionally, having meals together five times or more was the single associated category for the protection against the use of all studied substances, highlighting the need for greater and constant involvement in the children's lives.

A report pointed out that students who were absent from school on the day of the study had more involvement with the use of substances[34], as well as this study, indicating the importance of parental supervision and follow-up.

However, other analyses show that, likewise, family can lead to risky conducts, such as parents who smoke, which increases the risk of smoking among adolescents[15], domestic violence, aggression, sexual abuse and negligence, leading to possible risks to the health of the adolescents[35,36].

Another crucial factor in the lives of adolescents are their friends, contributing with their socialization and mental health. Therefore, the report of not having friends would increase the chances of isolation and drug use[12], which was identified for the use of

tobacco and illicit drugs, mostly associated with behaviors of social isolation and mental suffering[18,37]. The opposite was found regarding alcohol, which can be explained by the festive aspects of alcohol consumption in Brazil, related to parties and celebration with friends[18].

Finally, the variables of mental health, such as insomnia and feeling of isolation, have been associated with the use of substances by students, pointing to the importance of approaching these factors in programs of prevention of several risk behaviors[18].

Among the limitations of this study, it is worth to mention that the 2009 sample contemplates only the capitals, not being representative of the entire country, like in other years. The process used to gather the information of adolescents using the self-report can contain errors caused by under-reporting, or even caused by difficulties to understand the questions. The report of the use of substances may reflect, for instance, on the perception of substance use, instead of the real situation. Therefore, it could refer more to experimentation, and not the regular use. Besides, the study was carried out among students who attend school, and the real prevalence of substance use among adolescents may be underestimated, since students who miss classes tend to present higher prevalence of risk behaviors in relation to other students who do not miss their classes (at the time of a test)[34]. It is still important to mention that the associations found must be interpreted with caution regarding the relations of cause and effect due to the cross-sectional design.

Another limitation can be owed to the possible multicollinearity between the variables, since several explanatory variables tend to express the same dimensions for being correlated, which makes it difficult to distinguish their isolated effects, such as those referring to family context. There are other variables that can influence the use of substances, like the relationship with colleagues, friends, social and economic conditions, among others, which were not verified by PeNSE.

CONCLUSION

The findings in this study point to the high prevalence of alcohol consumption among Brazilian students, especially girls, and to the fact that sociodemographic variables, like age (14 years or more), white skin color, the act of working and poor mental health indicators, are strongly associated with the higher use of tobacco, alcohol and drugs in adolescence. On the other hand, family context was protective, highlighting the importance of well-structured family bonds in the lives of adolescents.

Results of surveys like PeNSE provide the support to public policies and actions of health promotion, becoming important tools to monitor the risk behaviors in this age group. This study can support initiatives such as the prohibition of alcohol advertisement, especially beer, sugary alcoholic beverages and others, so common at this age group. It is important to make advances in monitoring of the sales of alcoholic beverages and cigarettes to people aged less than 18 years, as well as in the restriction of points of sale.

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