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Factors associated with early sexual initiation and unsafe sex in adolescents: Substance use and parenting style

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1. Introduction

Early sexual initiation is an important risk factor for later drug use (Sandfort, Orr, Hirsch, & Santelli, 2008), delinquency (Moilanen, 2015), intimate partner violence (Halpern, Spriggs, Martin, & Kupper, 2009), depression, anxiety and eating disorders (Skolnik et al., 2019; Vasilenko, Kugler, & Rice, 2016). Early sexual initiation is also associated with unsafe sex (Kaplan, Jones, Olson, & Yunzal-Butler, 2013) and youth who engage in early sexual activity are more likely to have multiple partners (Sandfort, Orr, Hirsch, & Santelli, 2008). These behaviors can result in higher risk of sexually transmitted diseases (STDs) (WHO - world health organization, 2016), unplanned pregnancies (Ramiro et al., 2015) and abortions (Sedgh, Finer, Bankole, Eilers, & Singh, 2015). Because youth less than 16 years old are less likely to use or have access to contraception, they are at a high risk for STDs and unintended pregnancy (Mathews et al., 2009).

Global research on sexual and reproductive health indicates that the prevalence of sexual activity varies markedly between boys and girls and across countries (Avery & Lazdane, 2010; Centers for Disease Control and Prevention, 2014). In 2015, a national survey in Brazil found that 34.5% of boys and 19.3% of girls between ages 13 and 15 had engaged in sexual intercourse. Younger adolescents are also at higher risk for unsafe sex at first sexual intercourse compared to older adolescents; In Brazil, condom use was less prevalent among adolescents aged 13 and 15 (59.7%) when compared to 16 and 17 year old adolescents (68.2%) (National Survey of School Health; PENSE) (IBGE, 2016). Unsafe sex is also more frequent among Brazilian adolescents from households with few socio-economic assets (Oliveira-Campos, Giatti, Malta, & Barreto, 2013).

Both substance use and parenting styles influence early sexual initiation. US studies show that alcohol, tobacco and marijuana use were associated with sexual activity at the age of 15 (Connell, Gilreath, & Hansen, 2009). At the same time, research suggests adolescents with authoritative mothers are less likely to have had sexual intercourse when compared to adolescents with any other parenting style (Pittman & Chase-Lansdale, 2001). However, few studies have examined these risk behaviors in the Brazilian context

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where norms around parenting and drug use may be distinct or have examined the combined effects of these risk factors on sexual risk behaviors. Therefore, we aimed to investigate how substance use and parenting styles were related to early sexual initiation and of unsafe sex among adolescents. As a secondary aim, we studied how combinations of parenting style and substance use were associated with these outcomes.

2. Methods

This cross-sectional study was nested within a randomized controlled trial (RCT) of a drug prevention program. The trial included 7th to 8th grade middle school students at public schools in six Brazilian cities. The National Coordination of Mental Health, Alcohol, and Other Drugs of the Ministry of Health partnered with the United Nations Office on Drugs and Crime (UNODC) to adapt and implement the European drug prevention program *Unplugged*; the Brazilian version of it is called *#Tamojunto*, (Faggiano et al., 2010).

We analyzed baseline data from the trial that evaluated the effects of the *#Tamojunto* drug prevention program on adolescent substance use. The study is registered at the Brazilian Registry of Clinical Trials (Registro Brasileiro de Ensaios Clínicos-REBEC) with registration number RBR-4mnv5g. The Ethics Committee of the Federal University of São Paulo approved this study (protocol #473.498).

2.1. Sampling

The sample included 6285 students aged 11–15 in the seventh and eighth grades in 72 public middle schools in the cities of São Paulo-SP, São Bernardo do Campo-SP, Federal District-DF, Florianópolis-SC, Tubarão-SC, and Fortaleza-CE.

Based on a sample size calculation (Lwanga & Lemeshow, 1991) for a longitudinal study with 80% power, a 5% significance level, and a difference between groups of 1.5% points (5%–3.5%), the sample size required for each study group was 2835 participants. With a projected loss of 50%, 4253 participants were included in each group. The parameters used for the calculation were based on a pilot study (Sanchez et al., 2016) and on the expected results of the RCT. Sampling details have been published previously (Sanchez et al. (2017).

2.2. Instruments

Data collection was performed using a questionnaire developed and tested by the European Drug Addiction Prevention trial (EU-DAP) that was used in previous effectiveness studies for *Unplugged* (Faggiano et al., 2008). An anonymous self-reported structured questionnaire was administered by trained researchers without the presence of a teacher in the classroom. The version that was translated and adapted to Portuguese had some question substitutions that were guided by standard questionnaires on adolescent drug use and risk behaviors used in Brazil (e.g. from the World Health Organization questionnaire (Carlini et al., 2010) and the Brazilian Ministry of Health's Pesquisa Nacional de Saúde do Escolar questionnaire (IBGE, 2012)). The complete questionnaire was adapted in a pilot phase in 2013 and validated (Prado et al., 2016).

The questionnaire included sociodemographic questions and questions about the use of alcohol, tobacco, marijuana, inhalants, cocaine, and crack in the past month, year, and ever during one's lifetime. It also assessed questions on binge drinking (consumption of five or more doses of alcohol in 2 h) and factors associated with substance use, such as, parenting styles (Berge, Sundell, Öjehagen, & Håkansson, 2016), normative beliefs (Bertholet, Faouzi, Studer, Daeppen, & Gmel, 2013), school environment (Henry, Knight, & Thornberry, 2012), bullying (Pengpid & Peltzer, 2012), sexual risk behaviors, decision-making ability (Wheeler, 2010), intention to use drugs (Caria, Faggiano, Bellocco, & Galanti, 2011) and risk perception (Parsai, Voisine, Marsiglia, Kulis, & Nieri, 2009). To maintain confidentiality, the questionnaires were deposited in a brown envelope after being completed. At no time did researchers ask the students' names and it was made clear that the questionnaire was anonymous.

2.2.1. Sexual risk behavior

The sexual risk behavior section of the questionnaire covered sexual initiation, frequency of recent sexual activity, condom use and pregnancy. The sexually active group was defined as the students who reported any lifetime sexual intercourse. That means, they had positive responses to the question ‘Have you ever had sex?’ (no/yes). Lifetime unsafe sex was measured with the question: “When you have sex, do you use condoms?” Responses included “never had sex”, “always use”, “sometimes use” and “never use” and were dichotomized into no/yes by grouping “never had sex” and “always use” as “No”, and grouping “sometimes use” and “never use” as “Yes”.

2.2.2. Parenting styles

Data on parenting styles were collected through the Demand and Responsiveness Scale (Lamborn & Mounts, 1991), which includes four parenting styles: authoritarian, authoritative, negligent, and permissive (Maccoby & Martin, 1983). The instrument reflects adolescent perceptions of parenting and includes two scales corresponding to demand (6 items) and responsiveness (10 items) dimensions, that were translated and adapted for the Brazilian context (Costa, Teixeira, & Gomes, 2000). These two dimensions combined were used to make the four parenting categories: authoritative (high scores on demandingness and responsiveness), authoritarian (high scores on demandingness and low scores on responsiveness), indulgent (low scores on demandingness and high scores on responsiveness) and negligent (low scores on both demandingness and responsiveness). Responses were noted on a three-point Likert scale, with scores closer to three indicating greater perceived demand and responsiveness. The scale cutoff was based on

the median scores for each subscale, with the parents who scored at or above the median for demandingness or responsiveness classified as high in demandingness or responsiveness, respectively, whereas parents who scored at or below the median were classified as low in demandingness or responsiveness (Calafat, García, Juan, Becoña, & Fernández-Hermida, 2014). Responses are indicated on a three-point Likert scale, with scores closer to three indicating greater perceived demand and responsiveness. For instance, "To what extent do your parents really know what you do with your free time?" can be answered with, "Do not know", "Know little", or "Know enough." Also, a question about fictitious drugs (Holoten and Carpinol) was included and questionnaires with positive answers on this question (n = 49) were excluded from the analysis.

2.2.3. Combined risk variable: substance use and parenting style

To evaluate the joint effect of substance use and parenting style we combined each of these variables into on binary (no/yes) categories. Regarding substance use, answers indicating lifetime substance use of at least one of the following: binge drinking, use of tobacco, marijuana, inhalants or cocaine were considered 'yes'. Regarding parenting style, as authoritative had higher scores in both demand and responsiveness domains, we used it as a reference category. Authoritarian, negligent and permissive styles were grouped into a "poor parenting" category.

2.2.4. Socioeconomic status

Socioeconomic status (SES) was evaluated using the Brazilian Association of Research Companies scale (ABEP - Associação Brasileira de Empresas de Pesquisa, 2012), which reflects consumer goods and education level of the head of the household. Of its five categories, "A" and "E" correspond to highest and lowest SES, respectively. Student demographic data, including age and gender, were self-reported. Information on city, school, and grade were obtained from school records.

Two outcomes were evaluated: lifetime sex and lifetime unsafe sex (having sexual intercourse without a condom). Independent variables substance use - binge drinking and use of tobacco, inhalants, marijuana, and cocaine - and parenting styles (authoritative, authoritarian, permissive, and negligent). We considered early sexual initiation to be when sexual intercourse occurred before the age of 15. Other covariates included gender, age, socioeconomic status and city.

2.3. Statistical analysis

Our statistical approach involved generating descriptive characteristics of students who were sexually active and who reported unsafe sex, using weighted proportions (wgt%). We adjusted for city, school, and students, with the school as a stage 1 cluster and students as a stage 2 cluster. Because there were large amounts of missing data related to the parenting styles (22.8%), missing data were imputed through multiple imputation, which uses the intercorrelations of data from variables that are not missing to estimate plausible values for the missing data (Little & Rubin, 2002). Imputation was performed in Stata 14 assuming a random pattern of missing values for parenting styles only. An iterative method was used to fill in the missing values, the mvn method (mi impute mvn), that uses multivariate normal data augmentation to impute missing values of continuous imputation variables (Schafer, 1997). First, we imputed missing values and randomly created five imputation datasets. After that, we fit the model: [mi estimate] fits the specified model (logistic regression models) on each of the imputation datasets (five) and then combined the results into one MI inference (Schafer, 1997). The variables used in the imputation model included gender, age group, city, binge drinking, tobacco, inhalants, marijuana, and cocaine, and ABEP classification.

The next step involved logistic regression models to calculate both crude and adjusted odds ratios. Sampling weights were used to correct the sample estimate for the population from which it was extracted. To do this, we considered the population estimated in the initial draw, the absences on the day of data collection, and the sample universe in each city. For these analyses we used STATA/SE 14 software with the svyset procedure to determine the estimated variance for complex sample surveys. A p-value of < 0.05 was considered statistically significant.

Data cleaning involved two steps, first impossible values were changed to missing, that is, if a student had written that he was 100 years old, then that value was deleted and was considered missing. The same procedure was performed for the number of household items such as TVs, bathrooms, etc. (impossible variables were deleted, resulting in missing values). For example, if a student stated that he/she had used alcohol in the past month but did not drink alcohol in the past year or in his/her lifetime, this inconsistency was noted and replaced by a missing value. In addition, all data from questionnaires in which students answered 'yes' to a fictitious drug (holoten or carpinol) were excluded, to avoid false response profiles.

3. Results

Sexual initiation was reported by 13.3% (95% CI 11.8–15.0) of the students. The mean age of first sexual intercourse was 12.4 years (SD = 0.33). Additionally, 5.3% (95% CI: 4.3–6.4) of the participants reported unsafe sex. Lifetime sex and unsafe sex were more prevalent among boys, older students, and those who used any substances. Permissive and negligent parenting styles were associated with higher risk of sexual activity and unsafe sex, with the negligent parenting style being the most prevalent of the two behaviors evaluated. To illustrate, in the unsafe sexual activity group, 69.6% were boys, 67.3% were between 13 and 15 years of age, and 59.6% experienced the negligent parenting style ($p < 0.001$). Among the students who engaged in sexual activity, 46.8% were involved in binge drinking, whereas in the non-sexually active group prevalence of sexual activity was 14.2% (Table 1). In relation to unsafe sexual activity, the prevalence of substance use was also higher among adolescents who reported sexual intercourse without condoms compared with those who used condoms. Tobacco use was reported by 33.6% of the students who practiced unsafe sex and

Table 1
Distribution of lifetime sex and lifetime unsafe sex according to sociodemographic variables, substance use and parenting style among students.

	Lifetime Sex (N = 6285)				p	Lifetime Unsafe Sex (N = 6266)				p
	Yes		No			Yes		No		
	N	%wgt 95% CI	N	%wgt 95% CI		N	%wgt 95% CI	N	%wgt 95% CI	
Sex					< 0.001					< 0.001
Male	477	62.4 (58.5, 66.1)	2570	46.2 (44.4, 48.11)		192	69.6 (62.3, 76.0)	2850	47.2 (45.5, 48.9)	
Female	302	37.6 (33.9, 41.6)	2932	53.8 (51.9, 55.6)		96	30.4 (24.0, 37.8)	3124	52.8 (51.1, 54.5)	
Age					< 0.001					< 0.001
11-12	240	31.3 (26.9, 36.1)	3052	57.4 (54.5, 60.2)		97	32.7 (26.2, 39.8)	3172	54.8 (52.0, 57.6)	
13-15	539	68.7 (63.9, 73.1)	2450	42.6 (39.8, 45.5)		191	67.3 (60.2, 73.8)	2802	45.2 (42.4, 48.0)	
Socio-economic Status[b]					0.003					0.240
A	48	6.5 (4.3, 9.6)	192	3.4 (2.4, 4.8)		17	5.7 (3.1, 10.1)	223	3.7 (2.7, 5.1)	
B	279	33.7 (29.2, 38.6)	2150	37.0 (33.9, 40.3)		99	32.1 (26.3, 38.5)	2317	36.8 (33.7, 40.0)	
C	395	52.7 (47.6, 57.7)	2892	54.2 (50.5, 57.9)		153	57.0 (50.3, 63.4)	3128	53.9 (50.3, 57.4)	
D/E	55	7.2 (5.5, 9.4)	259	5.4 (4.3, 6.7)		17	5.2 (3.1, 8.8)	297	5.6 (4.6, 6.9)	
City					0.004					0.034
Brasília	68	10.0 (6.6, 15.1)	484	10.9 (8.0, 14.7)		30	11.6 (5.9, 21.4)	522	10.8 (8.0, 14.4)	
Florianópolis	87	1.8 (1.2, 2.6)	773	2.5 (1.9, 3.3)		16	0.8 (0.6, 1.2)	835	2.5 (1.9, 3.2)	
Fortaleza	103	13.5 (9.3, 19.1)	432	8.4 (6.9, 10.1)		43	14.5 (8.8, 22.9)	493	8.8 (7.2, 10.7)	
SBC	105	4.4 (2.9, 6.7)	840	5.6 (4.0, 7.7)		46	5.1 (3.6, 7.4)	898	5.4 (4.0, 7.4)	
São Paulo	392	70.1 (62.8, 76.4)	2674	72.1 (67.5, 76.2)		147	67.7 (57.1, 76.8)	2910	72.0 (67.4, 76.1)	
Tubarão	24	0.3 (0.2, 0.4)	299	0.6 (0.4, 0.9)		6	0.2 (0.0, 0.5)	316	0.6 (0.4, 0.8)	
Substance Use										
Binge drinking	361	46.8 (43.1, 50.6)	763	14.2 (12.8, 15.8)	< 0.001	138	45.9 (40.3, 51.6)	983	17.1 (15.5, 18.8)	< 0.001
Tobacco use	230	28.1 (24.1, 32.4)	255	4.7 (3.9, 5.5)	< 0.001	100	33.6 (28.5, 39.0)	382	6.4 (5.5, 7.3)	< 0.001
Inhalant use	211	26.7 (23.1, 30.6)	897	15.9 (14.7, 17.2)	< 0.001	99	31.9 (25.5, 39.0)	1003	16.4 (15.3, 17.7)	< 0.001
Marijuana use	145	19.3 (15.6, 23.4)	109	2.0 (1.5, 2.5)	< 0.001	65	22.5 (17.6, 28.3)	190	3.3 (2.7, 3.9)	< 0.001
Cocaine use	17	2.4 (1.6, 3.5)	16	0.3 (0.2, 0.5)	< 0.001	13	4.5 (2.6, 7.6)	20	0.4 (0.2, 0.6)	< 0.001
Parenting Style[a]					< 0.001					< 0.001
Authoritative	97	15.0 (11.7, 19.1)	1337	30.8 (28.7, 33.0)		26	14.0 (9.0, 21.0)	1407	29.6 (27.5, 31.7)	
Authoritarian	75	12.9 (10.4, 15.9)	875	20.6 (19.4, 21.9)		25	11.1 (7.0, 17.0)	922	20.0 (18.8, 21.3)	
Permissive	86	16.5 (13.1, 26.6)	563	13.3 (12.2, 14.5)		29	15.4 (10.3, 22.4)	620	13.7 (12.6, 15.0)	
Negligent	325	55.6 (49.7 61.2)	1518	35.3 (33.0, 37.6)		129	59.6 (51.9, 66.8)	1706	36.7 (34.5, 39.0)	

[a] This variable presented 22.8% of the *missing* data and was imputed in the inferential analyses.
[b] SES - Socioeconomic classification based on ABEP.

Table 2
Logistic regression for lifetime sex and lifetime unsafe sex in relation to sociodemographic data, parenting style and substance use among students.

	Lifetime Sex (N = 6285)		Lifetime Unsafe Sex (N = 6266)	
	Crude OR (95% CI)	Adjusted OR (95% CI)	Crude OR (95%CI)	Adjusted OR (95% CI)
Sex				
Female	Reference			
Male	**1.93 (1.60, 2.31)**	**1.51 (1.22, 1.88)**	**2.55 (1.84, 3.54)**	**1.82 (1.31, 2.56)**
Age				
11 to 12	Reference			
13 to 15	**2.95 (2.44, 3.57)**	**2.57 (2.03, 3.26)**	**2.50 (1.88, 3.33)**	**1.98 (1.37, 2.85)**
Socio-economic Status[b]	1.00 (0.99, 1.02)	.	1.00 (0.98, 1.02)	.
City	1.04 (0.95, 1.14)	.	1.07 (0.95, 1.21)	.
Binge drinking	**5.31 (4.45, 6.35)**	**3.24 (2.49, 4.22)**	**4.11 (3.11, 5.43)**	**2.08 (1.29, 3.37)**
Tobacco use	**7.94 (6.42, 9.81)**	2.53 (1.77, 3.62)	**7.41 (5.82, 9.43)**	**3.22 (1.92, 5.39)**
Inhalant use	**1.92 (1.54, 2.40)**	**0.68 (0.47, 1.00)**	**2.38 (1.71, 3.30)**	**.**
Marijuana use	**12.01 (8.51, 16.96)**	**3.22 (2.08, 5.00)**	**8.62 (6.40, 11.60)**	**1.86 (1.03, 3.67)**
Cocaine use	**7.98 (4.18, 15.25)**	**.**	**13.11 (6.13, 28.01)**	**2.55 (1.02, 6.38)**
Parenting Style[a]				
Authoritative	Reference			
Authoritarian	1.28 (0.93, 1.77)	1.14 (0.79, 1.67)	1.17 (0.58, 2.37)	1.00 (0.47, 2.14)
Permissive	**2.55 (1.76, 3.71)**	**2.14 (1.40, 3.28)**	**2.38 (1.21, 4.67)**	1.79 (0.85, 3.79)
Negligent	**3.23 (2.30, 4.54)**	**2.02 (1.41, 2.92)**	**3.43 (2.11, 5.58)**	**1.99 (1.20, 3.27)**

[a] Missing data was imputed.
[b] SES - Socioeconomic classification based on ABEP.

by 6.4% of the students who used condoms ($p < 0.001$). In addition, marijuana use was reported by 22.5% of students who practiced unsafe sex and by 3.3% of the students who used condoms ($p < 0.001$) (Table 1).

Sexual activity was 51% more likely to occur among boys (Adjusted OR = 1.51, 95% CI: 1.22–1.88) and age 13 and 15 years old was associated with over a two-fold higher likelihood of sexual intercourse (aOR = 2.57, 95% CI:2.03–3.26). Engaging in binge drinking (aOR = 3.24, 95% CI:2.49–4.22) and marijuana smoking (aOR = 3.22, 95% CI:2.08–5.00) increased the chance of sexual activity three-fold even after adjustment for sex, age, SES and city. Moreover, children of permissive parents (aOR = 2.14, 95% CI:1.40–3.28) and negligent parents reported approximately twice the risk of sexual activity (aOR = 2.02, 95% CI:1.41–2.92) (Table 2).

In relation to the practice of unsafe sexual activity, adolescents aged 13–15 years old were 98% (aOR = 1.98, 95% CI:1.37–2.85) more likely to engage in unsafe sex compared with 11 to twelve-year olds. Engaging in smoking tobacco (aOR = 3.22, 95% CI 1.92–5.39), binge drinking (aOR = 2.08 95% CI 1.29–3.37) and using cocaine (aOR = 2.55, 95% CI:1.02–6.38) were associated with increased risk of unsafe sex. The negligent parenting style was the only style associated with unsafe sex, increasing the odds of unsafe sex by 99% (aOR = 1.99, 95% CI:1.20–3.27) (Table 2).

When examining the combined substance use and parenting style variable, students who had poor parenting but did not use substances had a two-fold higher risk of sexual activity (aOR = 2.03, 95% CI:1.25–3.31). On the other hand, adolescents in families

Table 3
Logistic regression for lifetime sex and lifetime unsafe sex in relation to sociodemographic data and interaction between substance use and parenting style among students.

	Lifetime Sex (N = 6285)		Lifetime Unsafe Sex (N = 6266)	
	Crude OR (95%CI)	Adjusted OR (95% CI)	Crude OR (95%CI)	Adjusted OR (95% CI)
Sex				
Female	Reference			
Male	**1.93 (1.60, 2.31)**	**1.60 (1.31,1.96)**	**2.55 (1.84, 3.54)**	**2.00 (1.48,2.69)**
Age				
11 to 12	Reference			
13 to 15	**2.95 (2.44, 3.57)**	**2.97 (2.39,3.71)**	**2.50 (1.88, 3.33)**	**2.39 (1.69,3.39)**
Socio-economic Status[a]	1.0 (0.99,1.02)	.	1.0 (0.98,1.02)	.
City	1.04 (0.95, 1.14)	.	1.07 (0.95, 1.21)	.
Combined Risk Factors				
No Substance Use and Authoritative Parenting	Reference			
No Substance Use and Poor Parenting	**2.22 (1.38, 3.57)**	**2.03 (1.25, 3.31)**	**2.12 (1.02, 4.42)**	**1.97 (0.94,4.12)**
Substance Use and Authoritative Parenting	**4.61 (2.73, 7.77)**	**4.36 (2.56, 7.42)**	**4.84 (2.08, 11.25)**	**4.54 (1.96,10.50)**
Substance Use and Poor Parenting	**8.72 (5.75, 13.26)**	**7.53 (5.01, 11.31)**	**9.42 (4.94, 17.92)**	**8.09 (4.16,15.75)**

Substance use was defined as lifetime binge drinking, tobacco, inhalant use, marijuana or cocaine use.
Poor parenting was defined as authoritarian, permissive and negligent, versus authoritative parenting.
[a] SES - Socioeconomic classification based on ABEP (numerical variable).

with poor parenting styles and who used substances had 7.5 times higher odds of engaging in sexual activity (aOR = 7.53, 95% CI:5.01–11.31) (Table 3).

Regarding unsafe sexual activity, adolescent substance use and being in a family with an authoritative parenting style increased the chance of unsafe sex four-fold (aOR = 4.54, 95% CI:1.96–10.50). Adolescents who engaged in substance use from households with poor parenting styles were eight times more likely to have unsafe sex compared to adolescents who did not reported substance use and who were from families using an authoritative parenting style (aOR = 8.09, 95% CI: 4.16–15.75) (Table 3).

4. Discussion

In this study we analyzed risk factors associated with early sexual initiation and adolescent unsafe sex, namely substance use and parenting styles, along with the combination of these risk factors together. We found that binge drinking, tobacco and illicit drug use were associated with early sexual intercourse in adolescents. Second, the use of psychoactive substances was also related to unsafe sex. Though the age range was narrow, older male students stood out for having higher levels of lifetime sex and lifetime unsafe sex. Further, negligent parenting was associated with early sexual initiation and unsafe sex, while permissive parenting was only associated with early sexual activity. Finally, we found that adolescents who simultaneously used illicit substances and who experienced negligent, authoritarian or permissive parenting were at a substantially higher risk of both early initiation and unsafe sex outcomes.

The association we observed between psychoactive substances and early sexual initiation echoes the results of other studies. A study in Europe found that alcohol and other drug use before age 16 was associated with an increased odds of early sexual initiation (Bellis et al., 2008). In Finland, alcohol substantially increased the likelihood of engaging in risky sexual behaviors; among individuals who did not drink or rarely drank, 19% of girls had engaged in sexual intercourse versus 25% for boys, however, among those who drink a few times per month, the percentages increased to 38% and 31%, respectively (Lavikainen, Lintonen, & Kosunen, 2009). The effects of substance use on behavior, affecting critical judgment, reducing inhibition, and interfering with decision-making and planning, may explain its association with early sexual initiation (Oliveira-Campos et al., 2013). Early sexual initiation leaves adolescents more vulnerable to exposure to violence or subsequent regret (Connell et al., 2009) and to not use condoms (Oliveira-Campos et al., 2013).

Our findings reinforce the association between substance use and unsafe sex that has been documented in Brazil as well as in other contexts. A survey with adolescents from public schools in the state of Minas Gerais, Brazil, found that substance use was a factor determining condom use among boys (Bertoni et al., 2009). For boys who had already used illicit drugs, consistent use of condoms was reported by 42.7% whereas for boys who had never used substances the rate was 64.1% (Bertoni et al., 2009). In a nationally representative sample from the US, the 2013 Youth Risk Behavior Survey (YRBS) showed that among 34.0% of sexually active students, only 59.1% reported condom use during last sexual intercourse. In addition, 20.8% of these students engaged in at least one episode of binge drinking in the month prior to the study (Centers for Disease Control and Prevention, 2014). In the UK, adolescents who regularly used alcohol, cigarettes, or marijuana were less likely to use condoms than non-regular users of these substances (Parkes, Wight, Henderson, & Hart, 2007). In Finland, a national survey also highlighted the association between weekly drunkenness-related drinking between boys and girls and involvement in unprotected sex and multiple sexual partners (Lavikainen et al., 2009).

Parenting styles are thought to influence adolescent sexual behaviors insofar as they mirror attitudes that they learn from their relationships with their parents (Commendador, 2010). Parenting styles reflect social values and norms and are therefore fundamental to shaping social norms in their children (Mahdavian & Zolala, 2017). Parents often encourage their sons to be fearless and to engage in risky behaviors, whereas girls are protected and taught to avoid risks (Booth & Nolen, 2012). Thus, in the quest to reaffirm masculinity, boys may become more susceptible, for example, to substance use (Silveira et al., 2012). Our findings showing the negligent parenting style to be associated with the unsafe sex and early sexual initiation support prior studies (Hoskins, 2014). This may suggest that parents with negligent styles may overlook values and social norms (Mahdavian & Zolala, 2017). Others have found an association between parental monitoring, which is absent in the negligent parenting style, and delayed sexual initiation, few sex partners (de Graaf et al., 2010), increases in condom use and decreases of sexual risk behaviors in general (de Graaf, Vanwesenbeeck, Woertman, & Meeus, 2011).

Recent literature highlights the protective role of family communication, which is also absent in the negligent parenting style, for early and risky sexual involvement (Widman, Choukas-Bradley, Noar, Nesi, & Garrett, 2016). Monitoring and family support encourage autonomy and self-discovery and are associated with the development of social and emotional competencies (de Graaf et al., 2011). By providing an environment that promotes dialogue and trust, parents have more knowledge and greater control over the social activities of their children and can thus restrict the opportunities of adolescents to engage in risky behaviors, which may delay sexual initiation and increase the use of condoms (Commendador, 2010).

The fact that adolescents who simultaneously used substances and who experienced poor parenting were at a substantially higher risk of unsafe sex and early sexual initiation illustrates that sexual risk behaviors are complex and influenced by several factors across individual, interpersonal and community domains (Settheekul, Fongkaew, Viseskul, Boonchieng, & Voss, 2019). In this sense, it is fundamental to promote adolescent development of social and emotional skills in order to protect them from engaging in risky behaviors such as substance use and involvement in early and risky sexual activity. Thus, prevention programs that focus on early sexual initiation and substance use that take in account the family need to be incorporated into the broader context of school health education curricula, including for younger adolescents (Mmari & Blum, 2009).

One limitation of this study was use of a self-reported questionnaire, which could lead to information bias through either failure in interpretation of the questions or because of social desirability. However, the question about a fictitious drug allowed us to discard

questionnaires that appeared to be biased. Also, the fact that it was a cross-sectional study limits our ability to make causal inferences.

The results of this study highlight the association between alcohol use and other drugs, early sexual initiation and the practice of unsafe sex, and the importance of the family in this context. We found a markedly increased risk of initiation in sex and unsafe sex among youth who both experienced poor parenting and who engaged in substance use. Based on these results, we suggest that school-based prevention programs take a family-based approach to address substance use and sexuality simultaneously. Future interventions should consider strategies focused on strengthening parental skills to prevent or reduce risky behaviors in their children.

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