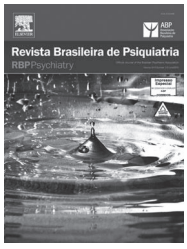
Rev Bras Psiquiatr. 2012;34:16-23

ELSEVIER

Revista Brasileira de Psiquiatria
RBPPsychiatry
Official Journal of the Brazilian Psychiatric Association
Volume 34 • Number 1 • March/2012



ORIGINAL ARTICLE

Gender parity and drug use: are girls catching up with boys?

André Malbergier,[1] Luciana Roberta Donola Cardoso,[1] Ricardo Abrantes do Amaral,[1] Verena Castellani Vitor Santos[1]

[1] Group of Studies on Alcohol and Drugs (PROGREA), Institute and Department of Psychiatry, Hospital das Clínicas, Medical School, Universidade de São Paulo, Brazil

Received on November 5, 2010; accepted on June 15, 2011

DESCRIPTORS
Adolescents;
Gender;
Alcohol abuse;
Psychoactive substance use disorder;
Epidemiology.

Abstract
Objective: To evaluate the association between gender and use of alcohol, tobacco, and other drugs in adolescents aged 10 to 18 years in the municipalities of Jacareí and Diadema, São Paulo, Brazil. *Methods*: A total of 971 adolescents completed the Drug Use Screening Inventory (DUSI). *Results*: In our sample, 55% of adolescents were male, 33.8% reported having made use in the previous month of alcohol, 13.5% of cigarettes, and 6.4% of illicit drugs. There was no significant difference between genders in the use of alcohol, tobacco, and illicit drugs in any of the analysis ($p > 0.05$). The use of alcohol, tobacco, and illicit drugs was associated with the city, age, educational level, school failure, and relationship with parents ($p < 0.05$). *Conclusions*: Substance abuse among adolescents in our sample seems to follow the recent global trend towards the equalization of drug use between genders. This result should be taken into account by public health professionals in developing policies for this problem.

Corresponding author: André Malbergier; Rua Dr. Ovídio Pires de Campos, 785; 05403-010 São Paulo, SP, Brazil; Phone: (+55 11) 3069-7891, Fax: (+55 11) 3069-7892; E-mail: andre.malbergier@hcnet.usp.br

1516-4446 - ©2012 Elsevier Editora Ltda. All rights reserved.

DESCRITORES:
Adolescentes;
Gênero;
Abuso de álcool;
Transtornos por uso de substâncias psicoativas;
Epidemiologia.

A paridade de gêneros e o uso de drogas: as meninas estão alcançando os meninos?

Resumo
Objetivo: Avaliar as associações entre gênero e uso de álcool, tabaco e outras drogas em adolescentes de 10 a 18 anos dos municípios de Jacareí e Diadema (São Paulo, Brasil). *Métodos*: O *Drug Use Screening Inventory* (DUSI) foi respondido por 971 adolescentes. *Resultados*: Na nossa amostra, 55% eram do sexo masculino, 33,8% relataram ter feito uso de bebidas alcoólicas no último mês, 13,5% de cigarro e 6,4% de drogas ilícitas. Não foi encontrada diferença significativa quanto ao uso de álcool, tabaco e drogas ilícitas entre os gêneros em nenhuma das análises ($p > 0,05$). O uso de álcool, tabaco e drogas ilícitas foi associado a cidade, idade, grau de escolaridade, repetência escolar, e relacionamento com os pais ($p < 0,05$). *Conclusões*: O consumo entre os adolescentes nesta amostra parece acompanhar recente tendência mundial quanto à equiparação do uso de drogas entre os gêneros. Este resultado deve ser levado em conta pelos profissionais de saúde pública na elaboração de políticas para o problema.

Introduction

The consumption of psychoactive substances is a common behavior in many countries and their use is starting at ever-earlier ages.[1] Male adolescents had been linked to higher frequency and quantity of alcohol and other drug use and to more drinking-related problems than female adolescents.[2,3] A study of Brazilian elementary and high school students showed that alcohol and illicit drug use during lifetime, in the past year, and in the previous month was more frequent and heavier among males than females.[4]

Recently, some studies are showing a change in this pattern. A nationwide study in the United States aimed at investigating whether there was a consistent evidence of a birth cohort effect on gender differences in the prevalence of DSM-IV alcohol abuse and dependence found a decreasing gender difference in four types of drinking behavior: lifetime largest drinks, frequent binge drinking, alcohol abuse, and alcohol dependence.[5] Also in Brazil, some studies with high school and university students have shown that the consumption of alcohol and tobacco by adolescents and young adults (15 to 26 years) was higher among females. However, males still have heavier consumption of these substances and also consume more illegal drugs than females.[6,7]

The parity of substance use between the two genders may be occurring due to changes in girls' social behavior. Factors related to changes in the performance of gender roles, family structures, women's struggle for space in the job market, stress, excessive activity, anxiety, and difficulty coping with problems may be contributing to increased prevalence of alcohol and other drugs among females.[8]

Substance consumption patterns, gender roles, and cultural norms may vary along time and among different countries. This fact points towards the need to conduct studies on the consumption of alcohol, drugs, and tobacco among adolescents in different countries and settings. This study intended to investigate the associations of gender and other sociodemographic variables and the use of alcohol, tobacco, and other drugs among adolescents aged 10 to 18 years in two municipalities of Jacareí and Diadema, São Paulo State, Brazil.

Method

This study evaluated the use of alcohol, tobacco, and other drugs and its relationship with sociodemographic variables, especially gender, among adolescents who participated in the Family School Program. This program is an initiative of the State Department of Education (SDE) in cooperation with the United Nations Educational, Scientific and Cultural Organization (UNESCO) and consists of using the physical space of state public schools during weekends with the objective of attracting young people and their families to participate in activities directed towards socioeducational actions.

This research was carried out from 2006 to 2007 in 50 public state schools in the municipalities of Jacareí and Diadema, São Paulo State, Brazil. The project was advertised by posters in the schools containing information about the research and how to participate. To stimulate participation, educators spoke about the study during the scheduled activities in the school, asking the adolescents to divulge the research to their communities.

After the disclosure period, the adolescents who were at school during the weekends participating in the sociocultural activities were approached and invited to participate in the study.

Adolescents gave their names and some residential data to the coordinator who handed them the consent form. Each adolescent took it to his/her parents and/or other responsible adult and handed it back to the research assistant before answering the questionnaire. All subjects and their responsible adults signed a free and informed consent form. Therefore, it was ensured that participation was voluntary and confidential, and that ethical standards for research on human beings were complied with. This study was approved by the Ethics Committee of Hospital das Clínicas, School of Medicine of the Universidade de São Paulo (protocol number: 425/06).

The Portuguese translated and validated version of the Drug Use Screening Inventory (DUSI)[9,10,11] was used to assess substance use and related problems. The DUSI is a self-administered questionnaire that evaluates alcohol and other drug consumption in the prior month. For this analysis, only the area "substance use" (Area 1) of DUSI was used. The instrument categorizes the consumption as: no use, 1 or 2 times; 3 to 9 times; 10 to 20 times; and more than 20 times in the last month.

The initial goal was to include 1,000 adolescents, e.g., 20 from each school. However, due to refusals (23) and research deadline, 971 adolescents were assessed. Fifty five percent (529) of the sample were males and the age ranged from 10 to 18 years old. Nine adolescents did not answer the question regarding gender. Unanswered questions were considered missing data. The valid cases for each analysis are shown in Tables 1, 2, 3.

Statistical analysis

Initially, the sample was described according to sociodemographic characteristics as the city (Jacareí or Diadema), gender, age, schooling level, grade failure, people with whom they lived, having friends who use a substance, and evaluation of relationships with parents or the adults with whom they lived. These variables are shown in absolute (n) and relative (%) frequencies.

The adolescents' evaluation of the relationships with their parents or adults with whom they live were categorized as "good" or "not good" (average/bad).

The use of alcohol, amphetamines, ecstasy, cocaine, cannabis, hallucinogens, tranquilizers and/or anxiolytics, steroids, inhalants and/or solvents and tobacco was categorized as: no use, 1 or 2 times; 3 to 9 times; 10 to 20 times; and more than 20 times in the last month. Substances other than alcohol and tobacco were grouped as illicit drugs when indicated. Univariate and multiple logistic regression analyses were used to compare the consumption of psychoactive substances between genders. The possible associations between the use of alcohol and other drugs and sociodemographics were also analyzed.

The chi-square test (χ^2)/Fisher's test were used for univariate analysis (Monte Carlo correction was used when at least one variable scored zero). Multiple logistic regression analyses utilized dichotomous substance use (yes or no) as a dependent variable and sociodemographic data as independent variables. The interaction effect showed whether the association between dependent and independent variables was influenced by gender. The odds ratio was calculated with the respective 95% confidence intervals. The significance level was set at 5% in all cases. For the statistical analyses, the Statistical Package for the Social Sciences 15.0 (SPSS Inc., Chicago, Illinois, USA) was used.

Results

Sample characteristics

Table 1 presents sociodemographic data of the sample. The students' mean age was 13.5 years (SD = 1.44). Almost 20% had failed a grade at least once. Forty percent of the adolescents reported having friends who use at least one psychoactive substance.

One-quarter of the male adolescents (24.3%) had failed a grade compared to 13.2% of the females (OR = 2.1). Males were more frequent in the sample of Diadema. There was no difference between genders related to schooling level, age, people with whom they

Table 1 Sociodemographic description

	Male (n = 529)	Female (n = 433)	p
City* (962)**			
Diadema	286 (54.1%)	201 (46.4%)	
Jacareí	243 (45.9%)	232 (53.6%)	0.020
Medium age* (SD)**	13.5 (1.4)	13.5 (1.4)	0.446
Schooling level* (962)**			
Elementary	458 (86.8%)	363 (83.8%)	0.235
High	71 (13.4%)	70 (16.2%)	
Grade failure* (953)**			
Yes	127 (24.3%)	57 (13.2%)	< 0.001
No	395 (75.7%)	374 (86.8%)	
With whom the student lived* (942)**			
Parents	461 (89.5%)	382 (89.5%)	1.000
Other family members	54 (10.5%)	45 (10.5%)	
Assessment of relationships with parents* (946)**			
Good	450 (87.2%)	363 (84.4%)	0.224
Bad/regular	66 (12.8%)	67 (15.6%)	
Friend who use any substance* (945)**			
No	302 (58.6%)	254 (59.2%)	
Yes	214 (41.4%)	175 (40.8%)	0.842

* Fisher's exact test; ** valid cases; *** T test.

lived, having friends who use any substance, and evaluation of the relationships with the parents or the people who they lived with (p > 0.05).

Substance use in the sample

Table 2 shows the results of multiple logistic regression analyses of the associations between sociodemographic variables and substance use. The variables included in the model were: city, gender, age, the people with whom the adolescent lived, grade failure, relationship with parents, schooling level, and friends who use any substance. Dependent variables were alcohol, tobacco and illicit drug consumption (analyzed separately). The consumption of alcohol, tobacco and illicit drugs was associated with city, age, grade failure (except for alcohol), and a not good relationship with parents. The schooling level was associated only with alcohol consumption. Gender was not associated with any substance use.

As expected, older adolescents (13-15 and 16-18) tended to consume more alcohol, tobacco, and illicit drugs than younger ones.

Adolescents who failed a grade reported more consumption of alcohol (p = 0.020), tobacco (p < 0.001), amphetamines (p = 0.013), cocaine (p = 0.046), cannabis (p < 0.001), inhalants (p = 0.05), and illicit drug as a group (p < 0.001) than adolescents who did not fail. Those who classified their family relationship as not good were more likely to consume alcohol (p < 0.001), tobacco (p < 0.001), amphetamines (p = 0.010), ecstasy (p = 0.05), cocaine (p = 0.015), cannabis (p = 0.049), inhalants (p = 0.07), and illicit drugs (p = 0.001) than those whose relationships were classified as good. The variables "people with whom the adolescents lived" and "having friends who use drugs" were not associated with alcohol, tobacco, and illicit drug consumption (p > 0.05).

Table 2 Multiple logistic regression analyses of substance consumption in the sample*

	OR***	CI****		p
		Lower	Upper	
Alcohol (892)**				
City	1.463	1.093	2.786	0.020
Bad relationships with parents	2.478	1.668	3.684	0.000
Schooling level (High school)	2.061	1.326	3.202	0.001
Age	0.802	0.709	0.906	0.000
Tobacco (890)**				
City	2.216	1.463	3.357	0.000
Grade failure	2.685	1.754	4.110	0.000
Bad relationships with parents	2.793	1.754	4.447	0.000
Illicit drugs (896)**				
City	2.402	1.339	4.308	0.003
Grade failure	2.862	1.636	5.006	0.000
Bad relationships with parents	2.827	1.546	5.168	0.001
Age	0.798	0.641	0.994	0.045

* The variables included in the model were: city, gender, age, the people with whom the adolescent lived, grade failure, relationship with parents, schooling level, and friends who use any substance; ** valid cases; *** Odds Ratio; **** 95% Confidence Interval.

Gender and substance use

Among the adolescents, 375 (38.6%) had used a psychoactive substance during the month before the assessment. Alcohol was the most consumed drug (34.8%; n = 332), followed by tobacco (14.0%; n = 133) and cannabis (3.0%; n = 29). The use of illicit drugs, including cannabis, was reported by 6.4% (n = 63) of the adolescents.

The frequency of alcohol and other drug consumption was equal for both genders. The consumption was then categorized as follows: did not consume; consumed 1 to 2 times; consumed 3 to 9 times; consumed 10 to 20 times, and consumed more than 20 times. This categorization was made to evaluate if boys and girls had not only the same frequency but also the same pattern of use. Stratifying by categories, we still did not find any differences between male and female adolescents consumption of alcohol (p = 0.719), tobacco (p = 0.545), and illicit drugs (p = 0.688).

Previous studies found that gender differences could be lower among younger adolescents. To test this statement, we categorized the sample into three groups: children from 10 to 12 years old, adolescents from 13 to 15 years old, and from 16 to 18 years old. Alcohol, tobacco, and illicit drugs use was again not different in boys and girls in the three age intervals (p > 0.05).

Sociodemographic variables and adolescent gender

Table 3 shows multiple logistic regression analyses of substance use and sociodemographic characteristics for each gender. The p value for the interaction effect (p*) is shown in the last column of the table and means that, for a p* < 0.05, the association of sociodemographic variables and substance use is different between genders.

Age and substance use

Male adolescents who were 13 thru 15 and 16 thru 18 years old were more likely to consume alcohol, tobacco and illicit drugs than children from 10 to 12 years old. The same was observed for female adolescents regarding alcohol and illicit drug use. Multiple logistic regression analysis for the interaction effect between genders showed that age is equally a risk factor for using alcohol, tobacco, and illicit drugs among male and female adolescents (p* > 0.05).

Grade failure and substance use

Male adolescents who failed a grade were almost twice more likely to consume alcohol than male adolescents who never failed a grade (OR = 1.925, p = 0.004). This association was not observed among female adolescents. Therefore, gender has an effect on this association (p* = 0.004). Adolescents who reported a grade failure were also more likely to consume tobacco and illicit drugs but these associations were not influenced by gender (p* = 0.976 for tobacco and p* = 0.497 for illicit drugs).

Table 3 Multiple logistic regression analyses of substance use among the participants

	Male				Female				
	Substance use				Substance use				
	Yes	OR	95% CI	p	Yes	OR	95% CI	p	p(*)
ALCOHOL (892)**	n (%)				n (%)				
City									
Diadema	262 (53.7)	1.355	0.913-2.011	0.131	192 (47.5)	1.637	1.050-2.552	0.030	0.533
Jacareí	226 (46.3)				212 (52.5)				
Schooling level									
Elementary school	144 (31.4)	1.528	0.800-2.920	0.199	115 (31.8)	1.934	0.963-3.883	0.064	0.628
High school	32 (55.2)				32 (53.3)				
Grade failure									
No	123 (31.3)	1.925	1.235-2.999	0.004	127 (35.1)	0.575	0.289-1.155	0.120	0.004
Yes	54 (45.4)				20 (33.9)				
Relationship									
Good	149 (33.8)	1.425	0.814-2.495	0.215	103 (29.2)	5.321	2.889-9889	< 0.001	0.002
Regular/ Bad	25 (39.1)				43 (65.2)				
Age	--------	0.797	0.676-0.940	0.007		0.797	0.660-0.964	0.019	0.996
TABACCO (890)**									
City									
Diadema	261 (53.7)	1.898	1.071-3.361	0.028	191 (47.3)	2.630	1.415-4.890	0.002	0.448
Jacareí	225 (46.3)				213 (52.7)				
Grade failure									
No	26 (22)	2.655	1.492-4.724	0.001	45 (12.4)	2.616	1.254-5.458	0.010	0.976
Yes	59 (11.7)				15 (26.8)				
Relationship									
Good	47 (10.7)	2.725	1.371-5.417	0.004	40 (11.3)	3.699	1.910-7.163	< 0.001	0.530
Regular/ Bad	12 (19.7)				20 (31.3)				
Age	---------	0.720	0.575-0.901	0.004		1.086	0.847-1.392	0.516	0.004
ILLICIT DRUGS (896)**									
City									
Diadema	263 (53.6)	1.320	0.632-2.755	0.460	193 (47.7)	7.071	2.244-22.274	0.001	0.016
Jacareí	228 (46.4)				212 (52.3)				
Grade failure									
No	17 (4.3)	3.193	1.543-6.648	0.002	21 (5.7)	2.086	0.641-6.783	0.153	0.497
Yes	17 (13.5)				8 (14.3)				
Relationship									
Good	26 (5.8)	2.358	0.989-5.622	0.053	19 (5.3)	4.354	1.742-10.882	0.002	0.341
Regular/ Bad	8 (12.1)				10 (15.6)				
Age	----------	0.830	0.626-1.100	0.194		0.743	0.518-1.065	0.106	0.636

p(*): interaction effect. Interaction effects were calculated for city, age, with whom the adolescent lived, schooling level, grade failure, relationship with parents, and friends who use any substance; ** valid cases.

Relationship with parents and substance use

Females who reported having a difficult relationship with their parents were more likely to consume alcohol than female adolescents who reported a good relationship (OR = 5.321, p < 0.001). This association was not observed among males (OR = 1.425, p = 0.215; p* = 0.002). In both genders, a difficult relationship with parents was associated with tobacco use (OR = 2.725, p = 0.004 for males and OR = 3.699, p < 0.001 for females, p* = 0.530). Among female adolescents, the likelihood of using illicit drugs was significantly higher for those who have a difficult relationship *versus* those who had a good relationship (OR = 4.354, p = 0.002). Male adolescents who reported not having a good relationship with parents were also marginally more likely to use illicit drugs than those who reported having a good relationship (OR = 2.358, p = 0.053). The analysis of interaction did not show an influence of gender in this association (p* = 0.341).

Friends who use any substance

Having friends who use any substance was not associated with alcohol (p = 0.679; p = 0.924, p* = 0.777), tobacco (p = 0.222; p = 0.075, p* = 0.024), and illicit drug (p = 1, p = 1, p* = 0.922) consumption among females and males, respectively.

Drug consumption in Diadema and Jacareí

Failing grade (p = 0.60), with whom the adolescents live (p = 0.753), relationship with parents (p = 0.643), and adolescents´ mean age (p = 0.329) were not different among the 2 cities.

As shown in Tables 1 to 3, male-female rate and consumption of substances were different among the 2 cities. These differences, as shown in multiple logistic regression analyses, did not influence parity of drug use among boys and girls.

Discussion

The prevalence of alcohol and cannabis use during the month before the assessment in our sample (33.8% and 2.8%, respectively) was lower than among elementary and high school students from a Brazilian national sample (44.3% and 3.2%, respectively). The opposite was observed for tobacco use (13.5% vs. 9.9%). However, these comparisons must be made carefully due to the different collection time, the convenience sample enrolled here, and the inclusion of students from private schools in the national Brazilian study.[4]

In Brazil, the consumption of drugs other than alcohol and tobacco has been greater among male than among female students.[4,12] More recently, Horta et al.[6] found that girls consumed more tobacco than boys in the month preceding the interview, but boys consumed more alcohol and other illicit drugs. Pinsky et al.[13] also showed that male adolescents tend to drink larger amounts of alcohol than females in a sample of 661 adolescents in Brazil.

In the present study, there was no difference in alcohol, tobacco, and illicit drug use between the two genders. The pattern of consumption (did not consume; consumed 1 to 2 times; consumed 3 to 9 times; consumed 10 to 20 times, and consumed more than 20 times) was also equal among the two genders. In multiple logistic regression analyses, gender was again not associated with any substance use. All this analysis reinforces the fact that girls, in this sample, are using licit and illicit substances as frequently as boys. This is the first time that these results are observed in Brazil, which is in line with a possible worldwide trend towards equality in the pattern of alcohol and other drug use among adolescents.

Similar patterns were found in a survey in the United States in 2006. The National Survey on Drug Use and Health[14] showed that, among youths aged 12 to 17, the rate of current illicit drug use was similar for boys and girls. Male and female adolescents had similar rates of current cannabis use and non medical use of prescription-type psychotropic. Among youths aged 12 to 17, the percentage of males who were current drinkers was similar to the rate for females. The rate of substance dependence or abuse among males was also similar to the rate among females (8.0% *vs.* 8.1%, respectively).

The rise in girls' rates of substance consumption may lead to the rethinking of drug prevention programs. Issues related to girl's consumption may be different from boys' and must be included in the programs. Sexual initiation, risky sexual behavior, making plans to commit suicide and actual suicide attempts have been associated with substance use experimentation and smoking only for girls.[15-17] Having norm-breaking friends seems to predict both alcohol and cannabis use among girls. Among boys, having norm-breaking friends was only predictive of alcohol use and only among the young boys.[18]

Other cultural and emotional issues are different among boys and girls and may be also reached by the prevention programs. Cultural norms and gender roles are changing for girls and women. Though some girls gained opportunities and freedoms, others became more vulnerable to stressful economic circumstances brought about by changes in community social organization and family structure. Females tend to internalize stress, hurting themselves through problematic substance use.[19]

Besides gender, some studies show that psychoactive substance consumption among adolescents has been also associated with specific patterns of use, age, family relationship, other risky behaviors (unsafe sex and delinquency), schooling level, and failing grades.[20-23]

In the present study, the consumption of alcohol, tobacco and other drugs was associated with city, age, schooling level, failing grades, and their evaluation of the relationship with parents in both genders. Older adolescents, adolescents who failed a grade and those who evaluated their family relationship as not good were more likely to consume alcohol, tobacco, and illicit drugs.

However, these associations varied among genders. For girls, a not good relationship with parents was associated with consumption of alcohol, tobacco and illicit drugs. For boys, this association was seen only for tobacco (marginally for illicit drugs).

The quality of the relationship with parents has been associated with psychoactive substance use among adolescents in other studies. The adolescents who evaluated their relationships with their family as bad or very bad tended to consume more alcohol and tobacco than those who have a positive opinion (good and/or very good).[24,25] Similarly to our study, an American survey with 2,733 adolescents showed that family problems were associated with cigarette use for girls but not for boys. Although the problems predicted both boys' and girls' alcohol use, the association was stronger for girls.[26] Therefore, family issues seem to have a stronger association with females' use of drug in our study and in the American one cited above.

On the other hand, failing a grade showed a stronger association with boy's substance use. In the present study, failing a grade was associated with consumption of alcohol, tobacco, and illicit drugs among boys. Among females, it was associated with tobacco and illicit drugs. The interaction analysis showed that the association was stronger for boys.

Failing a grade is a common variable associated with drug use. However, most of the studies do not analyze it separately for gender as the present study did. Souza et al.[27] and Bahls et al.[28] observed that students who had already failed a grade tended to consume more alcohol and other drugs than those who did not.

Conclusions

In conclusion, considering drug use as a male behavior seems to be improper in a context of increasing female consumption. However, drug consumption among females may have

some specific characteristics. Substance use seems to have a stronger association with family problems among girls and a stronger association with defiant behavior or school problems (failing a grade) among boys. These results, if replicated in national studies, should generate new perspectives in preventive programs in Brazil.

Study limitations

The DUSI only evaluates the substance use in the 30 days prior to the assessment. However, evaluating the behavior of the last month decreases memory bias and allows assessment of current substance use.

Sampling (convenience sample: only 50 schools in 2 municipalities in São Paulo State were assessed) and self-selection (adolescents had the control over whether to participate) biases can not be ruled out. This fact may impair generalization of these results to all the Brazilian adolescent population. However, the consistency of the findings (similar rates of substance use for boys and girls were found in all different analysis in this study) and the large sample are strengths of this study. Our results, the first in our country that showed a similar pattern of drug use for male and female adolescents, should stimulate other national population-based studies.

Acknowledgements

We acknowledge the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the State Department of Education, Government of the State of São Paulo.

Disclosures

Andre Malbergier
Employment: *Instituto de Pesquisa da Faculdade de Medicina da Universidade de Saõ Paulo (IPq-FMUSP), Brazil*. **Research grant:** *Secretaria Nacional Antidrogas (SENAD), Brazil*. **Other research grant or medical continuous education:** *Pfizer*.

Luciana R.D. Cardoso
Employment: *Instituto de Pesquisa da Faculdade de Medicina da Universidade de Saõ Paulo (IPq-FMUSP), Brazil*. **Research grant:** *Secretaria Nacional Antidrogas (SENAD), Brazil*.

Ricardo A. Amaral
Employment: *Instituto de Pesquisa da Faculdade de Medicina da Universidade de Saõ Paulo (IPq-FMUSP), Brazil*. **Research grant:** *Secretaria Nacional Antidrogas (SENAD), Brazil*.

Verena C.V. Santos
Employment: *Instituto de Pesquisa da Faculdade de Medicina da Universidade de Saõ Paulo (IPq-FMUSP), Brazil*. **Research grant:** *Secretaria Nacional Antidrogas (SENAD), Brazil*.

* Modest
** Significant
*** Significant: Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.

Financial Support from the *Secretaria Nacional Antidrogas* (National Secretariat for Drug Policy), Institutional Security Cabinet, Presidency of the Federative Republic of Brazil (SENAD) (004/2006).

References

1. Donovan JE. Adolescent Alcohol Initiation: A Review of Psychosocial Risk Factors. J Adolesc Health. 2004; 35:529-37.
2. Harrell ZAT, Karim NM. Is gender relevant only for problem alcohol behaviors? An examination of correlates of alcohol use among college students. Addict Behav. 2008; 33:359–365.
3. Poulin C, Hand D, Boudreau B, Santor D. Gender differences in the association between substance use and elevated depressive symptoms in a general adolescent population. Addiction. 2005; 100:525–535.
4. CEBRID/UNIFESP - Centro Brasileiro de Informações Sobre Drogas Psicotrópicas. V Levantamento Nacional Sobre o Consumo de Drogas Psicotrópicas entre Estudantes do Ensino Fundamental e Médio da Rede Pública de Ensino nas 27 Capitais Brasileiras. 2004. Retrieved on September, 20, 2010. Availabe from: http:// www.unifesp.br/dpsicobio/cebrid
5. Keyes KM; Grant BF, Hasin, DS. Evidence for a closing gender gap in alcohol use, abuse, and dependence in the United States population. Drug Alcohol Depend. 2008; 93:21-29.
6. Horta RL, Horta BL, Pinheiro RT, Morales B, Strey MN. Tobacco, alcohol, and drug use by teenagers in Pelotas, Rio Grande do Sul State, Brazil: a gender approach. Cad Saúde Pública. 2007; 23(4):775-783.
7. Pillon SC, O'brien BC, Ketty AP. The relationship between drugs use and risk behaviors in Brazilian university students. Rev Latino-am Enfermagem. 2005; 13(2):1169-1176.
8. Schinke SP, Fang L, Cole KC. Substance use among early adolescent girls: risk and protective factors. J Adolesc Health. 2008; 43(2):191-4.
9. De Micheli D, Formigoni MLOS. Screening of drug use in a teenage Brazilian sample using the Drug Use Screening Inventory (DUSI). Addict Behav. 2000; 25:683-91.
10. De Micheli D, Formigoni MLOS. Psychometrics properties of the Brazilian version of DUSI (Drug Use Screening Inventory). Alcohol Clinic Experiment Research. 2002; 26:1523-8.
11. De Micheli D, Fisberg M, Formigoni MLOS. Estudo da efetividade da intervenção breve para o estudo de álcool e outras drogas em adolescentes atendidos num serviço de assistência primária á saúde. RAMB. 2004; 50(3):305-313.
12. Guimarães JL, Kappann JI, Cruz R, Godinho PH, Tosta Junior LA. Psychoactive drug use in school age adolescents, Brazil. Rev Saúde Pública. 2004; 38(1):130-2.
13. Pinsky I, Sanches M, Zaleski M, Laranjeira R, Caetano R. Patterns of alcohol use among Brazilian adolescents. Rev Bras Psiquiatr. 2010; 32(3):242-9.
14. National Survey on Drug Use and Health. Results from the 2006 National Survey on Drug Use and Health: National Findings. Department of Health and Human Services. Substance Abuse and Mental Health Services Administration Office of Applied Studies September, 2007.
15. Bojorquez I, Fernandez-Varela H, Gorab A, Solis C. Factors associtated with illegal substance use initiation among young students in Mexico City. Drug Alcohol Rev 2010; 29(3):286-292.
16. Epstein JA, Spirito A. Gender-specific risk factors for suicidality among high school students. Arch Suicide Res. 2010; 14(3):193-205.
17. Champion HL, Foley KL, DuRant RH, Hensberry R, Altman D, Wolfson M. Adolescent sexual victimization, use of alcohol and other substances, and other health risk behaviors. J Adolesc Health. 2004;35:321–8.
18. Bränström R, Sjöström E, Andréasson S. Individual, group and community risk and protective factors for alcohol and drug use among Swedish adolescents. Eur J Public Health 2007; 18(1):12-8.
19. Broidy L, Agnew R. Gender and crime: A general strain theory perspective. J Res Crime Delinq. 1997: 34:275–306.
20. Lev-Wiesel R, Shuval R. Perceived causal and treatment factors related to substance abuse: gender differences. Eur. Addict. Res. 2006; 12:109-12.
21. Surís JC, Akre C, Berchtold A, Jeannin A, Michaud PA. Some go without a cigarette: characteristics of cannabis users who have never smoked tobacco. Arch Pediatr Adolesc Med. 2007; 161(11):1042-7.

22. Marques ACPR, Cruz MS. O adolescente e o uso de drogas. Rev. Bras. Psiquiatr. 2000; 22(suppl2):32-6.
23. Silva VA, Aguiar AS, Feliz F, Rebello GP, Andrade RC, Mattos HF. Estudo brasileiro sobre abuso de substâncias por adolescentes: fatores associados e adesão ao tratamento. Rev Bras Psiquiatr. 2003; 25(3):133-8.
24. Galduróz JC, Sanchez ZVDM, Opaleye ES, Noto AR, Fonseca AM, Gomes PLS, Carlini EA. Fatores associados ao uso pesado de álcool entre estudantes das capitais brasileiras. Rev Saúde Pública. 2010; 44(2):267-73.
25. Tavares BF, Béria JU, Lima MS. Fatores associados ao uso de drogas entre adolescentes escolares. Rev Saúde Pública. 2004; 38(6):787-96.
26. Parsai M, Voisine S, Marsiglia FF, Kulis S, Nieri T. The protective and risk effects of parents and peers on substance use, attitudes and behaviors of Mexican and Mexican American female and male adolescents. Youth Soc. 2009; 40(3):353-76.
27. Souza DPO, Martins DTO. O perfil epidemiológico do uso de drogas entre estudantes de 1º e 2º graus da rede estadual de ensino de Cuiabá, Brasil. Cad Saúde Pública. 1998; 14(2):391-400.
28. Bahls FRC, Ingbermann YK. Desenvolvimento escolar e abuso de drogas na adolescência / School development and adolescents' drug abuse. Estudos de psicologia (Campinas). 2005; 22(4):395-402.