

# Factors associated with drug use among adolescent students in southern Brazil

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## Keywords

Adolescent. Substance-related disorders, epidemiology. Students. Risk factors. Interviews.

## Abstract

### Objective

To assess factors associated with drug use among adolescent students from schools providing secondary education.

### Methods

A cross-sectional study was carried out in Pelotas, Southern Brazil, in 1998. An anonymous, self-administered questionnaire was answered by a proportional sample of 10-19-year-old students, enrolled in primary (5<sup>th</sup> grade and further) and secondary classes in all public and private schools of the urban area which providing secondary education. Schools were visited up to three times in order to reach absent students. Results were expressed as prevalence ratios (PR).

### Results

2,410 students were interviewed, losses amounting to 8%. The prevalence of drug use (except alcohol and tobacco) in the last year was 17.1%. After confounder control, associations remained between drug use and parents' divorce (PR=1.46; 95% CI: 1.18-1.80), poor relationship with father (PR=1.67; 95% CI: 1.17-2.38), poor relationship with mother (PR=2.71; 95% CI: 1.64-4.48), open-minded father (PR=1.36; 95% CI: 1.08-1.72), drug user in household (PR=1.61; 95% CI: 1.17-2.18), abuse (PR=1.62; 95% CI: 1.27-2.07), having been mugged or robbed in the previous year (PR=1.38; 95% CI: 1.09-1.76) and absence of religious practice (PR=1.31; 95% CI: 1.07-1.59).

### Conclusions

The study suggests associations between several family characteristics and drug use by adolescents, providing useful information for a complete understanding of this problem in Brazil.

## INTRODUCTION

The history of drug production and use is part of the history of humanity itself. In the last decades, however, due to its increased frequency, drug use has become a worldwide public health problem, awakening the interest of researchers.

In Brazil, comparisons between studies conducted prior to 1986 were difficult because of differences in the methodologies employed, poorly defined sampling

strategies, and sometimes questionable statistical analyses.<sup>4</sup> In 1986, a new generation of surveys began, which were based on questionnaire elaborated by the World Health Organization (WHO) and adapted for Brazil. This questionnaire allowed for the standardization of studies and for the comparison of the results obtained.<sup>5</sup>

Several studies using anonymous self-administered questionnaires have been carried out with the objective of studying the prevalence of drug use.<sup>3,8,10,11,17,18</sup> The Brazilian Center for Information on Psychotropic

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Drugs (*Centro Brasileiro de Informações sobre Drogas Psicotrópicas* – CEBRID) carried out four nationwide surveys (1987, 1989, 1993, and 1997) among adolescent students in 10 Brazilian capitals.<sup>8</sup> Data from these surveys indicate that adolescence is a time of exposure and vulnerability to substance use, and that experimenting drugs is a frequent phenomenon. For some adolescents, the improper use of substances will be only part of his or her development, ceasing as the adolescent matures. Others, however, will develop problematic usage, which may interrupt the normal process of adolescence and bring about severe consequences to the lives of these individuals.<sup>15</sup>

Few studies have been conducted addressing the risk factors for drug use among Brazilian adolescents, and most of the information available in this regard comes from studies carried out in other countries. In addition to sociodemographic factors (sex, age, social class), studies indicate associations between drug use and parental or familiar involvement with alcohol or drugs, not being raised by both parents, low perception of maternal and paternal support, absence of religious practice, and lesser frequency of sports practice.<sup>7,12,13,16</sup> Protective factors include trust in parents and peers, religious involvement (participation in youth groups, trust in religious advisers, belief in God, and ability to pray), educational expectations (being considered as intelligent, being among the best students in class), and having less conflicts and divorce attempts in the family.<sup>14,16</sup>

The Brazilian literature highlights especially the importance of sociodemographic factors, which are the subject of most studies.<sup>10,11,17,18</sup> In addition to these factors, Carvalho et al.<sup>6</sup> in a national sample of students, identified domestic violence and the quality of family relationships as important factors related to drug use, while Baus et al.<sup>3</sup> found an association between drug use and parents' divorce and not living with parents.

The present study was aimed at investigating factors associated with drug use in a representative sample of adolescents attending schools providing the Brazilian *ensino médio* (9<sup>th</sup>-11<sup>th</sup> grades).

## METHODS

This cross-sectional survey was carried out between August and November 1998. Pelotas, the city in which the study took place, is located in the Southern Region of Brazil, at about 240 km from state capital Porto Alegre. According to the 2000 census, conducted by the *Instituto Brasileiro de Geografia e Estatística* (Brazilian Institute for Geography and Statistics – IBGE), Pelotas has 301,081 inhabitants.

Sampling was systematic, stratified (public and private schools, *ensino fundamental* (1<sup>st</sup>-8<sup>th</sup> grades) and *ensino médio*, and day and night shifts), and with a probability proportional to the size (number of students) of all schools in the urban area of the city with *ensino médio*. The sampling universe was composed of 24 schools, of which 12 were run by the state government, 9 were private, two were federal, and one was municipal, and comprised 27,990 students enrolled between 5<sup>th</sup> and 11<sup>th</sup> grades, which correspond approximately to the 10-19 years age group.

Sample size was calculated using Epi Info software, v. 6.02, assuming a 20% prevalence of *use of drugs in lifetime* in unexposed individuals, a 95% confidence level, 80% statistical power, a relative risk of 2.0, and a prevalence of exposure – psychiatric morbidity and stressful events – of 3%. A further 30% was added for confounder control and 10% for losses, amounting to a total 1,960 individuals. Estimating the average class size at 20 students, 100 classes were randomly selected, amounting to an estimated total of 2,000 students. We employed an anonymous self-administered questionnaire, comprising 128 questions, most of which were pre-coded. For data on drug use, we used the instrument model proposed by WHO (1980) and adapted to Brazil by Carlini-Cotrim & Barbosa.<sup>5</sup> Questionnaires were administered collectively, in class, without the presence of the teacher, and were placed into opaque envelopes. In order to administer the questionnaire to students absent during the first visit, interviewers returned to the schools up to three subsequent times. The envelopes containing the questionnaires of each class were taken to the schools during the return visits, so that further questionnaires could be placed amidst the previous ones, ensuring anonymity.

The dependent variable was the pattern of non-medical use of psychotropic drugs (solvents, marijuana, cocaine, anxiolytics, amphetamines, anticholinergics, barbiturics, opioids, hallucinogens, and orexins, among others). For this analysis we employed the WHO definition of *use in the last year*: used at least once in the twelve-month period preceding the survey.

Independent variables comprised characteristics related to social class (determined by the criteria of the *Associação Brasileira dos Institutos de Pesquisa de Mercado* – Brazilian Association of Market Research Institutes),<sup>9</sup> reformulated in 1991, which considers the possession of consumer goods and the level of schooling of the head of the family, demography (age and sex), environment (living conditions, sanitation, and crowding), family (parents' marital situation, relationship between parents, and between parents and child), religious practice (belief in God, habit of praying when

facing difficulties, regular participation in youth groups or other religious activity in the last year), sports practice (physical activity in the last year, frequency of physical activity), and stressful events (in lifetime: sexual abuse, mistreatment, presence at home of person with chronic disease and of alcohol or drug user; in the twelve months prior to the survey: parents' divorce, death in the family or of other significant person, unemployment of the head of the family, mugging or theft, change of neighborhood or city).

Data was collected between August and November 1998 by a team of 21 Medicine, Nursing, and Social Science students.

Statistical analysis was performed using SPSS v. 8.0, Epi Info v. 6.02, and Stata Intercooled v. 6.0 software. Considering that the students of larger classes had greater chance of being included in the sample, data were weighted according to the inverse of this probability. Moreover, considering the possibility of an identity of behavior between students of a same class, the effect of the design was taken into consideration by identifying the variable *class* as the sampling unit. This was accomplished using the *survey PSU* (Primary Sample Unit) option, available in the Stata package.

The estimates obtained with bivariate analysis were expressed as prevalence ratios (PRs) and statistical significance was verified using chi-squared or linear-trend tests (for ordinal variables).

Since in cross-sectional studies with highly prevalent outcomes the odds ratio tends to overestimate the PR, we used Poisson regression with a robust variance estimate in the multivariate analysis in order to estimate PRs directly, as suggested by Barros & Hirataka.<sup>2</sup> Variables associated with the outcome with a significance level  $\geq 0.2$  were included in the model. Variable inclusion was done by levels, according to a previously established conceptual model (Figure). Variables associated with the outcome with a significance level = 0.05 (measured by Wald's test) were kept in the model.

## RESULTS

Of the total 3,080 students registered in the selected classes, 461 were outside the age group targeted by the study (10-19 years), so that 2,619 students were included. Of these, 14 (0.5%) refused to participate and 168 (6.4%) were absent during all visits. We administered 2,437 questionnaires, of which 27 (1.0%) were annulled (11 due to positive answer to a question regarding a fictitious drug and 16 for hav-

ing more than 4 questions annulled or less than 50% of the questionnaire filled), yielding a total 2,410 valid questionnaires. Final loss rate was 8.0%.

Sample distribution in terms of sociodemographic variables shows that the 14-16 years age group concentrated the greatest number of subjects (44.6%), followed by the 17-19 years group (32.8%). A little over half the sample was of females (56.4%). Most subjects were single (98.0%) and had white skin (81.9%). 55.4% of students attended *ensino médio*, 79.0% attended public schools, and 82.5% attended school during the day. Regarding social class, 73.2% of subjects belonged to classes B and C, the lowest prevalence being of found for class E (2,9%).

The prevalence of drug use (excluding alcohol and tobacco), in the last year was 17.1% in the subjects studied.

Table 1 shows the results of the crude analysis of drug use according to sociodemographic characteristics, physical activity, and religious practice. There was a linear association between drug use and social class, with prevalence ratios decreasing from the higher to the lower classes. Subjects in class D and E reported 50% less drug use when compared to those in class A ( $PR_{\text{class D}}=0.53$ ; 95% CI: 0.32-0.88;  $PR_{\text{class E}}=0.45$ ; 95% CI: 0.18-1.08). There was a linear increase in prevalence with age, reported use among subjects in the 17-19 years group being more than twofold that of the 10-13 years group ( $PR=2.64$ ; 95% CI: 1.83-3.91). There was no significant difference in drug consumption between girls and boys ( $RP=0.94$ ; 95% CI: 0.79-1.13).

Still in Table 1, we can see the absence of an association between drug use and practice or frequency of physical activity in the last year. As to religion, we can see that, although no single type of religious belief showed association with drug use, religious prac-

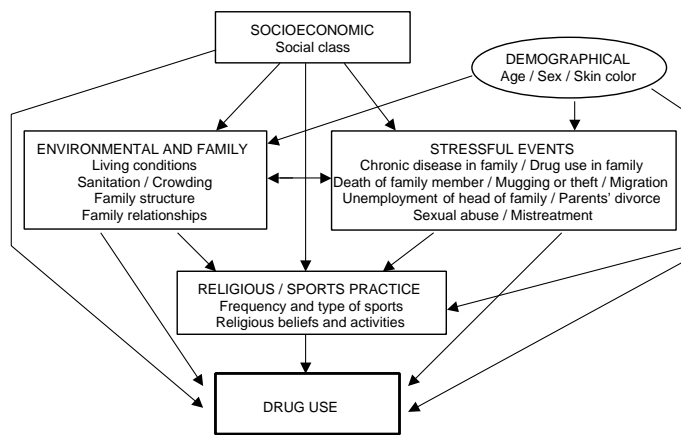


Figure - Conceptual model for the analysis.

tice in general was significantly associated with the outcome, subjects not reporting religious practice showing a roughly 40% greater prevalence of drug use than those who did practice religion (PR=1.44; 95%CI: 1.18-1.75). Likewise, those who reported not believing in God showed a 60% greater prevalence of drug use than believers (PR=1.63; 95%CI: 1.06-2.52). Participation in youth groups and the habit of praying were not associated with drug use.

Table 2 shows the results of the bivariate analysis of drug use in relation to family relationship and environmental factors. Subjects whose parents were divorced reported more than 50% greater use than those whose parents lived together (PR=1.55; 95%CI: 1.26-1.90). Subjects whose parents had never lived together, or with one or both parents dead showed no significant difference when compared to those whose parents lived together. Subjects that reported a poor or very poor relationship with father or mother showed a sig-

nificantly higher drug consumption than those that reported a good or excellent relationship with father (PR=2.04; 95%CI: 1.44-2.88) or mother (PR=2.77; 95%CI: 1.90-4.03). Likewise, greater drug use was reported by subjects who considered their fathers or mothers as 'open-minded' (RP<sub>father</sub>=1.34; 95%CI: 1.05-1.70; PR<sub>mother</sub>=1.26; 95%CI: 1.02-1.57) when compared to those who considered their father or mother as 'authoritarian'. As to the relationship between parents, drug use was reported more frequently among students whose parents had an average (PR=1.34; 95%CI: 1.04-1.74) or poor or very poor relationship (PR=1.61; 95%CI: 1.13-2.28), when compared to those whose parents maintained a good or excellent relationship. Concerning environmental factors, drug use was related to type of residence, being 30% lower among subjects living in houses (of any type) than among those living in apartments. Likewise, drug use was inversely related to crowding in the household (number of individuals per bedroom), being roughly 50% lower

**Table 1** - Use of drugs in the last year (excluding alcohol and tobacco) by adolescent students of public and private schools, according to sociodemographic characteristics, physical activity, and religious practice. Pelotas, Brazil, 1998.

Characteristics	N	%	Drug use in last year* %	PR (95%CI)*	p-value
Social class**					0.000***
A	178	8.8	21.4	1.00	
B	803	39.8	21.2	0.99 (0.70-1.41)	
C	673	33.4	17.6	0.82 (0.55-1.22)	
D	304	15.1	11.4	0.53 (0.32-0.88)	
E	58	2.9	9.6	0.45 (0.18-1.08)	
Sex				0.529	
Male	1,044	43.6	17.8	1.00	
Female	1,353	56.4	16.8	0.94 (0.79-1.13)	
Age group					0.000***
10-13	539	22.5	7.7	1.00	
14-16	1,068	44.6	19.4	2.52 (1.76-3.62)	
17-19	786	32.8	20.3	2.64 (1.83-3.81)	
Regular physical activity					0.268
Yes	1,753	73.1	17.7	1.00	
No	646	26.9	15.6	0.88	(0.70-1.10)
Frequency of physical activity in last year					0.784
No physical activity	283	11.9	18.8	1.00	
Up to 1x/week	422	17.7	17.1	0.91	(0.67-1.23)
2 a 3x/week	1,135	47.6	16.7	0.89	(0.68-1.16)
4+ x/week	543	22.8	17.9	0.95	(0.70-1.29)
Religion					0.541
None	414	18.1	18.5	1.00	
Catholic	1,230	53.7	16.5	0.89	(0.68-1.18)
Evangelical	261	11.4	15.1	0.82	(0.56-1.20)
Spiritualist	216	9.4	22.2	1.20	(0.88-1.63)
Afro-Brazilian	72	3.2	17.3	0.94	(0.54-1.62)
Protestant	31	1.4	18.5	1.00	(0.50-2.00)
Other	65	2.8	17.3	0.93	(0.46-1.88)
Religious practice					0.000
Yes	1,023	45.1	14.0	1.00	
No	1,247	54.9	20.1	1.44	(1.18-1.75)
Youth groups					0.109
Yes	416	18.5	14.2	1.00	
No	1,829	81.5	18.1	1.28	(0.95-1.72)
Belief in God					0.026
Yes	2,301	97.5	16.8	1.00	
No	60	2.5	27.4	1.63	(1.06-2.52)
Habit of praying					0.078
Yes	1,977	83.4	16.6	1.00	
No	394	16.6	20.0	1.21	(0.98-1.50)

PR: prevalence ratio

\*Weighted data, considering sample design

\*\*Social classification of the Associação Brasileira dos Institutos de Pesquisa de Mercado (Brazilian Association of Market Research Institutes)<sup>9</sup>

\*\*\*Linear trend test

among subjects living in households with three or more individuals per bedroom.

Still considering crude analysis, Table 3 shows the relationship between drug use and the occurrence of stressful events. Drug use was significantly associated with presence in the household of a relative that drinks excessively (PR=1.50; 95%CI: 1.19-1.90), presence in the household of a user of other drugs (PR=1.98; 95%CI: 1.42-2.76), and having suffered mistreatment (PR=1.92; 95%CI: 1.51-2.45). Likewise, victims of mugging or theft in the last year reported significantly higher drug use (RP=1.59; 95%CI: 1.25-2.02). History of sexual abuse, presence in the household of a relative with chronic disease, occurrence, in the last year, of unemployment of the head of the family, parents' divorce, death of a significant person, or change of neighborhood were not significantly associated with drug use.

Table 4 shows crude results and results adjusted by the multivariate analysis for factors associated with use

in the last year of psychotropic drugs (excluding alcohol and tobacco). In the first level, social class showed a linear association with the outcome, with prevalence ratios decreasing from the highest to the lower classes. Age, also included in the analysis at this level, also showed a linear association with drug use, there being an increase in use along with an increase in age.

The second level – *environmental variables* – included type of residence and crowding. These variables did not maintain a significant association with the outcome after confounder control. Variables related to familiar relationship were also included in this level. Parents' divorce maintained a significant association with drug use, the children of separated couples reporting drug use over 40% more frequently than the children of couples who lived together (PR=1.46; 95%CI: 1.18-1.80). Likewise, poor or very poor relationships with both father and mother remained significantly associated with greater drug use in last year when compared with good relationship, being related

**Table 2** - Use of drugs in the last year (excluding alcohol and tobacco) by adolescent students of public and private schools, according to environmental and family characteristics. Pelotas, Brazil, 1998.

Characteristics	N	%	Drug use in last year*	PR (95%CI)*	p-value
Parents' marital situation					0.000
Live together	1,680	71.3	15.3	1.00	
Divorced	472	20.0	23.7	1.55	(1.26-1.90)
Father and/or mother deceased	141	6.0	18.9	1.24	(0.82-1.87)
Never lived together	63	2.7	17.6	1.15	(0.66-2.03)
Relationship with father					0.000
Excellent / good	1,821	76.3	16.0	1.00	
Average	250	10.5	19.9	1.25	(0.96-1.63)
Poor / very poor	77	3.2	32.6	2.04	(1.44-2.88)
No contact	239	10.0	18.1	1.13	(0.81-1.58)
Relationship with mother					0.000
Excellent / good	2,166	90.3	16.2	1.00	
Average	157	6.5	23.3	1.44	(1.02-2.03)
Poor / very poor	35	1.5	45.0	2.77	(1.90-4.03)
No contact	40	1.7	22.2	1.37	(0.76-2.46)
Relationship between parents					0.016
Excellent / good	1,662	69.5	15.8	1.00	
Average	326	13.6	21.3	1.35	(1.04-1.74)
Poor / very poor	114	4.7	25.4	1.61	(1.13-2.28)
No contact	288	12.1	17.8	1.12	(0.82-1.53)
Father is					0.090
Authoritarian	977	41.3	16.0	1.00	
Moderate	681	28.8	16.3	1.02	(0.79-1.31)
Open-minded	451	19.1	21.4	1.34	(1.05-1.70)
No contact	256	10.8	16.4	1.02	(0.74-1.41)
Mother is					0.004
Authoritarian	897	37.8	16.1	1.00	
Moderate	815	34.4	15.2	0.94	(0.75-1.18)
Open-minded	607	25.6	20.4	1.26	(1.02-1.57)
No contact	52	2.2	25.3	1.57	(0.93-2.63)
Type of residence					0.003
Apartment	479	19.9	22.5	1.00	
Brick house	1,677	69.8	15.8	0.70	(0.57-0.86)
Mixed/wooden/other	247	10.3	16.2	0.72	(0.51-1.02)
Mains water					0.962
Yes	2,315	97.5	17.0	1.00	
No / in the yard	59	2.5	16.7	0.99	(0.53-1.85)
Crowding**					0.003
1	295	13.9	24.6	1.00	
2	1,482	69.6	17.2	0.70	(0.55-0.89)
3	277	13.0	13.0	0.53	(0.35-0.80)
4 +	75	3.5	13.1	0.53	(0.29-0.98)

\*Weighted data, considering sample design

\*\*Number of persons per bedroom

to an almost threefold increase in prevalence (PR=2.71; 95%CI: 1.64-4.48) in the case of the relationship with the mother. In addition, considering the father as 'open-minded' maintained its association with greater drug use by the adolescent (PR=1.36; 95%CI: 1.08-1.72). As to stressful events, drug use maintained its positive association with presence of drug user in the household (PR=1.62; 95%CI: 1.17-2.18), occurrence of mistreatment – a roughly 60% increase (PR=1.62; 95%CI: 1.27-2.07), and occurrence of mugging or theft in the last year (PR=1.37; 95%CI: 1.08-1.74).

The third level included religious practice and belief in God, of which only religious practice maintained its significant association. Subjects who did not practice religion reported 30% greater drug use than those who did (PR=1.31; 95%CI: 1.07-1.59).

## DISCUSSION

The data in the present study were collected in both public and private schools, which allowed for the inclusion of students belonging to different socioeconomic strata. The study was based on a representative sample of adolescents attending urban schools that provide *ensino médio* education.

Nevertheless, one must consider that the questionnaire employed, although widely used, is not a vali-

dated instrument, since there is no gold standard for measuring this stigmatized and illegal habit.<sup>5</sup> One must keep in mind, therefore, that this is a study of drug-use reporting, and not of drug use itself. Such a limitation is inherent to this type of study worldwide. As an attempt to overcome this limitation, we employed a self-administered questionnaire, filled collectively in the class room. This is an appropriate procedure for obtaining information on private or illegal behaviors due to its confidential character and its ability to ensure anonymity. In case of eventual information bias, it is reasonable to assume that the tendency would be towards underreporting, given that this information involves an illegal behavior.

Returning to the school in order to administer questionnaires to absent students is a differential aspect of the present study in relation to most other studies with similar methodologies, since it allowed for a reduction in the number of losses due to absences. The absence of certain students during all visits may have been related to drug use, thus generating a non-responder bias. However, total absences, refusals, and annulled questionnaires did not exceed 8%, which allows us to consider that our findings may be extrapolated to the population of adolescents that attended schools with *ensino médio*.

Moreover, the data in the present study refer to the population of adolescents that still attend school, and

**Table 3** - Use of drugs in the last year (excluding alcohol and tobacco) by adolescent students of public and private schools, according to the occurrence of stressful events. Pelotas, Brazil, 1998.

Events	N	%	Drug use in last year*	PR (95%CI)*	p-value
<b>In life</b>					
Chronic disease in family					0.662
No	2,144	90.3	16.9	1.00	
Yes	231	9.7	18.1	1.07	(0.79-1.45)
Alcoholism in family					0.000
No	2,124	89.0	16.2	1.00	
Yes	263	11.0	24.4	1.50	(1.19-1.90)
Drug use in family					0.000
No	2,304	97.3	16.3	1.00	
Yes	63	2.7	32.2	1.98	(1.42-2.76)
Mistreatment					0.000
No	2,140	89.6	15.6	1.00	
Yes	249	10.4	30.0	1.92	(1.51-2.45)
Sexual abuse					0.187
No	2,312	96.7	16.8	1.00	
Yes	78	3.3	22.2	1.32	(0.87-2.02)
<b>In last year</b>					
Unemployment of head of family					0.347
No	2,012	84.5	17.5	1.00	
Yes	369	15.5	15.6	0.89	(0.70-1.13)
Death in family					0.522
No	1,574	65.8	16.8	1.00	
Yes	817	34.2	18.0	1.07	(0.87-1.31)
Parents' divorce					0.268
No	2,239	94.4	17.1	1.00	
Yes	133	5.6	20.6	1.21	(0.86-1.69)
Victim of mugging or theft					0.000
No	2,047	85.6	15.8	1.00	
Yes	344	14.4	25.1	1.59	(1.25-2.02)
Change of neighborhood or city					0.114
No	2,073	86.6	16.8	1.00	
Yes	322	13.4	20.1	1.20	(0.96-1.51)

\*Weighted data, considering sample design

thus cannot be generalized to dropouts or adolescents who have never attended school. The problem of school dropout afflicts mainly low-income students, as can be seen by the low representativity of these groups in student samples.<sup>18</sup>

The present analysis investigates factors associated with drug use – excluding alcohol and tobacco – in the year preceding the survey. For the sake of simplicity, such use will be referred to simply as ‘drug use’.

Drug use was more frequent among the higher socio-economic classes. Muza et al,<sup>10</sup> in Ribeirão Preto, South-eastern Brazil, found that the use of illicit substances is greater among the wealthier class. Studies in other countries have shown associations between money availability and drug use.<sup>12,16</sup> There was a linear increase in

the prevalence of drug use with age, but no significant differences with respect to sex. Consumption differences between boys and girls appear when different substances are evaluated in separate, but disappear when drugs are grouped. We have considered the association between drug use and sociodemographic factors in greater detail in a previous article.<sup>18</sup>

A study in Mexico found that students who were drug users practiced sports less frequently than nonusers.<sup>14</sup> This finding was not confirmed in the present study, since neither practicing regular physical activity nor frequency of physical activity were associated with drug use.

Differences in crude analysis showing greater drug use among subjects living in apartments and with lower

**Table 4** - Multivariate analysis of factors associated with use of drugs in the last year (excluding alcohol and tobacco) by adolescent students of public and private schools. Pelotas, Brazil, 1998.

Characteristics	Drug use in last year* %	Crude PR	Adjusted PR** (95% CI)	p-value
<b>Level 1</b>				
Social class***				0.000****
A	21.4	1.00	1.00	
B	21.2	0.99	0.99 (0.70-1.41)	
C	17.6	0.82	0.82 (0.55-1.22)	
D	11.4	0.53	0.53 (0.32-0.88)	
E	9.6	0.45	0.45 (0.18-1.08)	
Age group				0.000****
10-13	7.7	1.00	1.00	
14-16	19.4	2.52	2.52 (1.76-3.62)	
17-19	20.3	2.64	2.64 (1.83-3.81)	
<b>Level 2</b>				
Parents' marital situation				0.006
Live together	15.3	1.00	1.00	
Divorced	23.7	1.55	1.46 (1.18-1.80)	
Father and/or mother deceased	18.9	1.24	1.55 (0.81-2.96)	
Never lived together	17.6	1.15	1.17 (0.64-2.14)	
Relationship with father				0.022
Excellent / good	16.0	1.00	1.00	
Average	19.9	1.25	1.22 (0.89-1.66)	
Poor / very poor	32.6	2.04	1.67 (1.17-2.38)	
No contact	18.1	1.13	1.17 (0.54-2.51)	
Relationship with mother				0.001
Excellent / good	16.2	1.00	1.00	
Average	23.3	1.44	1.03 (0.65-1.63)	
Poor / very poor	45.0	2.77	2.71 (1.64-4.48)	
No contact	22.2	1.37	0.92 (0.43-1.98)	
Father is:				0.027
Authoritarian	16.0	1.00	1.00	
Moderate	16.3	1.02	1.06 (0.82-1.38)	
Open-minded	21.4	1.34	1.36 (1.08-1.72)	
No contact	16.4	1.02	0.59 (0.27-1.30)	
Drug use in family				0.003
No	16.3	1.00	1.00	
Yes	32.2	1.98	1.61 (1.17-2.18)	
Mistreatment				0.000
No	15.6	1.00	1.00	
Yes	30.0	1.92	1.62 (1.27-2.07)	
Victim of mugging or theft*****				0.008
No	15.8	1.00	1.00	
Yes	25.1	1.59	1.38 (1.09-1.76)	
<b>Level 3</b>				
Religious practice				0.008
No	14.0	1.00	1.00	
Yes	20.1	1.44	1.31 (1.07-1.59)	

PR: prevalence ratio; CI: confidence interval

\*Weighted data, considering sample design

\*\*Adjusted for sex, variables in upper level, and variables in same level

\*\*\*Social classification of the Associação Brasileira dos Institutos de Pesquisa de Mercado (Brazilian Association of Market Research Institutes)<sup>9</sup> (1991)

\*\*\*\*Linear trend test

crowding rates (number of persons per bedroom) disappeared after adjustment. These differences are likely to be related to socioeconomic issues, since families of higher socioeconomic class have greater probability of living in apartments and with less crowding. Flisher et al,<sup>7</sup> in South Africa, also did not detect a significant association between drug use and crowding.

On the other hand, the associations between a number of family characteristics and drug use persisted after adjustment. The family plays an important role as a socializing agent in the individual's life, and has thus been the subject of much interest in studies investigating factors associated with drug use among adolescents.

Firstly, it is important to emphasize the importance of parents' marital status. The children of separated couples reported significantly greater drug use than those whose parents lived together. A study conducted in Florianópolis,<sup>3</sup> also in Southern Brazil, also found an association between drug use and parents' divorce. However, the fact of parents not living together does not explain such difference, since teenagers whose parents never lived together or those with one or both parents dead did not show differences in drug use. Furthermore, the present study design, in which exposure and outcome are measured simultaneously, does not allow us to affirm that drug use occurred due to the divorce itself. It is reasonable to speculate, therefore, that the effect is related to the social aspects and emotional interactions into which divorce is inserted. The emotional well-being of children may be affected by the conflicts and marital unhappiness that usually precede divorce by a considerable period. We should point out, however, that there was no relationship between drug use and parents' divorce in the last year, which suggests an effect of post-divorce factors, acting on a longer-term basis, such as estrangement from one or both parents, economic difficulties, and changes of address, among others.

Another factor studied was the relationship between adolescent and parents. Most subjects reported a good or excellent relationship with their parents, although the proportion of regular, poor, or very poor relationships with the father was higher than with the mother. Less than 2% of subjects reported no contact with their mothers, whereas lack of contact with the father was as high as 10%. More frequent drug use occurs both among youths with poor or very poor relationships with mother and with father, being roughly three-fold higher among those with poor or very poor relationships with their mothers. Studies conducted in other countries found an association between drug use and a low level of satisfaction with the support received from parents<sup>13</sup> and with a greater emotional

distance between youth and family.<sup>14</sup> The quality of the family relationship has also been identified as a factor associated with drug use in a nationwide sample of Brazilian students.<sup>5</sup> Poor relationship with parents may predispose the youth to drug use, but drug use itself may bring about alterations in behavior leading to difficulties in the youth-parent relationship.

Subjects who considered their fathers as 'open-minded' also reported greater drug use than those who considered their fathers as 'moderate' or 'authoritarian'. The way in which freedom is granted is especially relevant in terms of the achievement of maturity. Incomprehension and rejection are often masked by granting excessive freedom. Such freedom is experienced by the adolescent as what it actually is, i.e., abandonment.<sup>1</sup> A study conducted in Mexico found that a significantly larger percentage of students who were not drug users reported that their parents had clear rules regarding the consumption of alcoholic beverages, and considered it important to follow parental advice and to obey the rules established.<sup>14</sup>

Subjects with other drug users in the family also reported greater drug use. Drug and alcohol use by parents were also identified as predictive factors in other studies.<sup>12,16</sup> The fact of having a drug user at home may already be an indicator of family disorders predisposing to drug use. Moreover, the greater proportion of addicts in certain families may suggest an effect of genetic factors on modulating susceptibility to addiction. On the other hand, when seeking to construct their own identities, adolescents often adopt the models of behavior available to them, it being the task of family and of educators in general to provide the adolescent with more adequate models of behavior.

Drug use was also higher among subjects who reported being victims of mistreatment. Carvalho et al,<sup>6</sup> in a nationwide sample of students, identified domestic violence as one of the factors related to drug use. The choice between substance use as experimentation or on a regular basis is influenced by a number of factors, present in the course of development, and is often related to reasons beyond normal adolescence, being related to profound and early personal and familiar disorders, into which familiar violence may be inserted.

The association between drug use and the occurrence of mugging or theft again raises the issue of study design and of the inability of cross-sectional designs to establish a causal relationship between variables. If, on one hand, the stressful experience of being the victim of mugging or theft may increase the adolescent's predisposition to drug use, on the other, it may be related to the risk involved in the contact with illegal drugs, since



drug users are more exposed to the drug dealing environment and its inherent violence, being thus more exposed to the occurrence of such events. Regarding religion, we observed no differences in drug use between different beliefs or when compared with the absence of religious belief. This may reflect the fact that belonging to a given religion is probably merely a formality, with no influence on behavior. The practice of religion itself was what determined the difference, being associated with lesser drug use. Other studies have also identified religious practice as a protective factor.<sup>12,16</sup> Aberastury & Knobel<sup>1</sup> report that it is during adolescence that one begins to face the ultimate separation from ones parents, and the acceptance of the possibility of their death, thus the need to identify with greatly idealized images, able to ensure the continuity of existence. Greater religious involvement may contribute to reinforce feelings of hope and security concerning the future, rendering

teenagers less inclined to become involved with substance abuse. Furthermore, one must consider that religious practice may be a marker of behaviors assumed by youths with a more conservative profile, who would also be less inclined to become involved with risk behaviors, such as drug use.

The drug issue is quite a complex one, involving a large array of intervening factors. Epidemiological studies shed some light on the understanding of this pathway, contributing towards the advancement our knowledge of this reality. The results of the present study contribute towards the identification of factors of the adolescent-family relationship associated with drug use. Hence, the prevention of drug use by adolescents must also include measures directed towards the family, especially in cases in which risk situations have already been identified.

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