Original article

Prevalence of drug use and family relationships among school adolescents in Cuiabá, MT, Brazil: a cross-sectional study, 2015*

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Abstract

Objective: to analyze prevalence and factors associated with lifetime drug use in adolescents. **Methods:** this was a cross-sectional study carried out in 2015 with elementary and high school students in Cuiabá, MT, Brazil, aged 10-19; drug use (except alcohol and tobacco) was analyzed according to sociodemographic, school and family variables; data were submitted to descriptive analysis and Poisson regression to estimate prevalence ratios (PR) and 95% confidence intervals (95%CI). **Results:** drug use prevalence was 23.5% (95%CI 20.8;26.4) and was associated with unsatisfactory family relationships (PR=1.43; 95%CI 1.08;1.91) and non-authoritative parenting style (PR=1.67; 95%CI 1.14;2.44). **Conclusion:** prevalence of drug use among adolescents was associated with unsatisfactory family relationships, especially when conflicts were between parents and when parenting style was non-authoritative.

Keywords: Adolescent; Family Relations; Street Drugs; Epidemiology; Prevalence; Cross-Sectional Studies.

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Introduction

Adolescence is a stage of human development characterized by physical, cognitive, psychological and social changes in which individuals seek to forge their identity by experimenting with the unknown, often exposing themselves to risks capable of harming their health, such as experimenting with drugs.[1,2]

Drug use can appear in the diverse interfaces of everyday life. During adolescence, the characteristics of this behavior include above all school and family.[3] Not living with parents, lack of parental monitoring, family members who use alcohol, family disruption, domestic violence, the need to belong to a group and school absenteeism increase the chances of drug use in adolescence.[4-7]

Drug use prevalence and associated factors among adolescents have been observed in data retrieved from national and regional studies.[8] Patents with an authoritative parenting style provide a protective effect against drug use, while an authoritarian, indulgent or negligent (non-authoritative) style shows itself to be a risk factor.[7,9,10] Despite these characteristics being associated with risk behaviors or protection from drug use,[11] to date there has been little research into family relationships.

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In Cuiabá, capital of Mato Grosso (MT) state, studies have estimated drug use among school adolescents;[8,12] there is, however, no research into relationships established in their family context. Having knowledge about the dimensions of adolescent intrafamily relationships can contribute to qualifying intersectoral health and education policies so as to identify and act on behaviors associated with greater exposure to drug use.

The objective of this study was to analyze drug use prevalence and associated factors in the lives of school adolescents in the municipality of Cuiabá.

Methods

This was a cross-sectional study conducted with students attending middle school (6th to 9th grade), high school (10th to 12th grade) and youth and adult education re-engagement programs, enrolled at public schools in the urban area of the municipality of Cuiabá, MT, Brazil, in the second semester of 2015.

We included adolescent students aged 10-19 years old, based on the classification set by the Pan American Health Organization (PAHO)[13] and the Brazilian Child and Adolescent Statute (ECA).[14] Students were excluded from the study if they had a physical/mental disability or any limitation preventing them from filling in the questionnaire, as well as students under 18 years old whose parents/legal guardians did not authorize their participation in the study.

First of all we built a basic registry containing a list of the schools and number of students per class, using data provided by the Mato Grosso State Education Department. The schools were stratified according to the level of education they offered: (i) elementary education; (ii) high school education; (iii) elementary, high school and youth and adult education; and (iv) youth and adult education.

Two-stage random and systematic sampling was used to select the schools and classes. The schools were selected in the first stage. In the second stage, four classes from each school were selected at random. A systematic process was used in both stages: we calculated fraction expansion (FEx) to define the random number, in a table of random numbers. The following formula was used to define fraction expansion:[8]

$$\text{F.Ex.} = \frac{4.NTA}{NTL}$$

Where:
NTA = total updated classes
NTL = total out of date classes

The first unit drawn randomly corresponded to the number resulting from fraction expansion, while the second unit corresponded to the fraction expansion number plus the random number. The rest of the selection followed the same process.

The main outcome was prevalence of lifetime use of drugs, except alcohol and tobacco, which included: cannabis; solvents/inhalants; sedatives/tranquilizers; anxiolytics; cocaine; ecstasy; methamphetamine; steroids/anabolics; crack; LSD; anticholinergics; opioid analgesics; and opium/heroin.[8] The results were presented in a dichotic manner:[15] yes; no.

The explanatory independent variables were:[15]

a) Sociodemographic variables:

- sex (male; female);
- age (in years: 10-14; 15-19);
- race/skin color (white, black, brown, yellow and red, subsequently categorized into: non-White; White);
- adolescent practices a religion (yes; no); and
- family economic level (A, B, C, D and E, subsequently categorized into: high and medium; low).[16]

b) School variables

- part of day spent at school (morning; afternoon/night, the latter was grouped together with afternoon because of the low number of adolescents enrolled at night); and:
- school absenteeism in the last month, without parent's authorization (full attendance, missed 1-3 days, missed 4-8 days, missed 9 days or more, subsequently categorized into: yes; no).[8]

c) Family variables:

- relative adolescent lives with (father; mother; father and mother; other family members, such as uncles and aunts, grandparents, friends, boy/girlfriend, spouse, lives alone);[8]
- relationship with mother (excellent, good, regular, poor and there is no relationship, subsequently categorized into: unsatisfactory; satisfactory);[17]
- relationship with father (excellent, good, regular, poor and there is no relationship, subsequently categorized into: unsatisfactory; satisfactory);[17]
- relationship between parents (excellent, good, regular, poor and there is no relationship, subsequently categorized into: unsatisfactory; satisfactory); [17]
- alcohol use in family (at least one family member: yes; no);[8] and
- parenting styles (non-authoritative; authoritative).[8,18]

The 'age' variable was categorized in age ranges in accordance with Law No. 9394/1996 - National Education Directives and Principles[19] for elementary and high school education, as well as the classification defined in the most recent national survey, in order to enable the results to be compared.[8]

Economic level was obtained by means of a scale categorizing families into economic classes (A1, A2, B1, B2, C1, C2, D and E), by measuring head of household schooling, durable consumer goods and household occupation.[16]

Parenting styles were classified based on an assessment[17] the answers to which, using a three-point Likert, were classified as follows: authoritative (high levels of demandingness and responsiveness); negligent (low levels of demandingness and responsiveness); indulgent (high levels of responsiveness and low levels of demandingness); and authoritarian (high levels of demandingness and low levels of responsiveness). The authoritative parenting style corresponds to aspects that are positive for children's development when compared to other styles.[7,18]

The following parameters were taken into consideration in order to calculate the sample size: 25.6% lifetime drug use prevalence (except alcohol and tobacco) among students,[8] 3.0% (0.015) standard error and 95% confidence interval (95%CI). This resulted in a minimum sample size of 846 students, plus 1.3% for design effect (deff) to correct the sample size owing to the study involving several school units and the students coming from several classes,[20] plus a further 11% for losses[17] (students missing classes, refusal to take part in the study and parents not authorizing participation). The final estimated study size was 1221 divided between 48 classes with an average of 27 students per class, in 12 schools.

Data was collected by means of a questionnaire filled in by the students themselves, with no personal identification. The questionnaire had already been used and validated in surveys conducted the Brazilian Psychotropic Drugs Information Center.[8]

The questions were assessed using the reliability test – Kappa coefficient –,[21] by means of interpretation of a scale of scores, applying a test-retest with an 8-day interval, with 84 students from two schools not selected for the sample.[17] Agreement was good, moderate or perfect for 71.6% of the questions.

In order to control for participant bias, we analyzed a variable that corresponded to a fictitious substance:[8]

'In your lifetime have you ever used Holoten, Capinol or Medavane to make you feel different?'

Any adolescents answering 'yes' to this question were excluded from the study.

The data were stored using Epi Info version 6.0;

and analysis was performed using Stata version 9. We performed descriptive bivariate analysis, Pearson's x^2 test, with a 95% confidence interval, using the prevalence ratio (PR) to measure association. Independent variables with p-values <0.20 – with the exception of sex and age, which were kept for biological reasons –, were calculated using Poisson regression with robust variance.[22]

The study project was approved by the Federal University of Mato Grosso Júlio Müller University Hospital Human Research Ethics Committee (Opinion nº. 952.473/CEP/HUJM, dated February 12th 2015). Participants or their legal guardians signed a Free and Informed Consent form.

Results

Out of the total of 997 students attending school on the day the questionnaire was administered, 960 agreed to answer it. Eighty eight questionnaires were excluded (17 for answering 'yes' to the fictitious question and 71 who were more than 19 years old), so that 872 valid questionnaires were included (Figure 1).

Prevalence of lifetime drug use (except alcohol and tobacco) was 23.5% (95%CI 20.8; 26.4). The drugs most used were cannabis (11.6% [n=101]; 95%CI 9.6;13.9), followed by solvents/inhalants (11.5% [n=100]; 95%CI 9.5;13.8) (Figure 2).

Half the adolescents were female (50.6%) and aged 15-19 years old (52.5%). The majority were non-White (77.4%), religious (85.2%), attending school in the morning (63.3%), were not absent from school (70.1%), of low economic level (69.0%) and lived with their father and mother (44.9%) (Table 1).

Lifetime drug use prevalence was more frequent among those aged 15-19 years old (PR=1.44; 95%CI 1.12;1.84), those who did not practice a religion (PR=1.42; 95%CI 1.07;1.90), those who had been absent from school in the last 30 days (PR=1.72; 95%CI 1.33;2.23) and those of high and medium economic level (PR=1.34; 95%CI 1.05;1.71). Drug use was 1.59 times higher among those who lived with other family members (PR=1.59; 95%CI 1.16;2.17), those who had an unsatisfactory relationship with their mother (PR=1.68; 95%CI 1.29;2.20), with their father (PR=1.78; 95%CI 1.39;2.29) and those whose parents had an unsatisfactory relationship (PR=1.72; 95%CI 1.33;2.22). Drug use was 1.90 times higher among adolescents whose parents had a non-authoritative attitude (PR=1.90; 95%CI 1.34;2.69) (Tables 1 and 2).

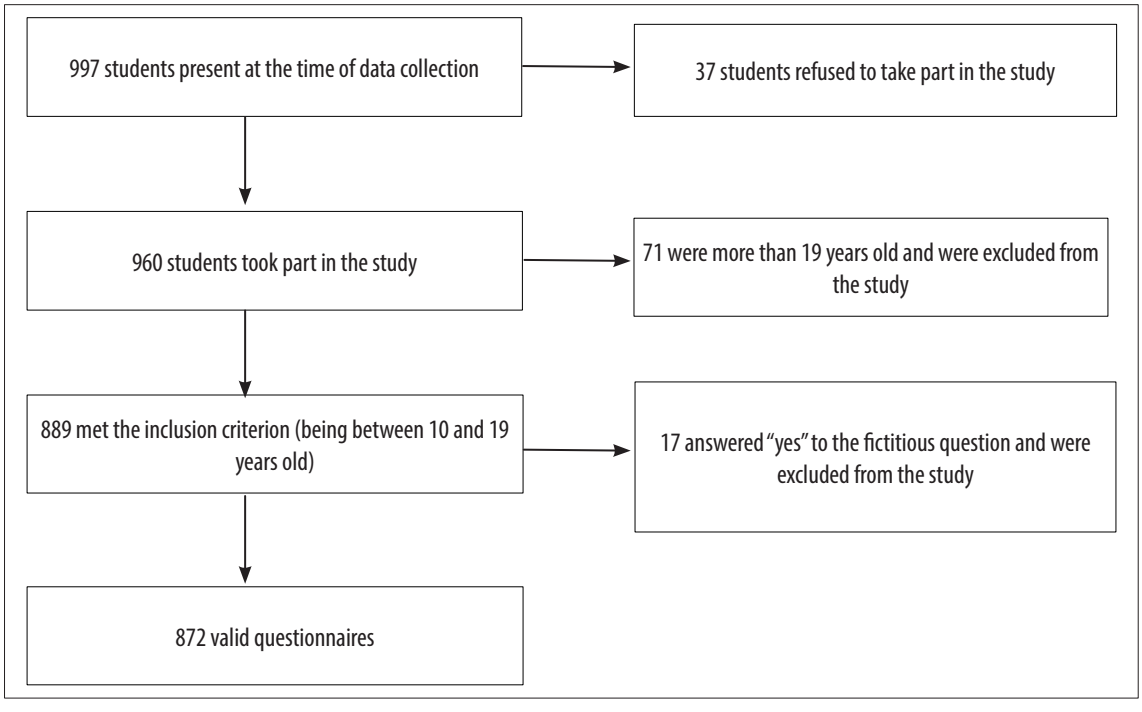
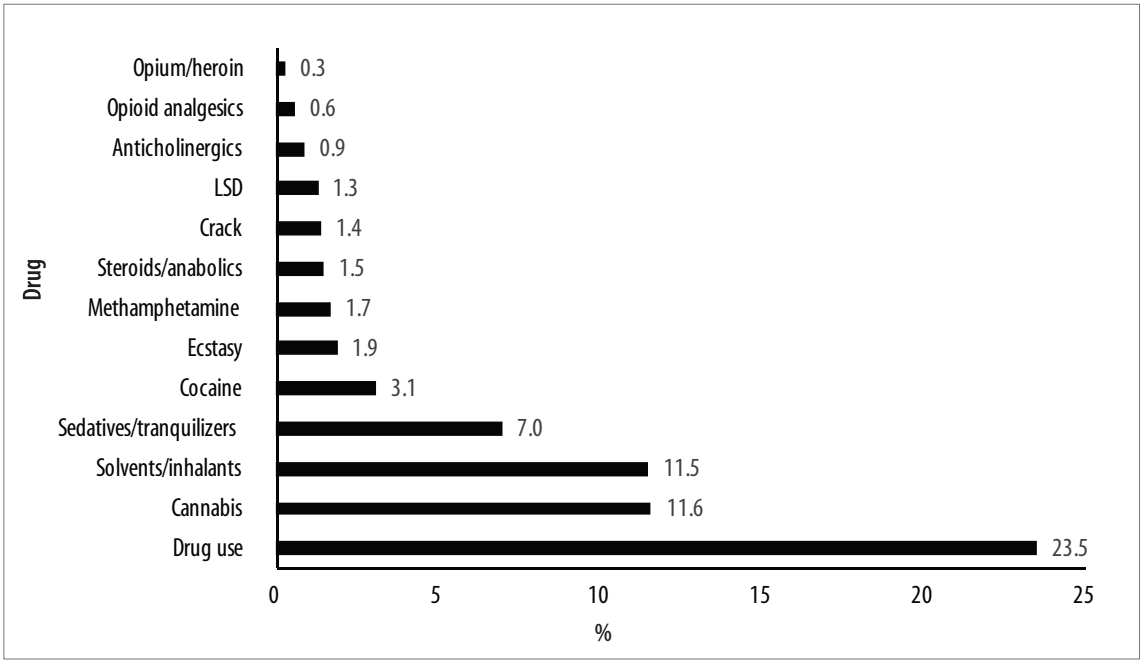


Figure 1 – Study selection, losses and refusals process, Cuiabá, Mato Grosso, 2015



a) Refers to total of adolescents reporting lifetime drug use.

Figure 2 – Prevalence of lifetime drug use (except alcohol and tobacco) by state school adolescents (n=872), Cuiabá, Mato Grosso, 2015

The variables that remained significantly associated ($p<0.05$) with drug use in the final model were: being 15-19 years old (PR=1.35; 95%CI 1.02;1.80); school absenteeism (PR=1.56; 95%CI 1.19;2.06); high and medium economic level (PR=1.45; 95%CI 1.10;1.92); parents with an unsatisfactory relationship (PR=1.43; 95%CI 1.08;1.91); and those whose parents were classified as having a non-authoritative parenting style (PR=1.67; 95%CI 1.14;2.44) (Table 2).

Discussion

Drug use by Cuiabá school adolescents was higher among those aged over 15, those who had been absent from school during the last 30 days and those whose socio-economic level was high and medium. These associations remained significant after the analysis was adjusted, as did parents with an unsatisfactory relationship and non-authoritative parenting style.

It is not possible to establish temporality in the associations between parental relationships and drug use based on this study's data because of its cross-sectional design.[22] Other limitations of the study include its representativeness which is restricted to adolescents enrolled in state schools, loss of participants not attending school on the day of the interview, school dropout and transfers, the reasons for which may be related to drug use. Economic classification was based on 2008 criteria rather than 2010 criteria, which may have caused measurement bias in this variable, considering economic mobility in Brazil at that time. These factors limit the external validity of the results.

The drug use prevalence found corroborates that found by regional studies also carried out in Cuiabá in 1998 (22.7%)[12] and in Barra do Garças, also in Mato Grosso state, in 2011 (35.9%),[17] as well as by the most recent national survey conducted in 2010 (24.2%).[8] The fact of there being little change over the last 20 years in lifetime drug use prevalence among school adolescents points to the need to consolidate the drug policy adopted in Brazil with effect from 2006, particularly with regard to prioritizing training of Education human resources to work with intersectoral prevention actions.[23]

Drug use was not associated with the adolescents' sex, race/skin color or religion of the adolescent, the latter despite bring associated with use did not remain in

Table 1 – Prevalence of lifetime drug use (except alcohol and tobacco), by sociodemographic, school and family variables, among state school adolescents (n=872), Cuiabá, MT, 2015

Variable	n	%	Lifetime drug use		PR[a]	95%CI[b]	p-value[c]
			n	%			
Sex (n=865)[d]							
Male	427	49.4	101	23.7	1,01	0.74-1.28	0.947
Female	438	50.6	103	23.5			
Race/skin color (n=820)[d]							
Non-white	635	77.4	157	24.7		0.90-1.70	0.183
White	185	22.6	11	21.6	1,14		
Age (in years) (n=872)							
15-19	458	52.5	126	27.5		1.12-1.84	0.004
10-14	414	47.5	79	19.1	1,44		
Part of day spent at school (n=872)							
Afternoon or night	320	36.7	82	25.7		0.91-1.47	0.251
Morning	552	63.3	123	22.3	1,15		
Practices a religion (n=853)[d]							
No	126	14.8	40	31.7		1.07-1.90	0.022
Yes	727	85.2	162	22.3	1,42		
School absenteeism (n=809)[d]							
Yes	242	29.9	75	31.0		1.33-2.23	<0.001
No	567	70.1	102	18.0	1,72		
Socio-economic level (n=872)							
High and medium	270	31.0	77	28.5	1,34	1.05-1.71	0.020
Low	602	69.0	128	21.3			
Relative lives with (n=858)[d]							
Only with father	68	7.9	11	16.2	0,79	0.44-1.40	0.408
Only with mother	273	31.8	64	23.4	1,14	0.85-1.53	0.370
Other family members	132	15.4	43	32.6	1,59	1.16-2.17	0.005
Father and mother	385	44.9	79	20.5			
Relationship with mother (n=832)[d,e]							
Unsatisfactory	144	17.3	50	34.7	1,68	1.29-2.20	0.000
Satisfactory	688	82.7	142	20.6			
Relationship with father (n=800)[d,e]							
Unsatisfactory	266	33.2	87	32.7	1,78	1.39-2.29	<0.001
Satisfactory	534	66.8	98	18.4			
Unsatisfactory	240	30.7	77	32.1	1,72	1.33-2.22	<0.001
Satisfactory	541	69.3	101	18.7			
Parenting styles (n=840)[c]							
Non-authoritative	613	73.0	164	26.8	1,90	1.34-2.69	<0.000
Authoritative	227	27.0	32	14.1			
Alcohol use in family (n=762)[c]							
Yes	525	68.9	135	25.7	1,35	1.00-1.83	0.043
No	237	31.1	45	19.0			

a) PR: prevalence ration.
b) 95%CI: crude confidence interval.
c) Pearson's chi-square test.
d) Data indicated as unknown: sex (n=7), race/skin color (n=52), practices a religion (n=19), school absenteeism (n=63), relative you live with (n=14), relationship with mother (n=22), relationship with father (n=34), relationship between parents (n=35), parenting styles (n=32) and alcohol use in family (n=110).
e) Data indicated in the option 'family member is deceased': relationship with mother (n=18), relationship with father (n=38) and relationship between parents (n=56).

the adjusted analusis. This was also the case of a cross-sectional study conducted with students in Porto Velho, capital of Rondônia state, in which no differences were found with regard to race/skin color and use of psychoactive substances or use of alcohol and tobacco.[6] With regard to religion, our results diverge from those of other studies, according to which religion was found to be a protective factor, seen as an important behavior for restraining the start of drug use and for supporting treatment.[24]

Drug use was highest among the 15-19 age group. This finding is the same as that found by the National School Health Survey (PeNSE), the data of which indicates that older adolescents have up to 3.14 times greater exposure to drug use.[5] Although this is considered to be a confounding variable, stratification in the process of sampling according to education type sought to minimize (neutralize) this effect, and significant association remained in the multivariate analysis using Poisson regression.[15] Moreover, factors stand out in this stage of life as greatly influencing experimenting with drugs, such as natural curiosity, as well as other external factors, such as the opinion of friends, adolescents being part of a given group and ease of access to drugs, for example.[3,6,25]

Adolescents belonging to the high and medium socio-economic level had greater drug use prevalence. Adolescents in the A and B economic groups reported higher drug use prevalence in studies conducted in municipalities in Mato Grosso state[26] and in other Brazilian regions,[8] in addition to 60% greater prevalence of violence.[17] Access to drugs is related to purchasing power, thus showing the need to break away from generalized concepts of drug use being associated with poverty.

School absenteeism showed association with drug use. The relationship between school absenteeism and drug use

Table 2 – Factors associated with lifetime drug use (except alcohol and tobacco) among state school adolescents (n=872), Cuiabá, Mato Grosso, 2015

Variables	Crude analysis			Adjusted analysis		
	PR[a]	95%CI[b]	p-value	PR[a]	95%CI[b]	p-value[c]
Sex (n=865)						
Male	1.01	0.74-1.28	0.947	0.87	0.66-1.14	0.314
Female	1.00			1.00		
Age (in years) (n=872)						
15-19	1.44	1.12-1.84	0.004	1.35	1.02-1.80	0.039
10-14	1.00			1.00	–	–
School absenteeism (n=809)						
Yes	1.72	1.33-2.23	<0.001	1.56	1.19-2.06	0.002
No	1.00			1.00	–	–
Socio-economic level (n=872)						
High and medium	1.34	1.05-1.71	0.02	1.45	1.10-1.92	0.008
Low	1.00			1.00	–	–
Relationship between parents (n=781)						
Unsatisfactory	1.72	1.33-2.22	<0.001	1.43	1.08-1.91	0.014
Satisfactory	1.00			1.00	–	–
Parenting styles (n=840)						
Non-authoritative	1.90	1.34-2.69	0.000	1.67	1.14-2.44	0.008
Authoritative	1.00			1.00	–	–

a) PR: prevalence ration.
b) 95%CI: 95% confidence interval.
c) Poisson regression.

was also found among 9th grade students in public and private Brazilian schools, although at this stage in life at school other factors, such as age, showed greater association.[11]

Drug use was not associated with living with other family members or friends, despite previous studies having identified positive association with this factor.[11,27] A cross-sectional study with 9th grade students conducted in the 27 Brazilian state capitals showed that adolescents were more protected when they lived with both parents, compared to those who lived with just one parent or lived with other people.[4] Changes in the traditional family configuration, as well as in some specific populations, may imply increased social vulnerability and overburdening of individual roles with regard to the functions that a family group takes on.[27]

Adolescent drug use is higher when relationships with their mothers and fathers and between their parents are unsatisfactory, and also when parents have non-authoritative attitudes. A cross-sectional study conducted in 2007 in the municipalities of Jacareí and Diadema in São Paulo state with 965 students revealed a higher level of family problems among adolescents who used drugs when compared to those who only used alcohol, whereby the likelihood of drug use was two times greater when there were frequent arguments with parents.[28] Negligent or authoritarian parental attitudes and parenting styles were associated with physical abuse and adolescent use of psychoactive substances.[7,9] Besides being a risk factor for adolescent drug use, unsatisfactory family relationships can contribute to attitudes of indifference, negligence and maltreatment on the part of parents.[11,29]

Moreover, when parents have difficulty in caring for and protecting their children, setting limits, providing affection and support, adolescents are also seen to be more vulnerable to risk behaviors, such as drug use, compared to their peers of the same age who can count on affectivity and space needed for dialogue and understanding of the issues characteristics of this stage of life, in the form of recognition of rights and setting and negotiating requirements.[28]

The way in which parents relate with each other and with their children was shown to be an important factor for adolescent drug use. Strategies involving family relationships need to be taken into consideration in policies on health and drug use.

Authors' contributions

Freitas LMF took part in the conception and design of the study, data collection, statistical analysis and writing the article. Souza DPO took part in planning the study, statistical analysis and critical review of intellectual content. Both authors approved the final version and are responsible for all aspects of the work, ensuring the precision and integrity of the entire article.

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