

Use of marijuana and cocaine among students in the municipality of Breves, Marajó Archipelago, Brazilian Amazon

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Abstract

Background: Globally, the use of illicit drugs is a public health problem. Generally, the use of licit drugs tends to precede and increase the risk of regular use of illicit drugs. Since, the family environment can influence this process. In Brazil, marijuana is the most commonly used illicit drug, especially among adolescent users. In northern Brazil, epidemiological studies of illicit drug use in the population of adolescents and young people are still scarce. This study determined the prevalence and factors associated with the regular use of marijuana and cocaine among high school students in the municipality of Breves, Pará, Brazilian Amazon.

Methods: This cross-sectional study was carried out in four high schools in the municipality of Breves, in which a self-filling form was used to collect information and enable the description and analysis of socio-demographic, economic and family conditions related to the regular use of illicit drugs. *Chi-Square* and *Odds Ratio* tests were used to indicate and quantify the contribution of factors associated with regular use of illicit drugs.

Results: Among 3,218 students, 1,828 (56.8%) agreed to participate in this study. The age range was 14–52 years, with predominance of female students (55.6%). The prevalence of experimentation and regular use of marijuana and cocaine was 8.8% and 4.0%, respectively. The average initial age of use of marijuana and cocaine was 13.5 years. Most students who regularly use illicit drugs use only marijuana (81.1%). Several factors associated with regular use of illicit drugs have been identified. In particular related to social, economic and demographic aspects.

Conclusion: The prevalence of students using illicit drugs is moderate in the municipality of Breves. Possibly, regular use of marijuana and cocaine is associated with the social, demographic and economic issues of the user's family.

Keywords: Epidemiology; Illicit drugs; Students; Breves; Brazil

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Citation: Furtado IM, Araujo LG, Almeida JM, et al. Use of marijuana and cocaine among students in the municipality of Breves, Marajó Archipelago, Brazilian Amazon. *J Drug Abuse*. 2017, 3:1.

Received: January 10, 2017; **Accepted:** January 19, 2017; **Published:** January 26, 2017

Introduction

The dependence of psychotropic drugs is a great challenge for parents, health professionals, educators, public policy managers, legislators and for the whole community. The impact on society, the economy and the health of this disorder is immense. In the last decades, drug experimentation has been increasingly precocious, with abuse and dependency, despite the fact that preventive efforts are increasing [1, 2].

An individual's first experiences with drugs often take place during adolescence. During this phase, the individual is particularly

vulnerable from a psychological and social point of view [3]. Thus, it is particularly important to study this age group in detail, especially in relation to frequent and heavy use of legal and illegal drugs and to identify the psychological and sociocultural factors that are associated with such use [4, 5].

In Brazil, six major epidemiological studies on the use of licit and illicit drugs were carried out in the last two decades. Alcohol is the most commonly used psychotropic drug. However, the use of marijuana has increased considerably among Brazilian students [4, 6, 7]. Several national and international studies have analyzed the associations of psychological and socio-cultural factors with

drug use among students. They have, for example, identified that variables like male gender, age, work, family breakup and absence of religion are associated with greater use of drugs among students in a diversity of sociocultural contexts [4, 5, 8-11].

In view of this, accurate knowledge of the factors associated with drug use among young people in Brazil has great relevance. Since it would allow interventions to be undertaken in relation to behavior and risk factors, with the aim of inhibiting the possible progression to heavy use of legal and illegal drugs, which are progressively addictive and deleterious for the individual [4]. Previous Brazilian studies on drug use among students have generally been conducted in the state capitals. The Marajó Archipelago is located at the mouth of the Amazon River in northern Brazil and is considered to be one of the world's major estuarine archipelagos, although socioeconomic and cultural indices reflect the neglect of local governmental institutions. The lack of infrastructure and public services in the Marajó Archipelago is reflected in widespread poverty, hunger, the sexual abuse and exploitation of children and adolescents, prostitution, and the consumption and trafficking of illicit drugs [12]. The present study is a survey of the use of marijuana and cocaine by students in public schools located in Breves, the largest municipality in the Marajó Archipelago, State of Pará, Brazilian Amazon.

Materials and Methods

This cross-sectional study consisted of epidemiological information provided voluntarily by high school students from the four high schools in the municipality of Breves, Marajó Archipelago (**Figure 1**). The information was collected during class time by means of a brief intervention to explain the objectives of the research and to invite the students to participate in the study by completing the form. Finally, the information collections occurred in the period from August to November 2012.

The epidemiological characterization of high school students, users and non-users of illicit drugs (marijuana and/or cocaine and its derivatives (cocaine paste, crack, merla, etc.) was established through a form, self-filled and applied collectively in the classroom. This form contained questions regarding the age, sex, school performance, performance of paid activity in parallel to the studies, marital status of the parents or guardians, participation of the parental or responsible in the school life, level of education of the parents 'or guardians', monthly income of parents or guardians (1 minimum wage=\$ 545.00 (approximately 182 dollars)), regular use or use of illicit drugs (marijuana and/or cocaine and its derivatives), age at which illicit drug use begins, and use of illegal drugs by parents, guardians, family members, relatives and/or "friends". In order to validate the information provided by the students, a question about the use of a fictitious drug was placed. The positive response regarding the use of this fictitious drug was used as a criterion for excluding the information provided by the student. In this study, the use of illicit drugs for up to three times during life and then abandoning definitive consumption was considered to be experimentation of illicit drug. On the other hand, the use of illicit drugs at least twice a week over the past 12 months has been considered as regular use.

Confidence intervals 95% were established for prevalence of experimentation and regular use of illicit drugs (marijuana and/or cocaine and its derivatives). Associations between illicit drug use and possible risk factors were assessed using the *Chi-Square* (χ^2) and *Odds Ratio* (OR) tests. In all tests, p-values equal to or less than 0.05 were considered statistically significant. All statistical analyzes were conducted in the BioEstat program version 5.0.

Prior to the application of the epidemiological form, several meetings were held with the students' parents, teachers and principals to explain the research objectives and to request authorization of the study execution in high schools. In addition,

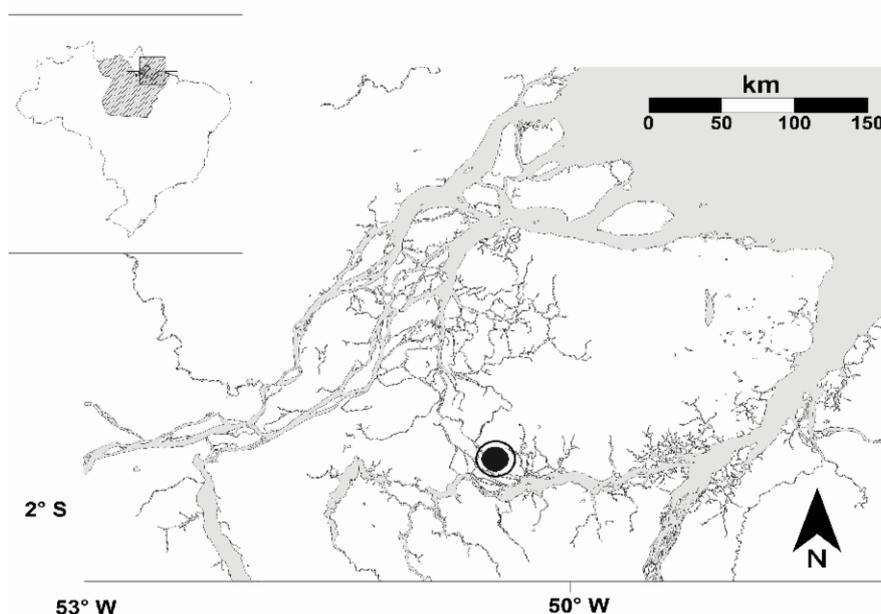


Figure 1 Geographical location of the municipality of Breves, Pará, Brazilian Amazon.

all students were informed of the objectives and invited to participate voluntarily in the research. This study is part of the research project "Epidemiological aspects of the use of licit and illicit drugs by public school students in the state of Pará, northern Brazil." which was approved by the Human Research Ethics Committee of the Institute of Sciences of the Health (CAAE 0103.0.073.000-10 – N°147/2010-CEP/ICS-UFPA).

Results

In 2012, 3,218 students were enrolled in the four high schools in the municipality of Breves. All students were invited to participate in this study by completing structured forms to characterize young illicit drug users, specifically marijuana and cocaine. Among them, 2,198 students agreed to voluntarily participate in the research. However, information provided by 370 students was excluded from the survey. These students reported using a fictitious drug. Among 1,828 participating students, the mean age was 19.5 years (median=18 years), with a minimum age of 14 years and a maximum of 52 years.

In addition, the majority of the students were female (55.6%), were 18 years old or less (56.9%), were in the 1st year of high school (40.4%), studied in the morning (39.7%), at least one year of study (55.0%), studied and worked in parallel (62.1%), had married parents (67.2%), presented a father and mother with reduced schooling (Illiterate and/or less than six years of schooling - 61.9% and 58.2%, respectively), had parents who did not participate in school life (56.0%) and had a family with income of up to three monthly minimum wages (82.4%).

The prevalence of students who experienced illicit drugs was 8.8% (n=160). The mean age of students who experienced illicit drugs was 19.5 years (standard deviation (SD) = ± 5.5 years). On the other hand, the prevalence of students who regularly used illicit drugs was 4.0% (n=74). The average age of students who regularly used illicit drugs was 18.5 years (SD= ± 3.5 years). In addition, the mean initial age of illicit drug use was 13.5 years (SD= ± 3.5 years) among regular users. Marijuana was the illicit drug first used by all students, both experimenters and regular users. Of the 74 students who regularly use illicit drugs, 60 (81.1%) only use marijuana, 12 (16.2%) use marijuana and cocaine paste, and only two (2.7%) use cocaine in stone with other substances (oxi). Most (n=65 (87.8%)) of regular student illicit drug users have used marijuana and/or cocaine for more than three years.

Among the variables analyzed in this study, we identified as factors associated with the use of illicit drugs (marijuana and/or cocaine and its derivatives): male sex, age over 17 years, having separated or deceased parents, reduced parental participation in students' school life, family income of up to three minimum wages, study and not work, study in the day shift (morning+afternoon), parents use drugs, and friends and family use drugs (**Table 1**). Some variables were characterized with high *Odds Ratio* (OR): male gender (OR=9.9), reduced participation of parents in school life (OR=3.5), having parents who use drugs (OR=2.8), and to have friends who use drugs (OR=8.8) (**Table 1**).

Discussion

In the 1980s, the prevalence of regular use of illicit drugs among Brazilian students was 22.1% for solvents, 4.9% for amphetamines, 4.7% for anxiolytics, and 4.3% for marijuana [13]. However, this scenario has changed considerably. Since the late 1980s, Brazil has ceased to be just a "corridor" of illicit drug trafficking. The populations of the different regions of the country began to integrate in a significant way a profitable and dangerous market of illicit drugs, especially of marijuana and cocaine and its derivatives. Currently, the "soccer country" is the 2nd largest consumer of cocaine and its derivatives in the world [14].

In Brazil, regular use of marijuana and cocaine among students is around 3.2% and 1.3%, respectively. In the northern region of Brazil and in its capitals, these values are similar [13]. This study found that 4.0% of students regularly use illicit drugs (marijuana and/or cocaine and its derivatives). This value is relatively similar to that found in other Brazilian municipalities, such as Campinas and São José do Rio Preto (São Paulo, Southeastern Brazil) and Feira de Santana (Bahia, Northeast Brazil) [4, 8, 15]. However, there are municipalities that the prevalence of illicit drug use among students is much higher than that found in this study. For example, the use of illicit drugs among students in the municipalities of Porto Alegre (South of Brazil), Aracaju (Northeast of Brazil), and São Paulo (Southeast of Brazil) is higher than 10% [5, 16].

The use and involvement with illicit drugs can be influenced by several factors, such as: psychological, social, and economic. Generally, the social environment is a potential epidemiological factor related to the use of licit and illicit drugs. In the municipality of Campinas (Southeastern Brazil), Soldera found that students from well-structured families, who transmit safety and good examples of behavior, have a lower prevalence of illicit drug use (marijuana + cocaine) [4]. On the other hand, in the municipality of São José do Rio Preto (Southeastern Brazil), Vieira reported that the use of illicit drugs is associated with the troubled family environment, especially the influence of parents who use drugs [3]. In addition, some studies have reported that young people belonging to families with separated parents or deteriorated families, who participate little in the lives of young people, are more likely to use licit and illicit drugs [17].

In this study, the social environment was mathematically associated with the use of illicit drugs. The variables "Parents use drugs", "Friends use drugs", "Have parents separated or deceased", and "Low participation of parents in school life" were associated with the use of illicit drugs. In this way, corroborating with other epidemiological studies that pointed out that the social example can influence positively or negatively about the use of drugs [4, 8, 17, 18].

In addition, other epidemiological variables were also mathematically associated with the use of illicit drugs among students in the municipality of Breves. The variables "Male", "Being over 18 years old", "Having reduced family income" and "Study and not work" are frequently detected as being associated with the use of licit and illicit drugs in the literature [4, 5, 16,

Table 1 Identification of factors associated with drug use (marijuana and/or cocaine and its derivatives) among high school students in the municipality of Breves, Pará Brazilian Amazon.

Factors	N	Use of drugs (%)	χ^2 (p-value)	OR	95% CI
Sex					
Male	805	65 (8.1%)	60.0 (p < 0.01)	9.9	4.8 – 19.9
Female	1,023	09 (0.8%)			
Age					
Up to 17 years	689	14 (2.0%)	13.4 (p < 0.01)	2.8	1.6 – 5.2
More than 17anos	1,065	60 (5.6%)			
Marital status of parents					
Married	1,229	38 (3.1%)	8.9 (p < 0.01)	0.5	0.4 – 0.8
Separated + Deceased	599	36 (6.0%)			
Father's education					
Illiteracy + Up to 6 years of study	1,131	42 (3.7%)	0.9 (p = 0.4)	0.9	0.5 – 1.3
Studied more than 6 years	697	32 (4.6%)			
Mother's education					
Illiteracy + Up to 6 years of study	1,063	44 (4.1%)	0.16 (p = 0.6)	1.2	0.7 – 1.8
Studied more than 6 years	765	30 (3.9%)			
Parental involvement in school life					
Ever	805	14 (3.9%)	19.8 (p < 0.01)	3.5	2.0 – 6.3
Sometimes + never	1,023	60 (5.9%)			
Family income					
Up to three minimum wages	1,507	58 (3.8%)	0.9 (p = 0.3)	0.8	0.5 – 1.4
More than three minimum wages	321	16 (5.0%)			
Study and work					
Yes	1,135	61 (5.4%)	13.6 (p < 0.01)	2.9	1.7 – 5.5
No	693	13 (1.9%)			
Study shift					
Daytime	1,319	35 (2.6%)	23.7 (p < 0.01)	3.1	1.9 - 4.9
Night	509	39 (7.7%)			
School Defacement					
Yes	1,005	51 (5.1%)	6.1 (p < 0.01)	1.9	1.2 – 3.1
No	823	23 (2.8%)			
Parents use some drugs					
Yes	656	25 (3.8%)	0.1 (p = 0.7)	1.2	0.6 – 1.9
No	1,172	49 (4.2%)			
Friends use some drugs					
Yes	1,366	60 (4.3%)	7.6 (p < 0.01)	2.8	1.3 – 6.3
No	462	07 (1.3%)			

18]. The literature points to the significant use of illicit drugs in Latin American countries, portraying a daily reality of the young people most affected by poverty, who, together with marijuana, are more accessible in relation to other illicit drugs [15].

In contrast, the results of this study are limited to the community of Breves or communities with similar characteristics. The Marajó Archipelago presents peculiar environmental, structural, economic, logistic and social characteristics that can considerably influence the use and profile of students who use illegal drugs. For example, the proportion of students who complete basic education and are formally absorbed by the labor market, therefore potentially distancing themselves from the world of drugs, is considerably low.

In addition to this limitation, it is also noted that the number of illicit drug users, as well as their profile, may have been underestimated. Despite the effort to approach all students in

the public schools of the municipality of Breves, not all students participated in the research, either because they missed classes on the days of information gathering or simply because they did not feel comfortable completing the quiz. The results of this study may be underestimated as to frequency of use and drug use, since students who frequently consume illicit drugs tend to be bothered to talk about the subject, often to skip classes or even, abandon the school environment.

One possible evidence of this problem is the association of illicit drug use with the study shift - diurnal period. The night shift is usually associated with the use of licit and illicit drugs among students due to the concentration of students over the age of 18. Some epidemiological studies on the use of licit and illicit drugs among students have already detected that the application of form in schools can have this type of problem, loss of information [4, 19, 20].

Conclusion

This study identified that the prevalence of experimental and regular users of illicit drugs (marijuana and/or cocaine and its derivatives) among students in the municipality of Breves are relatively similar to other epidemiological studies conducted in Brazilian cities. In addition, the epidemiological variables associated with the use of illicit drugs among students in the municipality of Breves were: male sex, age over 17 years, having separated or deceased parents, reduced parental participation in students' school life, family income up to three minimum wages,

not studying and working, studying in the day shift (morning + afternoon), parents use drugs, and friends and family use drugs.

Recommendations

The results of this study can contribute to the better targeting of strategies and policies for the control and prevention of drug use in the municipality, as well as other localities with similar characteristics. These results also fill an important gap in the area of public health and should be used by local education and health authorities.

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