

# Brazilian study on substance misuse in adolescents: associated factors and adherence to treatment

## Estudo brasileiro sobre abuso de substâncias por adolescentes: fatores associados e adesão ao tratamento

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**Abstract Objectives:** To investigate developmental and environmental factors associated to substance misuse in adolescents seen at a university day-hospital in Brazil and to verify the correlations between those factors and adherence to treatment. To compare factors associated to substance misuse in adolescents with the available scientific literature and to suggest specific preventive interventions for a national policy in Brazil.

**Methods:** Eighty-six adolescent's guardians were evaluated at admission to the service by using a semistructured interview including sociodemographic data, family relationship, perinatal and pregnancy histories, psychomotor and educational development, social relations, history of previous illnesses and family diseases, including drug abuse.

**Results:** The sample was predominantly male (90%). Adolescents referred from the criminal justice were older than those originating from other sources (16.4 x 15.4 years old  $p=.00$ ). Forty-four percent of adolescents reported school failure, a level which is two times higher than Brazilian statistics. Forty percent of the sample had criminal involvement, mainly drug dealing. *Cannabis* was the most prevalent reported drug. Living with both parents was protective, delaying the age of initiation by one year. Domestic violence was more frequent among parents with illicit drugs abuse (38.1% x 12.5%,  $p<.05$ ). Alcoholism and drug addiction in parents and relatives were about four times higher than those reported for the Brazilian population. No correlation was found between the investigated factors and adherence to treatment.

**Conclusion:** Our results indicate that the programs must include treatment of adults and education of parents and parents to be. Withdrawal of treatment occurs in the first month, and seems to be related to factors extrinsic to the adolescent.

**Keywords** Substance misuse. Adolescent. Treatment.

**Resumo Objetivos:** Investigar fatores relacionados ao desenvolvimento e ambiente associados ao abuso de substâncias por adolescentes atendidos em hospital universitário brasileiro. Comparar esses fatores com a literatura científica disponível e sugerir intervenções preventivas para uma política nacional no Brasil.

**Métodos:** Foram avaliados 86 adolescentes na admissão ao serviço através de uma entrevista semiestruturada, aplicada ao guardião do adolescente e incluindo dados sociodemográficos, relacionamento familiar, história da gravidez e perinatal, desenvolvimento psicomotor, educacional, relacionamento social, história de doenças anteriores e familiares, incluindo abuso de drogas.

**Resultados:** A amostra foi predominantemente masculina (90%). Os adolescentes encaminhados pela justiça criminal eram mais velhos do que os encaminhados por outras fontes (16,4 x 15,4 anos,  $p=0,00$ ). Tiveram repetência escolar 44% dos adolescentes, duas vezes mais do que o relatado nas estatísticas brasileiras para a população geral. Tinha envolvimento com a justiça 40% da amostra, principalmente por tráfico de drogas. *Cannabis* foi a droga mais prevalente entre os relatos. Viver com ambos os pais foi fator protetor, atrasando a iniciação às drogas em um ano. Violência doméstica foi mais comum entre pais que faziam uso de drogas ilícitas (38,1% x 12,5%,  $p<0,05$ ). Alcoolismo e dependência química por pais e familiares foram cerca de quatro vezes mais altos do que o relatado por outras amostras brasileiras. Não se encontrou corre-

lação entre os fatores investigados e adesão ao tratamento.

**Conclusão:** Os dados desse estudo indicam que os programas devem incluir o tratamento dos adultos e educação dos pais e futuros pais. O abandono do tratamento no primeiro mês parece ter causas externas ao adolescente.

**Descritores** Abuso de substâncias. Adolescentes. Adesão. Tratamento.

## Introduction

Drug dependence is a growing disorder in modern society and is closely related to environmental urban problems of increasing prevalence such as the violence associated to drug dealing. In a study carried out in institutions in charge of adolescents who had been involved in criminal situations<sup>1</sup> the author found that 30% of the adolescents arrested in Rio de Janeiro, Brazil, had drug dealing as their main charge, thus showing the importance of this delinquent behavior in the city. Many adolescents engaged in drug dealing behavior or using illicit substances will never become drug dependents.<sup>2</sup> However, substance misuse was suggested as the most important factor associated to violent behavior in adolescents.<sup>1</sup> Easy and premature access to drugs that can reduce anxiety and inhibitions to dangerous risk behaviors may be a risk for young people, especially those born in poor neighborhoods where drug dealing offers one of the only real opportunities for a well-paid job. Together with the availability of drugs, these children and adolescents still do not have the coping skills to deal with difficult situations and are used to seeing friends and relatives dealing with life stressors by taking drugs.<sup>3</sup> The medical and social problem described above further complicates the already complex theoretical issues described in the international scientific literature on substance misuse and drug addiction in adolescents. The diagnosis of drug dependence in adolescence is itself a subject of discussion. Substance use disorder diagnostic structures have been investigated in adult populations. However, it is unknown whether or not the current diagnostic scheme for substance disorders can accurately represent the development of substance use disorders in adolescents because research on diagnostic criteria has been conducted almost exclusively on adults.<sup>4</sup> While there are separate childhood criteria for mood, psychotic and antisocial personality disorders, substance use disorder criteria are not age-specific. The study by Fulkerson et al<sup>4</sup> concluded that DSM-IV substance abuse and dependence criteria may be more optimally structured as a unidimensional construct rather than a bidimensional construct for adolescents. The study did not find empirical justification for the distinction between abuse and dependence in adolescents. The authors point out that as the appropriate goal of any intervention with substance-using adolescents is the cessation of use (the only defensible treatment goal for minors), there may be no clinical utility for such a distinction. However, it is useful to know that abuse symptoms do not necessarily precede dependence symptoms in adolescents, as occurs in

adults. It is also of importance to know that evidence suggests that most substance-dependent subjects start drug misuse before 20 years old,<sup>2</sup> thus indicating that intervention during adolescence is of particular relevance in preventing the consequences of this behavior. Adolescents experience many life events and drugs will accompany most of them. Many will experiment with drugs and will quit drug use in adulthood.<sup>5</sup> However it is by this time that drug dependence will start for some of them and it is still difficult to determine which adolescents will be at risk of becoming dependent.<sup>2</sup>

Another important issue is that adolescence is a time of onset of many psychiatric disorders and these may increase the risk for drug dependence.<sup>5</sup> Identifying these disorders and establishing appropriate treatment is a responsibility for the health professional in charge of the adolescent engaged in substance misuse.

Treatment of substance misuse at this age group is particularly challenging. Some authors concluded<sup>6</sup> only that some treatment is better than none and that no treatment demonstrated superiority over the others. Relapse rates vary across studies but can be fairly high. It has been suggested that in treating adolescents, care should be provided to many aspects of their lives and should not be directed to the drug problem exclusively. For instance, sexual education, leisure activities and formal education should be provided.<sup>5</sup> Apparently, broad directed treatments are more effective. The new perspective of facing drug addiction as a chronic disease, as suggested by McLellan,<sup>7</sup> brings some optimism to the field of evaluation of treatment efficacy. According to this author, analogously to other chronic diseases, benefits for the drug-dependent patient would occur during treatment and appropriate support should be given after discharge in order to achieve long-lasting success. Evaluation of treatment months after its interruption would not be precise underestimating the efficacy of the different methods of treatment. It has been accepted that to obtain beneficial effects of any treatment for drug dependence patients should remain under treatment at least for three months.<sup>8</sup> However, this is not easily achieved.

Adherence to treatment is an important challenge with chronically-dependent patients in general and may present even greater difficulties when working with adolescents. Factors determining adherence are intrinsic to the patient and extrinsic, regarding procedures, staff and setting. Understanding these factors is crucial for the success of any treatment approach.

The aims of the present study were:

To investigate developmental and environmental factors

associated to substance misuse in adolescents assisted at the only university day-hospital targeting this population in Brazil.

To follow up the same adolescents evaluated at their admission to the service to look for correlations between the investigated factors and adherence to treatment

To compare the investigated factors with the available scientific literature and suggest specific preventive interventions for a national policy for drug abuse prevention in Brazil.

## Method

The study was carried out at the Integrated Regional Center for Attention of Adolescents (CRIAA) which belongs to the Department of Psychiatry and Mental Health of the Federal University of Niterói, Rio de Janeiro. The center offers treatment to adolescents aging 12 to 18 years engaged in substance misuse. A brief description of its function has been published elsewhere.<sup>9</sup> The service receives referrals from the community and from the criminal justice. Treatment is free of charge for the patient. The theoretical background of its methodology supposes teaching patients to deal with their conflicts, including drug problems as well as working to increase protective factors (family intervention, education, professional skills, leisure activities, sexual education). Although the number of patients reported in the present study is relatively small, it is representative of the total sample assisted at the 4-year old service. All adolescents seen during the first 18 months of functioning were invited to participate. There were no refusals but 10% of the subjects were excluded due to mistakes in research schedules, leading to missing data. Important changes in the functioning of the service were suggested as a result of the research and will be presented. Although a relatively new service, CRIAA intends to continue working in a well-documented way, suited to research and evaluation, due to its strong links with the university. Continuity in a service of this kind is unusual in Brazil. The involvement of the university will improve the likelihood of a long future for CRIAA. Data presented here represent the first efforts of this implantation and aim to contribute to the understanding of substance abuse in adolescents. Adolescents included in the present study were experiencing problems (including emotional, physical, legal, social, or educational) associated to the use of drugs. We defined this condition as substance misuse.

At the time of admission, 86 adolescents' guardians (74 mothers; 3 fathers; 2 couples and 7 other relatives) were interviewed in a private room by a previously-trained medical student, after giving informed consent. A semistructured interview was used and included information on sociodemographic data, family relationships, perinatal and pregnancy history, psychomotor development, educational degree, social relations, history of previous illnesses and family diseases (including drug abuse). All other relevant comments given by the informant were registered, especially about the family environment and violence towards the child. History of drug involvement, drug use pattern, problems related to drugs and previous treatments were also collected in a sepa-

rate interview with the adolescent which was carried out by the psychologist in charge of treatment. This procedure aimed to avoid biases related to the collection of information from the adolescent's guardian who might ignore details of the drug intake history. The instrument used to collect data on drug use was adapted from the intake form used at the Alcohol and Drugs Unit of the Federal University of São Paulo (Uniad, Unifesp). Briefly, this instrument collected information on age and circumstances of the first contact with alcohol, nicotine, cocaine, marijuana and any other drug reported by the adolescent. Information on the pattern of use of each drug was also collected, that is, amount used, frequency, and last episode of drug intake before the interview. Difficulties with previous treatments for substance misuse and involvement with the criminal justice were also investigated.

After the admission procedure the adolescent was referred to the treatment schedule of the institution with no further interference from the research procedures. Files of each individual patient were examined to assess adherence, and time remaining under treatment was registered. When the adolescent was no longer under treatment, the reason for discharge was recorded. As criteria for data analysis, six months or more in treatment was defined as good adherence and no adherence was defined as less than one month in treatment. Another study found out that after six months under treatment considerable improvement could be detected in the consumption of illicit substances and criminal involvement.<sup>10</sup> Characteristics of the sample were analyzed by taking the sample as a whole for the study of correlations and then by comparing the two subsets of extreme adherence (good adherence x no adherence). Correlations between variables were performed as pertinent to the study's objectives. The SPSS program was used to analyze data. Non-parametric or parametric analysis were used in accordance to the variables analyzed and are specified in each table. Differences between groups were considered as significant when *p* values were .05 or less.

## Results

Table 1 shows the general characteristics of the sample. The sample was predominantly male (90%), in spite of the service being available for both genders. There was a statistical significant difference between the age of adolescents criminally involved and those who were not. Those coming via the criminal justice aged  $16.4 \pm 1.1$  ( $n=34$ ) and those coming from the general community aged  $15.4 \pm 1.2$  ( $n=50$ ) ( $t=3.668$ ,  $p=.000$ ). Schooling (years at school) was  $5.2 \pm 1.9$  (mean  $\pm$  sd) and a significant correlation was detected between this and parental educational level (Spearman non-parametric correlation,  $p<.05$ ). Parental educational levels differed slightly between mothers and fathers. The majority of mothers (63%) had some primary school while this was the case for 40% of fathers. School failure at some stage of the educational process was present in 44% of the adolescents, whereas official statistics for the Brazilian population report around 20%.<sup>11</sup>

Criminal justice involvement was present in 40% of our sample, mainly drug dealing, and it is probably a correlate to

**Table 1 – General characteristics of the sample.**

Gender	90% male	10% female
Age (years)	15.8±1.3	
Schooling (years at school)	5.2±1.9	
School Failure: (any history of repetition at any educational level)	44%	
Parental Schooling:*	mothers: 63%	fathers: 40%
(% of incomplete fundamental level)		
Criminal Involvement	40%	

\*Spearman Non-parametric Correlation test:  $p < .05$  for parental educational level and schooling.

**Table 2 – Substance misuse by adolescents.**

Adolescents Reporting Misuse of	
Cannabis	82%
Cocaine	12%
Tobacco	44%
Alcohol	29%
Age of Initiation	12.5±2.0 (7-16)
Polydrug Use	
Alcohol and Cannabis	29%
Alcohol and Cocaine	22%
Cannabis and Cocaine	56,5%
Tobacco and Alcohol	47,2%

the availability of our service to the criminal courts. *Cannabis* was the most prevalent reported drug. Age of onset of drug use was between 12 and 13 years old, with some of them starting as early as 7 years old. An interesting finding was a difference between the age of initiation in adolescents with parents who were not living together when compared to those living together with both parents ( $12.2 \pm 2.1$  x  $13.5 \pm 1.5$   $t = 2.2$ ,  $p < .03$ ). Most adolescents in our study, when not living with both parents, were living only with the mother.

Poly-substance use was reported by most adolescents, and the association of cannabis and cocaine as well as the combined use of tobacco and alcohol were the most frequent ones (Table 2). Only one adolescent had alcohol as the only problem and among the poly-drug users, alcohol was very often present: those reporting the use of alcohol used 3.4 drugs and those who did not, reported the use of 2.1 drugs.

Figure 1 shows data about environmental circumstances in which psychosocial development took place. Domestic violence is probably underestimated as it was collected under indirect conditions, recording spontaneous information collected in the semistructured interview. Even then, it was reported in 24% of the cases. Abuse of illicit drugs was more frequent among parents reported to be violent towards the child: 38.1% x 12.5%, chi-square,  $p < .05$ .

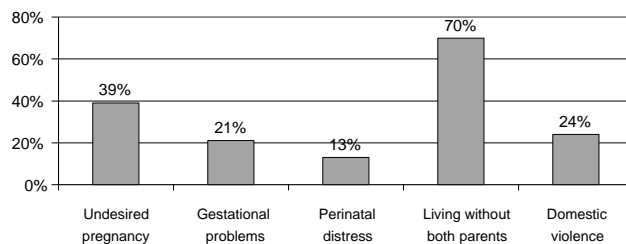
Family drug abuse showed striking results (Figure 2). In this sample, alcoholism was much higher than those reported in other previous studies of our group, carried out with Brazilian samples of income similar to the present sample.<sup>12</sup> The prevalence of alcohol dependence for the Brazilian population is 10%.<sup>13</sup> Rates about four-fold higher were found in the present study. Drug addiction in relatives and parental illicit drug use were also high.

There were no differences between samples when adolescents were divided into those with good adherence ( $n = 41$ ; 48.%) and no adherence ( $n = 19$ ; 22%). About one half of dropouts

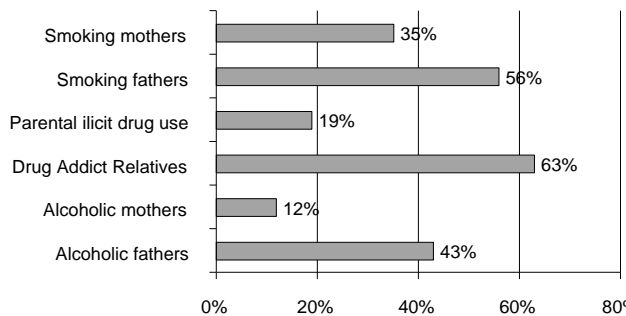
occurred in the first month and without an apparent reason. In the interval of 1 to 6 months, about 10% of those who dropped out were murdered by drug dealers or conflicts between drug dealers and the police.

## Discussion

Cannabis was the most consumed drug in our sample. Clinical observation of the adolescents and data from another study in progress, suggest that tobacco and alcohol abuse might have been underestimated in this study, perhaps due to the focus on illicit drugs. Selling, giving, or providing by any means these two drugs to adolescents is not legal in Brazil,<sup>14</sup> what leaves to the justice the possibility of interpreting their use by adolescents as a legal violation on the part of their parents. However, because tobacco and alcohol are socially-accepted drugs, their use is frequently overlooked. It is important to note that the information in our study was collected by the psychologists as part of the treatment program and was not recollected by the specific research team. Although the psychologists had to fill in a form with all relevant information about drug intake we realized that they had enormous difficulties in completing the forms regularly and completely. This outcome initiated a special training program for the staff. However, data of other studies confirm the preference for cannabis among 8th graders. The 'Monitoring the Future' Study reported, in 1999, that the rate of daily consumption of marijuana was higher than that of daily use of alcohol.<sup>15</sup> Studies report that the rate of marijuana consumption during the month preceding the survey was more than twice than that of all other combined drugs (8.3% vs. 4.0%) and higher than the rate of drunkenness (7.7%).<sup>16</sup> In Brazil, rates of 10% of cannabis experimentation were reported among secondary school



**Figure 1 - Environmental distress during development.**



**Figure 2 - Family drug-addicted relative.**

students.<sup>17</sup> These data, collected from adolescents who were not seeking treatment, agree with those collected in the present study in which a considerable part of the sample was exposed to additional risks and had criminal involvement. It has been considered that cannabis seems to be particularly dangerous for adolescents with conduct problems.<sup>18</sup> Although the diagnosis of conduct disorders has not been established for each adolescent of our sample, the high percentage of criminal justice involvement (40%) suggests that this may be important. Crowley et al<sup>18</sup> investigated a teenage sample referred for substance and conduct problems. They concluded that in adolescents with conduct problems cannabis potentially produces both dependence and withdrawal. In the present study, if involvement with criminal activities is considered as indicative of a conduct problem, 40% of the sample should be considered at risk for cannabis effects and should deserve special clinical attention. It is relevant to consider that the adolescents engaged in criminal activities were older than those who were not. However, age of initiation on drugs did not differ between groups. Apparently, involvement with crimes severe enough to result in the intervention of criminal courts, or repetition of illegal activities leading to intervention would start later in the lives of adolescents engaged in substance misuse, thus leaving time to prevent this outcome. Preventive activities must be directed both to children and adolescents who are not yet using drugs but also to the ones who have started drug consumption and are close to get involved in criminality. In this study, criminality was mostly drug dealing. Early contact with illicit drugs would favor social relationships with criminals and introduce the adolescent to drug dealing. We may remind that it has been believed that involvement with the law might precede the approach of the health system for drug dependents.

Poly-substance use was predominant in the present study. This finding is consistent with previous data on adolescents in treatment for alcohol and drug use.<sup>19</sup>

Males are reported to be more susceptible to substance misuse and conduct problems. However, many of the best studies on conduct problems have used male samples and several studies indicate that major gender-related differences in prevalence rates are related to the most serious antisocial acts.<sup>20</sup>

Insufficient attention has been devoted to gender differences and conduct problems among girls. It has been suggested that premature puberty and early sexual debut are possible elements of a female trend to conduct problems and substance use.<sup>20</sup> CRIAA is available for both genders and the predominance of boys was not an expected finding. Apparently, Brazilian female teenagers engage less in substance misuse than they do in other countries. Another possibility is that girls have a different pattern of substance abuse and are less involved in criminal problems. A study in Brazil reported that male adolescents present more involvement with the police than female adolescents.<sup>21</sup> As the criminal system is one of the sources of referrals to CRIAA, this might explain the small number of girls at the institution.

There is only one unit for delinquent girls in the city of Rio

de Janeiro. This paucity of services for girls presumes that they will need them less. However, this same paucity of residential places for girls correlates to the fact that there will be a reduced likelihood of a custodial outcome post-arrest. Studies on the profile of delinquent girls are necessary.

Our data is in accordance with the literature which suggests that drug consumption by parents and by people in the children's environment poses a risk for drug problems. Over and above the genetic susceptibility already established for alcoholism such environmental exposure offers a negative social learning process problem. Basically, the child would grow up observing adults dealing with their own problems by taking drugs and would learn this behavior as the only coping skill. Expectations regarding drug effects and acceptance by peers would reinforce this behavior.<sup>3</sup>

None of the investigated factors were related to adherence. This lack of significance may be a consequence of lack of sensitivity in a relatively small sample, but it is suggestive that determinant factors for adherence in this particular sample are not inherent to the patients, but are probably related to the treatment process in itself and to the characteristics of the staff. It has been pointed out<sup>7</sup> that when approaching other psychiatric diseases, researchers and doctors search for external causes of non adherence, such as complicated schedules. The same does not occur with chemical dependent subjects, who are often blamed for non-compliance. A reflection about treatment schedules is necessary. A comprehensive understanding of these external variables would require a different procedure. Adherence to treatment is one of the main challenges in treating drug dependence and it is perhaps more challenging when patients are adolescents. It is crucially important to understand this if one is interested in improving recovery rates. Another study showed that in CRIAA, one to 12 months in treatment was associated with some improvement in the patient's condition especially in criminal behavior.<sup>10</sup>

Motivation towards treatment is more likely to be an adult characteristic. They usually have fewer adverse consequences due to drug use. The treatment setting must be attractive in order to keep the adolescent for enough time. In conclusion, early alcohol or drug use is associated with continuous use. Therefore, prevention and treatment during adolescence is fundamental. The impact of the age of onset of substance use and delinquency has also been reported. Preventive programs have been traditionally focused on strategies of refusal and on behavioral problems. Data from the present study indicate that any conceived preventive measures must include treatment of adults and education of parents and parents to be. Drug consumption by the families was clearly one of the most important factors associated to substance misuse among adolescents in the present study. The impact of suggested changes in the result of treatment at this institution should be further evaluated.

Our study was not able to detect why so many adolescents withdrew from treatment at early stages. Data showing that this was more important in the first month of treatment led the staff to create a special motivating group which takes place in

the first month of admission at CRIAA. The impact of this new procedure is under evaluation. Our data suggest that the problem of adherence is extrinsic to the adolescent.

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