

# Characteristics of cannabis users seeking treatment in São Paulo, Brazil

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## ABSTRACT

**Objectives.** This article describes a sample of 160 adults selected to participate in a randomized controlled trial conducted at a specialized outpatient clinic for cannabis users in Brazil. It correlates consumption with several measures of marijuana use, comparing it with other samples.

**Methods.** Instruments used were the Composite International Diagnostic Interview (CIDI) and Wender Utah Rating Scale for screening and demographic data interviews, and the ASI, time-line follow back (TLFB), Marijuana Withdrawal and Marijuana Problem Scales, and Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) Checklist for cannabis dependence.

**Results.** Participants in the study were mostly single, white men; their mean age was 32.3 years. They had a mean of 15.6 years of formal education and 61.6% worked. The cohort started using marijuana at a mean age of 16.5 years and developed daily use by a mean age of 21 years. Subjects in the sample had used marijuana for a mean of 15 years. They used it for 92.2% of the 90 days prior to the interview and smoked a mean of 1.99 marijuana cigarettes per day during this period. Individuals in the group had experimented with other drugs, especially cocaine.

**Conclusions.** Marijuana users in this sample matched the profiles of those investigated elsewhere, although they reported fewer symptoms of dependence. Marijuana users should be considered independently in substance abuse programs, because they require specific attention and treatment. Broader epidemiological studies should be conducted to determine the extent of marijuana use within the Brazilian population.

## Key words

Marijuana, marijuana abuse, marijuana dependence, substance abuse treatment centers, Brazil.

Cannabis is the most widely abused illicit drug in the world (1, 2). According to data collected for 2005 and 2006, more than 3.8% of the world's popula-

tion has used cannabis (3). There is considerable experimentation with cannabis among teenagers in Australia, Europe, and the United States (2). According to a survey carried out in 2006 in the United States, 39.8% of the population (12 years old and above) had experimented with cannabis; 10.3% of those surveyed had used it in the year prior and 6.0% had used it in the month prior to the inter-

view (4). Approximately 9% of those who had used marijuana had met criteria for dependence at some point (5, 6). For those who had used the drug more than a few times, the dependence risk rose to 20%–30% (7). The rate of marijuana dependence in the U.S. is estimated to be greater than 7% among adult users (8), compared with 12% for cocaine and 5% for alcohol. A recent study in New Zealand shows

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that by the age of 21, over 10% of a sample of 1 265 people met criteria for cannabis dependence (9).

In Brazil, marijuana is the most commonly used illicit drug after volatile solvents, but its use is lower than in other countries. According to a survey with students from middle and high schools in 10 Brazilian cities, marijuana use in life rose from 2.8% in 1987 to 5.9% in 1997 (10). In 2004, the survey included 27 cities and found that lifetime marijuana use was 5.9%, placing it just below that of alcohol, tobacco, and solvents (11). Use in Brazil was lower than that of several other South American countries: studies conducted for similar age groups between 2003 and 2006 reported that lifetime marijuana use was 21.6% in Chile (12), 18.6% in Ecuador, 12.5% in Uruguay, 7.2% in Guyana, and 6.9% in both Panama and Nicaragua. The Brazilian rate was higher than in Paraguay (4.3%) and Venezuela (1.0%) (13). For youth between 15 and 16 years old, lifetime use in Brazil was 7.5%, much lower than for the same ages in France and the United Kingdom (each with 38.0%), the United States (35.1%), Belgium (32.0%), Spain (30.0%), the Netherlands (28.0%), and Italy and Germany (each with 27.0%) (14, 15).

In terms of rate of frequent use (i.e., used 6 or more times in the last 30 days), in Brazil there was a decrease from 0.8% in 1997 to 0.7% in 2004. Heavy use (i.e., 20 or more times in the last 30 days) remained at 0.5% in 1997 (11). Compared with other drugs, cannabis ranks just under solvents for heavy use.

In a 2001 household survey of people between 12 and 65 years old, conducted in 107 Brazilian cities, reported lifetime marijuana use was 6.9% (16), very similar to rates in Colombia (5.4%) and Germany (4.2%), but significantly lower than rates in the United States (34.2%), the United Kingdom (25.0%), Denmark (24.3%), Spain (19.8%), Chile (19.7%), the Netherlands (19.1%), Greece (13.1%), and Sweden (13.0%) (3, 12, 14, 17). One percent of respondents in the Brazilian household survey reported symptoms of marijuana dependence (16).

Although the use of cannabis is widespread, little research has focused on the treatment of marijuana users because of the mistaken belief that cannabis causes no harm (18, 19). However, studies have been carried out recently showing negative effects of the drug, such as: subjects starting to use at an earlier age, the relationship between cannabis use and psychosis, neuropsychological dysfunction, risk of consumption during pregnancy, and negative respiratory effects (20).

The number of people requesting treatment for cannabis dependence is rising, particularly in the United States and Australia, where from 1993 to 1999, the number in treatment doubled (6). Studies have shown that 20% of clients entering addiction services reported cannabis as a problem substance (21–23).

While marijuana use is a concern of health professionals, particularly in the United States, Australia, and New Zealand, only a few clinical population studies have been undertaken (18). The profile of the samples studied in such trials is very different from the general population. Compared with the populations in the United States and Australia, cannabis users who seek treatment in Brazil tend to be older, having a mean age of 32 years, and are predominantly male, white, single, have some education, and have an occupation. With regard to cannabis use, the United States population follows a pattern of onset at age 16, where problematic use begins three years later (24–27). In Australian samples, subjects tend to begin at an earlier age (around 15 years old) with the onset of problematic use at 18 years old (28–30). However, all U.S. and Australian subjects reported several years of very heavy use (more than once a day for 15 years) and many problems associated with their marijuana use (average of 8.5) as well as dependence symptoms (average of 6.16), the most common of which were “unsuccessful attempts to quit or cut down” (24–27).

Although the epidemiologic data on cannabis use and abuse are limited in Brazil, they do indicate that marijuana is a problem for the Brazilian popula-

tion. In Brazil, little attention has been given to marijuana users, possibly for reasons mentioned above, but basically because the harms wrought are not immediately perceived. The major challenge in treating marijuana users is that the impact of adverse effects only becomes evident after prolonged and frequent use (19). Given that it is difficult for patients to realize the drug is doing them harm, the belief that marijuana is a “soft” drug is still held by some health professionals.

In 2000, an out-patient clinic was opened in São Paulo, Brazil’s largest city, exclusively to treat marijuana users, representing the only such specialized service in the country. The researchers conducted a randomized controlled trial specific to marijuana users, testing a brief psychological intervention.

This article describes the sample selected in terms of drug abuse patterns, particularly of cannabis, and related problems and symptoms, and compares the sample to those described in the literature.

## MATERIALS AND METHODS

The cannabis users’ treatment study was conducted at São Paulo Federal University’s out-patient clinic which specializes in the treatment of alcohol and drug users. The clinic comprises different out-patient clinics, one of which is for marijuana users over 18 years of age. After two years of providing treatment for this population, the team responsible for the clinic conducted the trial in order to test a brief individual intervention described by Jungerman (31).

### Participants

Participants were recruited between September 2003 and October 2004. Of those who came for an interview, 60.5% responded to a newspaper advertisement, 17% had seen a report on a television program, 8% had been informed about the program by a friend or family member, 6.5% had read an

announcement on the clinic Web site, and the remainder came in response to flyers distributed at metro stations and university entrance gates, or as a result of radio messages about the program. All of the announcements invited marijuana users who were at least 18 years old and who wished to quit smoking marijuana and required help, to contact the outpatient clinic.

### Inclusion/exclusion criteria

There were 277 respondents to the announcements. They were invited for a personal interview that consisted of a brief screening to determine whether they met inclusion criteria. Interviewees provided basic information (age, permanent address, and contact information) along with a history of their use of cannabis and of other drugs in the last three months. On successful completion of the screening, they underwent the Composite International Diagnostic Interview (CIDI) (32) and Wender Utah Rating Scale (33). Participants were eligible for the study if they were at least 18 years old, had smoked marijuana on at least 40 occasions in the last 90 days (i.e., 3 times per week), had no psychiatric illness, no dependence on any other drug, and were not undergoing any other treatment for cannabis use (attendance at Narcotics Anonymous meetings was not counted as treatment). The results of the CIDI were used to exclude psychiatric disorders and other drug dependence.

Of the 277 individuals interviewed, 186 (67%) were eligible. The main reasons for exclusion were: 31% had used low levels of cannabis in the last 90 days, 11% met criteria for depression, 12% were undergoing other treatment for cannabis use, 10% fulfilled criteria either for abuse or dependence on cocaine, 11% met criteria for other psychiatric illnesses (such as attention deficit hyperactivity disorder and generalized anxiety disorder), 7% met criteria either for abuse or dependence on alcohol, and 7% were polydrug users. For 77% of the sample, the main reason given for seeking treatment was the desire to quit smoking marijuana.

Of the 186 eligible subjects, 13 failed to come in for the baseline interview, giving an initial sample of 173. For the purpose of this study, the sample comprised 160 individuals.

The project was approved by the Ethical Committee of the São Paulo Federal University.

### Assessment procedures

After the initial screening, subjects who were determined to be eligible were invited for a baseline interview. They were first presented with a consent form and received explanations on all the research procedures, including randomization. Once they had signed the consent form, they took part in a structured interview that included a demographic data questionnaire with a history of their drug use. A time-line follow back (TLFB) (34) was used to gather a history of marijuana use, as well as to check in detail the pattern and frequency of consumption of marijuana and any other drugs. The number and size of joints (marijuana cigarettes) smoked over the last 90 days were recorded on a calendar that divided each day into quarters (12 a.m.–6 a.m.; 6 a.m.–12 p.m.; 12 p.m.–6 p.m.; 6 p.m.–12 a.m.). Number of joints consumed, the number of days participants smoked per week, as well as the number of quarters of days participants smoked per day were calculated. The nine Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) Checklist criteria for cannabis dependence were also used (including two for tolerance symptoms and two for abstinence symptoms) (35).

Subjects also completed a series of self-report questionnaires to measure secondary outcomes including the Marijuana Withdrawal Scale (MWS) (36, 37), to check the most common symptoms from their most recent period of abstinence, and the Marijuana Problem Scale (MPS) (26), which is a 19-item scale used to measure recent problems associated with marijuana use.

The subjects randomly took urine tests that checked only for tetrahydrocannabinol (THC).

### Data analysis

Quantitative variables were expressed as means, standard deviations, minimums, and maximums. Categorical variables were summarized as absolute and relative frequencies. Pearson's correlation coefficient and ANOVA were used to evaluate the associations between the use of marijuana and other variables. All the analyses were performed using SPSS statistical software, version 15.0 (SPSS Inc, Chicago, Illinois, U.S.A.).

## RESULTS

The sample studied comprised 160 marijuana users. Table 1 shows the demographic data from the sample. The mean age was 32.32 years old (SD = 8.37; range 18–59 years). Subjects were mainly male, white, and single. They had a mean of 15.64 years of schooling (SD = 3.67; range 5–34 years). Most subjects worked (61.6%) and a number both worked and studied (16.3%). The majority of the subjects lived in their own homes.

Information regarding the sample's marijuana use is shown in Tables 2 and 3. The mean age at first use was 16.44 years old (SD = 3.67; range 8–35 years) and the mean age at onset of daily use was 21.08 years old (SD = 5.85; range 13–55). Mean years of use was 16.01 (SD = 8.23; range 3–46). Marijuana consumption in the 90 days prior to the baseline interview was recorded. The percentage of days smoked in that period was 92.19%, the mean number of joints smoked per day was 1.99, and the mean number of quarters (6-hour periods) per day that the subjects smoked marijuana was 2.05. All but one of the subjects underwent urine testing, and 100% of those tested were positive for THC.

Table 3 shows circumstances of first experimentation and patterns of use. Most subjects first tried marijuana with friends (78.1%), on the street (37.5%), or at home (28%). The most important factors that motivated subjects to experiment were "curiosity" (62.5%), followed by social pressure

**TABLE 1. Demographic data for sample of adult cannabis users (n = 160), Brazil, September 2003 to October 2004**

Category	No.	Percentage of sample
Gender		
Male	128	80.0
Female	32	20.0
Ethnicity		
White	143	89.4
Black	17	10.6
Marital status		
Single	103	64.4
Married/live together	40	25.0
Divorced/separated	17	10.6
Residence		
Own	95	59.4
Rent	56	35.0
Borrow/Squat	9	5.6
Religion		
None	53	33.1
Catholic	63	39.4
Spiritualist	22	13.8
Other	22	13.8
Occupation		
Employed	99	61.6
Works and studies	26	16.4
Unemployed	21	13.2
Student	14	8.8

(28.1%). The major factor that led subjects to continue using marijuana was “pleasure” or “good sensations” (61.9%), followed by pressure of friends (16.3%) These were the same reasons given for increased use (68.8% and 7.5%, respectively).

All but two subjects (98.8%) used marijuana in joints. When asked about frequency of use in the last year, 50.0% reported they had used more than once a day, and 34.4% reported they smoked one time daily. Most users (74.4%) smoked alone, and 51.3%

smoked in “puffs” (that is, they lit and relit the same joint), whereas 38.8% smoked whole joints. For 88.1% of the sample, the preferred time of day for use was the third quarter (from 6 p.m. to 12 a.m.).

An attempt was made to measure the size of the joint smoked by associating the grams of marijuana it contained, but smokers had difficulty providing this information. Consequently, a scale of “thin,” “medium” (cigarette size), and “large” joint size was adopted, where the medium size weighed approximately 1 gram. Nearly half (47.5%) of the sample smoked thin, and 40.6% smoked medium-sized joints.

Fifty-nine percent of the subjects spent up to 70 Brazilian *reais* (US\$ 20) per month on marijuana. Most bought their own marijuana (89.9%); purchases were made “from a friend or acquaintance” (42.5%), at a drug hang-out (33.1%), from a drug dealer (9.4%), or ordered by telephone and delivered (10.6%).

Table 4 shows the history of cessation for the subjects. Most (76.9%) had previously stopped or attempted to stop smoking marijuana within the last year and had done so alone. These attempts were made alone because 95.0% of subjects had never received treatment for their marijuana problem. Reduction in marijuana consumption had been attempted by 73.1% of the sample, and different approaches were reported: 53.1% said they had reduced the number of joints smoked per day; 33.5% reduced the number of times they smoked each day; 25.6% cut down on the number of days in the week they smoked; and 19.1%

changed the hours (six-hour periods) that they smoked in the day.

When asked how much they knew about marijuana, 43.8% of the sample stated they knew “something.” The majority (92.5%) wanted to know more, mainly about its adverse effects.

The mean number of dependence symptoms was 5.48 (SD = 2.14) out of a total of 9. These results were lower than those reported in other studies (27, 29). Table 5 shows the most frequently reported symptoms, with the main one being “unsuccessful attempts to quit or cut down,” mirroring other studies but with a lower percentage (83.7% in the present study versus 96% reported in Stephens et al.[27]). If we consider that dependence satisfies at least three of the seven symptoms, 88.7% of the sample met criteria for dependence. The two main variables that measure consumption are: percentage of days smoked and mean number of joints smoked per day in the last 90 days. The correlation between the mean number of symptoms and the two variables measuring consumption was statistically significant ( $r = 0.322$ ,  $P < 0.001$  for mean number of joints smoked and  $r = 0.350$ ,  $P < 0.001$  for percentage of days smoked).

Table 5 also shows associations between the two main variables measuring consumption (percentage of days smoked and mean number of joints smoked per day in the last 90 days) and each of the nine symptoms of the dependence syndrome. For both measures of consumption there was a statistically significant correlation for the two tolerance symptoms and for “considerable time spent buying, using, or recovering from the effects.” Moreover, there was a partially statistically significant correlation (i.e., for just one of the two measures: either percentage of days smoked or mean number of joints smoked per day) for the following: two symptoms of abstinence, “using for a longer period of time or more than intended,” “using takes up the time normally spent on other important activities,” “using despite persistent or recurrent psychological or physical problems,” and “unsuccessful attempts to quit or cut down.”

**TABLE 2. Characteristics of marijuana use reported by sample of adults (n = 160) seeking treatment, Brazil, September 2003 to October 2004**

Characteristic	Mean	Standard deviation	Minimum	Maximum
Age at first use	16.44	3.65	8	35
Age at beginning of daily use	21.08	5.85	13	55
No. of years of use	16.01	8.23	3	46
No. of joints smoked per day over the last 90 days	1.99	2.08	.04	11.82
No. of quarters (6-hour periods) smoked per day over the last 90 days	2.05	1.99	0.28	4.0

**TABLE 3. History and patterns of marijuana use reported by sample of adults (n = 160) seeking treatment, Brazil, September 2003 to October 2004**

Category	No.	Percentage
Characteristics of first time using marijuana		
Place first used:		
On the street	60	37.5
At home	44	28.0
With whom first used:		
With friends	125	78.1
Why first used?		
Curiosity	100	62.5
Social pressure	45	28.1
Reasons for continuing to use:		
Pleasure	99	61.9
Social pressure	26	16.3
Anxiety/low self-esteem	16	10.0
Reasons for frequent use:		
Anxiety	15	9.4
Social pressure	12	7.5
Typical form of use:		
Joints	158	98.8
Characteristics of use in last 12 months		
With whom used:		
Alone	119	74.4
With friends	21	13.1
Other	20	12.5
Typical form of use:		
Puffs	82	51.3
Whole joint	62	38.8
Various	16	10.0
Frequency of use:		
More than once a day	80	50.0
Once a day	55	34.4
3 to 5 times a week	23	14.4
Preferred time of the day:		
3rd quarter (6 p.m.–12 a.m.)	141	88.1
Size of the joint:		
Thin	76	47.5
Medium	65	40.6
Large	15	9.4
Source of supply:		
Buy	143	89.9
Do not buy	5	3.1
Varies (given, etc.)	9	5.6
Where bought:		
From a friend/acquaintance	68	42.5
In a drug hangout	53	33.1
Ordered by telephone	17	10.6
From a dealer	15	9.4

These results show an association between consumption and the presence of specific symptoms, of which "tolerance" and "time spent doing marijuana-related activities" were most significant.

On a scale from 0 to 19 the mean number of problems was 9.91 (SD = 4.15), a result similar to that reported elsewhere (26, 27). The correlation between the mean number of problems

and the two main variables that measure consumption (percentage of days smoked and mean number of joints smoked per day in the last 90 days), was statistically significant only for mean number of joints smoked per day ( $r = 0.163$  and  $P = 0.040$ ) and borderline for percentage of days smoked ( $r = 0.154$  and  $P = 0.053$ ). Results imply that the more the subjects smoke, the greater the number of marijuana-related prob-

lems. Table 6 shows the percentage of people reporting each of the problems, with the main one being "procrastination" (88.1%) which corresponds to a study by Stephens et al. (26).

Table 6 also shows the associations between the two main variables that measure consumption (percentage of days smoked and mean number of joints smoked per day in the last 90 days) and each of the 19 problems from the Marijuana Problem Scale. We found a statistically significant correlation for both measures of consumption due to "legal problems" and to "lowered self-esteem." There was a partially statistically significant correlation (i.e., just one of the two measures: either percentage of days smoked or mean number of joints smoked per day in the last 90 days) for "problems between subject and friends," "miss days at work or miss classes," "medical problems," "financial difficulties," and "lower energy level."

These results suggest that the more cannabis the subjects consumed, the higher their chances of having legal problems and a poor self-image. Marijuana use also indicated problems with friends or concerning occupational, financial, and physical issues.

Table 7 describes the main abstinence symptoms reported, with the main one being "craving," followed by "restlessness," "nervousness," and "irritability." "Craving" was the only symptom described as severe; the others were generally described as mild to moderate.

In relation to use of alcohol and other drugs, the percentage of days subjects reported alcohol use in the 90 days prior to the baseline interview was 10.4%, while for other drugs the value was less than 1%. In terms of lifetime use, 98.8% had drunk alcoholic beverages, 87.3% had snorted cocaine, 76.9% had inhaled solvents, 75.7% had smoked tobacco, 57.2% had taken hallucinogens (primarily LSD and psilocybin or "magic" mushroom tea), 30.6% had smoked "crack," 24.3% had taken sedatives, 22.5% had used amphetamines, 22% had used Ecstasy, and 9.8% had used opiates. Use of other types of drugs was reported by 15.6% of the sample, the two most common being

**TABLE 4. History of abstinence and reduction of marijuana use and knowledge of drug as reported by sample of adults (n = 160) seeking treatment, Brazil, September 2003 to October 2004**

Variable	No.	Percentage
Subjects have abstained from using marijuana	123	76.9
Subjects have reduced consumption	117	73.1
Methods of reducing consumption (more than one choice is allowed):		
Reduced no. of joints per day	85	53.1
Reduced no. of times per day	53	33.5
Reduced number of days smoked	40	25.6
Changed quarters (6-hour periods) when consumed	30	19.1
Subjects have never received treatment	152	95
What subjects know about marijuana:		
“Something”	70	43.8
“A lot”	47	29.4
“A little”	33	20.6
“Everything”	8	5.0
Subjects want to know more about marijuana	148	92.5
Subjects want to know more about adverse effects of marijuana	113	72.6

*mesclado* (a mixture of marijuana and crack) and anticholinergics. Alcohol was the most commonly used substance apart from cannabis, with 89.6% of the sample having consumed it in the days before the interview, and 31.8% having had problems with alcohol at some point in life, although the frequency of its use was “occasional” (on weekends). Fewer than half of the subjects had used tobacco in the few days preceding the interview, whereas 66% reported problems due to smoking in life. Recent, “occasional” cocaine use was reported by 18.5% of the sample.

**DISCUSSION**

The sample’s demographics follow a similar profile found in other studies

**TABLE 5. Subjects from the total sample (n = 160) reporting marijuana dependence symptoms defined by DSM-III-R Checklist and correlations with consumption variables (percentage of days smoked and mean number of joints smoked per day in the last 90 days), Brazil, September 2003 to October 2004**

Marijuana dependence symptoms <sup>a</sup>	Subjects who did not (“No”) and who did (“Yes”) report symptoms <sup>b</sup> No. (%)	Number of joints smoked per day Mean (SD)	P	Percentage of days smoked in the last 90 days	P
Withdrawal as manifested by:					
(a) Abstinence syndrome	No: 38 (31.7) Yes: 82 (68.3)	1.76 (1.77) 1.95 (1.68)	0.563	85.1 94.2	0.003 <sup>c</sup>
(b) The substance is taken to relieve or avoid abstinence symptoms	No: 59 (48.8) Yes: 62 (51.2)	1.56 (1.43) 2.26 (1.87)	0.024 <sup>c</sup>	87.0 95.5	0.002 <sup>c</sup>
Tolerance as defined by:					
(a) Need for markedly increased amounts of substance to achieve intoxication or desired effect	No: 78 (63.4) Yes: 45 (36.6)	1.48 (1.31) 2.66 (2.00)	0.000 <sup>c</sup>	88.7 96.5	0.006 <sup>c</sup>
(b) Diminished effect with continued use of same amount of substance	No: 53 (44.5) Yes: 66 (55.5)	1.39 (1.27) 2.26 (1.89)	0.005 <sup>c</sup>	87.8 94.0	0.031 <sup>c</sup>
Using for a longer period of time or more than intended	No: 61 (49.6) Yes: 62 (50.4)	1.67 (1.41) 2.16 (1.91)	0.390	91.1 92.0	0.031 <sup>c</sup>
Unsuccessful attempts to quit or cut down use	No: 20 (16.3) Yes: 103 (83.7)	1.51 (1.21) 2.17 (1.89)	0.034 <sup>c</sup>	90.8 91.9	0.704
Considerable time spent buying, using, or recovering from the effects	No: 47 (38.2) Yes: 76 (61.8)	1.57 (1.43) 2.13 (1.80)	0.078	87.3 94.2	0.016 <sup>c</sup>
Using takes up the time normally spent on other important activities	No: 47 (38.2) Yes: 76 (61.8)	1.51 (1.21) 2.17 (1.89)	0.034 <sup>c</sup>	90.9 91.9	0.704
Using despite persistent or recurrent psychological or physical problems	No: 21 (17.1) Yes: 102 (82.9)	1.65 (1.67) 1.97 (1.70)	0.434	83.6 93.2	0.010 <sup>c</sup>

<sup>a</sup> Symptoms as defined in the DSM-III-R Checklist (36).

<sup>b</sup> For dependence symptoms, sample size is from 119 to 123.

<sup>c</sup> P < 0.05.

**TABLE 6. Subjects reporting marijuana-related problems according to the Marijuana Problems Scale and correlations with consumption variables (percentage of days smoked and mean number of joints smoked per day in the last 90 days), Brazil, September 2003 to October 2004**

Marijuana-related problems <sup>a</sup>	Subjects who did not ("No") and who did ("Yes") report symptoms <sup>b</sup>	Number of joints smoked per day	P	Percentage of days smoked in the last 90 days	P
	No. (%)	Mean (SD)			
To lose a job	No: 140 (88.0) Yes: 19 (22.)	1.96 (2.01) 2.26 (2.64)	0.155	91.8 94.9	0.680
To procrastinate	No: 19 (11.9) Yes: 140 (88.1)	1.45 (1.17) 2.07 (2.17)	0.221	92.1 92.1	0.998
Memory loss	No: 35 (36.7) Yes: 123 (63.3)	2.13 (2.35) 1.97 (2.03)	0.700	89.5 92.8	0.221
Lowered self-esteem	No: 42 (26.4) Yes: 117 (73.6)	1.46 (1.72) 2.19 (2.18)	0.050 <sup>c</sup>	88.3 93.5	0.040 <sup>c</sup>
To have lower energy level	No: 42 (26.4) Yes: 117 (73.6)	1.45 (1.35) 2.19 (2.27)	0.049 <sup>c</sup>	89.1 93.2	0.110
To have lower productivity	No: 41 (27.8) Yes: 118 (72.2)	1.60 (1.20) 2.14 (2.31)	0.155	92.9 91.9	0.680
To feel bad about your use of drug	No: 49 (30.8) Yes: 110 (69.2)	2.06 (2.21) 1.97 (2.04)	0.818	92.9 91.8	0.635
Problems in your family	No: 56 (35.2) Yes: 103 (64.8)	1.76 (1.97) 2.12 (2.15)	0.320	94.2 91.0	0.176
To lack self-confidence	No: 57 (35.8) Yes: 102 (64.2)	1.83 (1.98) 2.09 (2.15)	0.455	89.8 93.4	0.128
Withdrawal symptoms	No: 66 (41.8) Yes: 92 (58.2)	1.91 (2.35) 2.07 (1.90)	0.638	90.5 93.2	0.254
Problems between you and your partner	No: 74 (46.5) Yes: 85 (53.5)	2.10 (1.76) 1.91 (2.34)	0.578	91.6 92.6	0.659
Difficulty sleeping	No: 74 (46.5) Yes: 85 (53.5)	1.73 (1.81) 2.29 (2.29)	0.140	90.5 93.5	0.191
To neglect your family	No: 87 (54.7) Yes: 72 (45.3)	1.99 (2.30) 2.02 (1.82)	0.927	92.4 91.8	0.786
Financial difficulties	No: 88 (55.3) Yes: 71 (45.7)	1.90 (2.13) 2.13 (2.04)	0.474	89.3 95.6	0.005 <sup>c</sup>
To miss days at work or miss classes	No: 101 (63.5) Yes: 58 (36.5)	1.74 (1.84) 2.45 (2.41)	0.039 <sup>c</sup>	91.5 93.2	0.478
Problems between you and your friends	No: 105 (66.0) Yes: 44 (34.0)	1.76 (1.98) 2.45 (2.24)	0.049 <sup>c</sup>	90.7 94.8	0.087
Blackouts or flashbacks	No: 111 (70.3) Yes: 47 (29.7)	1.94 (2.06) 2.16 (2.19)	0.551	91.6 93.3	0.505
Medical problems	No: 124 (78.0) Yes: 35 (22.0)	1.90 (2.05) 2.36 (2.23)	0.243	90.8 96.9	0.025 <sup>c</sup>
Legal problems	No: 132 (83.0) Yes: 27 (27.0)	1.76 (1.85) 3.15 (2.77)	0.002 <sup>c</sup>	91.0 98.1	0.017 <sup>c</sup>

<sup>a</sup> Problems as defined in the Marijuana Problems Scale (26).

<sup>b</sup> For dependence symptoms, sample size is from 158 to 159.

<sup>c</sup>  $P < 0.05$ .

(26, 28, 38), namely, they are primarily male, single, white, with a mean age of 32 years. It is interesting to note that for clinical samples subjects are older than for prevalence studies of marijuana users. This piece of evidence leads us to conclude that it takes some years of

regular marijuana use before an individual realizes its adverse effects.

In the Brazilian sample, marijuana use started at a mean of 16.44 years old. In the United States, studies report beginning use at a mean of 16.17 years old (25) and 14.7 years old (39);

in Australian samples beginning marijuana use at 15 years old is reported (38). Daily use commenced later in the Brazilian sample (at a mean of 21 years old) compared with U.S. samples (regular use starting at 18.21 years old and problematic use at 26.86 years old)

**TABLE 7. Subjects from sample of marijuana users (n = 160) reporting severity of withdrawal symptoms as defined by the Marijuana Withdrawal Scale (37), Brazil, September 2003 to October 2004**

Symptoms of marijuana withdrawal	None (%)	Mild (%)	Moderate (%)	Severe (%)
Craving to smoke marijuana	10.4	17.9	26.6	45.1
Nervousness	16.8	19.7	30.1	33.5
Restlessness	13.3	30.1	28.9	27.7
Irritability	23.1	15.0	37.0	24.9
Sleep difficulty	31.2	20.8	24.9	23.1
Violent outbursts	35.8	26.6	18.5	19.1
Depressed mood	26.0	28.9	27.2	17.9
Strange dreams	61.8	16.2	12.7	9.2
Decreased appetite	46.8	23.7	20.8	8.7
Anger	46.8	27.2	18.5	7.5
Headaches	61.0	17.4	14.5	7.0
Sweating	69.9	16.2	7.5	6.4
Stomach pain	79.8	10.4	7.5	2.3
Nausea	80.9	11.0	6.4	1.7
Shakiness/trembling	79.2	15.0	5.2	0.6

(27), and Australian samples (regular use starting at 18 years old) (38). The age of initiation of use in the Brazilian sample is higher and the length of time between the initiation of use and problematic use of cannabis is longer (4 years) compared with the U.S. and Australian samples (2 and 3 years, respectively), which could indicate less risk of severity (40, 41).

Subjects in the U.S. and Australian samples tended to use the drug more times per day. It is difficult to make comparisons about this variable because marijuana smoked in Brazil might not have the same concentration as that smoked in the U.S. or Australia, and in Brazil the measure was in joints while in Australia it was in pipes. The other measures of use (percentage of days used in the last 90 days, and mean number of joints smoked) are very similar between Brazilian and other clinical populations. This is positive in the sense that treatment methods used elsewhere can be shared and adapted for use in Brazilian settings. On the other hand, the similarity to the U.S. and Australian samples is disquieting, because as a developing country there are fewer resources in Brazil, both human and financial, to combat the problem.

In spite of displaying a high prevalence of cocaine experimentation, the Brazilian sample seems to be a “pure”

marijuana sample; following experimentation, the subjects had no major problematic use of other drugs (24, 26). In this sense, the sample does not reflect other epidemiological Brazilian data because our subjects tended to display a higher prevalence of drug use in general.

The history of use in this sample shows experimentation through curiosity but then a progression in use for pleasure. In contrast to research on protective and risk factors, social pressure in this particular sample is not the main reason, but ranks as the second reason for initiating and continuing the use of cannabis. In fact, most of the subjects reported that they smoked alone, contrary to the notion that marijuana is a “social” drug.

This was the first time in treatment for the majority of subjects in the Brazilian sample, although most had previously tried to stop on their own. This represents a marked difference from the U.S. and Australian subjects, who sought treatment more readily than Brazilians, possibly because they have access to specialized services.

Although our sample showed fewer dependence symptoms than those reported in other studies, the vast majority of subjects (88.7%) met criteria for dependence, even though this was not an inclusion criterion for the study. The

strong correlations between cannabis use and most dependence symptoms suggest that quantity and frequency of use might be important factors in reaching a diagnosis of dependence. Given that “tolerance” is an important symptom of dependence, it is worthwhile to encourage subjects who have experimented or are beginning to use marijuana frequently to stop before their consumption increases. In other words, “invest in prevention.”

Regarding the severity of marijuana-related problems, results for the Brazilian sample were similar to those reported in a U.S. study (27). The five most common problems mentioned were: procrastination, feeling bad about using, lower energy levels, memory loss, and lower productivity. The correlation between consumption and related problems underscores side-effects of consuming marijuana: the more consumed the more complications the subject might experience. From the 19 problems listed, “legal problems” and “lowered self-esteem” had the strongest correlation with consumption, suggesting that the consequences of marijuana use for this population are broad, ranging from psychological problems to social ones. Marijuana use also leads to problems with friends and occupational, financial, and physical problems.

These findings have implications about treatment for this population. The most valuable approach would include a multi-disciplinary team that can provide not only the psychological support to rebuild self-esteem and reinforce coping and social skills, but also professionals who can advise on legal and financial problems.

Cannabis use, even when it is problematic (as in the sample described here), does not necessarily disrupt normal activities such as maintaining employment or having a relationship. Consequently, it is difficult to bring this population to treatment and they seek help only when they “hit rock bottom.” This pattern is similar to that of cigarette smokers, who also take a long time to realize the harm of tobacco. The severity of withdrawal from marijuana has been shown to be comparable to withdrawal from tobacco (37).



## Limitations

To the best of our knowledge, this is the first study involving a clinical sample of marijuana users in Brazil. Because the sample was selected for a randomized controlled trial, many of the assumptions made could not be generalized for the Brazilian population of cannabis users. Also, the subjects were recruited primarily through media (television programs and newspapers) that tend to be more accessible to a part of the population that is more financially and socially stable, another limitation of the study. The information acquired was self-reported, based on the subjects' memories, and is therefore impossible to confirm. A lon-

gitudinal study of such a sample would be useful.

## CONCLUSION

The subjects in the sample have patterns of marijuana use that are comparable to those reported worldwide. The profile of users is closer to that of subjects in the U.S. study (25–27) than to subjects in the Australian study (38). Subjects who abuse marijuana do suffer from both adverse physical and psychological effects. As consumption increases, marijuana users are at greater risk of suffering from dependence symptoms and problems related to marijuana use.

This study confirms that marijuana can harm those who use it, and individuals with cannabis problems might seek specialized treatment. Based on the characteristics of this sample, treatment measures should be further explored, allowing specific treatment to be devised. More extensive epidemiological studies should be conducted to determine the extent of marijuana use in the Brazilian population as well as the number of users who are seeking treatment.

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**RESUMEN**

**Características de los fumadores de marihuana que buscan tratamiento en São Paulo, Brasil**

**Objetivos.** Describir una muestra de 160 adultos seleccionados para participar en un ensayo aleatorizado controlado, realizado en una clínica ambulatoria especializada para consumidores de marihuana en Brasil. Se asoció el consumo de marihuana con varias medidas relacionadas con este hábito y se comparó con otras muestras.

**Métodos.** Se empleó la Entrevista Diagnóstica Internacional Compuesta (CIDI) y la Escala de Valoración de Wender Utah para las entrevistas de tamizaje y la obtención de datos demográficos, y el Índice de Intensidad de la Adicción (ASI), la Línea Cronológica Retrospectiva (TLFB), la Escala de Abandono de la Marihuana, la Escala de Problemas por Marihuana y la lista de comprobación para la dependencia de la marihuana del Manual Diagnóstico y Estadístico de Trastornos Mentales (DSM-III-R).

**Resultados.** La mayoría de los participantes eran hombres blancos solteros; en promedio, la edad fue de 32,3 años y el nivel de escolarización de 15,6 años; 61,6% trabajaba. Como promedio, esta cohorte comenzó a fumar marihuana a una edad de 16,5 años y llegó a consumirla diariamente a los 21. Los participantes habían consumido marihuana durante 15 años y la consumieron 92,2% de los 90 días previos a la encuesta, con un consumo diario medio en ese lapso de 1,99 cigarrillos de marihuana. Miembros del grupo habían experimentado con otras drogas, principalmente cocaína.

**Conclusiones.** Los consumidores de marihuana estudiados se ajustan a los perfiles encontrados en otras investigaciones similares, aunque manifestaron menos síntomas de dependencia. En los programas para consumidores de estupefacientes se debe considerar a los consumidores de marihuana de manera independiente, ya que necesitan atención y tratamiento específicos. Se deben emprender estudios epidemiológicos más amplios para determinar la magnitud del consumo de marihuana en la población brasileña.

**Palabras clave**

Marihuana, abuso de marihuana, dependencia a la marihuana, centros de rehabilitación de drogas, Brasil.