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ABSTRACT

Crack cocaine (crack) dependence is a severe disorder associated with considerable morbidity and mortality, constituting a major public health problem in Brazil. The aim of this study was to improve understanding of the profile of treatment-seeking crack-dependent individuals. We recruited 65 crack-dependent individuals from among those seeking treatment at an outpatient clinic for alcohol and drug treatment in the city of São Paulo, Brazil. Assessments, conducted between August 2012 and July 2014, focused on sociodemographic characteristics, the pattern/history of crack use, treatment history, concomitant substance use disorders, psychiatric symptomatology, and impulsivity. In the study sample, males predominated, as did unemployment, homelessness, and low levels of education. On average, the participants had smoked crack for 10 years. Most had previously been treated for crack dependence. Concomitant DSM-IV diagnoses of dependence on other substances were common, dependence on tobacco and alcohol being the most prevalent. Participants presented significant psychiatric symptomatology and impulsivity, with nearly half of the sample presenting psychotic symptoms, 90% presenting depressive symptoms, and 80% presenting anxiety symptoms. Most treatment-seeking crack-dependent individuals in Brazil are living in extremely poor social conditions and are struggling with the severe, chronic, and comorbid features of this disorder.

Introduction

The demand for treatment for crack cocaine (crack) dependence, which has become a severe health concern in Brazil, has increased significantly in recent decades (Dunn et al. 1996; Ferri et al. 1997). Observational studies have been conducted to improve understanding of crack-dependent individuals. Such studies have reported that the prevalence of crack use is higher in urban regions, where socially vulnerable young men are at high risk (Duailibi, Ribeiro, and Laranjeira 2008; Santos Cruz et al. 2013). Crack users are often multiple drug users in whom crack is the drug of choice (Guindalini et al. 2006). Crack use is associated with a number of severe psychiatric comorbidities, such as alcohol dependence, mood disorders (e.g., major depressive disorder), anxiety disorders, antisocial personality disorder, and suicidal ideation (Narvaez et al. 2014a; Paim Kessler et al. 2012; Zubaran et al. 2010). Crack cocaine use has been found to be an important

predicator for psychiatric emergency service visits in Brazil (Da Cruz et al. 2014). In comparison with the general population, crack users are more likely to live or have lived on the streets, as well as to have been exposed to violence, hospitalization, prostitution, and risky sexual behaviors (Carvalho and Seibel 2009; Dunn and Laranjeira 1999; Moreira et al. 2014; Narvaez et al. 2014b). Crack use is also associated with dropping out of school, unemployment, involvement in illegal activities, drug trafficking, conflicts with the police, and incarceration (Dunn et al. 1996; Narvaez et al. 2015; Oliveira and Nappo 2008). Mortality among crack-dependent individuals is 12 times higher than in the general population (Ribeiro et al. 2004). Although some studies have provided important information on the profile of crack users, they have not distinguished between crack users with and without a confirmed diagnosis of crack dependence, nor have they focused on treatment-seeking crack users. The aim of this study

was to provide additional knowledge on the sociodemographic characteristics, patterns of crack use, concomitant substance use disorders, and psychiatric symptomatology in crack-dependent individuals who report recent crack use and seek outpatient treatment in Brazil.

Methods

Between August 2012 and July 2014, 81 crack users seeking treatment at the Vila Maria Specialized Medical Outpatient Clinic for Alcohol and Drug Treatment in the northern region of the city of São Paulo, Brazil, were screened for eligibility. The inclusion criteria were being 18–65 years of age and having been diagnosed with crack dependence according to the DSM-IV-TR (First et al. 1997). Polydrug users were eligible for enrollment if crack was their drug of choice. The exclusion criteria were having been abstinent from crack for four weeks or more prior to intake, not being able to attend treatment sessions at least three times per week, and having a DSM-IV diagnosis of schizophrenia. A total of 21 participants were excluded from the study for the following reasons: being abstinent from crack for more than four weeks (5); not having crack as the first drug of choice (6); being diagnosed with schizophrenia (3) (confirmed using SCID-I); and not being able to attend treatment at least three times per week (7). Therefore, the final study sample comprised 65 participants. All participants provided written informed consent. The study was approved by the Research Ethics Committee of the Federal University of São Paulo and by the Ethics Committee of the Brazilian National Ministry of Health.

Assessments were conducted in a private room at the Vila Maria Specialized Medical Outpatient Clinic for Alcohol and Drug Treatment. The intake interview lasted up to 90 minutes and included the collection of data related to sociodemographic characteristics, the history/pattern of drug use, and treatment history. Social class was assessed using the Brazilian Economic Classification Criteria (First et al. 1997). Substance use diagnoses were made and psychotic symptoms were identified through the use of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID; First et al. 1997), the Beck Depressive Inventory II (BDI-II; Gorenstein, Argimon, and Werlang 2011), the Beck Anxiety Inventory (BAI; Cunha 2001), and the Barratt Impulsiveness Scale (BIS-11; Von Diemen et al. 2007). After the intake assessments, the participants provided a urine sample to assess recent crack and marijuana use, as well as a breath sample to assess recent alcohol use. Statistical analyses were performed with the IBM SPSS Statistics software package, version 22.0 (IBM Corporation, Armonk, NY, USA).

Results

The majority (87.7%) of the crack-dependent individuals in our sample were male (Table 1). The mean age of the participants was 35 years. Most (69.2%) were single, and 10.8% were divorced. The mean level of education was 9.3 years of schooling; 35.4% of the sample had dropped out before completing nine years of schooling, and only 29.2% had graduated from high school (≥12 years of schooling). The sample comprised individuals from all social classes—approximately one-third from the middle class, approximately one-third from the lower or lower-middle class, and approximately one-third from the upper-middle or upper class. The majority (83.1%) of the participants were unemployed, with only 4.6% being formally employed. Nearly one-fourth (23.1%) reported living on the streets at the time of the intake assessments.

The mean age at the onset of crack use was 22 years, and the mean duration of continuous crack use was 12 years. In a normal day of crack use, participants reported smoking an average of 12 crack rocks.[1] Of the 65 participants, 26 (40%) reported using crack ≥5 days per week in the last three months, and 11 (16.9%) reported using crack less then once per week during the same period. On average, the last crack use occurred seven days before the intake assessment, and approximately half of the participants submitted a crack-positive urine sample at intake. Over 60% reported sleeping on the streets due to crack use, and nearly 90% reported frequenting "Crackland"[2] to consume crack. Regarding the history of treatment for crack dependence, nearly half (47.7%) of the participants had attended self-help meetings, 61.5% had received outpatient treatment, and 84.6% had been admitted to an inpatient treatment facility. The mean number of previous treatment attempts was 4.2 (sd = 5.1).

Concomitant DSM-IV diagnoses of dependence on other substances were common among the participants, with 69.2% meeting the criteria for multiple substance dependence. The most common concurrent substance use disorder was tobacco use, with 90.8% having been diagnosed with tobacco dependence. Alcohol dependence was observed in 66.1% of the sample, and marijuana dependence was observed in 12.3%.

Psychiatric symptomatology was also common (Table 1). Nearly half of the sample presented at least one psychotic symptom during the intake assessment.

Table 1. Sociodemographic characteristics, patterns of crack cocaine (crack) use, concomitant substance use disorders, and psychiatric symptomatology in treatment-seeking crack-dependent individuals in the city of São Paulo, Brazil, at intake.

VARIABLE	N = 65
Age (years), mean (SD)	35.3 (8.5)
Male sex, *n* (%)	57 (87.7)
Marital status	
Single, *n* (%)	45 (69,2)
Married, *n* (%)	13 (20.0)
Divorced, *n* (%)	7 (10.8)
Education	
Years of schooling, mean (SD)	9.3 (3.6)
<9 years of schooling, *n* (%)	23 (35.4)
≥12 years of schooling, *n* (%)	19 (29.2)
Social class[a]	
A, *n* (%)	7 (10.8)
B, *n* (%)	14 (21.5)
C, *n* (%)	21 (32.3)
D, *n* (%)	3 (4.6)
E, *n* (%)	20 (30.8)
Occupation	
Unemployed, *n* (%)	54 (83.1)
Formal employment, *n* (%)	3 (4.6)
Homeless, *n* (%)	15 (23.1)
Pattern of crack use	
Age at onset of crack use (years), mean (SD)	22.7 (6.9)
Duration of crack use (years), mean (SD)	12.6 (7.4)
Quantity of crack use in the last three months.	
Crack rocks smoked per day, mean (SD)	12.3 (12.4)
Frequency of crack use in the last three months.	
Up to three days per month, *n* (%)	11 (16.9)
At least once per week, *n* (%)	15 (23.1)
Two to four days per week, *n* (%)	13 (20.0)
Five or more days per week, *n* (%)	26 (40.0)
Time since last crack use (days), mean (SD)	7.3 (8.6)
Crack-positive urine sample, *n* (%)	32 (49.2)
Impact of crack use	
Has slept on the streets due to crack use, *n* (%)	42 (64.6)
Has been to "Crackland"[b] in order to use crack, *n* (%)	58 (89.2)
Treatment history	
Attended self-help group meetings due to crack use, *n* (%)	31 (47.7)
Received outpatient treatment for crack dependence, *n* (%)	40 (61.5)
Received inpatient treatment for crack dependence, *n* (%)	55 (84.6)
Number of previous inpatient treatments, mean (SD)	2.8 (4.0)
Number of previous treatment attempts, mean (SD)	4.2 (5.1)
Concomitant substance use disorders	
Multiple substance dependence, *n* (%)	45 (69.2)
Tobacco dependence, *n* (%)	59 (90.8)
Alcohol dependence, *n* (%)	43 (66.1)
Marijuana dependence, *n* (%)	8 (12.3)
Alcohol-positive breath sample, *n* (%)	11 (16.9)
THC-positive urine sample, *n* (%)	2 (3.1)
Psychiatric symptomatology and impulsivity	
At least one psychotic symptom, *n* (%)	30 (46.1)
BDI-II score, mean (SD)	24.5 (12.1)
Mild depression, *n* (%)	18 (27.7)
Moderate depression, *n* (%)	19 (29.2)
Severe depression, *n* (%)	22 (33.8)
BAI score, mean (SD)	20.7 (13,5)
Mild anxiety, *n* (%)	15 (23.1)
Moderate anxiety, *n* (%)	15 (23.1)
Severe anxiety, *n* (%)	22 (33.8)
BIS-11 score	
Total (overall impulsiveness), mean (SD)	79.1 (5.9)
Attentional impulsiveness, mean (SD)	22.1 (2.4)
Motor impulsiveness, mean (SD)	27.4 (3.5)
Non-planning impulsiveness, mean (SD)	29.7 (3.9)

[a]The Brazilian Economic Classification Criteria questionnaire (ABEP 2012) was used in order to stratify the participants by socioeconomic class—from A to E, class A being the highest and class E being the lowest.
[b]A region of downtown São Paulo where thousands of crack users living under extremely vulnerable social conditions gather to consume crack openly in the streets.
THC = delta-9-tetrahydrocannabinol (the main active substance in marijuana); BDI-II = Beck Depression Inventory II; BAI = Beck Anxiety Inventory; BIS-11 = Barratt Impulsiveness Scale, version 11.

The mean BDI-II score was high 24.5 (sd = 12.1), with over 90% of the sample presenting at least mild depression and over one-third presenting severe depression. The presence of anxiety symptoms was also significant, with a mean BAI score of 20.7 (sd = 13.5); over 80% of the sample presented at least mild anxiety, and

approximately 30% scored in the severe anxiety range. The level of impulsiveness, as assessed with the BIS-11, was also high, with the mean overall impulsiveness score being 79.1 (sd = 5.9), and mean domain scores of 22.1 (sd = 2.4) for attentional impulsiveness, 27.4 (sd = 3.5) for motor impulsiveness, and 29.7 (sd = 3.9) for non-planning impulsiveness.

Discussion

Our findings offer some important insights into the demographics, history, and pattern of crack use, as well as concomitant substance use disorders and psychiatric symptomatology indicators, in crack-dependent individuals seeking treatment in the city of São Paulo. Our sample was composed predominantly of men with a relatively low level of education, and high rates of unemployment and homelessness. Other authors have also identified a strong association between crack use and socioeconomic marginalization in major cities in Brazil (Duailibi, Ribeiro, and Laranjeira 2008; Dunn and Laranjeira 1999; Santos Cruz et al. 2013). Our results also indicate that treatment-seeking crack-dependent individuals in the city of São Paulo come from a variety of social classes, thus suggesting that, although social vulnerability might be a risk factor for crack use, crack dependence is a severe disorder that has spread to all socioeconomic spheres of Brazilian society.

The high quantity and frequency of crack use reported by the participants, together with the fact that most of them reported having used crack continuously for more than 10 years and the evidence of numerous failed treatment attempts, highlight the severe, compulsive, and chronic nature of this disorder. Those findings also indicate the lack of efficacy of the existing centers in treating crack dependence and advocate for the need to incorporate evidence-based treatments such as contingency management (Miguel et al. 2016, 2017).

In agreement with previous findings (Da Cruz et al. 2014; Moreira et al. 2014; Narvaez et al. 2014a; Paim Kessler et al. 2012; De Oliveira et al. 2009; Falck et al. 2004, 2002), the high prevalence of concomitant substance use disorders, psychiatric symptomatology, and impulsivity observed in our sample indicates the highly comorbid nature of crack dependence. These findings further suggest that treatment facilities charged with treating crack-dependent individuals should consider combining pharmacological and psychosocial evidence-based treatments designed to address other substance use disorders, mood disorders, and anxiety disorders, as well as neurorehabilitation to improve impulse control. Incorporating these interventions into treatment protocols might increase the efficacy of those protocols in treating this complex disorder.

Our study has several limitations. First, the sample was small and comprised only individuals seeking treatment at one outpatient clinic. As such, the profile observed in this study might differ from that of crack-dependent individuals receiving treatment in other regions of the country or in different treatment contexts. Second, our sample was composed exclusively of crack users who reported recent crack use, had a confirmed DSM-IV diagnosis of crack dependence, and were seeking treatment for that dependence. Therefore, the prevalence of the features evaluated here might be different among crack users who are not seeking treatment, do not meet the DSM-IV criteria for a diagnosis of crack dependence, or have been abstinent from crack for more than one month, with possibly less severe health and social conditions. Third, only participants who could attend treatment three times per week were included in the study. This exclusion criteria might have limited our findings by not considering those who, for various reasons (i.e., work, distance to the treatment facility), could not attend treatment three times per week.

Despite these limitations, our study suggests important markers of the demographics, patterns of crack use, concomitant substance use disorders, and psychiatric symptomatology in treatment-seeking crack-dependent individuals in Brazil, thus contributing to a better understanding of the social and clinical profile of such individuals. There is a great need for randomized clinical trials designed to evaluate treatments for crack dependence in order to develop effective treatments for this complex and severe disorder.

Notes

1. Although the quantity of cocaine in each crack rock can vary considerably, we reported the number of rocks of crack rather than the number of grams because crack in Brazil is sold in rocks and not in grams of cocaine. Consequently, crack users commonly report the number of rocks smoked and do not know how to determine the number of grams of cocaine smoked.
2. "Crackland" is a region of downtown São Paulo where thousands of crack users living under extremely vulnerable social conditions gather to consume crack openly in the streets.

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