Original Article

Risk behaviors for sexually transmitted diseases among crack users[1]

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Objectives: to investigate the prevalence and risk behaviors by means of reporting of sexually transmitted diseases among crack users. Method: cross-sectional study carried out with 588 crack users in a referral care unit for the treatment of chemical dependency. Data were collected by means of face-to-face interview and analyzed using Stata statistical software, version 8.0. Results: of the total participants, 154 (26.2%; 95% CI: 22.8-29.9) reported antecedents of sexually transmitted diseases. Ages between 25 and 30 years (RP: 2.1; 95% CI: 1.0-4.0) and over 30 years (RP: 3.8; 95% CI: 2.1-6.8), alcohol consumption (RP: 1.9; 95% CI: 1.1-3.3), antecedents of prostitution (RP: 1.9; 95% CI: 1.3-2.9) and sexual intercourse with person living with human immunodeficiency virus/AIDS (RP: 2.7; 95% CI: 1.8-4.2) were independently associated with reporting of sexually transmitted diseases. Conclusion: the results of this study suggest high risk and vulnerability of crack users for sexually transmitted diseases.

Descriptors: Crack Cocaine; Drug Users; Sexually Transmitted Diseases; Risk Factors.

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Introduction

The crack first appeared in the United States of America (USA) in the early 80s, and since then, its use has expanded to all regions of the world, especially to South American countries[1]. In 2008, a study conducted by the Ministry of Health, with individuals aged from 15 to 64 years, estimated that 2.6% of the Brazilian population have already used crack in life. In the Central-West region of Brazil, this estimate was 0.3%[2].

Crack use can cause extensive damage and health risks to users, such as acute and chronic complications[3], mental disorders and early death by murder and overdose[4]. Furthermore, many users have risk behaviors such as consumption of alcohol and other drugs[5], multiple partners, inconsistent condom use and prostitution[6], which in turn, are associated with Sexually Transmitted Diseases (STD), including infection with Human Immunodeficiency Virus (HIV).

A number of studies have shown a high prevalence of STD in illicit drug users[7-9]. In the USA, a study of 266 crack users found positive cases for gonorrhea, syphilis, chlamydia, HIV, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Herpes Virus type 2 (HSV-2), with prevalence rates of 1.9%, 3.8%, 4.5%, 4.1%, 33.5%, 37.2% and 53.3%, respectively[7]. In Argentina, HIV prevalence (6.3%), HBV (9.0%), HCV (7.5%) and *Venereal Disease Research Laboratory* (VDRL) (4.2%) were estimated in 504 non-injectable cocaine users[8]. In Brazil, an investigation with 125 crack users, in a community of Salvador, at the State of Bahia, estimated the prevalence of HBV, HIV, HCV and syphilis (VDRL), of 0.8%, 1.6%, 2.4% and 4.0%, respectively[10]. In São Paulo, prevalence of 22% for STD reporting and of 6.6% for HIV were found in 304 institutionalized illicit drug users[9].

The number of studies on the epidemiology of STD in crack users is still limited[11-13], and most of the ones conducted in Brazil was carried out in the most developed regions of the country (South and Southeast)[5,9-10]. In this respect, the objective of this study was to investigate the prevalence and risk behaviors by means of STD reporting in institutionalized crack users of Goiânia, Goiás, Central region of Brazil.

Methods

Cross-sectional study carried out with crack users, in a referral care unit for treatment of chemical dependency of the State of Goiás, between August 2012 and April 2013. The study included individuals aged 18 years or over and who had consumed crack for at least one month before hospitalization. Individuals were excluded if they were under influence of any medication at the time of the interview.

All eligible individuals were invited to participate in the study and were informed on the objectives, importance, benefits, risks and confidentiality of the data. If they agreed to participate, they signed the Free and Informed Consent Form (ICF), and then they were interviewed in a private place at the care unit.

The interviews were conducted using a research instrument adapted: "Profile of crack users in 26 capitals, Distrito Federal, nine metropolitan areas and Brazil"[14]. The research instrument contains questions on socio-demographic characteristics (gender, age, skin color, marital status, education and income), pattern of consumption of licit and illicit drugs (drugs used and time of crack use) and risk factors for STD (prison record, condom use during sexual intercourse in the last six months, antecedents of prostitution, give money and/or drugs in exchange for sex, sex with a person living with HIV/AIDS, and others). It was considered as outcome variable the reporting of STD at some point in life, including HIV infection.

The data were analyzed using Stata statistic software, version 8.0. For the continuous variables, mean and standard deviation were calculated. The prevalence of STD reporting was estimated with 95% confidence interval (95% CI). Initially, univariate analysis was performed, and then all variables with $p<0.10$ were included in the Poisson regression model. The chi-square test ($\chi2$) was used to analyze differences among proportions. Values with $p<0.05$ were considered statistically significant.

The Committee of Ethics in Human and Animal Research, of the University Hospital of the Federal University of Goiás, approved this study, under the protocol number 117/2011. All stages of the research meet the ethical principles that guide research in humans, described and established by Resolution CNS 196/96.

Results

The study included 588 crack users. Most were male (84.5%), single (66.7%), with income of less than three minimum wages (62.6%) and self-declared as dark-skinned/brown/mulatto (61.7%). The average

age of users was 30.5 years (SD ± 8.3) and 45.4% of participants were older than 30 years. Regarding education, half of them (50.3%) had more than eight years of study (Table 1).

Of the participants, 154 (26.2%; 95% CI: 22.8-29.9) reported that they had or still have a STD. Three hundred and twenty individuals (54.4%; 95% CI: 50.4-58.4) reported having previously been submitted to HIV test, and of these, 11 (3.4%; 95% CI: 1.9-6.0) reported to have tested positive.

Table 2 shows the analysis of potential factors associated with STD reporting in the crack users investigated. In the univariate analysis it was found that age, marital status, prison record, antecedents of prostitution and sexual intercourse with a person living with HIV/AIDS were associated with STD reporting

($p<0.05$). The variables time of crack use, alcohol consumption, use of condoms with a casual partner and give money and/or drugs in exchange for sex showed marginal association with the outcome. These variables were included in a multivariate analysis model, and after controlling the confounding variables, ages between 25 and 30 years (Prevalence Ratio: 2.1; 95% CI: 1.0-4.0) and over 30 years (Prevalence Ratio: 3.8; 95% CI: 2.1-6.8), alcohol consumption (Prevalence Ratio: 1.9; 95% CI: 1.1-3.3), antecedents of prostitution(Prevalence Ratio: 1.9; 95% CI: 1.3-2.9) and sexual intercourse with a person living with HIV/AIDS (Prevalence Ratio: 2.7; 95%CI: 1.8-4.2) were independently associated with STD reporting. The prison record showed a marginal association with the outcome (Prevalence Ratio: 1.5; 95% CI: 1.0-2.2).

Table 1 - Socio-demographic characteristics of 588 institutionalized crack users. Goiânia, GO, Brazil, 2012-2013

Characteristic	n	%
Sex		
Male	497	84.5
Female	91	15.5
Age (years) (mean: 30.5; SD ±8.3)		
≤ 24	160	27.2
25-30	161	27.4
> 30	267	45.4
Marital status		
Single	392	66.7
Married/unmarried union	134	22.8
Separated/divorced	62	10.5
Skin color (self-reported)		
Dark-skinned/brown/mulatto	363	61.7
White	142	24.1
Black	44	7.5
Yellow/Asian	39	6.7
Education (years of study)*		
≤ 8	292	49.7
> 8	295	50.3
Income (minimum wages)†‡		
≤ 1	84	14.7
2-3	274	47.9
> 3	214	37.4

*No data for a participant
†No data for 16 participants
‡Value of the minimum wage in Brazil, base-year 2012: R$ 622,00

Table 2 - Analysis of factors associated with reporting of sexually transmitted diseases in 588 institutionalized crack users. Goiânia, GO, Brazil, 2012-2013

Variable	STD*		PR‡ crude (95% CI)§	p	PR‡ adjusted‖ (95% CI)§	p
	n/Total†	%				
Age (years)						
≤ 24	20/160	12.5	1.0		1.0	
25-30	30/161	18.6	1.5 (0.9-2.5)	0.10	2.1 (1.0-4.0)	0.04
> 30	104/267	39.0	3.1 (2.0-4.8)	0.00	3.8 (2.1-6.8)	0.00

(continue...)

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Table 2 - (continuation)

Variable	STD*		PR‡ crude (95% CI)§	p	PR‡ adjusted‖ (95% CI)§	p
	n/Total†	%				
Marital status						
Married/unmarried union	34/134	25.4	1.0		1.0	
Single	95/392	24.2	1.0 (0.7-1.3)	0.80	1.3 (0.7-2.4)	0.30
Separated/divorced	25/62	40.3	1.6 (1.0-2.4)	0.03	1.6 (0.7-3.2)	0.20
Time of crack use(months)						
≤ 24	42/191	22.0	1.0		1.0	
25-48	36/137	26.3	1.2 (0.8-1.8)	0.40	1.2 (0.7-2.1)	0.50
> 48	76/260	29.2	1.3 (1.0-1.8)	0.09	0.9 (0.5-1.3)	0.50
Alcohol consumption¶						
No	38/183	20.8	1.0		1.0	
Yes	116/405	28.6	1.4 (1.0-1.9)	0.05	1.9 (1.1-3.3)	0.03
Prison record						
No	66/297	22.2	1.0		1.0	
Yes	88/289	30.4	1.4 (1.0-1.8)	0.03	1.5 (1.0-2.2)	0.05
Condom use with casual partner¶						
Always	37/150	24.7	1.0		1.0	
Eventually	30/106	28.3	1.1 (0.8-1.7)	0.50	0.8 (0.5-1.3)	0.40
Never	22/60	36.7	1.5 (1.0-2.3)	0.07	1.3 (0.8-2.1)	0.30
Antecedents of prostitution¶						
No	102/420	24.3	1.0		1.0	
Yes	40/111	36.0	1.5 (1.1-2.0)	0.01	1.9 (1.3-2.9)	0.00
Gave money and drugs in exchange for sex¶						
No	99/393	25.2	1.0		1.0	
Yes	46/142	32.4	1.3 (1.0-1.7)	0.09	1.3 (0.9-2.0)	0.20
Sexual intercourse with a person living with HIV/AIDS**						
No	110/486	22.6	1.0		1.0	
Yes	15/24	62.5	2.8 (1.9-3.9)	0.00	2.7 (1.8-4.2)	0.00

*Sexually Transmitted Disease
†Denominator reflects the number of valid responses
‡Prevalence Ratio
§Confidence interval of 95%
‖Ajusted by age, marital status, time of crack use, alcohol consumption, prison record, condom use with casual partner, antecedents of prostitution and sexual intercourse with a person living with HIV/AIDS
¶Last six months
**Last year

Discussion

In Brazil, there are few studies of crack users[5,10,15]. This research presents the first data on STD reporting in crack users in the Central-West region of Brazil. The study population consisted predominantly of males, young adults, singles and with low income, which are characteristics common to institutionalized crack users from other regions of Brazil[15-16].

The STD reporting in vulnerable populations, such as crack users, can contribute to the screening of the positive and symptomatic cases, the access to health services and the specific diagnosis of the etiologic agent, reducing the chain of transmission in this population group. Furthermore, interventions for the treatment and control of STD by professionals and health services may occur from the verbal reporting on these infections.

In this study, the prevalence of STD reporting was of 26.2% (95% CI: 22.8-29.9), similarly to that found in institutionalized drug users in the northern of Thailand (n=1859; 24.3%; 95% CI: 22.4-26.3)[17]. However, it was lower than estimated for female drug users of Baltimore (n=214; 40.7%; 95% CI: 34.3-47.3)[18] and non institutionalized crack users of Miami and Florida (n=2002; 51.4%; 95% CI: 49.3-53.6), USA[12]. The differences in the prevalence rates reported in Goiânia and in the USA may be explained by the higher frequency of risk factors in these populations, such as prison record, prostitution and alcohol consumption[12,18]. Regarding the study in Baltimore[18], women were biologically more susceptible to STD, prostituting themselves more than men.

On the other hand, the prevalence found in Goiás was similar to that observed in institutionalized illicit drug users in São Paulo, Southeastern region of Brazil (n=304; 22%; 95% CI: 17.8-27.0)[9] and crack users assisted in Centers for Psychosocial Attention of the state of Piauí, Northeast region of Brazil (n=352; 31.2%; 95% CI: 26.6-36.3)[15]. A study to estimate the prevalence of HCV infection in institutionalized illicit drug users of Campo Grande and Goiânia, in the Central-West region of Brazil, found a frequency of STD reporting of 30.9% (n=664; 95% CI: 27.5-34.5)[19].

In the present study, STD reporting was independently associated with age, alcohol consumption, antecedents of prostitution and intercourse with a person living with HIV/AIDS. Moreover, prison record remained marginally associated with the outcome.

It was observed a positive gradient of STD reporting and age, with prevalence increase from 12.5% in individuals younger than 25 years, to 39.0% in users over 30 years. (Prevalence Ratio: 3.8: 95% CI: 2.1-6.8), which suggests a cumulative risk of acquiring STD as age increases. Other authors have also pointed age as predictor of STD in illicit drug users[7,20].

Of all participants, 68.9% (95% CI: 65.0-72.5), 63.6% (95% CI: 59.6-67.4) and 55.4% (95% CI: 51.4-59.4) reported, in the last six months, consumption of alcohol, marijuana and snorted cocaine, respectively, which classifies them as polyusers. In addition, STD reporting was associated with alcohol consumption (Prevalence Ratio: 1.9; 95% CI: 1.1-3.3). The consumption of alcohol and crack favors the adoption of risky sexual practices, such as multiple sexual partners, prostitution, inconsistent condom use and sexual intercourse with STD carriers[6,21], increasing the vulnerability of crack users to infection through sexual transmission.

Antecedents of prostitution was reported by 18.9% (95% CI: 15.9-22.2) of users. This feature was associated with STD reporting (Prevalence Ratio: 1.9; 95% CI: 1.3-2.9). A study conducted with 407 drug users in two cities in Texas, USA, showed an association between preferred use of crack, prostitution and increased prevalence of STD[13]. Prostitution is an alternative for the users to obtain drugs[4] and/or money[22] for drug purchase, leading to a high risk of STD acquisition by this population group.

Approximately 4.1% (95% CI: 2.8-6.0) of the participants reported to have hadsex with individuals living with HIV/AIDS, and of these, half did not use condoms. It was also observed an association between antecedents of sexual relations with people living with HIV/AIDS and STD reporting (prevalence ratio: 2.7: 95% CI: 1.8-4.2). In the USA, an investigation carried out with young people, showed higher prevalence of reporting of sexual relationship with STD carriers among crack and non-injectable cocaine users[6].Furthermore, a study carried out in Nassau, Bahamas, showed a temporal relationship between crack epidemic and increasing cases of genital ulcers, secondary syphilis and HIV[23], showing a strong association between crack use and spread of STD.

Crack use is often related to illicit practices, with antecedents of arrest and/or imprisonment, common in this population[9]. In the present study, approximately half (49.1%; 95% CI: 45.1-53.2) of individuals reported antecedents of imprisonment. Yet, it was found that crack users with prison records showed prevalence ratio 1.5 times higher (95% CI: 1.0-2.2) than those who did not report this feature. Other authors also have reported incarceration as predictor of STD in illicit drug users[8,20]. In general, individuals incarcerated have high rates of STD[24] and multiple risk behaviors that favor the transmission of these infections[25].

The findings of this study suggest that multiple factors must be considered in the integral care of the crack users, including the tracking of these infections. The nurses and the multidisciplinary health team should consider the vulnerabilities and risks of these individuals for STD in the care planning, with emphasis on health education activities, availability of rapid tests for detection of these diseases, early treatment and hepatitis B vaccination, provision of condoms and supplies for prevention, and epidemiological surveillance.

This research has some limitations that should be considered. Due to the nature of data collection, the prevalence of STD reporting can be under-or overestimated. In addition, response bias should be considered for sensitive moral issues. However, it should be noted that the results of this study are in agreement with the literature, and suggest a high prevalence of STD in crack users investigated.

Conclusion

In this study, prevalence of STD reporting was of 26.2% (95% CI: 22.8-29.9) and independently associated with ages between 25 and 30 years, over 30 years, alcohol consumption, antecedents of prostitution

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and sexual intercourse with a person living with HIV/AIDS.

The results of this study suggest high risk and vulnerability of crack users for STD. Consequently, public policies and strategies for control and prevention of diseases associated with crack use, such as the implementation of policies for reducing the damage caused by alcohol and other drugs, as well as health education, should be a priority for this population.

The knowledge of serological and epidemiological profiles of infections in different populations can contribute in a unique way in the planning and implementation of actions to promote health and disease prevention, as well as in the health care for people in a comprehensive and holistic manner, respecting the particularities of each segment of the population. Healthcare professionals should always seek this knowledge for decision-making based on evidence when assisting the individual, the family and the community.

Acknowledgements

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