

## Behavior and major barriers faced by non-injectable drug users with HBV/HCV seeking treatment for hepatitis and drug addiction in Rio de Janeiro, Brazil

Comportamentos e barreiras relacionados à busca ao tratamento para a hepatite e dependência química entre usuários de drogas não injetáveis com Hepatite crônica do Rio de Janeiro, Brasil

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**Abstract** Drug users (DU) are a marginalized group and at risk for viral hepatitis, who seldom access health services. A cross-sectional survey was conducted with 111 DU with chronic HBV/HCV and 15 in-depth interviews with health professionals/policymakers in Rio de Janeiro, Brazil. Most interviewees were male, non-white, with a low educational background, unemployed and/or living on less than \$245 a month (minimum wage). In the last 6 months, 61.8% of interviewees snorted cocaine, 64.7% at least once a week. Half of the interviewees had a stable partner and 38.3% of those with occasional partners never/almost never using condoms. Addiction treatment seeking was found to be associated with: being white (OR:5.5), high-school degree (OR:8.7), and employment (OR:5.7). Hepatitis treatment seeking was high (80.9%), and access to low-threshold, user-friendly health services was key for treatment seeking behaviors (OR:3.6). Missed opportunities for hepatitis treatment seem to be associated with structural (uneven political/financial support to hepatitis programs) and patient-related barriers (severe addiction and non-adherence). Those most in need were less likely to access treatment, calling for renewed strategies, in order to curb hepatitis among impoverished drug users and their sexual partners.

**Key words** Hepatitis, Drug use, Access, Adherence, Brazil

**Resumo** Usuários de drogas (UD) são uma população marginalizada e sob risco para hepatites virais que raramente acessam tratamento. Foi utilizado inquérito com 110 UD com Hepatite crônica e 15 entrevistas em profundidade com profissionais e gestores de saúde. A maioria dos entrevistados é homem, não branco, com baixa escolaridade, desempregado e com renda  $\leq$  salário mínimo. Nos últimos 6 meses, 61,8% usaram cocaína inalada e 64,7% uma vez por semana ou mais. Dos participantes, 50% tiveram relações sexuais com parceiros estáveis e 38,3% com parceiros ocasionais nunca/quase nunca usando preservativos. Preditores de busca por tratamento para dependência química incluem: raça/cor branca (OR:5.5), ter ensino médio (OR:8.7) e estar empregado (OR:5.7). 80,9% dos participantes buscou tratamento para hepatite, o acesso a serviços mais acolhedores é determinante para esse comportamento (OR:3.6). Oportunidades perdidas para tratamento de hepatite estão associadas a barreiras estruturais (inadequado apoio político/financeiro aos programas) e barreiras individuais (dependência química severa e baixa aderência). Aqueles que mais precisam de tratamento possuem menor chance de obtê-lo, salientando a importância de renovar estratégias para responder à epidemia de hepatite entre usuários de drogas empobrecidos e seus parceiros sexuais.

**Palavras-chave** Hepatites, Uso de drogas, Acesso, Aderência, Brasil

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## Introduction

Hepatitis B and C constitute a worldwide public health problem, representing a significant cause of morbidity and mortality, especially in developing countries. It is estimated that 350 million people worldwide are chronic carriers of the hepatitis B virus (HBV)<sup>1,2</sup>, representing approximately 5% of the world population<sup>3</sup>, while chronic HCV infection - a major cause of liver cirrhosis and end-stage liver disease - is estimated to affect approximately 170 million people worldwide, around 3 million only in Brazil<sup>4,5</sup>. The transmission of HBV and HCV occurs, mainly, through direct contact with blood, intravenous injections and transfusion of contaminated blood and/or hemo-components, and unprotected sex, the latter basically associated with HBV transmission<sup>6</sup>, while the sexual transmission of HCV remains controversial<sup>7</sup>.

No vaccine is currently available to prevent hepatitis C and treatment for chronic hepatitis C is too costly for most persons in developing countries to afford. Thus, from a global perspective, the greatest impact on hepatitis C disease burden will likely be achieved by focusing efforts on reducing the risk of HCV transmission from nosocomial exposures (e.g. blood transfusions) and high-risk behaviors, e.g. unsafe injection practices and shared injection drug use<sup>8,9</sup>. Injection drug use constitutes one of the main routes of HCV transmission worldwide<sup>4,10-12</sup>, being responsible for about 68.0% of new viral infections in the U.S.<sup>13</sup>. Injection drug users (IDU) are frequently engaged in parenteral and sexual risky behaviors, favoring their frequent and repetitive exposition to different blood borne diseases<sup>14,15</sup>. This profile explains the high prevalence of HCV infections found in this population in different countries<sup>4,10,12,16</sup>. Among young and/or new injectors the incidence of viral infections tends to be high<sup>17-22</sup>, although anti-HCV prevalence tends to be lower than those observed among older users and/or IDU with a longer history of injection of illicit drugs.

Most newly-acquired HBV infections in the United States are among persons aged 25-45 years<sup>17</sup> and major risk factors include unprotected sex and/or injection drug use<sup>23,24</sup>. Among IDU, years of injecting, frequency of injections, and syringe sharing are well known transmission risk factors<sup>25-28</sup>.

While improved vaccination has reduced the overall incidence of acute HBV infection in the US population<sup>29,30</sup>, available data over the last decade suggest that HBV vaccine coverage among

drug users has remained extremely low, ranging from 2 to 10% among IDU<sup>31,32</sup>. In developing countries, the availability of immunizations and other strategies targeting drug users are scarce. There is an urgent need to improve the available knowledge and the HBV vaccine delivery among IDU and non-injecting drug users (NIDU) early in their drug use careers.

There are few Brazilian studies investigating HCV infection among drug users, including both injecting and non-injecting drug users, identifying prevalence rates from 5.8% to 36.2%<sup>33-38</sup>.

As far as our knowledge, only two studies were conducted in Brazil to evaluate HBV among drug users. Bastos *et al.*<sup>38</sup> conducted a study with patients of two drug treatment centers in Rio de Janeiro and showed a prevalence of 12.9% in a group of non-injecting drug users. A recent and large cross-sectional study conducted in all drug treatment centers located in the Central-West Region of Brazil (N=34) evaluated 852 non-injection drug users and identified an overall prevalence of HBV infection of 14%<sup>39</sup>.

The vast majority of patients who present to drug treatment services in Brazil are cocaine users. Until the late 1980s, this was predominantly in the form of injected/snorted cocaine, but since the mid-1990s there was a rapid shift from injection to snorting/smoking of crack cocaine<sup>40,41</sup>.

In a context of high rates of dropout and multiple admissions to treatment in public facilities, the Brazilian Ministry of Health decided to redesign assistance delivered to people who misuse alcohol and illicit drugs in the 1990s, with the opening of outpatient units within the public health sector "CAPS-AD" (Psychosocial Care Center - Alcohol and Drugs). Those outpatients units are intended to provide psychological, social and psychiatric support, together with prevention and educational initiatives to disenfranchised alcohol/drug dependent individuals and their relatives. Free access to treatment for any medical condition is a constitutional right in Brazil and successful examples include the Brazilian response to HIV/AIDS epidemic<sup>42</sup>. As of June 2009; there were roughly 1500 CAPS in Brazil, one-fourth exclusively dedicated to treat alcohol/drug dependency ("CAPS-AD"). "CAPS-AD" should act as a bridge between drug/alcohol treatment and other health care services such as prenatal care, HIV/AIDS treatment centers, among others. To date, little is known about the actual access of disenfranchised population to CAPS-AD units in Brazil. The correlates of hepatitis treatment access among NIDU have not yet been studied<sup>43</sup>.

The main goal of this study was to identify factors related to the access to addiction and Hepatitis treatment among a population of non-injection drug users with chronic Hepatitis living in disenfranchised communities in Rio de Janeiro, Brazil.

## Methods

### Recruitment of Study Participants & Data Management

A cross-sectional study was conducted among 110 non-injection drug users with chronic HBV and/or HCV, between March 2005 and February 2006, in Rio de Janeiro, Brazil. Chronic Hepatitis was accessed by self-report and confirmed by medical records. Following the National Institute on Drug Abuse (NIDA/NIH) and the World Health Organization standard definitions, non-injection drug users were defined as those who haven't injected drugs during the past 12 months. The specific criteria for ascertaining NIDU status and minimizing misclassification of IDUs as NIDUs were: track marks checking and re-confirming route of drug administration during previous 12 months within questionnaire.

Participants were recruited and interviewed at two inner city public health clinics, one of them an outpatient unit with a comprehensive program for people living with HIV/AIDS<sup>44</sup>. Both clinics provide free primary care, addiction and HIV/AIDS treatment, but do not offer specialized treatment for patients with chronic Hepatitis. The majority of its clientele belongs to low social strata, a high percentage homeless and/or previous incarcerated patients. Inclusion criteria were: cocaine use at least once during previous month, age between 18 to 65 and confirmed diagnosis of chronic HBV or HCV infection within the last 2 weeks. Prospective participants were assured that the provided information would not be released to anyone outside our study group. Those who gave written informed consent were interviewed, and participants received a small stipend (\$10 US-dollars).

Questionnaire included sections covering socio-demographics, self-perceived physical and mental health status, HBV/HCV treatment information, HIV status and treatment information, addiction treatment, sexual behavior and patterns of illicit drug use. Interview responses were recorded on Teleform® scan able data forms and reviewed by the interviewers for complete-

ness and consistency prior to the departure of the participant. When needed, clarifications were elicited. The Teleform® program flags missing data and data inconsistency, assuring high standards of quality control.

The Teleform® system is composed of a data capture server, a questionnaire designer, data verifiers and a PDF module. The data capture server is responsible for capturing the data via scannable questionnaires and PDF files that feeds data directly to the database on the Teleform® data capture server. The Designer is a point-and-click application that helps set up a questionnaire with features of automated forms processing and document capture. Designer includes layout tools for creating new forms and rendering existing forms automated. The scanning system, Teleform® Reader, is equipped with recognition engines that identify handwriting, barcodes, and check boxes.

To enhance survey findings, qualitative data was also collected. Fifteen in-depth interviews were conducted with key-informants, selected among health professionals working in the field of addiction and/or hepatitis, health services managers, researchers and police makers (representatives from the Rio de Janeiro Health Secretariat and the National Program for Viral Hepatitis).

The study was approved by the Institutional Review Boards from the Oswaldo Cruz Foundation (CEP/Fiocruz), the Brazilian National Review Board (CONEP) and Centre for Addiction and Mental Health (CAMH). Participants infected with HIV received on-site treatment as well as prompt referral to the Oswaldo Cruz Foundation for HBV/HCV infected patients.

### Data analysis

Socio-demographic, mental health, sexual behavior and drug use variables were analyzed to identify characteristics associated with addiction and hepatitis treatment seeking. Hepatitis treatment seeking was defined as "having ever looked for hepatitis treatment, after receiving chronic hepatitis diagnostic from a physician". Addiction treatment seeking was defined as "having ever looked for alcohol or drug abuse/dependence treatment after receiving a positive addiction diagnosis from a physician or psychologist". For both endpoints, we also evaluated the influence of frequent alcohol and/or snorted cocaine use on treatment seeking, by creating two key variables: "regular drinkers" and "regular cocaine sorters".

"Regular drinkers" were defined as individuals who drank 3 or more distilled drinks on a

typical day. According to the Department of Health and Human Services<sup>45</sup>, the recommended daily limits for moderate alcohol consumption are no more than two drinks for men or one drink for women per day. According to the National Institute on Alcohol Abuse and Alcoholism and the Substance Abuse and Mental Health Services Administration, men may be at risk for alcohol-related problems if their alcohol consumption exceeds 4 drinks per day, and women if they have more than 3 drinks per day<sup>46</sup>.

“Regular cocaine sorters” were defined as individuals who snorted cocaine on a weekly basis or more frequently, based on criteria established by previous studies conducted by the National Institute on Drug Abuse Collaborative Cocaine Treatment Study<sup>47</sup>.

Fisher’s exact test for categorical variables and t-tests and ANOVA for continuous variables were employed. Non-parametric tests (the Wilcoxon Rank-Sum or the Kruskal-Wallis test) were used for variables that violated the assumption of normality or equal variance. Potential correlates with a P-value  $\leq 0.05$  on vicariate analyses were considered to be associated with ‘treatment seeking’. The small sample size precluded multivariate analyses.

“Missed opportunities” for actual Hepatitis treatment engagement were also evaluated by determining whether individuals reported at least one of the following situations: (1) Received hepatitis diagnosis without any counseling; (2) Received hepatitis diagnosis but weren’t referred for treatment evaluation, and (3) Started antiviral treatment, but discontinued it without medical advice.

In-depth interviews were analyzed using principles of grounded theory<sup>48</sup>. Atlas.ti, a software program for computer-based text search and retrieval, was used to help manage data during the coding process<sup>49</sup>. Selected quotes were included to illustrate major research findings reported by the interviewees. The selection of quotes aimed at covering viewpoints consensus while avoiding redundancy.

## Results

### Characteristics of the survey sample

Participants mean age was 37.5 years, the majority were male and with non-white ethnicity. Around two-thirds had less than high school graduation, roughly a half didn’t have a regular

place to live (been homeless or living in shelters/hotel rooms), and around one-third had been incarcerated at least once. More than a half of participants was identified as “regular drinkers” (58.2%), and among those who have ever snorted cocaine, 64.7% were identified as “regular cocaine sorters” (Table 1).

### Access to alcohol and drug abuse treatment

Among those defined as “regular drinkers” (N=64), almost 80% have never looked for alcohol counseling and treatment. White participants had over 5-fold higher odds of having ever looked for addiction treatment (Table 2, upper panel).

Among those defined as “regular cocaine sorters” (N=44), a slightly lower proportion never looked for addiction treatment: 71.2%. Participants with at least high school graduation had almost 9-fold higher odds of having ever looked for addiction treatment, while those with regular employment had almost 6-fold higher odds for treatment seeking (Table 2, lower panel).

In summary, a minority of our sample have ever looked for addiction counseling and treatment, despite this being a population that uses both alcohol and cocaine on a regular and abusive basis. Treatment seeking behaviors seem to be mostly influenced by the following demographic and social characteristics: ethnicity, educational level and regular employment.

### Hepatitis treatment seeking behaviors

A completely different scenario was found when we evaluated hepatitis-related treatment seeking behaviors: the majority of our sample (80.9%) reported to have ever sought this treatment. Socio-demographic predictors for hepatitis treatment seeking behaviors included white ethnicity, at least high school graduation and non-married status. Those who have ever been in addiction treatment and were classified as “regular drinkers” were also more likely to mention hepatitis treatment seeking behaviors. The major predictor for treatment seeking was access to low threshold (e.g. services where abstinence and scheduled appointment is not mandatory, and patients have access to treatment after hours) and multidisciplinary health services (physicians, psychologists, nurses and social workers): participants who had access to those services had almost 4-fold higher odds of having ever looked for hepatitis treatment (Table 3).

**Table 1.** Basic socio-demographic characteristics, alcohol/drug use and sexual behavior of 110 non-injection drug users with HBV/HCV. Rio de Janeiro, 2005-2006.

	Total (%)	N=110
Mean age in years (Standard Deviation)	37.5	(11.5)
Male sex	93	(84.5)
Non-white ethnicity	72	(65.5)
Participants without high school graduation	72	(65.5)
Participants single or divorced	82	(74.5)
Unemployed or receiving monthly income lower than the minimum wage <sup>a</sup>	93	(84.5)
Do not have a regular place to live (homeless, living in shelters...)	47	(42.7)
Ever been incarcerated	42	(38.2)
Self-reported depressive symptoms "always" or "most of the time"	47	(42.7)
Self-reported anxiety symptoms "always" or "most of the time"	59	(53.6)
Never been in alcohol/drug addiction treatment	84	(76.4)
Never/hardly never used condom with stable partners, last 6 months	36	(50.7) <sup>b</sup>
Never/hardly never used condom with occasional partners, last 6 months	23	(38.3) <sup>c</sup>
Self-reported having received HBV vaccination	34	(30.9)
Patients coinfecting with HIV and HBV/HCV	9	(8.3) <sup>d</sup>
Use of liquor during the last 6 months		
3 or more drinks on a typical day ("regular drinkers")	64	(58.2)
Use of fermented drinks during the last 6 months		
3 or more drinks on a typical day	79	(71.8)
Use of marijuana during the last 6 months		
Used marijuana on a weekly basis, almost every week	64	(85.3) <sup>e</sup>
Use of snorted cocaine during the last 6 months		
Used snorted cocaine on a weekly basis, almost every week ("regular cocaine snorters")	44	(64.7) <sup>f</sup>

<sup>a</sup> Approximately \$245.00 USD (September, 2008). <sup>b</sup> Among participants with stable partner, last 6 months. <sup>c</sup> Among participants with occasional partners, last 6 months. <sup>d</sup> Among participants who answered the question. <sup>e</sup> Among participants who ever used marijuana during the last 6 months. <sup>f</sup> Among participants who ever used snorted cocaine during the last 6 months.

### Missed opportunities for hepatitis treatment

Among the overall sample, around a half reported lack of proper counseling after their positive diagnosis for HBV and/or HCV and was not referred to a specialized health facility after their positive diagnosis for chronic hepatitis. Among those participants in need of antiviral therapy, another half decided to discontinue their treatment without previous medical advice (Table 4).

We also evaluated the specific characteristics of participants who had started antiviral therapy for chronic hepatitis infection, but decided to discontinue their treatment without medical advice. The majority of those participants was non-white, had less than high school educational and were classified as "regular drinkers" (data not shown here).

### Hepatitis treatment access: Key informants perceptions

Findings from the in-depth interviews underscore the fact that special efforts should be undertaken to reduce barriers in access to hepatitis treatment among the studies population. Major themes that emerged across all in-depth interviews suggest that the Brazilian National Hepatitis Program often suffers from lack of sustainability, as follows:

"While the Brazilian National AIDS Program is recognized as a model to be followed by other developing countries, the national strategy towards Hepatitis B and C epidemics seems inadequate. The Brazilian National AIDS Program offers free treatment and care to one in every three people living with HIV/AIDS, and patients who haven't started treatment are closely monitored. On the other hand, treatment access for people living with chronic hepatitis in Brazil is less than optimal. The Brazilian government offers free treatment and care for one patient, out of 350 people living with chronic Hepatitis C. The figure

**Table 2.** Characteristics associated with having received alcohol/drug treatment among 64 “regular drinkers” (upper panel) and/or 44 “regular cocaine snorters” (lower panel). Rio de Janeiro, 2005-2006.

	Looked for treatment <sup>b</sup>	Didn't look for treatment <sup>c</sup>	OR (95% CI)
	N(%)	N(%)	
	15 (23.4)	49 (76.6)	
Mean age in years (Standard Deviation)	37.4 (10.3)	37.9 (11.5)	
Male sex	13 (86.7)	47 (95.9)	0.28 (0.35 – 2.16)
White ethnicity	10 (66.7)	13 (26.5)	5.54 (1.59 – 19.27) <sup>b</sup>
High school graduation	8 (53.3)	14 (28.6)	2.86 (0.87 – 9.38)
Single or divorced	12 (80.0)	37 (75.5)	1.29 (0.31 – 5.38)
Regular employment, receiving at least the minimum wage per month <sup>a</sup>	3 (20.0)	4 ( 8.2)	2.81 (0.55 – 14.31)
Do not have a regular place to live	10 (66.7)	22 (44.9)	2.45 (0.73 – 8.25)
Ever been incarcerated	7 (46.7)	21 (42.9)	1.16 (0.36 – 3.73)
Self-reported depressive symptoms “always” or “most of the time”	7 (46.7)	27 (55.1)	0.71 (0.22 – 2.27)
Self-reported anxiety symptoms “always” or “most of the time”	8 (53.3)	27 (55.1)	0.93 (0.29 – 2.97)
Never/hardly never used condom with stable partners, last 6 months	6 (40.0)	17 (34.7)	1.25 (0.38 – 4.12)
Never/hardly never used condom with occasional partners, last 6 months	2 (13.3)	17 (34.7)	0.29 (0.06 – 1.43)
Patients coinfecting with HIV and HBV/HCV	3 (20.0)	2 ( 4.1)	5.87 (0.88 – 39.21)
	<b>Looked for treatment</b>	<b>Didn't look for treatment</b>	
	<b>N(%)</b>	<b>N(%)</b>	
	<b>11 (28.8)</b>	<b>33 (71.2)</b>	
Mean age in years (Standard Deviation)	37.6 (9.8)	37.8 (11.5)	
Male sex	9 (81.8)	30 (90.9)	0.45 (0.65 – 3.12)
White ethnicity	7 (63.6)	10 (30.3)	4.02 (0.96 – 16.91))
High school graduation	6 (54.5)	4 (12.1)	8.70 (1.79 – 42.30) <sup>d</sup>
Participants single or divorced	7 (63.6)	25 (75.8)	0.56 (0.13 – 2.42)
Regular employment, receiving at least the minimum wage per month <sup>a</sup>	4 (36.4)	0 (0.00)	5.71 (2.91 – 11.20) <sup>e</sup>
Do not have a regular place to live	7 (63.6)	17 (51.5)	1.64 (0.40 – 6.71)
Ever been incarcerated	5 (45.4)	16 (48.5)	0.88 (0.22 – 3.48)
Self-reported depressive symptoms “always” or “most of the time”	5 (45.4)	19 (57.6)	0.61 (0.15 – 2.42)
Self-reported anxiety symptoms “always” or “most of the time”	8 (72.7)	21 (63.6)	1.52 (0.34 – 6.86)
Never/hardly never used condom with stable partners, last 6 months	6 (54.5)	12 (36.4)	2.10 (0.53 – 8.37)
Never/hardly never used condom with occasional partners, last 6 months	1 (0.09)	9 (27.3)	0.26 (0.03 – 2.39)
Patients coinfecting with HIV and HBV/HCV	3 (0.27)	1 ( 3.0)	12.0 (1.09 – 131.24)

<sup>a</sup> Approximately \$245.00 USD (September, 2008). <sup>b</sup> Looked for outpatient treatment (for alcohol or cocaine addiction) and attended at least one appointment. <sup>c</sup> Never looked for outpatient treatment for alcohol or cocaine addiction. <sup>d</sup>  $P \leq 0.01$ , Fisher's exact test was used. <sup>e</sup>  $P \leq 0.005$ , Fisher's exact test was used.

is even worse for those living with chronic Hepatitis B: only one in 1,000 patients receive free treatment and care. The government 2008 fund to treat every people living with HIV/AIDS in Brazil, was, in average, 1,800 US-dollars; while it was only 27 US-dollars for every patient living with chronic HCV or HBV. And for drug users, the picture is even worse. There is something wrong...” [Brazilian activist and representative of the World Hepatitis Alliance]

“The National Program for Viral Hepatitis is very recent, it was created in 2002 and it still doesn't have the necessary budget to implement key national strategies. For instance, until nowadays we were unable to develop a national mass media

campaign. Hepatitis B vaccine coverage is not enough, particularly for high risk groups such as drug users and commercial sex workers. Surveillance studies points to a national prevalence around 10% for hepatitis B and, according to blood banks surveillance, the prevalence for Hepatitis C is lower than 1%. Having in mind that Brazil has around 190 inhabitants, we have a huge problem in our hands. The access to treatment is improving, but we still have a long way to go.” [Representative from the National Program for Viral Hepatitis]

Another key aspect consistently found across in-depth interviews suggests that health professionals lack proper training to work with drug

**Table 3.** Characteristics associated with Hepatitis treatment seeking among 110 non-injection drug users with HBV/HCV. Rio de Janeiro, 2005-2006.

	Looked for treatment N(%) 88 (80.9) <sup>a</sup>	Didn't look for treatment N(%) 22 (19.1) <sup>a</sup>	OR (95% CI)
Mean age in years (Standard Deviation)	36.9 (11.8)	39.8 (10.6)	
Male sex	75 (85.2)	18 (81.8)	0.96 (0.25 – 3.73)
White ethnicity	32 (36.3)	5 (22.7)	1.83 (0.61 – 5.46)
High school graduation	32 (36.4)	6 (27.3)	1.43 (0.50 – 4.05)
Participants single or divorced	68 (77.3)	14 (63.6)	1.70 (0.60 – 4.78)
Regular employment, receiving at least the minimum wage per month <sup>a</sup>	14 (15.9)	3 (13.6)	1.13 (0.29 – 4.37)
Do not have a regular place to live	36 (40.9)	10 (45.4)	0.76 (0.29 – 1.98)
Ever been incarcerated	33 (37.5)	9 (40.9)	0.80 (0.30 – 2.10)
Self-reported depressive symptoms “always” or “most of the time”	36 (40.9)	10 (45.4)	0.76 (0.29 – 1.98)
Self-reported anxiety symptoms “always” or “most of the time”	43 (48.8)	15 (68.2)	0.38 (0.13 – 1.07)
Never/hardly never used condom with stable partners, last 6 months	29 (32.9)	7 (31.8)	0.98 (0.36 – 2.70)
Never/hardly never used condom with occasional partners, last 6 months	19 (21.6)	4 (18.2)	1.17 (0.35 – 3.89)
Has ever been in addiction treatment	22 (25.0)	4 (18.2)	1.42 (0.43 – 4.66)
Classified as “regular drinker”	54 (61.3)	10 (45.4)	1.74 (0.67 – 4.55)
Classified as “regular cocaine snorter”	33 (37.5)	11 (50.0)	0.54 (0.21 – 1.42)
Access to low threshold and multidisciplinary health services	73 (82.9)	12 (54.5)	3.65 (1.30 – 10.20) <sup>b</sup>

<sup>a</sup>The percentages vary according to availability of the data. <sup>b</sup> $P \leq 0.01$ , Fisher's exact test was used

**Table 4.** Missed opportunities for Hepatitis treatment among 110 non-injection drug users with HBV/HCV. Rio de Janeiro, 2005-2006.

	Total (%) <sup>a</sup>
Received Hepatitis diagnosis without any counselling	57 (51.8)
Received Hepatitis diagnosis but weren't referred to treatment evaluation	49 (44.5)
Non-white participants <sup>b</sup>	36 (73.5)
Participants with less than high school education <sup>b</sup>	36 (73.5)
Participants who have ever been incarcerated <sup>b</sup>	21 (42.9)
Participants with no regular place to live <sup>b</sup>	21 (42.9)
Participants classified as “regular drinkers” <sup>b</sup>	29 (59.2)
Participants classified as “regular cocaine snorters” <sup>b</sup>	23 (46.9)
Participants who actually received antiviral treatment	42 (38.2)
Participants in need of antiviral therapy who decided to discontinue their treatment <sup>c</sup>	22 (52.4)

<sup>a</sup>The percentages vary according to availability of the data. <sup>b</sup>Among participants who received Hepatitis diagnosis but weren't referred to treatment evaluation, categories are non-exclusive. <sup>c</sup>Among participants who ever received antiviral therapy.

users. The vast majority of managers and health professionals also pointed that Brazil lacks specialized health services to provide the necessary treatment and care for people with chronic Hepatitis, as follows:

“We usually provide a thorough counseling for high risk groups, such as commercial sex workers and drug users. But our first aim is to prevent the infection, by providing hepatitis B vaccine and

counseling, I must confess that treatment is still uneven for those groups. There is not enough health facilities providing hepatitis treatment, health professionals lack proper training, and drug users hardly have access to the necessary treatment. I feel like we are always trying to control the fire, you know? It's like a dog chasing his own tail, a never ending story. We need better prevention strategies, better vaccine coverage and, on the top

of that, treatment must be available for all those in need, no matter what his skin color, sexual orientation or if he uses or not illicit drugs” [Researcher and health professional].

## Discussion

Most NIDU included in our survey sought hepatitis treatment (>80%), in spite of the fact that slightly a half of our sample did not receive any counseling after their hepatitis diagnosis and was not referred to specialized health facilities. This high percentage of participants who did not receive appropriate referral might suggest a low prioritization of this vulnerable population by health services/professionals. Qualitative data suggests that additional barriers include lack of specialized services and discontinuation of funding to provide necessary training for health professionals and intervention strategies targeting drug users.

On the other hand, treatment seeking behaviors for addiction remained low, even among participants defined as “regular drinkers” and/or “regular cocaine snorters”: around one fourth of participants in need of addiction treatment have ever looked for specialized care, despite the existence of low-threshold public outpatient units all over the town – “CAPS-AD”.

Hepatitis treatment seeking was highly influenced by the availability of low threshold and multidisciplinary health services, highlighting the importance to provide user friendly, culturally sensitive services, ideally offering a multidisciplinary approach that targets the broad range of problems usually faced by this population: psycho-social related needs, as well as frequent infectious diseases and the need for addiction treatment in a single site.

Missed opportunities for Hepatitis treatment highlighted both health services-related barriers (lack of proper training and funding discontinuation) and patient-related barriers (e.g. severe drug addiction and treatment discontinuation without previous medical advice). Further studies should be developed in order to evaluate underlying barriers associated with less than optimal hepatitis treatment and/or discontinuation of hepatitis treatment among Brazilian NIDU, in a context of purported “universal access to treatment”.

There are a number of limitations to this study. Firstly, the study population was a convenience sample and the results should not be extrapolated to other populations of NIDU. However, the de-

mographic profile of the study population is similar to that of larger surveys conducted with Brazilian NIDU<sup>50</sup>. Secondly, the survey did not evaluate other social and health concerns of the interviewees. For many current NIDU with HBV/HCV, addiction treatment may be a relatively low priority, compared to housing and/or alimentation needs. Thirdly, and most importantly, the small sample size of our study precluded multivariate analyses; therefore our findings should be interpreted with caution. Nevertheless, the present study highlighted the importance of user friendly and low threshold health services as a facilitator for treatment entry among drug users.

Additional studies should explore the barriers to health treatment among drug users using larger sample sizes, and evaluating patients outside clinical settings (e.g. street-recruited drug users). More adequate study designs, such as prospective longitudinal studies, should be used to test and validate interventions aiming to improve the access and adherence to health treatment among this a highly vulnerable population.

Available knowledge must be further developed and assessed to determine the utility of addiction treatment as an instrument of reducing the high and avoidable Hepatitis disease burden among drug users. From both a public health and an individual welfare perspective, the time is right to combine scientific knowledge and political will into a targeted and proactive Hepatitis treatment and prevention approach for Brazilian drug users.

## Collaborations

M Malta, S Cavalcanti, L Gliksman, E Adlaf, MA Hacker, N Bertoni, E Massard and FI Bastos contributed equally in the study design, literature search, data analysis and manuscript preparation.

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