

# HEPATITIS B AND C VIRUS INFECTIONS AMONG PERSONS WHO USE CRACK IN MIDWEST REGION, BRAZIL

Vivianne de Oliveira Landgraf de Castro<sup>1</sup>, Ana Rita Coimbra Motta-Castro<sup>1,2</sup>, Joseph Forbi<sup>3</sup>, Hong Thai<sup>3</sup>, Saleem Kamili<sup>3</sup>

<sup>1</sup>Federal University of Mato Grosso do Sul, Brazil

<sup>2</sup>Oswaldo Cruz Foundation, Mato Grosso do Sul, Brazil

<sup>3</sup>Centers for Disease Control and Prevention

## BACKGROUND

Studies have shown that certain vulnerable populations, such as persons who use crack cocaine (crack), are more susceptible to infections by hepatitis B virus (HBV) and hepatitis C virus (HCV). The presence of ulcers, cuts, blisters and burns in the mouth are common among users of crack and can facilitate the spread of blood-borne viruses. Previous studies among crack users in Brazil showed prevalence of HBV and HCV infections of 6.7% and 2.6%, respectively. The aim of this cross-sectional study was to estimate the prevalence of HBV and HCV infections and determine the main viral genotypes circulating among persons who use crack in the state of Mato Grosso do Sul, Midwest region, Brazil.

## METHODS

A total of 700 crack users were invited to participate in this study using convenience sampling method. They were recruited from the therapeutic communities and streets of three Mato Grosso do Sul cities. Whole-blood samples were collected from each participant and sera were tested for hepatitis B surface antigen (HBsAg) and antibodies against HBsAg (anti-HBs), hepatitis B core antigen (total anti-HBc) and HCV (anti-HCV) by enzyme immunoassays (EIAs). HBsAg and/or anti-HBc-positive samples were tested for HBV DNA using an in-house nested-PCR to amplify S-gene region and genotyped by sequencing. Anti-HCV positive samples were submitted to a nested-PCR to amplify two HCV genomic region (5'-UTR and HVR-1). HCV genotypes were classified based on the 5'-UTR and HVR-1 consensus sequences.

## RESULTS

Table 1. Sociodemographic characteristics among 700 crack users in Mato Grosso do Sul, Midwest

Characteristics	N (%)
Male	593 (84.7)
Age (26-35 years)	273 (39.0)
Mixed or black	477 (68.1)
Income <\$200	350 (50.0)
Single	553 (79.0)
Low education (5-8 years)	320 (45.7)
History of incarceration	421 (60.1)



Figure 1. Geographic location of the study. Crack users were recruited from remarkable cities.

Table 2. Prevalence of HBV and HCV serological markers among 700 crack users in Mato Grosso do Sul, Midwest Brazil.

Markers	% (95% IC)	Remarks
HBsAg/Anti-HBc	1.8% (0.8-2.7)	Chronic Infection
Anti-HBc/Anti-HBs	7.8% (5.7-9.7)	Past Infection
Anti-HBc only	4.2% (2.7-5.6)	-
Anti-HBs	24.9% (21.7-28.1)	Vaccinated
No markers	61.8% (56.7-63.9)	Susceptible
Anti-HCV	4.5% (2.9-6.0)	-

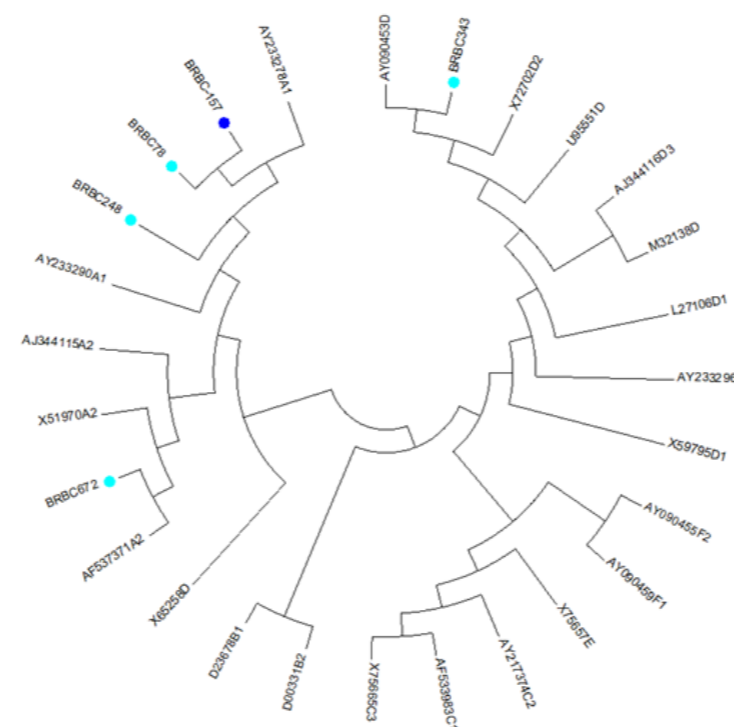


Figure 2. Phylogenetic tree analysis of the S region of HBV. The phylogenetic tree was constructed by the neighbor-joining method using MEGA v.6.0 software (bootstrap resampling test with 1,000 replicates).

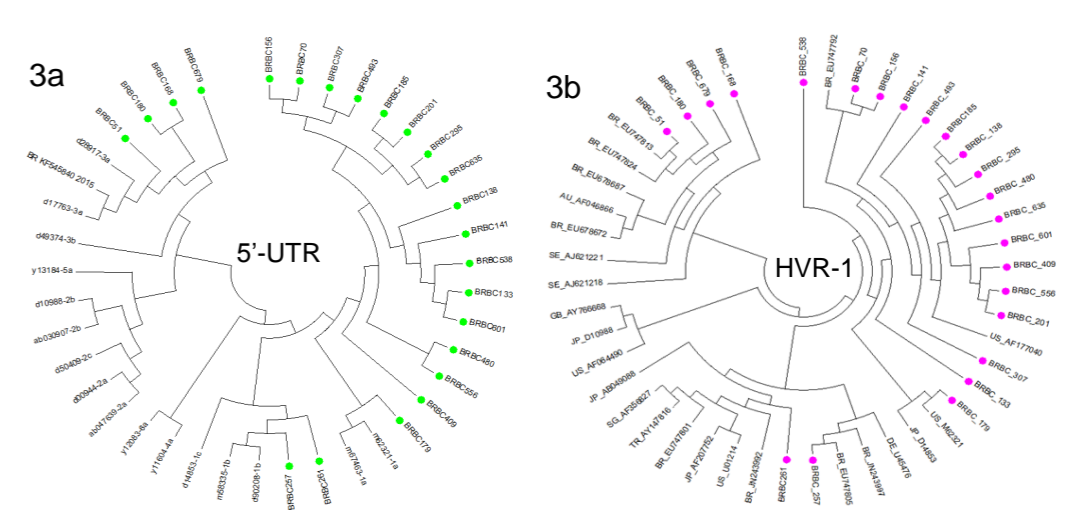


Figure 3. Phylogenetic tree analysis of the 5'-UTR (4a) and HVR-1 (4b) regions of HCV. The phylogenetic tree was constructed by the neighbor-joining method using MEGA v.6.0 software (bootstrap resampling test with 1,000 replicates).

## CONCLUSIONS

The prevalence of HBV and HCV infections among persons who use crack in Brazil is significantly higher than that reported in previous studies of crack users in the same region. These results highlight a need for improved health awareness and hepatitis B and C prevention programs among crack users.

## REFERENCES

BASTOS, F.; BERTONI, N. Livro digital da Pesquisa Nacional sobre o Uso de Crack é lançado | ICICT | Fiocruz. Disponível em: <https://www.icict.fiocruz.br/>  
 DA SILVA LN, DA SILVA FRANÇA DD, DEL-RIO NHA, DOS SANTOS CARNEIRO MA, MARTINS RMB, et al. Low prevalence, low immunization and low adherence to full hepatitis B vaccine scheme and high-risk behaviors among crack cocaine users in central Brazil. Journal of infection and public health. 2017 Jan - Feb;10(1):76-83

## CONFLICTS OF INTEREST

The above authors declare that they do not have any potential conflict of interest in this study.

### Contact Information

NAME: Vivianne de Oliveira Landgraf de Castro

TEL NO: +55 67 992010963

EMAIL: vikalndgraf@hotmail.com

