

Food Insecurity Associated with Infection of Hepatitis C and B Viruses in the United States

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Background: Hepatitis C virus (HCV) and Hepatitis B virus (HBV) infected populations are rising in the modern day, with approximately 1 million and 1.2 million new cases per year, respectively. Additionally, food insecurity (FI) is also growing, with an increase in the rates from 10.4% to 13.5% between 2021 and 2022. Past studies have shown a link between FI and HCV-HIV coinfecting populations. However, the association between FI and HCV/HBV is still unclear. Past studies provide evidence for a link between FI and injection drug use (IDU), which is one of the primary paths for spreading HCV and HBV infection. This evidence suggests a possible association between FI and HCV/HBV infection. The objective of this study is to investigate the association between food insecurity and HCV/HBV infection.

Methods: The data used for this study was derived from the National Health and Examination Survey (NHANES) 2015-2020. To be eligible for this study, respondents had to be adults over 20, have no missing values for HBV or HCV infection status, the primary outcomes, and have not received the HBV vaccine. The total sample size was 9797. The primary predictor in this study was food insecurity. Other potential confounding factors we considered in the study included age, gender, education level, race, smoking status, drinking status, marital status, and income, measured using the family income to poverty ratio. Analyses were conducted using the Statistical Analysis System (SAS). With SAS, the predictors associated with HCV/HBV status were tested using the chi-square test. FI associated with HCV/HBV status was evaluated using logistic regression while adjusting for other factors.

Results: The food-insecure individuals had a higher chance of HCV or HBV infection than food-secure individuals (4.3% vs. 2.5%). The bivariate analysis indicated that the association between food insecurity and HCV/HBV was statistically significant ($p < 0.001$). Other variables that were statistically significant in association with HCV/HBV were gender ($p < 0.001$), age ($p < 0.001$), smoking status ($p < 0.001$), and family income ($p < 0.001$). Furthermore, the multivariable logistic regression provided evidence that HCV/HBV-infected individuals were more likely to be food insecure (odds ratio (OR) = 1.35, $p = 0.041$), male (OR = 1.62, $p = 0.004$), old adults (OR = 3.03, $p < 0.001$), middle-aged adults (OR = 2.65, $p = 0.004$), current smokers (OR = 3.11, $p < 0.001$), and poor (OR = 1.93, $p < 0.001$).

Conclusions: Food insecurity was found to be associated with higher rates of HCV/HBV infection. In addition, smoking status, age, and family income were significantly associated with HCV/HBV infection. Our findings provide valuable information for the prevention of HCV/HBV infection and incentivize steps to be taken against food insecurity to reduce HCV and HBV infection.