

# Population-Based HBV, HDV Prevalence Study in Apparently Healthy Mongolian Population

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## Introduction

In Mongolia, it is estimated that nearly 90% of hepatocellular carcinoma (HCC) is caused by viral hepatitis. Mongolia has the world's highest rate of liver cancer mortality—nearly eight times the global average. Over 1,600 people died due to HCC in 2012 alone, according to the official statistics from the Ministry of Health of Mongolia. To date, there has not been a population-based study that determined prevalence of HBV, HDV in Mongolia.

## Methods

In this study, 1,158 people were included. HBsAg, HBeAg and anti-HDV were analyzed by ELISA. HBV-DNA testing was performed using quantitative RT-PCR methods (Abbott m2000sp/m2000rt) at the Liver Center. HDV-RNA viral load testing was performed at the Center for Hepatitis and Liver Tissue Engineering of the Stanford School of Medicine

## Results

Out of 1,158 randomly selected individuals, 123 (10.62%) subjects were HBsAg positive. 11.8% of men and 9.7% of women were HBsAg positive, indicating significant gender difference for HBV prevalence. Only 19.5% of HBsAg positive individuals were HBeAg positive. Consistent with this result, 67.5% of HBsAg positive individuals were also anti-HDV positive. Over 61% of anti-HDV positive individuals had quantifiable HDV-RNA as determined by qRT-PCR. According to quantitative HBV viral load testing of HBsAg positive individuals, 10.6% had more than 20,001 IU/mL, 7.3% had 2001-20,000 IU/mL, whereas 52.8% had less than 2,000 IU/mL HBV viral load values. The results of multivariate regression analysis for potential risk factors show that the risk factors for HBV infection were increased with dental treatment 4.2 times (OR=4.293 95% CI 1.158-15.912 p=0.029) and with hemodialysis 5.1 times (OR=5.078 95% CI 1.199-21.511 p=0.027).

## Conclusion

In this study, we determined for the first time population-based HBV, HDV prevalence in Mongolia, and the results are truly alarming. In fact, 67.5% of HBsAg positive individuals were also anti-HDV positive, which is the highest prevalence in the world to the best of our knowledge. Not only, anti-HDV prevalence is high, but also over 61% of these individuals have quantifiable HDV-RNA, indicating active HDV infection. Based on these results, it is estimated that Mongolia has approximately 200K people with chronic HBV infection and over 136K people are anti-HDV positive. Mongolian males have higher chronic HBV infection. Finally, dental treatment and hemodialysis significantly increase the risk of HBV infection.