Section: Microbiology

Original Research Article

A CROSS-SECTIONAL STUDY ON SEROPREVALENCE OF HEPATITIS B VIRUS AND HEPATITIS C VIRUS ATTENDING A TERTIARY CARE INSTITUTE IN NORTH-EAST INDIA

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ABSTRACT

Background: Viral hepatitis is a serious public health problem affecting billions of people globally. It remains a significant health care burden in India despite advances in antiviral therapy and effective vaccines. Hepatitis B and C are primarily blood-borne frequently causing deaths among general population. This study was carried out to estimate the burden of viral hepatitis in a tertiary care institute. **Aims and objectives:** To determine the prevalence and burden of Hepatitis B virus (HBV) and Hepatitis C virus (HCV) in general population attending a tertiary care institute. **Materials and Methods:** A cross-sectional study was conducted in the Department of Microbiology, Jawaharlal Nehru Institute of Medical Sciences (JNIMS) on patients visiting Out-Patient Department (OPD) and In-Patient Department (IPD) from January 2023 to December 2023 who were advised for HBsAg and HCV Ab testing of any age group, male and female were taken consent and included in this study. Rapid diagnostic methods were used for qualitative detection of HBsAg (TRUSTline) and HCV Ab (TRUSTline). **Result:** A total of 12580 serum samples were tested for HBsAg and HCV Ab, of which 126 (1%) were reactive for HBsAg and 364 (2.9%) were reactive for HCV Ab. 25 (0.2%) were reactive for both HBsAg and HCV Ab. The prevalence of HBV and HCV among males (57% and 81%) was higher than in females (43% and 19%) respectively. Age group of 21-30 had the maximum prevalence of HBV (30%) and HCV (35%). **Conclusion:** This study found that the prevalence of HCV is higher than that of HBV as compared to other parts of India with male predominance in the age group 21-30 years for both HBsAg and HCV Ab. High prevalence among males may be due to injection drug use. Hence, more attention should be given to develop appropriate preventive measures and clinical management to reduce negative outcomes.

INTRODUCTION

Viral hepatitis is a serious public health problem affecting billions of people globally. It remains a significant health care burden in India despite advances in antiviral therapy and effective vaccines. Hepatitis B and C are primarily blood-borne frequently causing deaths among general population.[1] They have several important similarities including worldwide distribution, hepato-tropism, similar modes of transmission and the ability to induce chronic infection that may lead to liver cirrhosis and hepatocellular carcinoma.[2] According to 2024 Global Hepatitis Report by the World Health Organization (WHO), India accounted for a significant 11.6 per cent of the world's hepatitis cases in 2022 which translates to a concerning number of over 35.3 million hepatitis infections in the country, with 29.8 million hepatitis B and 5.5 million hepatitis C cases.[3] The prevalence studies specifically targeting the general population in India remain limited, highlighting a critical gap in knowledge necessary for effective prevention and control strategies.[4]

Aims and objectives

The aim of our study is to determine the prevalence and burden of Hepatitis B virus (HBV) and Hepatitis C virus (HCV) in general population attending a tertiary care institute.

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MATERIALS AND METHODS

A cross-sectional study was conducted from January 2023 to December 2023 in the Department of Microbiology, Jawaharlal Nehru Institute of Medical Sciences (JNIMS), Imphal, Manipur after obtaining permission from the Institutional Ethics Committee.
A total of 12580 participants visiting Out-Patient Department (OPD) and In-Patient Department (IPD) who were advised for HBsAg and HCV Ab testing of any age group, male and female were included in this study. 5 ml of peripheral blood was collected from all the participants under aseptic conditions after obtaining written informed consent. Serum was separated and tested using rapid diagnostic methods which is an in-vitro immunochromatographic one step assay for qualitative detection of HBsAg (TRUSTline) and HCV Ab (TRUSTline). Participants with positive test results were counselled about the nature of the infection and its further management. All results are expressed as frequency (in percentage).

Inclusion Criteria: All participants who were advised for HBsAg and HCV Ab testing, the samples which were sent to the serology laboratory of Department of Microbiology.

Exclusion Criteria: Samples that have been haemolyzed.

RESULTS

A total of 12580 serum samples were tested for HBsAg and HCV Ab, of which 126 (1%) were reactive for HBsAg and 364 (2.9%) were reactive for HCV Ab. 25 (0.2%) were reactive for both HBsAg and HCV Ab. The prevalence of HBV and HCV among males (57% and 81%) was higher than in females (43% and 19%) respectively. Age group of 20-30 had the maximum prevalence of HBV (30%) and HCV (35%). Of the 12580 participants, 8137 (65%) were from IPD and 4443 (35%) from OPD.

Table 1: Seroprevalence of Hepatitis B virus and Hepatitis C virus

	HBV [n (%)]	HCV [n (%)]
Number of positive sample	126 (1%)	364 (2.9%)
Number of negative sample	12454 (99%)	12216 (97.1%)
Total number of sample tested	12580	12580

Table 2: Distribution of Hepatitis B cases according to Demographic profile of participants

Particulars		Frequency [n (%)]
Age (Years)	0-10	0 (0%)
	20-Oct	6 (4.8%)
	20-30	38 (30%)
	30-40	34 (27%)
	40-50	18 (14.3%)
	50-60	10 (7.9%)
	>60	20 (15.9%)
Total		126

Table 3: Distribution of Hepatitis C cases according to Demographic profile of participants

Particulars		Frequency [n (%)]
Age (Years)	0-10	2 (0.5%)
	10-20	26 (7.1%)
	20-30	130 (35%)
	30-40	42 (11.5%)
	40-50	88 (24.2%)
	50-60	60 (16.5%)
	>60	16 (4.4%)
Total		364

Table 4: Prevalence of HBV/HCV co-infection

Total number of sample tested for HBV and HCV	Number of HBV/HCV co-infection [n (%)]
12580	24 (0.2%)

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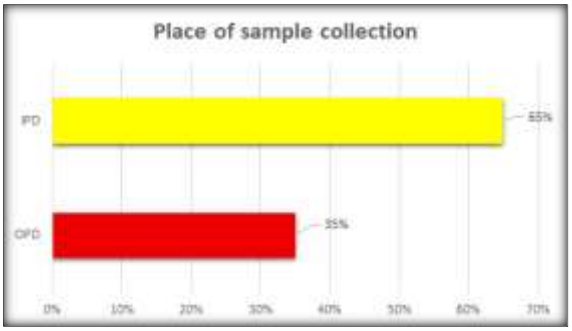

Figure 1: Distribution of participants according to Place of sample collection

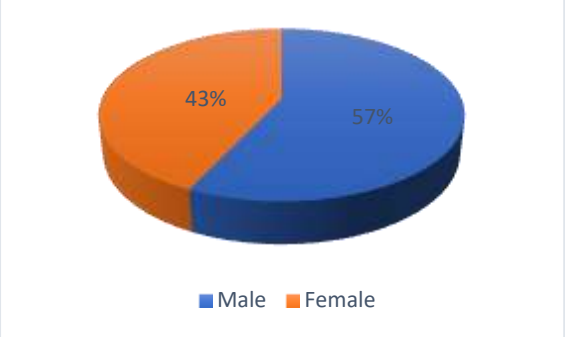

Figure 2: Prevalence of Hepatitis B among males and females

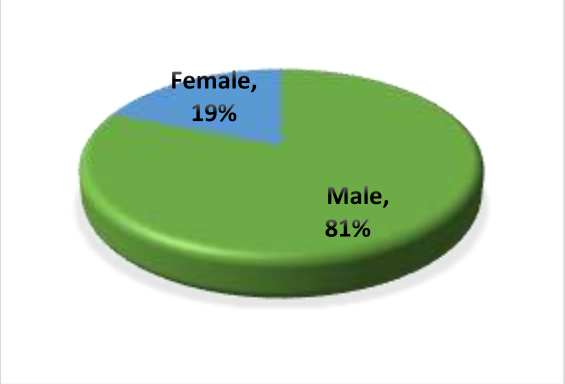

Figure 3: Prevalence of Hepatitis C among males and females

DISCUSSION

In the present study, 4780 (38%) participants were males and 7800 (62%) were females. Of the 12580 samples, 8177 (65%) were from IPD and 4403 (35%) from OPD. The seroprevalence of hepatitis B and hepatitis C was observed to be 1% and 2.9% respectively and co-infection of HBV/HCV was 0.2%. In contrast, a study conducted by Jha et al,[5] found the seroprevalence of hepatitis B and hepatitis C to be 2.03% and 0.82% respectively. A study conducted by Desikan et al,[6] found a prevalence rate of HBV/HCV co infection to be 1.89%.

In our study, the prevalence of HBV and HCV among males (57% and 81%) were higher than in females (43% and 19%) respectively. A similar study conducted by Roy et al1, observed that the seroprevalence of HBV and HCV infection among males (15.4% and 40.7%) were higher than in females (1.9% and 1%) respectively.

Age group of 21-30 years had the maximum prevalence of HBV (30%) and HCV (35%) in this study. Kausar et al,[2] in their study reported a high prevalence of HBV (36.8%) in the age group of 41-50 years. Rajani et al,[7] reported the seroprevalence of HCV (9%) infections higher in the age group 11-20 years which was lower than this study.

CONCLUSION

This study found that the prevalence of HCV is higher than that of HBV as compared to other parts of India with male predominance in the age group of 20-30 years for both HBsAg and HCV Ab. Lower prevalence rate of HBV in Manipur may be due to increase in HBV vaccination. Higher prevalence of hepatitis B and hepatitis C infections among males may be due to injection drug use which is lesser among females. Hence, more attention should be given to develop appropriate preventive measures and clinical management to reduce negative outcomes.

REFERENCES

1. Roy A, Sh P, Sulochana Devi K, Haokip P, Laldinmawii G, Damrolien S. Seroprevalence of hepatitis B and hepatitis C in people who inject drugs and other high risk groups in a tertiary care hospital in Northeast India. Int J Community Med Public Health. 2017 Sep;4(9):3306-3309.
2. Kausar A, Hv P. Seroprevalence of Hepatitis B in a Tertiary Care Hospital in South India. International Journal of Current Medical And Applied Sciences. 2022;33(2):17–9.
3. Prasad S. India had over 11% of global hepatitis burden in 2022, with 35.3 million cases. Down To Earth. 2024. Available from: https://www.downtoearth.org.in/health/india-had-over-11-of-global-hepatitis-burden-in-2022-with-35-3-million-cases-95514
4. Ardavan Mohammad Aghaei, Gholami J, Arshiya Sangchooli, Yasna Rostam–Abadi, Sogol Olamazadeh, Ardeshir M, et al. Prevalence of injecting drug use and HIV, hepatitis B, and hepatitis C in people who inject drugs in the Eastern Mediterranean region: a systematic review and meta-analysis. The Lancet Global Health. 2023 Aug 1;11(8):e1225–37.
5. Jha AK, Arya Suchismita. Seroprevalence of Hepatitis B and C in the Eastern Himalayan Region of India: A Population-Based Study. Tropical Gastroenterology. 2020 Jun 22;40(3):321–4.
6. Desikan P, Khan Z. Prevalence of hepatitis B and hepatitis C virus co-infection in India: A systematic review and meta-analysis. Indian J Med Microbiol. 2017;35(3):332–9.
7. Rajani M, Jais M. Age-wise seroprevalence of hepatitis C virus infection in clinically suspected infectious hepatitis patients attending a tertiary care hospital in Delhi. International Journal of Medicine and Public Health. 2014;4(1):78.

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