Available on: https://jnsrr.ep-journals.org/ E-ISSN: 3051-3766 P-ISSN: 3051-3758

Journal of Natural Science Research and Review

Volume: 01 Issue: 04 October-2025

Prevalence of Hepatitis B and C Virus Among Students of Federal University Gashua, Yobe State, Nigeria.

Kolo, R.L.
Department of Microbiology, Faculty of Science, Federal University Gashua, Yobe State, Nigeria
Kopdorah, W.S.
Department of Biochemistry, Faculty of Science, Federal University Gashua, Yobe State, Nigeria
Ameh E Rosemary
Department of Microbiology, Ahmadu Bello University, Zaria, Kaduna State, Nigeria

Published Date: October 08, 2025

ABSTRACT: Hepatitis B virus (HBV) and Hepatitis C virus (HCV) infection is a major health problem and account for a substantial proportion of liver diseases world-wide. The aim of this study was to determine the prevalence of hepatitis B and C virus among students of Federal University Gashua, Yobe State, Nigeria. A total of one hundred and twenty (120) blood samples were collected from students and one step Hepatitis B surface antigen and Anti-HCV test strips were used to analyse the samples. A total of 10 (8.3%) were positive for HBsAg and none 0 (0%) was positive for Anti-HCV among the study population. The age group of 21-25 years had highest prevalence of 6(11.1%). In relation to gender, male students recorded highest prevalence of 5(11.1%) in comparison to female students. Assessment based on marital status, married subjects had highest HBV prevalence of 5 (10.0%), most of the respondents had knowledge about the disease but highest prevalence of 3(9.1%) was observed in those that were not aware of the infection. The result was analysed in relation to some risk factors, the respondents that were not vaccinated, those that shared sharp objects and those with history of blood transfusion all had higher HBV prevalence. The outcome of this study showed a high prevalence rate of HBV and a zero percent prevalence of HCV among Student of Federal University Gashua, Yobe State, Nigeria. Students should be educated on Hepatitis B and Hepatitis C infection as well as the risk factors associated with it, immunization against viral hepatitis should be encouraged.

KEYWORDS: Hepatitis B virus (HBV), liver diseases, Anti-HCV, blood transfusion

INTRODUCTION

Hepatitis is defined as the inflammation of the liver. It may be caused by exposure to certain chemicals, autoimmune diseases, or by microbial agents such as bacteria, parasites and viruses; majorly the hepatitis viruses (Ahmedin *et al.,* 2004). The hepatitis B and C viruses in particular, can cause acute and chronic hepatitis and are the leading causes for hepatic cirrhosis and cancer, thus creating a significant burden to healthcare systems due to the high morbidity/mortality and costs of treatment (Ugbebor *et al.,* 2011). In 2013, viral hepatitis was the seventh highest cause of mortality and globally was responsible for an estimated 1.4 million deaths per year (Jeferries *et al.,* 2018) with an estimate of 47% attributable to hepatitis B virus, 48% to hepatitis C virus and the remaining to hepatitis A and E viruses (Wiktor and Hutin, 2016 and WHO, 2010).

The viruses live in the blood and other body fluids and are transmitted from person to person through unprotected sexual intercourse with an infected person and percutaneous exposure to blood or body fluids through injections, needle stick or blood transfusion (Ugbebor *et al.,* 2011). The hepatitis B virus (HBV) is 10 times more infectious than hepatitis C virus (HCV) with many carriers not realizing they are infected with the virus, thus referred to as a "silent killer" (Samuel *et al.,* 2004).

The risk of developing a chronic form depends on age at infection: The younger the patient, the higher the risk of developing chronic hepatitis: chronic infection is seen in 90% of infants infected at birth, 30 to 50% of children infected between the age of one to four years, and 1 to 10% of those infected at older age or as adults (Ugbebor *et al.,* 2011). HBV infection has been the most significant factor associated with the development of liver cancer, which is one of the most malignant cancers; the second most frequent cause of cancer death in men, and the sixth leading cause of cancer death in women (Ishikawa, 2015). The incubation period of hepatitis B is four to 12 weeks, followed by the acute infection phase, icteric, or anicteric course, once again with a variable duration of two to 12 weeks (Kayser *et al.,* 2005). HBV can effectively be prevented by vaccination; a safe and effective HBV vaccine has been available since the 1980s and can prevent acute and chronic infection with an estimated 95% success (Ugbebor *et al.,* 2011).

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

MATERIALS AND METHODS

Study area

The study was conducted in Federal University Gashua, Yobe State, Nigeria 12° 52° 26.33 "N, longitude 11° 02° 26.05" E, Latitude Bade is a community in Yobe State in North-Eastern Nigeria, on the Yobe River a few miles below the convergence of the Hadejia River and the Jama'are River basin. Average elevation is about 299 m. The town lies near the Nguru - Gashua Wetlands, an economically and ecologically important ecological system (Neiland, 2010).

Federal University Gashua was established in 2013 and is located in Gashua the Headquarter of Bade Local Government Area the university is located along Nguru and Yusufari Road Gashua 1.7km. The University consists of four (4) faculties, which includes: Faculty of Science, Faculty of Management and Social Science, Faculty of Art and Faculty of Agriculture. The students of Federal University Gashua Yobe State, Nigeria were the target population. They consist of young male and female adults within the age of 16-35 years from different ethnic, religious and cultural background studying different degree programs at various levels. Ethical clearance and approval was obtained from the management of the Federal University Gashua Yobe State, Nigeria. The aim of the study was explained to the participants and consents were sought before the study began.

Questionnaire administration

Questionnaire was administered to the consenting students of Federal University Gashua, Yobe State Nigeria, in order to obtained information on the socio-demography and risk factor of HBV and HCV.

Sample collection and processing

The samples (blood) were collected in the school clinic with the help of a laboratory technician. The students were asked to sit properly on chair with arm well rest on the table tourniquet was gently tied to the upper arm and 2ml of blood was aseptically collected from each student and dispensed into plain bottles which were allowed to settled. The samples were centrifuged at 1000r/min for one minute and serum were separated into plain bottles and stored in the refrigerator for further analysis.

The one step Hepatitis B surface Antigen (HBsAg) and Anti-HCV test strip (serum plasma) is a rapid chromatographic immunoassay for the qualitative detection of hepatitis B and hepatitis C surface antigen in serum or plasma.

Specimen and test strips were brought to room temperature, test strips were removed from their sealed pouch and placed on a clean flat surface after which were labelled with specimen number. Pipette was used to transfer the specimen to the sample pad of each of the strip and allowed to run for about 15minutes after which results were read and interpreted.

RESULTS

A total of one hundred and twenty (120) blood samples were screened for HBsAg and Anti-HCV among students of Federal University Gashua. A total of 10 (8.3%) were positive for HBsAg and none 0 (0%) was positive for Anti-HCV among the study population (Figure 1).

Association between hepatitis B virus infection and socio-demographic variables were assessed and presented in Table (1). The age distribution of HBV infection among study participants shows age group 21-25 years had highest prevalence of 6(11.1%). In relation to gender, male students recorded highest prevalence of 5(11.1%) in comparison to female students. Assessment based on marital status, married subjects had highest HBV prevalence of 5 (10.0%). The result showed that most of the respondents had knowledge about the disease but highest prevalence of 3(9.1%) was observed in those that were not aware of the infection.

Analysis of HBsAg was done in relation to some risk factors (Table 2). Positive result was observed 4(7.0%). There was a higher rate of infection among non-vaccinated persons 4(7. 4%).And students ever shared sharps object had highest prevalence of 5(9. 1%).And those students that never undergone blood transfusion recorded highest prevalence of 3(5.2%). Therefore, students had never smoke had highest prevalence of 5(8.3%).

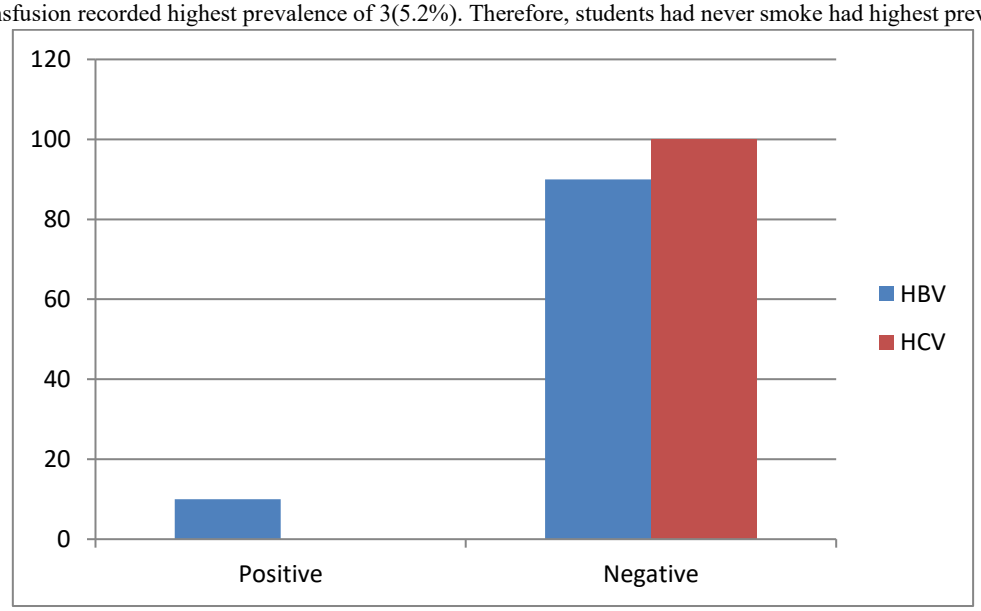

Figure 1: Prevalence of HBV infection among students of Federal University Gashua, Yobe State, Nigeria.

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

TABLE 1: The prevalence of HBV infection in relation to socio demographic variables among students of Federal University Gashua, Yobe State, Nigeria.

Variables	No. Examined	No. Positive (%)
Age Group		
16 - 20	42	3(7.1)
21 – 25	54	6(11.1)
26 – 30	24	1(4.2)
Total	120	10(8.3)
Gender		
Male	45	5(11.1)
Female	75	5(6.7)
Total	120	10(8.3)
Marital Status		
Single	100	8(8.0)
Marriage	20	2(10.0)
Divorce	0	0(0)
Total	120	10(8.3)
Awareness		
Yes	87	7(8.0)
No	33	3(9.1)
Total	120	10(8.3)

TABLE 2: The prevalence of HBV infection in relation to some risk factors among students of Federal University Gashua, Yobe State, Nigeria.

Variable	No Examined	No Positive (%)
Vaccinated		
Yes	10	0(0.0)
No	110	10(9.1)
Total	120	10(8.3)
Shared sharp object		
Yes	13	3(23.1)
No	107	7(6.5)
Total	120	10(8.3)
Blood Transfusion		
Yes	08	2(25.0)
No	112	3(2.7)
Total	120	10(8.3)
Smoking		
Yes	04	0(0)
No	116	10(8.6)
Total	120	10(8.3)

DISCUSSION

An overall prevalence rate of 10(8.3%) was recorded for HBV and 0(0%) for HCV in this research. The result obtained for HBV screening may be regarded as high according to WHO classification for assessing severity of HBV infections in HBV endemic countries where low prevalence to be < 2%, moderate to be 2-8% and high prevalence to be > 8% HBV positivity (WHO, 2010). The high (8.3%) prevalence of HBsAg obtained in this study suggests that hepatitis B is somewhat common among students in the campus. University students are known to indulge in risky sexual exposure patterns and are hence prone to the disease (Tuck *et al.,* 2009). Hepatitis B virus can be transmitted via contact with all bodily fluid (saliva, urine, semen, breast milk, sweat, tears), and by frequent and prolonged close personal contact with an infected person (Aminu *et al.,* 2013).

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

Even though the prevalence obtained in this research is thought to be high, a higher prevalence rate was recorded by Isa *et al.,* (2015) and Aminu *et al.,* (2013) in Ahmadu Bello University, Zaria, Kaduna State, Nigeria, Pennap *et al.,* 2011 in Nassarawa State University in Keffi, Nigeria and Mabayoje *et al.,* 2010 at Ladoke Akintola University of Technology in Southwest Nigeria who reported high endemicity of 9.2%, 12.5%, 13.2% and 9.5%. Contrary to other studies of Garbati *et al.,* 2024, Enitan *et al*., 2019, Simidele *et al*., (2018), Imarenezor *et al.,* (2016) and Dawurang *et al.,* (2012) who reported lower prevalence of 4.0%, 1.5%, 4.5%, 6.0% and 4.5% respectively. These variations in prevalence could not be unconnected to the screening methods, study group and the fact that newly admitted students to be not vaccinated at entry.

None of the students in this study tested positive to antibodies to hepatitis C virus (Anti-HCV). There is a growing concern regarding the prevalence of HBV and HCV infection among students in the university, which can be influenced by behavioral, social, and environmental factors. Many researchers have investigated the prevalence of HCV among university students in Nigeria, with varying results based on geographic region, study design and sample size. The result of this study agree with previous study by Agabi *et al.,* 2024 in Jos and contrary to studies by Olusola *et al.,* 2020 from southwest and Okeke *et al.,* 2017 from southeast Nigeria with prevalence rates of 2.1% and 1.5% among undergraduate students.

On age distribution, there was a higher prevalence rate 6(11.1%) was recorded in the age range of 21-25 years. High sexual activity could be attributable to this observed prevalence among members of the age group (Alter, 2003). Ekuma *et al.,* 2014 were able to identify some factors associated with the increased risk among the age group to include, duration of sexual activity, number of sexual partners and the clients of prostitutes. This result is contrary to the finding of Olakunle *et al.*, 2023 and Isah *et al.,* (2015) who reported a higher prevalence rate among age group of 15-19 and 16-20 years among undergraduate students in Ekiti and Kaduna State, Nigeria respectively.

In this study, male student had the highest HBV prevalence which could be linked to some risk factors such as multiple sexual partners, intravenous drug use, sharing of sharp objects, tattooing among others. Also, disparity in sample size, sample population and the varying levels of engagement in the risk predisposing practices across populations could have attributed to the result. This agrees with the results of previous studies which clearly indicated that HBV is more prevalent among male subject than their female counterparts (Agabi *et al*., 2024, Garbati *et al.,* 2024, Imarenezor *et al*., 2016 and Tula and Iyoha, 2015) but in contrast with the study of Ndako *et al.,* 2020.

On assessment of marital status most of the respondents in this study were single but the married respondents had the highest prevalence of 2(10.0%) which could have been as a result of their sexual activity, unhygienic lifestyle and possible engaging in other means in which this virus can be transmitted. The result of this study disagrees with that of Agabi *et al*., 2024 and Pennap *et al.,* 2011.

Highest prevalence was recorded among students that were not aware of HBV infection, this is expected because lack of awareness can increase the risk of been infected because risk factors are not known and therefore cannot be avoided. Unvaccinated students had highest prevalence which agrees with previous studies of Enitan *et al*., (2019). Students who share sharp objects and those with history of blood transfusion had highest HBV prevalence. This is so because these are known risk factors associated with HBV infection. This finding disagrees with that of Enitan *et al*., 2019 but contrast previous study of Agabi *et al*., 2024.

REFERENCES

1) Agabi, Y.A., Nkup, J.Y., Cirfat, N.A., Okechalu, J.N, and Vincent, G.O. (2024). Prevalence of hepatitis B and C surface antigens among students in Jos, Nigeria. *Microbes and Infectious Diseases*; Article-In-Press, DOI: 10.21608/mid.2024.253156.1699.
2) Alter, M. (2003). Epidemiology and prevention of hepatitis B. Seminars in Liver Disease; 23(1):39- 46.
3) Aminu, M., Okachi, E.E., Abubakar, S.M. and Yahaya, A. (2013). Prevalence of hepatitis B virus surface antigen among healthy asymptomatic students in a Nigerian University. *Annals of African Medicine*; 12(1):55–56. doi: 10.4103/1596-3519.108257.
4) Ekuma, O.O., Mawak, J.D., Uwakwe, A., Ogbu, O., Okoh, F.N. Agah MV, et al. (2014). Prevalence of Hepatitis B surface antigen among the newly admitted students of University of Jos, Nigeria. *American Journal of Life Sciences*; 2(1):35-39
5) Enitan, S., Adebola, O., Adejumo, E., Itodo, G., Ileoma, E., Oluremi, A., et al. (2019). Prevalence of Hepatitis B and C Virus Infection among Students of a Private Tertiary Institution in South-Western Nigeria. Intl J of Trop Dis & H.; 36(3):1–15.
6) Imarenezor, E.P.I.C., Brown, S.T.C., Yakubu, O.E. and Soken, D.C. (2016). Survey of Hepatitis B and C among Students of Federal University Wukari, Taraba State, Nigeria. Int. Res. J.Med Sci; 4(3):31-37.
7) Jefferies, M., Rauff, B., Rashid, H., Lam, T. and Rafiq, S. (2018). Update on global epidemiology of viral hepatitis and preventive strategies. World J Clin Cases 2018; 6(13):589–599.
8) Ndako, J.A., Ojo, S., Dojumo, V.T., Fajobi, V.O., Ifeanyi, I., Akinwumi, J.A., et al. Sero-Epidemiological Analysis of Hepatitis B Virus Infection among Apparently Healthy Young Adults in Omuaran-Community. International Journal of Pathogen Research. 2020;4(4):31–38.
9) Olakunle, A.O., Stephen, K.S.O., Uchenna, L.U. and Seye, J.O. (2023). A cross-sectional study on the prevalence of HIV and hepatitis B virus co-infection among students of a tertiary institution in Ekiti State, Southwest Nigeria. Pan African Medical Journal; 5(44):7. doi: 10.11604/pamj.2023.44.7.31416.
10) Olusola, B.A., Akinyemi, O.A. and Olorunfemi, S. (2020). Prevalence and risk factors for hepatitis C virus infection among university students in Nigeria. African Journal of Infectious Diseases; 14(1), 49-55.
11) Pennap, G.R., Aliyu, Y., Odula, O. and Forbi, J. (2010). Prevalence of Hepatitis B and C virus Infection among People of a Local Community in Keffi, Nigeria. African Journal of Microbiology. Res (4):274- 278
12) Simidele, O.M., Oladimeji, A., Joseph, A.A., Aduayi, V. and Samuel, N.I. (2018). Burden of Hepatitis B Viral Infection among Workers in a Tertiary Health Institution in Southwestern Nigeria. Open Journal of Medical Microbiology. 8(4):85–97.

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

13) Tuck, M.K., Chan, D.W., Chia, D., Godwin, A.K., Grizzle, W.E., Krueger, K.E. et al. (2009). Standard Operating Procedures for Serum and Plasma Collection: Early Detection Research Network Consensus Statement Standard Operating Procedure Integration Working Group. Journal of Proteome Research, 8(1):113-117.
14) Tula, M.Y. and Iyoha, O. (2015). A cross-sectional study on the Sero-prevalence of hepatitis B surface antigen (HBsAg) among apparently healthy students of a tertiary institution in North - Eastern Nigerian. Int. J. dis. Health; 7(3):102-108.
15) Wiktor, S.Z. and Hutin, Y.J. (2016). The global burden of viral hepatitis: better estimates to guide hepatitis elimination efforts. Lancet; 388:1030–1031.
16) World Health Organization (WHO) (2010).. Sixty Third World Health Assembly - Viral Hepatitis; (WHA63.18)

License: This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/

Corresponding Author: Kolo, R.L.