

## **Knowledge of Hepatitis B and C among Clients Co-infected with Human Immunodeficiency Virus and Hepatitis B and C in a Tertiary Hospital in Kaduna, Northwest Nigeria**

Yusuf-Ajibade N<sup>1</sup>, Ogunsina MA<sup>2</sup>, Omisakin OO<sup>3</sup>, Bello-Ovosi B<sup>2</sup>, Yakubu PD<sup>2</sup>, Sani H<sup>2</sup>

<sup>1</sup>Department of Medicine, Barau Dikko Teaching Hospital, Kaduna

<sup>2</sup>Department of Medicine, Barau Dikko Teaching Hospital, Kaduna and Kaduna State University, Kaduna

<sup>3</sup>Department of Surgery, Barau Dikko Teaching Hospital/Kaduna and Kaduna State University, Kaduna

**Correspondence:** Dr. M. A. Ogunsina.

E-mail: arinolaprecious@yahoo.com

Tel: +2348037876822

### **Abstract**

**Background:** Viral hepatitis is an inflammatory disease of the liver that is caused by hepatitis viruses A to G. Approximately ten percent of people living with Human Immunodeficiency virus are infected with viral hepatitis. This coinfection results in a significant increase in liver related morbidity, mortality and more immune suppression in PLHIV. This study assessed knowledge of hepatitis B and C among clients co-infected with HIV and hepatitis B and C.

**Methods:** A cross sectional study was conducted from August 2018 to February 2019. The study population were HIV clients seeking care and tested positive for hepatitis B and C in Barau Dikko Teaching Hospital Kaduna, Nigeria. Data was collected using a structured self-administered questionnaire. Knowledge was classified into poor, fair and good and analyzed using SPSS version 25. Chi Square test was used to test the relationships between categorical variables and statistical significance set at  $p = 0.05$ .

**Result:** A total of 384 clients participated, 272 (70.8%) were females and mean age was  $39.3 \pm 9.6$  years. Fifty one (13.3%) of participants had poor knowledge of hepatitis B and C, 39(10.2%) were aware of the Hepatitis B and C status of their partners. Level of knowledge had a statistically significant association with education ( $p= 0.042$ ) but none with age group and gender ( $p=0.87$  and  $0.93$  respectively).

**Conclusion:** There was good knowledge of hepatitis but poor awareness of their partners' status. More enlightenment and partners screening is advocated among the general populace to abate the transmission of this disease.

**Keywords:** Hepatitis B and C, Human Immunodeficiency Virus, People Living with HIV Infection.

### **Introduction**

According to the World Health Organization (WHO), viral hepatitis, though highly preventable, is one of the major communicable diseases that stands out and threatens public health globally. It is one of the commonest co-infections among people living with HIV (PLHIV) outside tuberculosis. The

WHO ranked hepatitis as one of the ten major diseases that cause death globally, caused principally by viral types A,B,C,D,E,F and G and can be transmitted via diverse methods with varying associated complications.<sup>1</sup> On account of the burden of hepatitis B (HBV) and C (HCV) infection worldwide, a workable resolution was

made towards 2030 agenda to fight the disease with goals targeting effective vaccination, prevention of mother to child transmission, application of universal precaution at workplaces, use of antiviral agents in post exposure prophylaxis and effective treatment of the infection.

Viral hepatitis co-infection has been documented to cause greater liver-related morbidity and mortality, higher viral load, more severe immune suppression and significantly diminished CD4 recovery in PLHIV than in those with HIV alone. There has been varying prevalence data globally on viral hepatitis though HBV was reported to be more prevalent in eastern part of Asia and sub-Saharan Africa and in patients that presented with cirrhosis. As at 2015 across the globe, among the estimated 40 million PLHIV, about four million were reported to be infected with hepatitis B virus (HBV). Several studies have shown widely varying degrees of knowledge of these infections among various groups of individuals in the community and types of occupation. In Indonesia, a very high level of knowledge (86.7%) of hepatitis was demonstrated in a community study. Similar level of knowledge was demonstrated among predominately White women from rural Kentucky for HIV and HCV. In the study among students in Vietnam, only 19.9% obtained a good score. Among medical students in Iraq, a high proportion of the study participants (41%) had poor knowledge of HBV and this also negatively affected their level of vaccination against the infection. In Sudan, two studies among healthcare workers revealed that the respondents had just above average (56.9%) and good levels of knowledge with scores higher among vaccinated individuals. Similarly in Nigeria, various authors found varying levels of knowledge of the infections. Among health care workers in South south region, average knowledge score for HBV and HCV was poor though those in the clinically oriented departments had better scores. Another among healthcare workers in Sokoto showed that majority (86.3%) demonstrated good knowledge of HBV infection.

This was also noted in Lagos (70.1%) among the respondents. With varying prevalence rate across the globe, the knowledge of the individuals also varies. Amri et al from review of literature concluded that reduction of HIV/HCV and

HIV/HBV among workers in health facilities was probably due to their change in attitude, practice and improved knowledge on prevention and transmission of the diseases. For the National action plan for hepatitis to achieve about 85% coverage for HB vaccine for infants, reduce acquisition of new HCV infection by 60% and reduce the number of deaths associated with HBV by at least 20% to be possible, the knowledge, attitude and practice of the populace has to be improved. There has been no significant study of the knowledge of these infections among PLHIV.

## Methodology

### Study area

This was carried out in the Special Treatment Center (STC) unit of Barau Dikko Teaching Hospital (BDTH), a tertiary hospital in the capital city of Kaduna State, Northwest Nigeria. The hospital is a training institution for clinical students of the College of Medicine of the Kaduna State University as well as of house-officers and resident doctors. The clinic has been in existence for over 10 years caring for newly enrolled and old clients living with HIV/AIDS. It serves the State capital as a tertiary hospital for specialist care and also serves as a referral facility for the surrounding towns.

### Study design

It was a cross-sectional descriptive study conducted from August 2018 to February 2019. Using Scott Smith adopted formula,  $n = (Z \text{ value})^2 \times \text{standard deviation} \times (1 - \text{standard deviation}) / (\text{margin of error})^2$

$$n = (1.96)^2 \times 0.5 \times (1 - 0.5) / (0.05)^2$$

$$n = 3.842 \times 0.5 \times (0.5) / 0.0025$$

$$n = 384.2$$

Therefore, the sample size was approximated to 385.

The study population were adults aged 18 years and above who tested positive for both HIV and viral hepatitis. Bedridden clients, those with encephalopathy and those who refused to participate in the study were excluded from the study.

Convenient sampling was used to select the participants. HIV positive patients were those that were reactive to either Determine or Western Blot (rapid tests) and confirmed by Enzyme-Linked

Immunosorbent Assay (ELISA). Patients are said to be reactive to hepatitis Band or C if tested positive by the rapid test indicating present or current hepatitis B and or C virus infection.

A structured pre-tested questionnaire administered by trained interviewers was used to obtain data. The pretest was carried out among clients who were not part of this study and modifications made as necessary to the questionnaire. The introduction part obtained demographic information while the body of the questionnaire assessed the knowledge of the participant. The knowledge aspect was divided into three parts assessing the cause, mode of transmission and treatment/prevention of hepatitis B and C. The correct answers to the questions either "Yes" or "No" were scored one (1Mark) each while wrong answers or "I don't know" were scored zero (0 mark). Scores <11, 11-15 and 16 marks were classified as poor, fair and good levels of knowledge respectively. Five

trained assistants were used to collect data. The analysis of data was done using IBM SPSS statistics 25. Data was processed, cleaned and results presented through tables and charts. Pearson Chi-square test was applied to measure degree of relationship between knowledge and demography. Ethical approval (protocol no: 18-00028-1) was obtained from the Ethical Committee of the Barau Dikko Teaching Hospital.

**Results**

There were more females 272 (70.8%) compared to males, 206 (53.7%) were less than 40 years and the mean age was 39.3 ± 9.6years. Those that were married and employed were 175(45.6%) and 253(65.9%) respectively and 277(72.2%) of them had at least secondary school level of education as shown in Table 1. Three hundred and thirty three (86.7%) participants had above average knowledge of hepatitis B and C as shown in Figure

Table 1: Sociodemographic characteristics of respondents

<b>Variables</b>	<b>Frequency (N=384)</b>	<b>Proportion (%)</b>
<b>Gender</b>		
Male	112	29.2
Female	272	70.8
<b>Age (Years)</b>		
18 – 29	54	14.1
30 – 39	152	39.6
40 – 49	126	32.8
50-59	34	8.9
>60	18	4.7
<b>Mean age</b>	39.31 ± 9.58 years	-
<b>Marital status</b>		
Married	175	45.6
Single	135	35.1
Widowed	35	9.2
Unspecified	39	10.2
<b>Occupational status</b>		
Employed	253	65.9
Unemployed	131	34.1
<b>Educational Status</b>		
Nil	56	14.6
Primary	51	13.3
Secondary	142	37.0

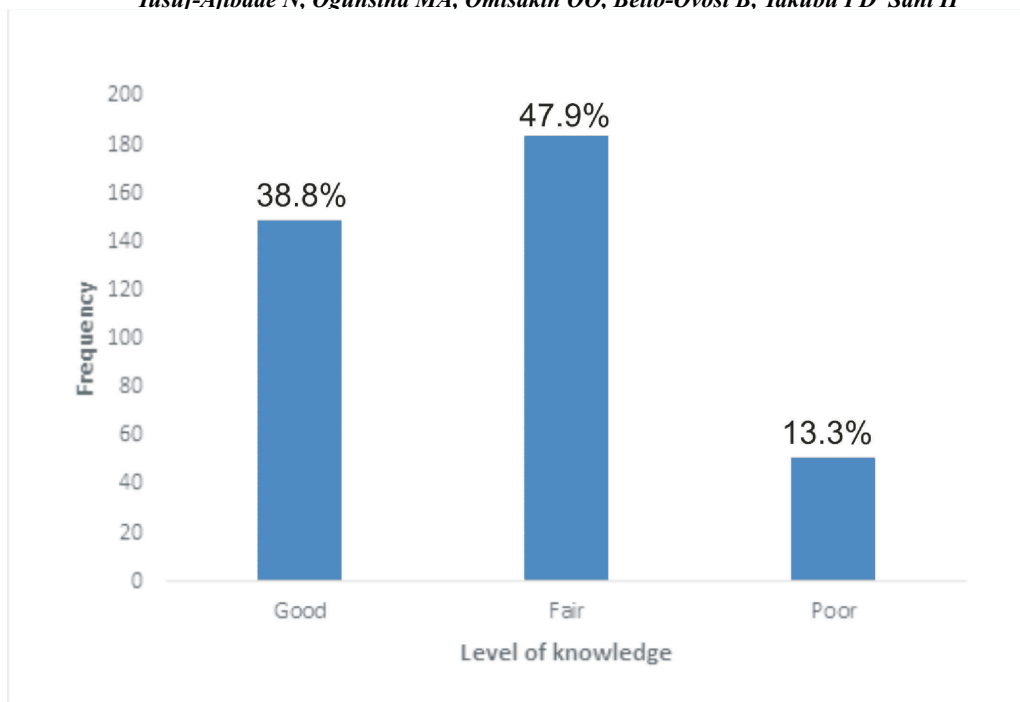


Figure1: Knowledge of hepatitis B and C among clients co-infected with HIV and HBV/HCV in BDTH Kaduna State.

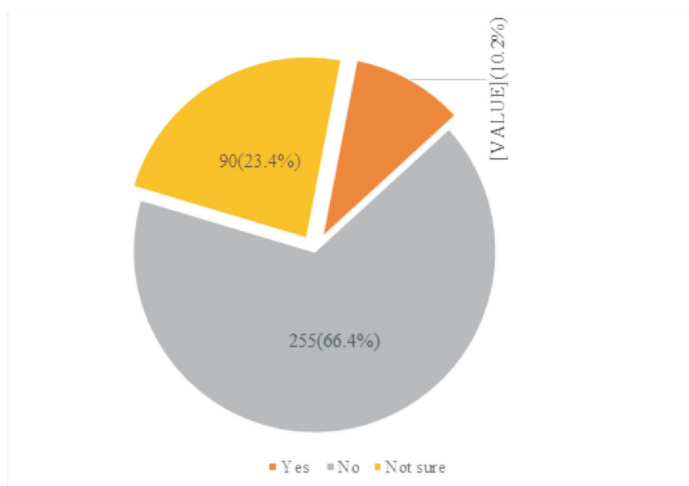


Figure 2: Knowledge of partners' HBV/HCV infection status among clients co-infected with HIV and HBV/HCV in BDTH, Kaduna State.

Table 2: Relationship between knowledge of hepatitis infection and sociodemographic variables among clients co-infected with HIV and HBV/HCV in BDTH, Kaduna State.

Variables	Knowledge classification			p-value
	Poor (n=51) (%)	Fair(n=184) (%)	Good (n=149) (%)	
<b>Age group</b>				
<40years	31 (60.8)	133 (58.6)	70 (66.0)	0.43
=40	20 (39.2)	94 (41.4)	36 (34.0)	
<b>Gender</b>				
Male	15 (29.4)	65 (28.6)	32 (30.2)	0.96
Female	36 (70.6)	162 (71.4)	74 (69.8)	
<b>Occupation</b>				
Unemployed	13 (25.5)	75 (33.0)	43 (40.6)	0.15
Employed	38 (74.5)	152 (67.0)	63 (59.4)	
<b>Education</b>				
Nil/Primary	11 (21.6)	59 (26.0)	37 (34.9)	0.042
Secondary/Tertiary	40 (78.4)	168 (74.0)	69 (65.1)	

### Discussion

The study showed that majority of the participants were females which may be explained by the fact that the study population is a special group (PLHIV) and it has been documented that most PLHIV are females." Over half of the population studied were below the age of 40 years, that is, the younger populace were more affected as also noted in Abuja. Since HIV, Hepatitis B and C are transmitted via blood and sex, the sexual route of transmission might also be the route for the hepatitis infection since they are the averagely sexually active and reproductive age group.

The transmission by use of intravenous injections can also be an important source here especially for hepatitis C infection which a study in Asia noted contributed to 80% of those that were co-infected by hepatitis C despite the fact that 85% HIV infection were through sexual transmission. The majority were also in the economically productive group by being gainfully employed. If these co-infections are not actively managed, they might eventually have untold effects on the economy of the nation in terms of manpower, cost of treatment

of disabilities, quality of life of the clients and loss of working hours.

While assessing their knowledge, most of the participants knew that it was viral in origin, and it was different from HIV infection. Many of the participants were able to correctly identify some of the modes of transmission including infected mother to child and through sex while a few erroneously believed transmission could occur via the feaco-oral route. The higher awareness of the sexual route might be attributed to the knowledge of the co-infection with HIV that the participants had.

Khalid observed in his study that participants' knowledge on the preventive measures for hepatitis was poor unlike in our study where more than two thirds of participants were aware that the use of hand gloves, vaccination, and enlightenment by social awareness were methods of prevention. In a study in Kano, it was noted that the knowledge among the study population was poor though the educational status of the participants was not stated and it did not assess mode of transmission Despite knowing that the infection can be transmitted

sexually, only one in every ten knew their partners' hepatitis infection status. Some of these partners might already be infected and not getting adequate or any management. This can worsen the prognosis of the participants because of continuous infection/re-infection by their partners which could further promote the transmission of the disease in the general population.

Age and gender did not significantly affect the level of knowledge of hepatitis B and C among the participants. This was similar to the finding by Eni et al who observed that there was no significant difference observed for knowledge across the age groups. Level of education significantly affected the level of knowledge of the participants which is comparable to that of the undergraduates studied by Khalid et al in Sudan.<sup>25</sup> It therefore suggests that basic knowledge of the disease condition should be taught at various levels of education.

### Conclusion

The level of knowledge of hepatitis B and C among people living with HIV/AIDS accessing care in Barau Dikko Teaching Hospital Kaduna is well above average. There is still the need for public awareness among these clients to sustain and improve what they know and also reach out to those among them with inadequate knowledge. Partner's screening for hepatitis should also be advocated in managing clients living with HIV. This will be essential in combating the spread of these diseases among these clients and their partners.

### References

1. WHO. Global health Sector Strategy on viral hepatitis? 2016-2021 towards ending viral H e p a t i t i s . <https://apps.who.int/iris/bitstream/handle/10665/246177/WHO-HIV-2016-06>. Accessed 26 January 2019.
2. W H O . H e p a t i t i s B . <https://www.who.int/news-room/factsheets/detail/hepatitis-b> Accessed 07 January 2019.
3. Bonacini M, Louie S, Bzowej N, Wohl AM. Survival in patients with HIV infection and viral hepatitis B or C: a cohort study. *AIDS*. 2004;18(15):2039-2045.
4. Ladep NG, Agaba PA, Agbaji O, Muazu A. Rates and impact of hepatitis on human immunodeficiency virus infection in a large African cohort. *World Journal of Gastroenterology* 2013; 19(10):1602-10.
5. CDC. Coinfection with HIV and viral h e p a t i t i s . <https://www.cdc.gov/hepatitis/hiv-hepatitis-coinfection.htm>. Accessed: 04 December 2018.
6. Alberts CJ, Clifford GM, Georges D, Negro F, Lesi OA, F Hutin Y et al. Worldwide prevalence of hepatitis B virus and hepatitis C virus among patients with cirrhosis at country, regi on, and global levels: a systemic review. *The Lancet* 2022; 7(8): 724-735.
7. Askari A, Hakimi H, NB, Hassanshahi G, Arababadi MK. Prevalence of Hepatitis B Co-infection among HIV positive Patients: Narrative Review Article. *Iran J Public Health*. 2014 ;43(6):705-712.
8. Kourtis AP, Bulterys M, Hu DJ, Jamieson DJ. HIV/HBV co-infection--a global challenge. *N Engl J Med*. 2012;366(19):1749-1752.
9. Dwiartama A, Nirbayati WF, Giri-Rachman EA, Niloperbowo W, Tan MI, Anin A. Knowledge Attitude, and Practice towards Hepatitis B Infection Prevention and Screening among Indonesians. *Int J Environ Res Public Health*. 2022; 19(8): 4644.
10. Peteet B, Staton M, Miller-Roenigk B, Carle A , Oser C. Rural Incarcerated Women: HIV/HCV Knowledge and Correlates of Risky Behavior. *Health Educ Behav*. 2018 ;45(6):977-986.
11. Nguyen TL, Pham TH, Samuel SO, Hoang TV, Nguyen TU, Ngo TB et al. Knowledge, Attitudes and Practices toward Hepatitis B Virus Infection among Students of Medicine in Vietnam. *Int J Environ Res Public Health*. 2021; 18(13): 7081
12. Othman SM, Saleh AM, Shabila NP. Knowledge about Hepatitis B infection among medical students in Erbil City, Iraq. *Eur Sci Journal* 2014;9(10):299-305.
13. Mustafa AM, Ahmed A, Abdelbaset TA, Shaheen MT, Hilali A, Fadul M et al.

- Knowledge, attitude and practice of hepatitis (B) among healthcare workers in relation to their vaccination status in Khartoum, Sudan, 2015: a cross-sectional study. *Sudan journal of medical sciences*. 2018; 13(1):22-32.
14. Bakry SH, Mustafa AF, Eldalo AS, Yousif MA. Knowledge, attitude and practice of health care workers toward Hepatitis B virus infection, Sudan. *Int J Risk Saf Med*. 2012;24(2):95-102.
  15. Osagiede EF, Ozomata EA, Osagiede ET, Jumbo J, Ofanson JE, Abah SO. Assessment of Knowledge and Seroprevalence of Hepatitis B and C Viral Infection among Health Care Personnel in a Rural Teaching Hospital in South-South Nigeria. *Journal of Environmental and Occupational Health*. 2020; 10(3): 55-72.
  16. Hassan M1, Awosan KJ, Nasir S1, Tunau K1, Burodo A1, Yakubu A et al. Knowledge, risk perception and hepatitis B vaccination status of healthcare workers in Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria. *Jour. of Public Health and Epid*. 2016; 8(4): 53-59.
  17. Abiola AO , Omoyeni OE, Akodu BA. Knowledge, attitude and practice of hepatitis B vaccination among health workers at the Lagos State accident and emergency centre, Toll-Gate, Alausa, Lagos State. *West Afr J Med*. 2013;32(4):257-62.
  18. HHS.gov. National viral hepatitis Action Plan. <https://www.hhs.gov/hepatitis/viral-hepatitis-action-plan/index.html> Accessed: 27 November 2018.e
  19. Rucker, M. How to Determine Sample Size for your Study. <https://unstuck.me/determine-the-sample-size-study>. Accessed:05 November 2018.
  20. Indeed editorial team. How To Determine Sample Size: Calculate Using This Formula | Indeed.com. <https://www.indeed.com/career-advice/career-development/how-to-calculate-sample-size-formula>. Accessed 20 November 2023.
  21. Ogunsina MA, Yusuf-Ajibade N, Maaji E, Shuiab M. Assessment of Utilization of Post Exposure Prophylaxis (Pep) Among HIV-Exposed Individuals in a Tertiary Hospital, Northwest Nigeria. *West Afr J Med* 2021;38 (10): 999-1003.
  22. Erhabor O, Ejele OA, Nwauche CA. Epidemiology and management of occupational exposure to blood borne viral infections in a resource poor setting: the case for availability of post exposure prophylaxis. *Niger J Clin Pract*. 2007;10 (2):100-104.
  23. Nnakenyi ID, Uchechukwu C, Nto-Ezimah U. Prevalence of hepatitis B and C virus co-infection in HIV positive patients attending a health institution in southeast Nigeria. *African Health Sciences* 2020; 20(2):579-586.
  24. Tremeau-Bravard A, Ogbukagu IC, Ticao CJ, Abubakar JJ. Seroprevalence of hepatitis B and C infection among the HIV-positive population in Abuja, Nigeria. *Afr Health Sci*. 2012; 12(3): 312–317.
  25. Chen M, Wong WW, Law MG, Kiertiburanakul S, Yunihastuti E, Merati TP, et al. Hepatitis B and C Co-Infection in HIV Patients from the TREAT Asia HIV Observational Database: Analysis of Risk Factors and Survival. *PLoS ONE* 2016; 11(3): e0150512.
  26. Khalid FA, Mohammed AA, Farah EA. Knowledge and Awareness of AIDS among University of Kassala Students. *Sudan. J Community Med Health Educ* 2013; 3: 201.
  27. Edia-Asuke UA, Usman HS. Seroprevalence of Hepatitis B and C Infections among HIV/AIDS Patients Attending Aminu Kano Teaching Hospital, Kano State, Nigeria. *UJMR*. 2017; 2 (1):200-5
  28. Eni AO, Soluade MG , Oshamika OO , Efekemo OP , Igwe TT, Onile-Ere OA. Knowledge and Awareness of Hepatitis B Virus Infection in Nigeria. *Ann Glob Health* 2019;85(1):56.