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Prevalence of Hepatitis B and C Among Residents of Internally Displaced Persons Camps in Abuja NigeriaIfeyinwa Veronica Obiesie *¹, Anthony John Dadah¹, Awawu Grace Nmadu²*Department of Microbiology, Faculty of Science, Kaduna State University, P.M.B.2339 Kaduna State, Nigeria ¹, Department of Community Medicine, College of Medicine, Kaduna State University P.M.B.2339 Kaduna State, Nigeria ².**Author for Correspondence: smylinfaz@gmail.com +234 8063685223***Abstract**

A cross-sectional indebt study was carried out in order to find out the prevalence of hepatitis B and C among residents of internally displaced persons camps in Abuja, Nigeria. Structured questionnaires were used to gather information on sociodemographic and risks factors. Four hundred and fifty participants (142 males, 308 females) were tested for hepatitis B and C using immunochromatography strips. Chi-square analysis, bivariate analysis and multiple logistic regression analysis (MLRA) were statistical tools employed to explore data collected. Age in terms of mean for each respondent was 22 years. The prevalence of hepatitis B and C among the IDPs was 9.3% and 7.3% respectively. Bivariate analysis did not disclose any significant risk factors to hepatitis B and C. However, multiple logistic regression revealed the significant risk factors for hepatitis B infection as having no previous knowledge of hepatitis (AOR= 25, p-value = 0.02). Also, multivariate analysis showed that being vaccinated against HBV was protective for Hepatitis B (AOR= 0.05, p-value = 0.04). This study concludes that hepatitis B was more prevalent among the IDPs in the 3 camps studied and recommends that creation of awareness on hepatitis B and C including factors that pose on-going risk to infection within the IDP camps, effective vaccinations for non-infected members and treatment should also be provided to infected individuals.

Keywords: *Hepatitis B and C, Internally displaced persons, Abuja, Nigeria, Prevalence.*

Introduction

Hepatitis is a term commonly used to denote inflammation of the liver. This could be due to infection (viral, bacterial, parasitic fungal) or it could be non-infectious (due to alcohol, autoimmune ailments, drugs, and, metabolic). Globally, virus-related hepatitis causes about 50% cases of severe and chronic hepatitis globally (World Health Organization, 2017). The common causes of hepatitis are Hepatitis B and C viruses (*Dienstag et al., 2015*). These three viruses cause serious anxiety due to illness burden (*Oon, 2012*). Viral hepatitis is a public health concern (*Stanaway et al., 2016*). In 1990, viral hepatitis became the 10th chief cause of death universally, this number rose to the 7th in 2013. The World Health Organization's (WHO) states that global hepatitis report for 2017 indicates that about 325 million individuals globally have chronic hepatitis B or C of which a greater number cannot lay hands on life supporting tests and treatment. Therefore, the public is at grave danger of developing lingering liver ailments, liver cancer, and death. Hepatitis B virus spreads majorly through contact with infected blood or through body fluids. Records for the year 2015 showed that hepatitis B caused about 887,000 deaths frequently due to cirrhosis and hepatocellular carcinoma (*Global Burden of Diseases, 2015*). A benign and current vaccine exists for prevention of HBV infection. HCV infection is mostly spread through contact with infected blood particularly after transfusing blood and its products, soiled injections during medical procedures and through sharing contaminated injections among drug users (*Dienstag et al., 2015*). Transmission via sex

seems to be possible although not usual. There is no vaccine now for protection against HCV infection.

Majority of researches carried out on Hepatitis B and also Hepatitis C in Nigeria are hospital-based (Uruku, *et al.*, 2018; Nongo *et al.*, 2017). In Nigeria, HBV is described as hyper-endemic with a pooled prevalence of 13.6%. In a study by Olayinka *et al.* (2016) in the six geopolitical zones in Nigeria, occurrence for hepatitis B infection was reported as 12.2%. It highlights the need for upgraded vaccination. Hepatitis C possesses a universal prevalence of 3%. The reported prevalence for hepatitis C in Nigeria is 2.1% (Karoney and Siika, 2013). In a study on IDPs in Pakistan, the prevalence was stated to reach a percentage of 5.2% for hepatitis C as against 4.5% of hepatitis B (Adeel and Qazi *et al.*, 2018). In a research carried out among refugees in the USA between 2006 and 2011, the prevalence of hepatitis B among Iraqi, Bhutanese and Burmese refugees was 3.8%, 5.7% and 36.0% respectively (Scott *et al.*, 2015). Published studies about the prevalence of hepatitis B and C amongst Internally Displaced Persons (IDPs) in Nigeria is limited, thus, this research focuses on finding out the prevalence of these 2 hepatitis viruses among persons residing in some IDP camps in Abuja, the capital of Nigeria. It will also scale up hepatitis screening for IDPs resident in the camps.

Materials and Methods

The population studied were residents of internally displaced persons (IDPs) camps in Abuja, Nigeria. A convenience sampling technique was used to select a total of 450 participants; 200, 150 and 100 from residents of Durumi IDP camp, Karumajiji IDP camp and New Kuchingoro IDP camp respectively. The target population included males and females aged 5 years and above who gave consent. Consent was obtained from parents for children.

Data on sociodemographic features including age, gender, marital status and years of residence on IDP camp and risk factors for hepatitis virus contact were collected by means of the structured questionnaires.

Sera specimens were obtained from the whole blood (collected from participants by venipuncture) by centrifugation at 1000 rpm for 5 minutes. The Immunochromatographic tests (ICT) was used initially to screen all blood specimens for Hepatitis B surface antigen and Hepatitis C antibody. Specimens positive by the ICT method were then confirmed using molecular analysis. The Immunochromatographic tests and the molecular analysis were carried out as directed by the manufacturer.

All statistical analysis was done using the statistical software package STATA SE version 12. Descriptive investigations for socio-demographic factors were expressed as frequencies, percentages and measures of central tendencies. Chi square test was used to assess the risk to hepatitis virus infections. Bivariate analysis and multivariate logistic regression were employed to further test significant association of predictor variables. A confidence interval (CI) of 95% was employed and a P-value of <0.05 reflected significant association.

Ethical approval for the study was obtained from The Federal Capital Territory, Health Research Ethics Committee. Permission into the IDP camps was also granted by the Abuja Municipal Area Council.

Results

Seventy-five (75) participants of the total 450 were positive for hepatitis B or C viruses. The prevalence of hepatitis B amongst the IDPs was 9.3% while hepatitis C was 7.3%. The comorbidity of hepatitis B and C was 0.4% (table 1).

TABLE 1: Prevalence of Hepatitis B and C with co-infection of Hepatitis B and C

Hepatitis Virus	Frequency	Percentage (%)
HBV	42	9.3
HCV	33	7.3
HBV/HCV	2	0.4

Key: *HBV; Hepatitis B virus, HCV; Hepatitis C virus*

Plates I and II describes the outcome of the molecular analysis of specimens positive by serological technique for hepatitis B and C viruses. Of eighteen, 12 sera specimens and 2 were confirmed positive by PCR technique.



PLATE I: Agarose gel picture of PCR amplicon for HBV.

Key: Lane M; DNA Marker (100bp and above), lanes 1 to 6; specimens, lane Pos; Positive control (1063bps), lane Neg; negative control



PLATE II: Agarose gel picture of PCR amplicon for HCV.

Key: Lane M; DNA Marker (100bp and above), lane Pos; Positive control (230bps), lanes 1 to 6; specimens, lane Neg; negative control, PCR; Polymerase Chain Reaction, HCV; Hepatitis C virus

After Chi-Square analysis, there was no significant association between socio-demographic characteristics and the prevalence of hepatitis B and C among the IDPs. Multivariate logistic regression of hepatitis B and C risk factors shown in Table 2 concludes that a statistically significant difference exists for HBV in participants with no previous knowledge of hepatitis (AOR= 25, p=0.02). The study also found that being vaccinated against HBV was protective for the infection (AOR= 0.05) and this was statistically significant (p=0.04).

TABLE 2: Multiple Logistic Regression Analysis of Hepatitis B and C Risk Factors

Risk factors	HBV+ (%)	AOR	95% CI	p- value	HCV + (%)	AOR	95%CI	p- value
Age								
<=24	25 (59.5)	1.95	0.51-7.52	0.33	16 (48.5)	0.56	0.13-25	0.45
>24years	17 (40.5)				17 (51.5)			
Gender								
Female	13(31.0)	0.88	0.23-3.28	0.86	23(69.7)	3.3	0.81-13.8	0.09
Male	10(30.3)							
Marital status								
Married	20(47.6)	0.97	0.24-3.90	0.97	16(48.5)	0.48	0.09-2.76	0.42
Not married	22(52.4)				17(51.5)			
Educational status								
Primary	23(54.7)	0.43	0.05-2.54	0.14	19(57.6)	0.86	0.24-3.1	0.82
Secondary	15 (35.7)				11 (33.3)			
Tertiary	2 (4.8)	0.34	0.13-47.1	0.30	1 (3.0)	0.67	0.07-6.9	0.74
Non formal	2 (4.8)	2.53	0.53	2 (6.1)				
Previous knowledge of hepatitis								
Yes	17(40.5)	25.1	1.6-392	0.02	12(36.4)	<0.01		0.99
No	25 (59.5)				21(63.6)			
Vaccination								
Yes	86(32.6)	0.05	0.03-0.81	0.04				
No	178(67.4)							
How long(years)								
1-3	132 (32.3)	1.11	0.34-8.70	0.87	137 (32.9)	1.4	0.43-4.9	0.54
>3	276 (67.7)				280 (67.1)			
Sharps								
Yes	15 (4.3)	1.38	0.22-8.70	0.73	17 (4.8)	1		
No	333 (95.7)				336 (95.2)			

Key: HBV; Hepatitis B virus, HCV; Hepatitis C virus, (+); positive, AOR; adjusted odds ratio, CI; confidence interval

Discussion

This study recorded a prevalence of 9.3% for hepatitis B. Our observed prevalence is higher than that reported by the WHO for African, European and American regions with prevalence of 6.1%, 1.6% and 0.7% respectively. The lower prevalence's reported were due to effective vaccination practices (Ott *et al.*, 2012). The high prevalence reported in this research work shows that it's necessary to step up vaccination practices for IDPs in the camps. Olayinka *et al.* (2016) reported a HBV prevalence of 12.2%, Aminu and Vandu (2014); 13.3%, Musa *et al.* (2015); 13.6% among their study participants. Lado *et al.* (2018), Nongo *et al.* (2017) and Anaedobe *et al.* (2015) reported prevalence of HBV of 8.3%, 7.0% and 6.7% respectively which are quite similar to this study.

Hepatitis C prevalence rate observed in this study was 7.3 % which is higher than the global prevalence of 3% and that of Africa and North America with prevalence of 5.3% and 0.4% - 1.1% respectively. This is probably because the persons in IDPs are exposed to higher risks of infection within the camps. Our HCV prevalence is higher than the 6.3% prevalence reported by Uruku (2018) and Enitan *et al.* (2019) who reported a 0% prevalence rate.

Test for association by Chi square analysis in this research presented no significant relationship amongst the sociodemographic characteristics of IDPs and status of hepatitis B and C infection ($X^2 < 1$, $p > 0.05$). Oshun and Odeghe (2019) also reported no significant associations between age, prior surgery, records of blood transfusion, alcohol usage and HCV infection. Emmeline *et al.* (2019) reported congruence with this study that no sociodemographic factor was significantly associated with hepatitis B. They however in contrast reported significant associations between age and hepatitis C infection. The bivariate analysis for risk factors of hepatitis B and C showed that there were increased insignificant odds (3%) for having hepatitis B in those less than 24 years than in older peers which might be credited to unsafe sex practices among youths. This finding is consistent with reports by Enitan *et al.* (2019). Nongo *et al.* (2017) reported that the participants aged 25 years and above had higher

rates of hepatitis B which is in contrast to the finding in this study. The chances of being positive with hepatitis C was found to be more among age 25 years and above. This finding is consistent with reports from Ya'aba *et al.* (2015) and Uruku *et al.* (2018). Males had slightly lower odds for both HBV and HCV than the female who had greater risks. The unmarried had higher odds of having both HBV and HCV infection which could be attributed to unhealthy sex practices, thus validating it as a major means of transmission. Oshun and Odeghe (2019) in contrast reported that HCV infection rate was higher in the married and Lado *et al.* (2018) that HBV infection incidences were greater in the married than the unmarried though not statistically significant. Multivariate logistic regression analysis of hepatitis B and C risk factors in this study further showed no significant association between hepatitis B and participants with no previous knowledge of hepatitis (AOR= 25, $P=0.02$) and that being vaccinated against HBV was protective (AOR= 0.05, $p=0.04$). There were no statistically significant associations between the use of sharps, length of stay at the IDP camp and the risk of HBV or HCV infection. After multiple regression analysis, the significant risk factors to HBV infection were lack of previous knowledge about hepatitis and vaccination against hepatitis B.

Recommendations

There is a need for more awareness about hepatitis and its modes of transmission among residents of the IDP camps. Vaccination should be provided for non-infected persons in the camp and treatment for hepatitis should also be provided for those infected.

Conflicts of Interest

There were no conflicts of interest in the research.

References

- Adeel, K. and Qazi, J. (2018). 'Risk factors and molecular epidemiology of HBV and HCV in internally displaced persons (IDPs) of North Waziristan Agency, Pakistan. *The Journal of Pakistan Medical Association*; **68(2)**: 165-169.
- Aminu, M. and Vandu M.D. (2014). Hepatitis B Infection in Nigeria: A Review Conference



- Paper. 4th University of Ibadan Conference of Biomedical Research; **43**.
- Anaedobe, C.G., Fowotade, A., Omoruyi, C.E. and Bakare, R.A. (2015). Prevalence, socio-demographic features and risk factors of Hepatitis B virus infection among pregnant women in Southwestern Nigeria. *Pan African Medical Journal*; **20**:406.
- Dienstag, J.L., Kasper, D., Fauci, A., Hauser, S., Longo, D., Jameson, J. and Loscalzo, J. (2015). Acute Viral Hepatitis' 19ed. (pp. **360**) *Harrison's Principles of Internal Medicine*; New York: NY McGraw-Hill.
- Emmeline, H.M.D., Frederic, K.M.S., Blanchard, J.M.D., and Juon, H.S. (2019). Prevalence of Chronic Hepatitis B and C Infection in Mongolian Immigrants in the Washington, District of Columbia, Metropolitan Area, 2016–2017' *Preventing Chronic Diseases*, **16**.
- Enitan, S.S., Adebola, O.K., Adejumo, E.S., Itodo, G.E., Ileoma, E., Oluremi, A.S., and Omotola, D. (2019). Prevalence of Hepatitis B and C Virus Infection among Students of a Private Tertiary Institution in South-Western Nigeria' *International Journal of Tropical Disease*; **36**(3):1-15.
- Global Burden of Disease, (2015). Mortality and Causes of Death, Collaborators; Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015. *The Lancet*; **388** (10053):1459–1544.
- Karoney, M.J. and Siika, A.M. (2013). Hepatitis C Virus infection in Africa: a review. *The Pan African Medical Journal*; **14**:44.
- Lado, Z.Y., Chukwuma C. Ogbaga C.C. and Nwagbara, O.F. (2018). Epidemiology of Hepatitis B viral infection among students and non-teaching (casual) staff of Nile University of Nigeria. *Journal of Public Health and Epidemiology*; **10** (3):77-86.
- Musa, B.M., Bussell, S., Borodo, M.M., Samaila, A.A., and Femi, O.L. (2015). Prevalence of hepatitis B virus infection in Nigeria, 2000-2013: A systematic review and meta-analysis' *Nigerian Journal of Clinical Practice*; **18** (2):163-172.
- Nong o, B.H., Eyaofun, T., Agida, T.E., Oghenebuk, U. and Yunusa, T. (2017). Seroprevalence of hepatitis B virus among antenatal attendees at the University of Abuja Teaching Hospital. *Annals of Nigerian Medicine*; **10** (2):58-62.
- Olayinka, A. T., Oyemakinde, A., Balogun, M.S., Ajudua A., Nguku P., Aderinola, M., Ewuenu-Oladejo, A., Ajisegiri, S.W., Sha'aibu, S., Musa, B.O.P., Gidado, S. and Nasidi, A. (2016). Seroprevalence of Hepatitis B Infection in Nigeria: A National Survey. *American Journal of Tropical Medicine and Hygiene*; **95** (4):902–907.
- Oon, G.C. (2012). *Viral hepatitis-the silent killer*. *Annals of the Academy of Medicine, Singapore*; **41** (7):279–280.
- Oshun, P. O. and Odeghe, E. (2019). Prevalence of Hepatitis C virus and HIV among adults presenting for health screening in Lagos' *African Journal of Clinical and Experimental Microbiology*; **20** (2):143–149.
- Ott, J.J., Stevens, G.A., Groeger, J. and Wiersma, S.T. (2012). Global epidemiology of hepatitis B virus infection: new estimates of age-specific HBsAg seroprevalence and endemicity. *Vaccine*; **30**:2212–2219.
- Scott, K.C., Taylor, E.M., Blain Mamo, B., Herr, N.D., Cronkright, P.J., Yun, K., Altshuler, M. and Shetty, S. (2015). Hepatitis B Screening and Prevalence among Resettled Refugees- United States, 2006–2011' *Morbidity and Mortality Weekly Report, CDC*; **64**(21):570-573.
- Stanaway, J.D., Flaxman, A.D., Naghavi, M. et al., (2016). Global burden of viral hepatitis from 1990-2013; findings from the GBD study 2013. *Lancet*; **388** (10049):1081-1088.
- Uruku, J.M., Dangana, A., Nasirb, I.A, Egenti, B.N., Lohyaa, N., Iyallaa, E.S., Ezraa, K. and Faladea, E.O. (2018). Seroprevalence of acute hepatitis C virus infection among mortuary workers and ambulance drivers in Plateau State, Nigeria. *The Egyptian Journal of Internal Medicine*; **30**: 35-39.

World Health Organization (2017). Global Hepatitis Report. World Health Organization; **83**.

Ya'aba, Y., Isu, N.R., Onoja, A.J., Ibrahim, K., Mohammed, S.B. and Oladosu, P. (2015).

Prevalence of Hepatitis C Virus (HCV) in healthy adults and Human Immunodeficiency Virus (HIV) infected adults in Abuja, Nigeria. *Journal of Phytomedicine and Therapeutics*; **1(1)**: 11-23.

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