

Original Research Article

Prevalence of hepatitis B virus among applicants for recruitment into Nigeria police force in Osun State, southwestern Nigeria

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ABSTRACT

Background: Police officers are likely to have blood-borne virus exposure like hepatitis B virus, while on duty. It is important to know the hepatitis B status of applicants at entry point of recruitment into the force to avoid employing applicants that can spread the virus to the citizens. This study determined the prevalence of hepatitis B infection among applicants for recruitment into the Nigerian police force in Osun State, southwestern Nigeria.

Methods: A cross-sectional study was conducted among 165 applicants from 30 LGAs in Osun State, selected using a multistage sampling technique, research data was also from the recruitments' exercise registers and records, univariate, bivariate and multivariate were done using IBM SPSS version 25.0 and statistical level of significance was set at $P < 0.05$.

Results: The mean age of respondents was 22.08 ± 2.428 . The Prevalence of HBV was 43.6%. There was a statistically significant association between the applicants' HBV status and their socio-demographic status $p = 0.014$. Binary logistic regression analysis revealed that: applicants from Ila, Ede north and Irewole LGAs are eight times less likely to have hepatitis B virus (OR: 0.124 and 0.120), those from Ejigbo and Isokan LGAs are seven times less likely to have HBV (OR: 0.135 and 0.132) and applicants from Odo-Otin LGA of Osun state are eleven times less likely to have HBV (OR: 0.088) compared to other local governments areas.

Conclusions: More than two-fifths of the applicants were tested positive for HBV, this proportion cannot be overlooked as they could expose colleague, or citizen to the infection.

Keywords: Applicants, Hepatitis B, Osun State, Police officers, Prevalence, Recruitments

INTRODUCTION

Hepatitis is a term that refers to the inflammation of the liver caused by different viruses including hepatitis A, B, C, D and E.¹ It is a viral infection that attacks the liver and is capable of causing both acute and chronic disease, it can be transmitted from mother to child during childbirth and contact with bodily fluids through sexual intercourse with an infected person, unsafe injections and contact with infected blood.² HBV could be

asymptomatic causing different presentations such as hepatocellular cancer.³ Acute hepatitis B is discrete in onset and symptoms include headache, loss of appetite, fever, abdominal pain, nausea, malaise etc.⁴ Chronic hepatitis B is referred to as the persistence of hepatitis B surface antigen (HBsAg) over a period of six months.⁴

Globally, the hepatitis B virus is a major public health problem.⁵ The hepatitis B infection's burden is most common in the western Pacific and African Region where millions of people are chronically infected, similarly,

about 20 million and 14 million are infected in the mediterranean and south-east Asia region.² Acute hepatitis B was estimated to be 21,900 cases in 2015, with an incidence of 1.1 cases per 100,000 as estimated by Centre for Disease Control and Prevention.⁴

Although police are less likely to have blood-borne virus exposure compared to other emergency and safety officers or hospital employees,⁶ nevertheless, it is important that the risk of infection be assessed especially from the recruitment level. Periodic screenings are crucial as they are frequently exposed to blood contacts while on duty, in order to minimize the risk of infection and transmission it is important to establish fitting measures to prevent transmission of the hepatitis B virus.³

There have been studies on hepatitis infection among police officers, but none have assessed the prevalence of hepatitis B and C among the applicants for recruitment into the service.^{3,7,8}

METHODS

This study was a cross-sectional study and it was carried out among 165 selected applicants from the total applicants that came from the 30 LGA for recruitment exercise into the Nigeria police force. The study employed a quantitative method of data collection, based on the report from the 2006 census.⁹ The city is largely dominated by the Yoruba ethnic group. It has an area and population density of 47.0km² and 4,557km² respectively. There are three senatorial districts in Osun state, each senatorial district has 10 local government areas, and each LGAs provided 20 applicants for recruitment exercise into the Nigeria police force.

For the purpose of this study, five out of ten local government areas were randomly selected from each senatorial district via balloting. Eleven applicants were selected from each selected local government using simple random sampling employing the balloting method. The minimum sample size was 150 and was increased to 165 after adjusting for a 10% non-response rate.

The ethical approval for the study was obtained from the ethical committee of Adeleke, university Ede, Osun State Nigeria. Permission to carry out the study was obtained from the commissioner of police Osun state police command and from the Osun State Ministry of Health, Osun State Nigeria. Needed Information was obtained from the applicants' screening registers, information obtained included socio-demographic characteristics, and the screening test results of hepatitis B.

Statistical analysis

Data analysis was done using IBM SPSS software version 25.0, the tabular form was used for results presentation while chi-square and logistic regression were appropriate, statistical level of significance was set at $P < 0.05$.

RESULTS

Table 1 shows the socio-demographic characteristics of the respondents. The majority (80.0%) of the applicants selected were between ages 20-26 years compared to only 20% that were in the 16-19 years age bracket. More than two-thirds (75.1%) of the respondents were males. There were eleven respondents selected from each LGA, which equals 6.67% per local government area (Table 1).

Table 1: Socio-demographic characteristics (n=165).

Variables	Sub-variables	Frequency	Percentage (%)
Age (in years)	16-19	33	20.0
	20-26	132	80.0
Sex	Male	119	72.1
	Female	46	27.9
Local government areas	Ifedayo	11	6.67
	Ifelodun	11	6.67
	Boluwaduro	11	6.67
	Ila	11	6.67
	Odo otin	11	6.67
	Ede north	11	6.67
	Irewole	11	6.67
	Ejigbo	11	6.67
	Isokan	11	6.67
	Ife north	11	6.67
	Ife south	11	6.67
	Atakunmosa west	11	6.67
	Atakunmosa east	11	6.67
	Obokun	11	6.67
	Egbedore	11	6.67

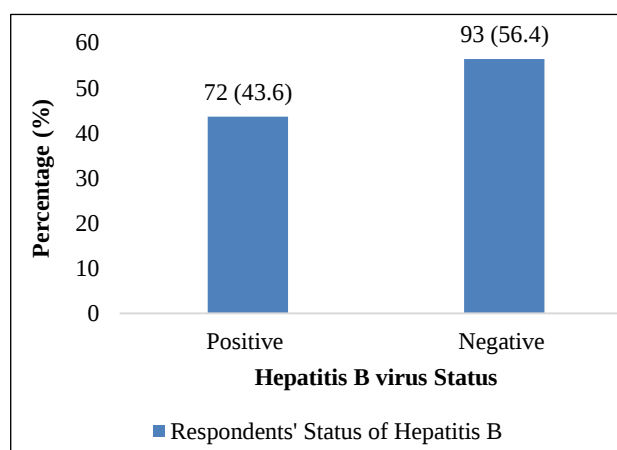


Figure 1: Respondents' status of hepatitis B.

Figure 1 shows the respondents' level of hepatitis-B status, more than half (56.4%) were found to have tested negative for hepatitis B Virus, while 43.6% tested positive for hepatitis-B virus (Figure 1).

Table 2 shows the association between the respondents' status of hepatitis-B virus and their socio-demographic characteristics. Although not statistically significant, more of the respondents (46.2%) in the age bracket of 20-26 years tested positive for the hepatitis-B virus screening

test compared to only one-third (33.5%) of the adolescents (16-19 years old) that reacted to the screening test of the hepatitis-B virus. More males (46.2%) than females (37.0%) were found to have hepatitis B virus.

Table 2: Association between respondents' hepatitis B status and their socio-demographic characteristics (n=165).

Variables	Sub-variables	Respondents' hepatitis B status		Statistics
		Positive % (n=72)	Negative % (n=93)	
Age (in years)	16-19	11 (33.3)	22 (66.7)	$\chi^2=1.780$
	20-26	61 (46.2)	71 (53.8)	p=0.182
Sex	Male	55 (46.2)	64 (53.8)	$\chi^2=1.157$
	Female	17 (37.0)	29 (63.0)	p=0.282
LGAs	Ifedayo	9 (81.8)	2 (18.2)	$\chi^2=28.084\#$ p=0.014
	Ifelodun	5 (45.5)	6 (65.5)	
	Boluwaduro	5 (45.5)	6 (54.5)	
	Ila	4 (36.4)	7 (63.6)	
	Odo otin	3 (27.3)	8 (72.7)	
	Ede north	4 (36.4)	7 (63.6)	
	Irewole	4 (36.4)	7 (63.6)	
	Ejigbo	4 (36.4)	7 (63.6)	
	Isokan	4 (36.4)	7 (63.6)	
	Ife north	9 (81.8)	2 (18.2)	
	Ife south	8 (72.7)	3 (27.3)	
	Atakunmosa west	6 (54.5)	5 (45.5)	
	Atakunmosa east	2 (18.2)	9 (81.8)	
	Obokun	2 (18.2)	9 (81.8)	
	Egbedore	3 (27.3)	8 (72.7)	

#Likelihood ratio

Table 3: Binary logistic regression of the outcome variable “respondents' hepatitis B status” and their socio-demographic predictors. (n = 165).

Variables	Variable categories	P value	Odds ratio	95% confidence interval	
				Lower	Upper
Age	16-19 years (reference)	0.592	1.284	0.515	3.196
Sex	Male (reference)	0.351	0.677	0.298	1.537
LGAs	Ifedayo (reference)	0.083			
	Ifelodun	0.121	0.213	0.030	1.508
	Boluwaduro	0.136	0.223	0.031	1.607
	Ila	0.038	0.124	0.017	0.892
	Odo otin	0.022	0.088	0.011	0.707
	Ede north	0.036	0.120	0.016	0.867
	Irewole	0.038	0.123	0.017	0.890
	Ejigbo	0.047	0.135	0.019	0.975
	Isokan	0.047	0.132	0.018	0.977
	Ife north	0.979	0.971	0.109	8.667
	Ife south	0.656	0.629	0.082	4.827
	Atakunmosa west	0.186	0.267	0.038	1.887
	Atakunmosa east	0.078	0.052	0.006	0.462
	Obokun	0.078	0.051	0.006	0.451
	Egbedore	0.257	0.092	0.012	0.722

However, there was a statistically significant association between the respondents' local governments areas where more of the respondents (81.8%) from Ifedayo and Ife-North, tested positive for hepatitis B virus, followed by Ife-South (72.7%) while Atakumosa East and Obokun have the least proportion of respondents that tested positive to hepatitis B virus (18.2%) (Table 2).

Table 3 shows the binary logistic regression of the outcome variable "Respondents' Hepatitis B Status" and their socio-demographic predictors. For the variable "Local Government Areas" the sub-categories Ila with P value 0.038 ($p < 0.050$) odds ratio: 0.124, and confidence interval 0.017-0.892). Odo-Otin with P value 0.022 ($p < 0.050$) odds ratio: (0.011-0.707), Ede north with P value 0.036 ($p < 0.050$), odds ratio: 0.120 and confidence interval (0.016-0.867). Irewole: p-value 0.038 ($p < 0.050$), odds ratio 0.135, confidence interval (0.017-0.890) and sub-categories Ejigbo and Isokan with p value 0.047, odds ratio 0.135 and 0.132, confidence interval (0.019-0.975) and (0.018 and 0.977) for Ejigbo and Isokan respectively. This shows that applicants from Ila, Ede north and Irewola LGAs are eight times less likely to have hepatitis-B virus, those from Ejigbo and Isokan LGAs are seven times less likely to have hepatitis-B and applicants from Odo-Otin LGA of the state are eleven times less likely to have hepatitis-B compared to other local governments areas (Table 3).

DISCUSSION

The mean age of the respondents was 22.08 ± 2.428 , this means age is lower compared to that of Adjei et al, (2008) study where the officers had 38.1 as their mean age, the majority of the respondents were between the age of 20-29 years old.¹⁰ More than two-thirds of the applicants were males which is in line with another study on hepatitis B among policemen in Adiyaman where majority of the policemen were males.³ Similarly, this finding is slightly higher than Adjei's 2008 study on correlates between HBV among prison inmates and officers in Ghana that reported less than two-thirds of their respondents were females.¹⁰ Looking at the rigours of police officers' occupation, it is expected that it suits more male than females and this could be the likely reason for more male officers than female police officers in most places.

The prevalence of HBV revealed by this study is higher than that of Adjei's (2022) study where less than one-third have HBsAg and much higher than Kölgelir et al, (2015) study on the prevalence of hepatitis B among policemen working in Adiyaman where less than one-tenth tested positive to hepatitis B surface antigen.^{10,3}

CONCLUSION

The findings of this study show statistically significant associations between the applicants' LGAs and their

hepatitis B status, furthermore, binary logistic regression revealed a further relationship that applicants from Ila, Odo-Otin, Ede-North, Irewole and Isokan were less likely to have tested positive for hepatitis. Further study may look into this area to ascertain factors responsible for their low positivity and those predisposing other LGAs to hepatitis B as well as their preventive practices regarding the infection.

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REFERENCES

1. Elijah MI, Irebanije FJ. A Survey for Hepatitis 'B' Infection among Prison Inmates in. *J Pharm Biol Sci*. 2014;9(1):134-7.
2. World Health Organization. Hepatitis B, 2022. Available at: <https://www.who.int/news-room/fact-sheets/detail/hepatitis-b>. Accessed 09 February 2023.
3. Kölgelir S, Demir NA, Demir LS, Özçimen S, İnkaya AÇ. Knowledge level of hepatitis b and its prevalence in policemen working in Adiyaman. *Eur J Gen Med*. 2015;12(2):114-7.
4. Wilkins T, Sams R, Carpenter M. Hepatitis B : screening, prevention, diagnosis, and treatment. *Am Fam Physician*. 2019;99(5):314-23.
5. Trépo C, Chan HLY, Lok A, Lyon HC De. Hepatitis B virus infection. *Lancet*. 2014;6736(14):1-11.
6. ANZPAA. Police and Blood-Borne Viruses. *Aust New Zeal Polic Advis Agency Dep Heal Ageing*. 2020;(7):1-8.
7. Welch J, Tilzey AJ, Bertrand J, Bott ECA, Banatvala JE. Risk to metropolitan police officers from exposure to hepatitis B. *Br Med J*. 1988;297(6652):835-6.
8. Bandaranayake DR, Salmond CE, Tobias MI. Occupational risk of hepatitis b for police and customs personnel. *Am J Epidemiol*. 1991;134(12):1447-53.
9. NPC. Nigeria Demographic and Health Survey, Calverton Maryland. NPC and ORC Macro. National Population Commission (NPC), 2018. Available at: <https://www.dhsprogram.com/pubs/pdf/FR359/FR359.pdf>. Accessed 09 February 2023.
10. Adjei AA, Armah HB, Gbagbo F, Ampofo WK, Boamah I, Adu-Gyamfi C, et al. Correlates of HIV, HBV, HCV and syphilis infections among prison inmates and officers in Ghana: A national multicenter study. *BMC Infect Dis*. 2008;8:33.

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